



FINAL Missouri River Recovery Management Plan and Environmental Impact Statement

VOLUME 4
August 2018



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Missouri River Recovery Management Plan and Environmental Impact Statement

Volume 4

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**APPENDIX A: HUMAN CONSIDERATIONS PROXIES
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**Missouri River Recovery Management Plan
and Environmental Impact Statement**

**Appendix A: Human Considerations Proxies and Round 1 and 2
Bird Alternative Proxy Results**

September 30, 2016

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Human Considerations Proxies

The term human considerations is used to address the interests of stakeholders. These include the authorized purposes as well as the many other services afforded by the System. The Corps and USFWS have worked closely with the Missouri River Recovery Implementation Committee (MRRIC) since January 2013 to identify the underlying stakeholder interests referred to as human considerations. Human considerations to be assessed when evaluating alternatives are rooted in the economic, social, and cultural values associated with the natural resources of the Missouri River. The MRRIC represents management of these interests. In January 2013, the Corps asked the MRRIC and their constituent stakeholders to provide input on the human considerations relative to their use of the Missouri River and its resources. The Corps requested this feedback to help inform how MRRIC collective interests could be considered in an assessment of consequences associated with management actions for the listed species. The MRRIC formed the Human Considerations Ad Hoc Working Group as a mechanism to provide input on human considerations. The working group gathered and reviewed input from MRRIC members on the following categories: agriculture; commercial dredging; environmental conservation / fish and wildlife; flood risk management; irrigation; hydropower; local government; navigation; recreation; Tribal and cultural; water quality and water supply; thermal power; and wastewater.

The MRRMP-EIS project delivery team (PDT) developed a suite of models for use in assessing the effects of management actions and alternatives to the human considerations. A subset of these models was used to calculate “proxy metrics” for the human considerations. Proxy metrics were used in the alternatives development process to inform ProACT discussions with MRRIC (Table A-1). Proxy metrics were developed to be efficiently modeled and calculated, responsive to changes in reservoir operations and/or channel geometry modifications, and indicative of the potential for impacts to a human consideration. In most cases, the proxy metrics were not representative of the complete impacts analysis as presented in this draft MRRMP-EIS. Additional economic models were developed to facilitate impacts analysis of each alternative carried forward for detailed consideration in this draft MRRMP-EIS. These economic models were also the basis for calculation of National Economic Development (NED) and Regional Economic Development (RED) effects consistent with Corps planning requirements. The models used to evaluate each human consideration are described in a series of technical reports that accompany this draft MRRMP-EIS.

Round 1 and 2 Proxy Results

The human considerations proxies were calculated for the Round 1 and 2 bird alternatives. These results were used to facilitate trade-off discussion with MRRIC held in May and August of 2015.

TABLE A-1. HUMAN CONSIDERATIONS PROXY METRICS USED IN THE PROACT PROCESS WITH THE MISSOURI RIVER RECOVERY IMPLEMENTATION COMMITTEE

Human Consideration (Interest Category)	Proxy Metric	Units	Description
Agriculture	Peak flows and stages during flood events, and also duration of high stages for interior drainage analysis	Annual and seasonal number of days damage thresholds are exceeded	Change in number of days per year and per season that damage thresholds would be exceeded.
Commercial Dredging	Average annual change in sediment accumulation rate	Tons/year	The base year is 2013 for the sediment modeling, and the model is run forward 50 years. Evaluation will be conducted on how the change in sediment accumulation over the 50-year period differs from on potential alternative versus another potential alternative.
Environmental Conservation / Fish and Wildlife	Change in aquatic / floodplain habitat	Acres	Change in acres of all native habitat types for the baseline condition to each alternative condition.
	Acres of wetland habitat classes	Acres	Acres of wetland habitat classes potentially occurring under each alternative.
	Total # of occurrences of flows below 9,000 cubic feet per second (cfs)	Number of occurrences	Number of occurrences that a flow of 9,000 cfs or less occurs in the Fort Randall to Gavins Point Dam reach based on daily or hourly timesteps.
Flood Risk Management	Peak flows and stages during flood events, and also duration of high stages for interior drainage analysis	Annual and seasonal number of days damage thresholds are exceeded	Change in number of days per year and per season that damage thresholds would be exceeded.
Irrigation	Intake operating conditions	Number of days water surface elevation falls below normal operating conditions	This unit of measure will determine the number of days per year that an irrigation intake along the Missouri River will function below a normal operating level under a given alternative scenario versus the No-Action Alternative. These days are averaged and presented by county.
Hydropower	Total seasonal generation	Generation (MWh)	Seasonal generation (summer, winter).
Local Government	Number of acquisition acres per mile	Acres/mile	For a given alternative, an estimate of the number of acres/mile planned for acquisition.

Human Consideration (Interest Category)	Proxy Metric	Units	Description
Navigation	Number of days per year during the navigation season when at least minimum service is supported by operations	Days/year	Minimum service level refers to when there is approximately an 8-foot depth in the Missouri River navigation channel.
	Number of days per year during the navigation season when operations supports navigation at or above full service levels	Days/year	Full service is when there is a 9-by-300 foot channel in the Missouri River navigation channel.
	The length of the season as measured by the number of days per year navigation is supported by operations during the season; Measured at system level	Days/year	The navigation season on the Missouri River is limited to the normal ice-free period with a full-length flow support of 8 months.
	Number of days per year during the possible navigation season when at least minimum service occurs at one of four target locations (Sioux City, Nebraska City, Omaha, and Kansas City)	Days/year	Minimum service level refers to when there is approximately an 8-foot depth in the Missouri River navigation channel.
	Number of days per year during the possible navigation season when at or above full service occurs at one of four target locations (Sioux City, Nebraska City, Omaha, and Kansas City)	Days/year	Full service is when there is a 9-by-300 foot channel in the Missouri River navigation channel.

Human Consideration (Interest Category)	Proxy Metric	Units	Description
Recreation	Number of days with operate boat ramps	Average number of days/year; Number of boat ramp days/year	Operable boat ramps are when stages and elevations fall between minimum and maximum normal boat ramp elevations during four seasons: spring, summer, fall, and winter.
	Number of chutes, backwaters, or shallow water habitat (SWH) areas	Numbers	The number of chutes or number of SWH areas provide a proxy for recreation in terms of potential opportunities for recreational access, slower river water velocities, and safety.
	Number of days above the conservation pool elevation, the mid-2000s drought elevation, and an elevation between these elevations at upper three reservoirs	Number of days/year	Conservation pool elevations represent important elevations to support both access and fisheries health. Drought pool elevations from the mid-2000s represent important elevations to evaluate how severe drought affects access and fisheries health effects. The pool elevations between the conservation pool and drought elevations represent important elevations to evaluate alternatives. Four seasons are evaluated: spring, summer, fall, and winter.
	Normal to improved fishing success at three upper reservoirs	Number of years criteria are met	Fishing success is defined at upper three reservoirs through rising spring reservoir elevations and the onset of drought.
Tribal and Cultural	Sites at risk	Average number of days at which the water-surface elevation puts cultural resource sites at "high" or "very high" risk	This unit of measure will determine the average number of days per year that each cultural resource site along the Missouri River is subject to higher than normal risk, given an alternative scenario versus the No-Action Alternative.
Water Quality and Water Supply	Intake operating conditions	Number of days below normal operating elevations	This unit of measure will determine the number of days per year for each year over the period of record that a water supply intake along the Missouri River will function below a normal operating level under a given alternative scenario versus the No-Action Alternative.

Human Consideration (Interest Category)	Proxy Metric	Units	Description
Thermal Power	Intake elevations	Number of days per year when river and reservoir elevations are below critical intake operating elevations by power plant location, evaluated annually and for peak summer and winter periods	Sum of number of days per year when river and reservoir elevations are below intake elevations annually and in the peak summer and winter periods.
	Critical low-flow elevations	Number of days per year below the critical low flow condition by power plant location, evaluated annually and for peak winter and summer periods	Sum of number of days per year below critical low flow condition annually, and in the peak summer and winter months.
	Water temperature	Number of days per year when river water temperature is above temperature threshold by power plant location, evaluated annually and for peak summer and winter periods	Sum of number of days per year when water temperature is above temperature threshold annually and in the peak summer and winter months.
Wastewater	Low-flow conditions	Low-flow conditions in cfs calculated by facility location	Calculated the low-flow conditions at each power plant location under the alternatives to compare the changes in low flow conditions under the action alternatives.

**Missouri River Recovery Management Plan - Environmental Impact Statement
Round 1 Bird Alternative Proxy Results (Presented at May 2015 MRRIC Plenary)**

10th Worst

Human Considerations (10th Percentile Worst Years)

		No Action	All Mech	Spring Rel B + Mech	Fall Rel C + Mech	Spring Rel B + LSF + OA + Mech	Fall Rel C + LSF + OA + Mech
Commercial Sand & Gravel							
Cultural	Lakes - Ft Peck, Sask, Oahe			↑		↑	↑
	Lake Sharpe & Lake Francis-Case					↓	↓
	Rivers						
F&W							
	Wetland						
	Forest						
Flood Risk / Agriculture	Major flood risk						
	Int. Drainage, North of St Joseph			↑	↓↓	↓↓↓	↓↓↓
	Int. Drainage, South of St Joseph			↑↑	↑		
Hydropower	Summer Generation			↓		↑↑	↑↑
Irrigation	Montana					↓	↓
	Southern Nebraska					↓↓↓	↓↓↓
	Elsewhere						
Local Government							
Navigation	Length of season			↓		↓↓↓	↓↓↓
Recreation	Boat ramp access					↑↑	↑↑
	Fishing SAK						
	Fishing OHA						
Thermal Power	Shutdown Intake			↓			
	Temperature					↓↓	↓↓
Wastewater	Bismarck Reach (2 facilities)						
	Downstream						
Water Supply	Northern munis				↑	↑↑↑	↑↑↑
	Southern munis			↓		↑	↑
	Comm & Industrial			↓		↓↓	↓↓

**Missouri River Recovery Management Plan - Environmental Impact Statement
Round 1 Bird Alternative Proxy Results (Presented at May 2015 MRRIC Plenary)**


ESA and MRRP Program

	No Action	All Mech	Spring Rel B + Mech	Fall Rel C + Mech	Spring Rel B + LSF + OA + Mech	Fall Rel C + LSF + OA + Mech
Birds		↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Pallid *					↑	↑
Cost of Mechanical ESH Construction		↓↓↓	↓↓	↓↓	↓↓↓	↓↓↓

Human Considerations (Median Years)

Commercial Sand & Gravel						
Cultural	Lakes - Ft Peck, Sask, Oahe				↑↑	↑↑
	Lakes - Sharpe, Francis-Case, L&C Rivers					
Fish and Wildlife	Wetland			↑		
	Forest		↑↑		↑↑	
Flood Risk / Agriculture	Major flood risk					
	Int. Drainage, North of St Joseph		↓	↓	↓↓	↓↓
	Int. Drainage, South of St Joseph					
Hydropower	Summer Generation		↓	↓	↓↓↓	↓↓↓
Irrigation	Montana				↓↓↓	↓↓↓
	Elsewhere		↓		↑↑	↑↑
Local Government						
Navigation	Length of season				↓↓↓	↓↓↓
Recreation	Boat ramp access		↑	↑	↑	↑
	Fishing SAK				↓	↓
	Fishing OHA				↓	↑
Thermal Power	Bismarck Reach			↓	↓↓	↓↓
Wastewater	Bismarck Reach (2 facilities)			↓	↓↓	↓↓↓
	Nebraska and Iowa		↓	↓		
	Kansas and Missouri					
Water Supply	Northern munis				↓	↓
	Southern munis					
	Comm & Industrial		↑	↓	↑↑	↑↑

↑↑↑	Most distinct positive changes
↑↑	Some distinct positive changes
↑	Generally relatively minor positive changes
[blank]	Small or generally mixed or uncertain changes
↓	Generally relatively minor negative changes
↓↓	Some distinct negative changes
↓↓↓	Most distinct negative changes

* benefits if foraging and / or food-producing habitat are limiting

Appendix A: Human Considerations Proxies and Round 1 and 2 Bird Alternative Proxy Results

Missouri River Recovery Management Plan - Environmental Impact Statement Round 2 Bird Alternative Proxy Results (Presented at August 2015 MRRIC Plenary)

				Dir	SPR_335L + M (A32)	SPR_42MAF + M (A30)	SPR_31MAF + M (A29)	FALL_35L + M (A28)	FALL_42MAF + M (A22)	FALL_31MAF + M (A21)	FALL_42MAF + LSF + M (A26)
Birds					ESA OK	ESA OK	ESA OK	ESA OK	ESA OK	ESA OK	ESA OK
Pallid					NA	NA	NA	NA	NA	NA	NA
Cost of Mechanical (Assuming no annual budget caps, % change from All Mechanical)					-30%	-64%	-65%	-39%	-43%	-56%	-51%
Human Considerations (All % change from No Action 82 year total unless otherwise noted)											
Water Supply	Shut Down Elevation	Upper Basin Municipal	L	4.9%	3.8%	6.0%	2.5%	13.5%	19.4%	2.5%	
		Lower Basin Municipal	L	1.8%	3.5%	6.5%	1.5%	3.1%	1.4%	-3.3%	
		Commercial & Industrial	L	1.9%	2.6%	4.0%	5.3%	7.2%	8.0%	2.9%	
Waste Water	Low Flow Conditions	Annual Criteria	L	2.9%	1.0%	3.8%	0.0%	2.1%	3.4%	-7.2%	
		Spring Criteria	L	0.0%	-1.8%	-1.8%	0.0%	0.0%	1.8%	0.0%	
		Summer Criteria	L	4.8%	2.4%	13.7%	0.0%	-4.6%	45.8%	-18.5%	
		Winter Criteria	L	1.7%	-2.2%	0.2%	0.0%	1.9%	-12.2%	-0.4%	
Thermal Power	Shut Down Intake Elevation	Bismarck Reach and Lake Sak -- Annual	L	5.9%	22.7%	21.2%	0.9%	0.0%	8.7%	12.1%	
		Below Gavins -- Annual	L	2.0%	2.6%	4.8%	1.1%	2.3%	2.3%	-2.7%	
	Shut Down Intake Elev + 1ft	Bismarck Reach and Lake Sak-- Annual	L	0.7%	11.7%	15.4%	2.9%	4.2%	15.4%	10.4%	
		Below Gavins -- Annual	L	1.7%	2.6%	4.6%	1.4%	2.2%	2.6%	-2.6%	
	Low Flow Thresh., Labadie	Summer (July-Sept)	L	1.8%	4.8%	9.5%	0.0%	2.1%	7.7%	35.4%	
Irrigation	Temperature	Below Gavins -- days <30kcf -- Summer	L	1.5%	10.6%	11.6%	1.3%	3.6%	5.6%	26.1%	
		Irrigation Season	L	2.3%	2.8%	4.3%	2.1%	3.6%	5.2%	0.4%	
Navigation	Service Level for the System	At Least Min	H	-0.2%	-0.5%	-0.8%	0.0%	-0.6%	-2.4%	-16.5%	
		At Least Full	H	-6.9%	0.4%	-4.9%	-3.0%	-12.6%	-11.1%	-26.6%	
	Service Level at Target locs	At Least Min	H	-0.3%	-1.5%	-1.8%	-0.1%	-0.4%	-1.2%	-2.7%	
		At Least Full	H	-1.2%	-2.6%	-2.6%	-0.5%	-1.1%	-0.8%	-5.8%	
Flood Risk	Flood Stage - Greenwood and Niobrara	Annual	L	16.1%	38.1%	44.0%	29.2%	29.2%	47.2%	48.5%	
		Spring	L	148.2%	324.1%	416.9%	13.3%	10.3%	11.3%	22.6%	
		Fall	L	4.7%	3.4%	-9.7%	115.9%	137.3%	192.4%	170.0%	
	Flood Stage -- All Other Locations	Annual	L	-0.4%	-0.8%	-1.1%	-1.0%	-1.0%	-1.4%	-0.2%	
		Spring	L	0.9%	2.0%	2.4%	-0.2%	-0.9%	-0.5%	-0.2%	
		Fall	L	-0.3%	-0.3%	-1.9%	2.8%	3.8%	-0.3%	12.9%	
	Flood Stage + 5ft	All Locations -- Annual	L	-0.4%	-1.4%	-2.6%	-0.2%	-1.9%	-1.8%	-1.8%	
	Flap gate	Annual	L	1.5%	2.1%	2.9%	1.2%	1.5%	1.8%	1.4%	

Appendix A: Human Considerations Proxies and Round 1 and 2 Bird Alternative Proxy Results

Missouri River Recovery Management Plan - Environmental Impact Statement Round 2 Bird Alternative Proxy Results (Presented at August 2015 MRRIC Plenary)

				Dir	SPR_335L + M (A32)	SPR_42MAF + M (A30)	SPR_31MAF + M (A29)	FALL_35L + M (A28)	FALL_42MAF + M (A22)	FALL_31MAF + M (A21)	FALL_42MAF + LSF + M (A26)
Recreation Boat Ramp operability (% change in ramp-days)	Fort Peck	Summer	H		-1.1%	-1.4%	-3.5%	-1.3%	-2.2%	-6.1%	-0.4%
		Fall	H		-1.1%	-2.3%	-5.2%	-1.6%	-3.3%	-6.2%	1.6%
	Lake Sakakawea	Summer	H		-1.4%	-1.5%	-2.9%	-1.6%	-3.5%	-5.8%	-1.0%
		Fall	H		-1.7%	-0.8%	-2.4%	-2.7%	-5.7%	-8.2%	-2.1%
	Lake Oahe	Summer	H		-1.1%	0.0%	-1.5%	-0.8%	-2.1%	-3.6%	1.2%
		Fall	H		-1.4%	0.2%	-1.2%	-1.5%	-3.3%	-4.1%	0.9%
	Lower Three Reservoirs	Summer	H		0.0%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
		Fall	H		-0.8%	-0.9%	-1.3%	-0.5%	-0.8%	-0.8%	-0.5%
	Rivers Between Reservoirs	Summer	H		0.1%	-0.4%	-0.2%	0.1%	1.3%	1.0%	0.8%
		Fall	H		0.1%	-0.4%	-0.2%	0.1%	1.3%	1.0%	0.8%
Recreation Conservation Pool change	Fort Peck Lake	Spring	H		1.6%	3.0%	4.4%	-0.3%	-0.7%	-1.0%	-2.6%
		Summer	H		-0.9%	-2.0%	-2.3%	-0.5%	-1.3%	-1.5%	-2.7%
	Lake Sakakawea	Fall	H		-0.7%	-1.5%	-2.2%	3.8%	5.8%	8.2%	9.1%
		winter	H		-1.0%	-1.2%	-1.5%	-1.4%	-2.1%	-2.6%	-1.0%
	Lake Oahe	summer	H		-6.4%	-1.9%	-5.9%	-9.2%	-8.8%	-12.6%	-8.1%
		summer	H		-4.9%	-0.1%	-5.9%	-7.4%	-9.5%	-11.3%	13.1%
	Lake Oahe	summer	H		-2.4%	-0.3%	0.5%	-4.9%	-2.8%	-3.5%	-0.9%
	"Good" Fishing Years (Number of Years Difference from NA)	Fort Peck Lake	H		1	2	3	-2	2	1	2
		Lake Sakakawea	H		1	-3	5	1	0	5	1
		Lake Oahe	H		5	-2	0	0	-2	3	4
Hydropower	Average Seasonal Generation	Annual	H		-0.2%	-0.4%	-0.6%	-0.4%	-0.7%	-0.8%	-0.7%
		Summer	H		-1.0%	-1.5%	-2.2%	-1.0%	-1.4%	-1.6%	-2.9%
		Winter	H		-1.0%	-1.5%	-1.8%	-2.2%	-3.0%	-3.9%	-1.8%
	Total Season Value	Annual	H		-0.4%	-0.8%	-1.1%	-0.6%	-1.0%	-1.3%	-1.4%
Cultural Resources (%Change in Mean Average Site-Days Affected)	Reservoirs	Sites Below (very high) - Lake Oahe	L		3.4%	-0.4%	-0.5%	4.3%	4.4%	6.6%	-3.4%
		Sites Below (very high) - Lake Sak	L		2.5%	0.8%	1.8%	5.3%	5.5%	6.4%	2.8%
		Sites Above (high and very high) - Oahe	L		-28.9%	-17.7%	-16.0%	-26.3%	-8.9%	-5.6%	9.3%
		Sites Above (high and very high) - Sak	L		-5.8%	-7.0%	-5.6%	-20.2%	-6.1%	-3.9%	4.3%
	Rivers	Sites Not Behind Levees (All States)	L		-0.1%	0.0%	-0.1%	0.0%	-0.4%	-0.2%	-0.1%
		Sites Behind Levees (IA, NE, KS, MO)	L		-1.2%	-2.1%	-2.8%	-1.8%	-1.6%	-1.7%	-1.9%
Fish & Wildlife	Aquatic/Floodplain Habitat	Wetland Habitat	H		-0.30%	-0.50%	-0.60%	-2.80%	-0.80%	-0.50%	-2.10%
		Flows below 9,000cfs	H		-1.14%	-0.06%	-0.36%	-0.30%	-0.27%	-0.55%	-3.63%
	Flows below 9,000cfs		L		1.20%	4.00%	6.00%	1.30%	1.70%	2.20%	1.60%

Dir = L = Lower numbers are better
Dir = H = Higher numbers are better

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APPENDIX B: FISH AND WILDLIFE COORDINATION ACT CORRESPONDENCE

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Appendix B: Fish and Wildlife Coordination Act Correspondence

June 18, 2014: Planning Aid Letter Regarding Task B2 in the Missouri River Recovery Program Fish and Wildlife Coordination Act Scope of Work – Fiscal Year 2014

March 24, 2015: Planning Aid Letter Regarding the Appendix A of the Adaptive Management Plan: Adaptive Management Governance

February 13, 2015: email from Nebraska.gov re: FWCA Adaptive Management Governance Document for review

February 13, 2015: email from Iowa DNR re: FWCA Adaptive Management Governance Document for review

February 19, 2015: email from Kansas Department of Wildlife, Parks and Tourism re: FWCA Adaptive Management Governance Document for review

November 2, 2015: Planning Aid Letter Regarding the Missouri Recovery Management Plan Lower Missouri River Pallid Sturgeon Framework, Targets and Decision Criteria

October 27 2015: Planning Aid Letter Regarding Task B1 in the Missouri River Recovery Program FWCA Scope or Work – FY 2015

November 5, 2015: Planning Aid Letter Regarding the Missouri River Recovery Management Plan-EIS: USFWS 2003 BiOp Projected Actions Alternative

November 13, 2015: Planning Aid Letter Regarding Task B3 in the Missouri River Recovery Program FWCA Scope or Work – FY 2015

December 4, 2015: Planning Aid Letter regarding development of the Missouri River Recovery Management Plan/EIS

December 4, 2015: Planning Aid Letter Regarding the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) fish and wildlife proxy

April 28, 2016: Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) Preliminary Draft Chapter 2: Alternatives

September 14, 2016: USFWS letter to U.S. Army Corps of Engineers regarding Interception Rearing Complex Targets

August 2018: Fish and Wildlife Coordination Act Report for the Missouri River Recovery Management Plan and Science and Adaptive Management Plan

August 24, 2018: USACE letter to USFWS regarding responses to the final “Fish and Wildlife Coordination Act Report for the Missouri River Recovery Plan and Science and Adaptive Management Plan” – August 2018

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IN REPLY REFER TO:
FWS/R6/ES

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mountain-Prairie Region

31247 436th Avenue
Yankton, SD 57078



June 18, 2014

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding Task B2 in the Missouri River Recovery Program Fish and Wildlife Coordination Act Scope or Work – Fiscal Year 2014

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service) provides this planning aid letter (PAL) regarding the development of the U.S. Army Corps of Engineers' (Corps) Missouri River Recovery Management Plan (Management Plan) and associated Environmental Impact Statement (EIS) in accordance with the Fiscal Year (FY) 2014 Fish and Wildlife Coordination Act (FWCA) scope of work (SOW), Task B2 (Purpose and Need). As a cooperating agency on the Management Plan and EIS, the Service provides the following pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the NEPA of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.).

This PAL does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of the FWCA, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

The Management Plan provides a tremendous opportunity for the Corps to objectively consider the results of its ongoing actions to: (1) implement the BiOp; (2) assess recent scientific findings regarding the life history of the three federally listed species; (3) review progress to address impacts to, and recovery of, Missouri River habitats and river processes; (4) incorporate human interests; (5) utilize this knowledge while working transparently with Missouri River basin stakeholders and the Service to develop innovative and contemporary actions to achieve species conservation; and (6) remove impediments to implementation of these actions in order to realize a sustainable Missouri River ecosystem.

Service Perspective on Purpose and Need

Purpose

The Service believes it is important for the Corps to better define the purpose for the Management Plan. It remains unclear to the Service whether the purpose of the Management Plan will be to prepare a new project description on how the Corps will meet its ESA responsibilities, or to develop an adaptive management (AM) strategy for the Missouri River Recovery Program (MRRP).

Congress directed in section 7 of the ESA that all federal agencies “7(a)(1)...use their authorities in the furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species...” and that all federal agencies “7(a)(2) ensure that any action ... authorized, funded, or carried out... was not likely to jeopardize a listed species or cause destruction or adverse modification of critical habitat.” Accordingly, we recommend the Management Plan re-evaluate past and ongoing operations of the Missouri River system in relation to threatened and endangered species and determine if there are different operational scenarios, along with AM, that would achieve these purposes. These operations should seek to be more scientifically informed and cost effective, while addressing the jeopardizing effects of the Missouri River operations as currently implemented.

The Service views the purpose of the Management Plan as the development and eventual implementation of a fully functioning AM program as included in the 2003 BiOp reasonable and prudent alternative (RPA). AM involves formulating alternative actions to meet measurable objectives, predicting the outcomes of alternatives based on current knowledge, implementing one or more alternatives, monitoring the effects, and then using the results to improve knowledge and adjust actions accordingly.

With that in mind, the Service recommends the purpose description within the Management Plan recognize the need to develop an ecologically viable, resource efficient, legally defensible AM program that provides for the basic life requisites of listed species while maintaining the authorized purposes of the Missouri River system.

Need

After review of the Need section in the Management Plan, the Service believes that it would benefit from a reorganization. The section could be parsed out into three sub-sections: (1) historical overview; (2) current status of the ecosystem and species; and (3) what the Corps has done to meet its ESA obligations under previous BiOps and how that leads us to development of this Management Plan.

Much of the information needed for sub-sections (1) and (2) already exists and can be incorporated into development of the Need section. Together, these sections would “tell a story” of how the Missouri River ecosystem became imperiled, the current status of the system and its species, and how the Corps is remedying this by mitigating for fish and wildlife habitat losses using various authorities.

For the historical overview, a more comprehensive discussion of the historical events that have led up to the “*need for the Corps to take action and develop the Management Plan*” is needed. We recommend this section include how the construction of the Mainstem Dam system (Flood

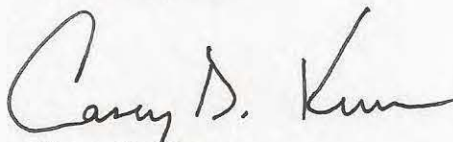
Control Act of 1944) on the Missouri River, as well as other development (including implementation of the BSNP) by the Corps, has come at the expense of the river's native fish and wildlife. The reader should finish reading this section with no doubt as how the conditions on the Missouri River necessitate action by the Corps.

For the sub-section detailing current ecosystem and species status, the Corps has already included an overview of the circumstances (historical and current) that have led to the precipitous decline in the pallid sturgeon, piping plover and interior least tern. The Service would recommend including some type of overview of habitat losses (they are partially interwoven in to the species status paragraph), perhaps in a table format and then also relocating Table 1-1 (Decline in Native Species) to this sub-section as well.

Finally, the Need section would also benefit from a simplification of Section 3.2.4 (Acquisition and Development of Land Needed for Creation of Habitat). As is, the section while informative regarding how the Corps is mitigating for lost fish and wildlife habitat, is also mired down in a complex discussion of different authorities, acreage requirements and percent reductions in native wildlife. The overview on page 10 is lengthy and tends to overshadow the actual discussion of "need." The section could be improved with a simple discussion of what the Corps has done and is doing (per different authorities) to mitigate for the adverse impacts to the natural Missouri River ecosystem and the loss of habitat for both native and federally listed species.

The Service looks forward to our continuing collaboration with the Corps and other conservation partners in support of this important effort. State Fish and Wildlife agencies were contacted and informed of the recommendations that the USFWS was making to the USACE regarding Purpose and Need. To date no comments have been received. We believe a Programmatic Management Plan with a well-designed adaptive management program is critical to ensuring the success of the program, and the conservation of the fish and wildlife resources of the Missouri River. If you have any questions, please feel free to contact me at (605) 665-4856.

Sincerely yours,

A handwritten signature in black ink, reading "Casey D. Kruse". The signature is fluid and cursive, with the first name "Casey" and last name "Kruse" clearly legible.

Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis) ARD
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE



IN REPLY REFER TO:
FWS/R6/ES

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Missouri River Coordinator
31247 436th Avenue
Yankton, SD 57078



March 24, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding the
Appendix A of the Adaptive Management
Plan: Adaptive Management Governance

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service) provides this planning aid letter (PAL) regarding the development of the U.S. Army Corps of Engineers' (Corps) Missouri River Recovery Management Plan (Management Plan) and associated Environmental Impact Statement (EIS) in accordance with the Fiscal Year 2015 Fish and Wildlife Coordination Act (FWCA) scope of work. As a cooperating agency on the Management Plan and EIS, the Service provides the following comments in coordination with the seven Missouri River mainstem state fish and wildlife agencies pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the NEPA of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.). Enclosed are emails from three state fish and wildlife agencies, Nebraska Game and Parks Commission, the Iowa Department of Natural Resources, and Kansas Department of Wildlife, Parks and Tourism, containing their comments.

This PAL does not constitute the final report of the Secretary of the Interior as required by Section 2 (b) of the FWCA, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

The following comments are specifically in regards to the draft Appendix A: Adaptive Management (AM) Governance document. They are a compilation of comments provided by the three state agencies listed above and Service staff.

General Comments

The Service is pleased that a governance plan is being included in the management plan. Such a document will allow other entities, including the public, to understand how the decisions will be made during implementation of the Management Plan. Overall, the document is coming together

well and will provide a means for the implementation phase of the process. At the same time, we have a few concerns and recommendations listed below to improve the Management Plan, and its comprehensive approach.

The governance document fails to adequately recognize the statutory and constitutional responsibilities of the state fish and game agencies and Tribes throughout the decision making processes. Just as the federal government has certain responsibility for various natural resources, so do the state fish and game agencies and Tribes. The document should address the Corps' responsibilities to coordinate with the Tribes through government-to-government consultation as directed by Federal statutes or administrative actions such as Executive Order (EO) 13175, and agency policies. Not only does the Corps have statutory (FWCA) responsibilities to coordinate with state fish and game agencies; each state also has responsibilities, through various federal and state statutory and constitutional authorities, for management of water quantity, water quality, and fish and wildlife resources within their boundaries that could be affected in this process (in either a positive or negative way). State fish and game agency and tribal consultations throughout the AM process will help ensure that future Federal actions are achievable, comprehensive, long-lasting, and reflective of state and Tribal input.

Failure to fully inform and involve the state fish and game agencies and Tribes has the potential to slow recovery of the currently listed species as well as the overall system if unintended conflicts occur due to failure to adequately engage them in the process. We recommend that the state fish and game agencies and Tribes be included in the governance document.

The governance document presents a confusing description of the AM governance or decision making structure and process. It appears that there are six tiers of information processing and/or decision making: 1) an Oversight Team, 2) an Oversight Sub Team, 3) a Management Team, 4) a Management Sub Team, 5) a Technical Team, and 6) finally a Technical Sub Team. Figure 1, however, suggests that there are three tiers. The document should be revised to ensure a consistent message/ process is presented.

Adding to the confusion for the reader, terms are not used consistently throughout the document. For example on pages 3-4, the headings describe three **Sub**-Teams [Oversight **Sub**-Team (OT), Management **Sub**-Team, Technical **Sub**-Team (TT)]; then in Figure 1 the same acronyms are used (OT, MT, and TT) but the use of **Sub** has been dropped from the names for these teams [e.g. Oversight Team (OT)]. The description of the team membership in Figure 1 does not match that described in the text that precedes the figure. For example, page 2 describes the Oversight Team as the Corps Division and Service Regional Director, whereas Figure 1 has different description of the team membership for the Oversight Team.

If the intent is truly to have six tiers, this may prove to be a very inefficient, redundant, and unmanageable composition that will likely result in cumbersome decision making and implementation. The Colorado River Recovery has a three tiered process (multiple technical teams, a management team, and implementation team (SES level agency representatives) that works very well.

Specific Comments

Page 1 and 2, Categories of Decision Making. The document suggests that certain categories will only be handled by specific tiers. Although this may be the standard process, programmatic decisions may have to be made at the Oversight level, when agreement cannot be reached at the Management Team level.

Page 2, last sentence of top paragraph. This sentence describes the composition of the Oversight Team. The document needs clarification on who is the Corps representative (the whole Division and the Service Regional Director or one person and the Service Regional Director).

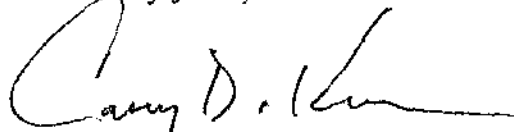
Page 2, Table 1, and Figures 1 and 2. In the three tiers of decisions, project specific design and implementation appear to be missing. They are not policy, or programmatic, or monitoring. They are designing and building habitat. Those types of decisions and who will be included in those decisions need to be included in the text and in Figures 1 and 2. Those types of action decisions should have significant involvement by our state fish and game agency partners and Service field staff (i.e. ES FOs, refuges, fisheries). We recommend adding a section to show how states and tribes are included in the process. The Governance structure would benefit with some discussion of the complementary processes also required for Corps projects. That could provide a better understanding of the way the Corps intends to integrate input from the various agencies, groups, and partners beyond MRRIC.

Page 3. It appears in the document that the management sub-team is the implementation entity and that the two federal agencies will coordinate through Missouri River Recovery Implementation Committee on project implementation. Historically, it has been the role of the state fish and game agencies to assist in putting projects on the ground. It is important to ensure there is no disconnect between the field and the various organizational levels in the AM governance structure. We recommend including the state fish and game agencies in this discussion as well.

Page 4, Technical Sub-Team section. The second sentence of this section states "the TT consists of three teams of scientists.....;" however, four teams are listed.

The Service, in coordination with Missouri River mainstem state fish and wildlife agencies, is looking forward to continuing to work collaboratively in support of this important effort to ensure the success and ultimate implementation of the Management Plan for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. If you have any questions, please feel free to contact me at (605) 665-4856.

Sincerely yours,



Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

Enclosures

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis)ARD

State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE

From: **Zuerlein, Gene** <gene.zuerlein@nebraska.gov>
Date: Fri, Feb 13, 2015 at 11:53 AM
Subject: RE: FWCA Adaptive Management Governance Document for review
To: "NelsonStastny, Wayne" <wayne_nelsonstastny@fws.gov>

Wayne,

Thanks for sending the AM document out for review. Since the states have public trust responsibilities for fish and wildlife species, it appears to me the document should include more involvement from state fish and wildlife agencies in the basin since we have expertise in many fish and wildlife topics and managers on the landscape. I only saw the word mitigation one time and since this program has Congressional authority to purchase 167,000 acres of land, especially within the accretion zone below Sioux City, the probability of bringing health back to the river sooner as well as the health of listed species is greater if everyone keeps this in mind.

Gene

From: **Larson, Chris J [DNR]** <Chris.Larson@dnr.iowa.gov>
Date: Fri, Feb 13, 2015 at 10:53 AM
Subject: RE: FWCA Adaptive Management Governance Document for review
To: "NelsonStastny, Wayne" <wayne_nelsonstastny@fws.gov>, "Adams (Topeka) Steve" <steve.adams@ksoutdoors.com>, Chris Longhenry <Chris.Longhenry@state.sd.us>, "dfryda@nd.gov" <dfryda@nd.gov>, Don Skaar <dskaar@mt.gov>, Gene Zuerlein <gene.zuerlein@nebraska.gov>, Kasey Whiteman <Kasey.Whiteman@mdc.mo.gov>, sdalbey <sdalbey@mt.gov>, "J. Campbell-Allison" <jennifer.campbell-allison@mdc.mo.gov>

Need to make mitigation an integral part of any recovery plan.

CHRIS LARSON, Southern Iowa Regional Fisheries Supervisor

Iowa Department of Natural Resources
P (712) 769-2587 | F (712) 769-2440 | chris.larson@dnr.iowa.gov
57744 Lewis Rd | Lewis, IA 51544

WWW.IOWADNR.GOV

Leading Iowans in Caring for Our Natural Resources.

From: "Adams (Topeka), Steve" <steve.adams@ksoutdoors.com>
Date: February 19, 2015 at 11:51:22 AM CST
To: "NelsonStastny, Wayne" <wayne_nelsonstastny@fws.gov>
Cc: "Chris J [DNR] Larson" <Chris.Larson@dnr.iowa.gov>, Chris Longhenry <Chris.Longhenry@state.sd.us>, "dfryda@nd.gov" <dfryda@nd.gov>, Don Skaar <dskaar@mt.gov>, Gene Zuerlein <gene.zuerlein@nebraska.gov>, Kasey Whiteman <Kasey.Whiteman@mdc.mo.gov>, sdalbey <sdalbey@mt.gov>, "J. Campbell-Allison" <jennifer.campbell-allison@mdc.mo.gov>, Carol Smith <carol_smith@fws.gov>, Jane Ledwin <Jane.Ledwin@fws.gov>, Casey Kruse <Casey_Kruse@fws.gov>
Subject: Re: FWCA Adaptive Management Governance Document for review

Wayne:

Thank you for the opportunity to review these documents. We have reviewed the documents associated with the Adaptive Management Governance process that proposes a structure for decision making and responsibility of various federal agencies and interests. First, we want to clarify the intent of these documents. It appears these documents outline the decision process related to Adaptive Management related actions associated with the overall recovery effort, not just interaction with MRRIC. Is that correct? With that as the context, the issue of concern to us is these documents appear to fail to recognize the statutory and constitutional responsibilities of the states and adequately include the states throughout the decision making processes. Just as the federal government has certain responsibilities for various natural resources, so do the states. Through various statutory and constitutional authorities, each of the states have responsibilities for the management of water quantity, water quality, and fish and wildlife resources within their boundaries that could be affected in this process (in either a positive or negative way).

Failure to fully inform and involve the states has the very real potential to slow recovery of the currently listed species as well as the overall system if unintended conflicts occur due to failure to adequately engage the states in the process. We would urge the federal agencies to correct this deficiency before these documents are finalized.

Steve Adams
Kansas Department of Wildlife, Parks and Tourism



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

REPLY TO
ATTENTION OF

Programs Directorate

31 JUL 2015

Noreen Walsh
U.S. Fish and Wildlife Services
134 Union Blvd
Lakewood, CO 80228

Dear Noreen:

As we have discussed, this letter confirms our mutual understanding that the U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service (Service) are engaged in consultation on the 2003 Amended Biological Opinion on the Operation and Maintenance of the Mainstem Missouri River Reservoir System, the Missouri River Bank Stabilization and Navigation Project, and the Kansas Reservoir System (2003 Amended BiOp). The Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP/EIS), which is currently being developed jointly by our agencies in collaboration with the Missouri River Recovery Implementation Committee (MRRIC), serves as the on-going medium for this consultation. Following release of the draft MRRMP/EIS for public review and comment in 2016, this document will provide the foundation for a revised Biological Assessment (BA) and proposed action for our operation of the Missouri River System. Subject to the conclusions of the revised BA, we anticipate the Service may amend the current BiOp or issue a new BiOp pursuant to regulations governing section 7 of the Endangered Species Act (ESA). Based on this process and public input, the Corps will then be poised to make any appropriate revisions to the draft MRRMP/EIS, issue a final decision, and begin implementation.

The Missouri River Recovery Program's Independent Science Advisory Panel (ISAP), tasked by MRRIC, released a report (Final Report on Spring Pulses and Adaptive Management) on November 30, 2011 that analyzed the efficacy of the managed spring pulse releases from Gavins Point Dam as implemented by the Corps in response to the 2003 Amended BiOp. The ISAP's report identified the need to review the current management actions being taken to benefit the listed species in light of the current state of the science, concluding that there was "substantial new knowledge regarding pallid sturgeon, least tern, and piping plover, their habitats, and management opportunities on the lower Missouri River" since the 2003 Amended BiOp was published (pg 57). The ISAP recommended a "new management agenda using hydrological manipulations and habitat construction activities, implemented in an adaptive management framework" to replace the current action plan (pg 4). To achieve that goal, the panel provided a set of specific guidance and suggestions for the agencies to pursue (pg 4-5). The report also provided recommendations for developing an overarching Adaptive Management (AM) program to systematically address uncertainties involved with implementation of the management actions. As you know, development of an AM plan is also a component of the 2003 Amended BiOp.

On February 21, 2012, the MRRIC supported that guidance and provided our agencies with a formal consensus recommendation, in accordance with their Charter, proposing seven specific actions for the agencies to implement to fulfill the ISAP recommendations. On May 8, 2012, the Corps and Service provided a joint response to the MRRIC's recommendation, endorsing the ISAP's report and expressing our agencies' joint commitment to working closely with the MRRIC to implement the recommended actions.

To implement the ISAP report's recommendations, and in coordination with and building on the corresponding set of recommendations from the MRRIC, our two agencies have been applying a structured scientific process, employing teams of nationally recognized experts, to:

- Complete an Effects Analysis (EA) that includes review and compilation of the best available scientific information,
- Develop Conceptual Ecological Models (CEMs) for the three listed species to articulate the stressors and mitigative actions on species performance ,
- Identify the factors that might be limiting species' success,
- Evaluate a suite of management actions with the potential to remove those limiting factors, including any impacts that may accrue to human considerations,
- Design an overarching AM plan with clear decision criteria and robust and integrated research, monitoring and assessment activities,
- Assess and make appropriate changes to management actions through a management plan for continued compliance with ESA requirements, and
- Demonstrate commitment to implementing that management plan by completing all necessary components to its development, including National Environmental Policy Act (NEPA), Corps' Independent External Peer Review (IEPR), and Fish and Wildlife Coordination Act (FWCA).

Over the past three years, our agencies have invested significant time and resources toward implementing the recommendations and have made tremendous progress.

- The Notice of Intent for the MRRMP/EIS was published in January 2013 following extensive collaboration between our agencies on the study's Purpose and Need.
- The Request for Proposals for the Effects Analyses work was developed jointly by our agencies, reviewed by the ISAP and the MRRIC, and issued in March 2013. Nationally respected experts from the U.S. Geological Survey (pallid sturgeon), Pacific Northwest National Laboratories (least tern and piping plover), and the Corps' Engineer Research

and Development Center (river geomorphology) were selected to lead the EA teams and began work immediately.

- At the suggestion of the Service, a group of key team members, including the Corps, Service, and the Chair of the MRRIC, attended a Structured Decision Making Workshop at the National Conservation Training Center in June 2013 to strengthen our ability to conduct such a complex undertaking as the MRRMP/EIS with such a large and diverse group as the MRRIC.
- Evolving through a series of interim products that were guided by ISAP reviews and feedback, the CEMs for the three species were completed in February 2014.
- At the MRRIC's request, and with our agencies' concurrence, an independent socio-economic panel of experts was selected in April 2014 to provide review and feedback on the economic evaluation of potential MRRMP/EIS alternatives. The three-member Independent Social Economic Technical Review (ISETR) panel supplements the scientific expertise of the ISAP.
- Draft EAs for the species were completed in October 2014; the documents are currently undergoing pre-publication quality reviews.

Key elements that have been developed as part of the EA process include predictive species models, comprehensive hypotheses sets, evidence-based assessments of those hypotheses, and identification of potential management actions. It is safe to say that the breathtaking amount of state-of-the-science information that has been produced as part of this effort is unprecedented.

We appreciate the Service's continued efforts to utilize the EA results to identify objectives and metrics for the species. As you are aware, the species objectives and metrics are critical to development of appropriate management actions. The clear connection of species objectives and metrics to the rigorous scientific processes being followed by the EA teams (and reviewed by the ISAP and the MRRIC) will ensure success in reaching the goals described above.

Our agencies have been working with stakeholders to evaluate potential management action alternatives that achieve species objectives. This includes analyzing the potential impacts of those management actions on a suite of socioeconomic and other human considerations. We are also working with the EA team leads to draft the AM strategies that will systematically address uncertainties involved with implementation of management actions. And all of this has been accomplished with and improved by continuous review and feedback from the ISAP, ISETR, and the MRRIC.

While there is no doubt that our two agencies, working with the MRRIC, EA teams, and review panels, have accomplished much, there is still work to be done. As our agencies continue to refine management actions, assemble and evaluate alternative plans and potential

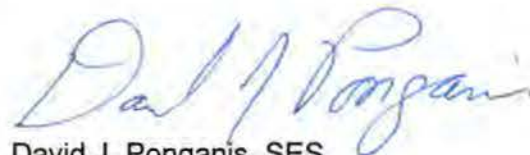
impacts, develop AM strategies, and select a new management plan, we are committed to maintaining continuous engagement with the Service.

As we jointly work to complete the MRRMP/EIS, the Corps continues to implement the Reasonable and Prudent Alternative (RPA) provisions in the 2003 Amended BiOp, working closely with the Service to adaptively manage the RPA elements as appropriate, and as envisioned by the 2003 Amended BiOp. For example, over the past several years, based on new information or changing environmental conditions, our agencies have convened a plenary process with basin stakeholders to develop technical criteria for the spring pulse, worked collaboratively to modify the definition and parameters of Shallow Water Habitat (SWH), and explored modifications to criteria for unbalancing the upper three reservoirs that will benefit the species without adversely affecting the flood control purpose. All of these adjustments to management actions are based on evaluation of habitat, flow, climate, species response and other information as it becomes available, as contemplated in the 2003 Amended BiOp (pg 221).

Our agencies continue to meet regularly through the established Agency Coordination Team (now known as the CORE team) which allows us to evaluate implementation of management actions alongside the status of the species to ensure sufficient progress is always being made toward avoiding jeopardy and that course corrections are made as needed (pg 223). This is nowhere more evident than in the continuous improvements being made in the design, location, and construction of SWH to benefit the pallid sturgeon. The Corps' implementation teams are incorporating the best available pallid sturgeon science into engineering designs to address the factors thought to be limiting sturgeon success. We will also continue to make use of the quarterly MRRMP/EIS In-Progress Review meetings to jointly resolve management decisions as needed.

As we have agreed, and shared publicly on many occasions, the Corps fully recognizes the need to expeditiously complete the path to a new management plan as agreed to above in order to continue fulfilling our obligations under the ESA.

We look forward to our continued collaboration over the next year to achieve that goal.

A handwritten signature in blue ink, reading "David J. Ponganis".

David J. Ponganis, SES
Director, Programs



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
31247 436th Avenue
Yankton, SD 57078



November 2, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding the Missouri River Recovery Management Plan
Lower Missouri River Pallid Sturgeon Framework, Targets and Decision Criteria

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service) provides this planning aid letter (PAL) regarding the development of the U.S. Army Corps of Engineers' (Corps) Missouri River Recovery Management Plan (Management Plan) and associated Environmental Impact Statement (EIS) in accordance with the Fiscal Year 2015 Fish and Wildlife Coordination Act (FWCA) scope of work agreed to by our agencies. The Service provides the following comments pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the NEPA of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.).

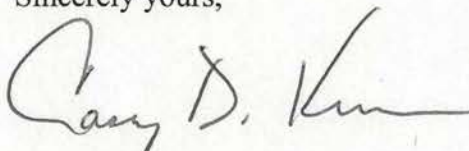
This letter confirms the USFWS support for the Lower Missouri River Pallid Sturgeon Framework, Targets and Decision Criteria, (enclosed), for the Missouri River Recovery Management Plan EIS (MRRMP-EIS). We appreciate the dialogue that has occurred between the Corps and Service staff to date on this effort. We look forward to further discussions to finalize the Level 1 and 2 Components and Decision Criteria.

The Service recognizes the lingering uncertainties regarding the scale and scope of management actions necessary for the Corps to avoid jeopardizing the continued existence of the pallid sturgeon. The Framework document should accelerate the reduction of uncertainty and ultimately lead to a more strategic and focused implementation of appropriate management actions. The acquisition of knowledge and reduction of uncertainty do not, in themselves, constitute avoidance of jeopardy. Avoidance of jeopardy is only achieved through taking action and the Service fully supports the Framework and expects a commitment to a strategy reliant upon a progressive adaptive management (AM) program. The AM program, including this Framework should provide and illustrate a commitment and pathway to the scope of actions, including level 4, necessary to abate the effects of the Federal action and avoid jeopardizing the continued existence of pallid sturgeon on the lower Missouri River. At the same time, the AM decision process should ensure the flexibility to adjust actions, objectives, timelines and decision criteria while maintaining a focus on the fundamental objectives.

The Service acknowledges the ongoing refinement of actions and development of alternatives for the MRRMP-EIS. We anticipate that as the MRRMP-EIS moves forward that the decision criteria outlined in this Framework may need fine-tuning.

We look forward to continued discussions on this topic with the Corps. Please contact me at (605) 665-4856 or Wayne Nelson-Stastny at 605 660-5349 for further questions and clarification. The Service looks forward to our continuing collaboration with the Corps and other conservation partners in support of this important effort.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Casey D. Kruse". The signature is fluid and cursive, with a large initial "C" and a long, sweeping underline.

Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

Enclosure

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis) ARD
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE

LMR Pallid Sturgeon Framework, Targets and Decision Criteria

Summary: This draft document outlines the Lower Missouri River pallid sturgeon framework (Framework) with an emphasis on the required implementation targets and decision criteria for management actions at level 3. The criteria outlined below represent a joint USFWS/USACE characterization of the necessary elements for managing uncertainty and associated risks under the Adaptive Management Plan as envisioned, and is intended to guide alternative formulation for the MP-EIS. The Framework is based on four levels of activity. Level 1 and 2 components include, respectively, research and field studies/experiments aimed at resolving critical uncertainties regarding the management actions needed to offset the effects of the Federal action. Management actions at levels 3 and 4 are aimed at avoiding or offsetting impacts of the Federal action by increasing the pallid sturgeon population. The nature and details of actions needed at level 4 remain uncertain, but a suite of level 3 actions organized around four categories have been identified for planning purposes and would be implemented unless certain decision criteria are met. The relevant decision criteria and implementation requirements are summarized in the following sections. It is intended that implementation of the actions through level 4 following decision criteria with associated studies collectively encompassed in the Framework **would** avoid jeopardizing the pallid sturgeon while minimizing unnecessary and potentially impactful actions. Additional details of the Framework will be incorporated into the MRRP AM plan.

Underpinning Principles: Given the lingering uncertainties regarding the scope and scale of the management actions necessary for the Corps to avoid jeopardizing the continued existence of pallid sturgeon, a strategy reliant upon a progressive adaptive management (AM) program is the most effective way to manage risks to the pallid sturgeon. This strategy is evident in the Pallid Sturgeon Framework (Framework) advanced through the Effects Analysis (EA) and further refined by the Corps and Service. The Framework is expected to accelerate the identification of recruitment bottlenecks, resulting in a more strategic and focused implementation of appropriate management actions. This approach has the added benefit of minimizing impacts to stakeholders and avoiding unnecessary implementation costs.

While both the uncertainty and the scale of required actions point to a need for the Framework, the acquisition of knowledge and reduction of uncertainty do not, in themselves, constitute avoidance of jeopardy or directly reduce risks to the species. For these reasons, the Service requires a set of decision criteria to guide execution of the Framework so as to ensure that the knowledge gained results in a thoughtful but rapid progression through the implementation levels to actions providing a meaningful, population-level response of the pallid sturgeon. The intent is that the implementation of this framework through a progressive adaptive management program will be sufficient to abate the effects of the Federal actions and avoid jeopardizing the continued existence of the pallid sturgeon on the lower Missouri River.

The decision criteria (outlined below) include two stipulations that supplement risk management for the species beyond that afforded by AM alone. First, the artificial propagation program would be continued throughout the Framework's implementation, and improvements to that program related to genetic concerns, disease, stocking size, etc., would be pursued consistent with the propagation plan under development for the Recovery Program. Second, implementation of management actions at level 3 for each hypothesis would be required within a specified timeframe, provided the hypotheses associated with the action are not rejected by that time. This stipulation should not be construed to mean that level 3 actions should not or cannot be implemented earlier than the time limits; the criteria below ensure that progression from one level to the next (or possibly skipping one or more levels, rejecting the associated hypotheses, etc.,) would occur as soon as dictated by the metrics and decision criteria outlined at the end of the framework.

The actions at levels 2 and 3 outlined in this framework and in more detail in the AM Plan provide the basis for the Adaptive Management Plan as described and evaluated in the Missouri River Recovery Management Plan and Environmental Impact Statement (MP-EIS)¹. Thus, any of the actions identified as part of this alternative may be implemented in whole or in part, subject to the bounding decision criteria, and other logistical constraints. The scope of implementation for each action is expressed using bounding rates. The overall implementation scope will be established once a sufficient population-level response has been observed to permit development of level 4 targets.

It is important to note that the actions needed to address the pallid sturgeon life requisites remain uncertain and the actions currently outlined in the Framework are subject to change. At any time during the Framework's implementation, it may become apparent that 1) a particular action is not needed, 2) a proposed action requires modification to be effective, or 3) that some new action not previously evaluated is required. In the first instance, the criteria outlined in the AM Plan would permit abandonment of further implementation of associated management actions and describe other lines of study (if any). In the latter two cases appropriate engagement with MRRIC, and/or other requirements or procedures needed for compliance with NEPA may be necessary prior to implementation.

Lower River Pallid Sturgeon Framework: The Framework for the lower river consists of four levels of activity as described in Table 1. The lower river refers to the mainstem Missouri River downstream of Gavins Point Dam, including the influences (to the extent they are relevant) of upstream reservoirs like Fort Randall and Lewis and Clark Lake, influences of major tributaries, and some portion of the Middle Mississippi River.

The studies and other activities at levels 1 and 2 listed herein are described in detail in Appendix C of the AM Plan. These efforts are organized so as to efficiently address the hypotheses identified in the EA. Activities at level 3 identified herein are described further in the MRR MP. They include various management actions aimed at eliciting a population-level response from the pallid sturgeon. Level 4 actions are not presently described but will evolve through implementation of the AM plan. The extent

to which specific studies or actions at any level are implemented will depend upon several circumstances and is guided by the objectives and a set of associated decision criteria.

Table 1. Pallid sturgeon framework for the lower Missouri River

Level 1: Research	Population Level Biological Response <u>IS NOT</u> Expected	Studies without changes to the system (Laboratory studies or field studies under ambient conditions)
Level 2: In-river testing		Implementation of actions at a level sufficient to expect a measurable biological, behavioral, or physiological response in pallid sturgeon, surrogate species, or related habitat response.
Level 3: Scaled Implementation	Population Level Biological Response <u>IS</u> Expected	In terms of reproduction, numbers, or distribution, initial implementation should occur at a level sufficient to expect a meaningful population response progressing to implementation at levels which result in improvements in the population. The range of actions within this level is not expected to achieve full success (i.e. Level 4).
Level 4: Ultimate Required Scale of Implementation		Implementation to the ultimate level required to remove as a limiting factor.

Components, Actions and Decision Criteria for the Pallid Sturgeon Framework: Objectives for the pallid sturgeon have been defined at each of the Framework levels (including means objectives for actions) as well as for the overall program (i.e. the fundamental objectives). For each objective, the AM Plan presents corresponding metrics, decision criteria (performance measures, triggers, etc.) monitoring needs and protocols, and (sometimes) contingency plans. Near-term implementation of the Framework will focus on those objectives outlined for levels 1 through 3 with an increased focus over time on the fundamental objectives and sub-objectives. There are also objectives and associated criteria relating to general program implementation that address concurrent plover, tern and pallid sturgeon considerations.

As information is developed from level 1 and 2 studies or through monitoring of effectiveness of management actions, the Framework's decision criteria will be used to determine when and what action should follow. Decisions might include:

- a) accepting that the scientific information supports the hypothesized action and:
 1. moving to the next most important science question pending for each big question; or
 2. moving to implementation of higher level (i.e. level 2, 3 or 4) actions;
- b) determining that the scientific information does not support the hypothesized action and:
 1. refining the hypothesis and continuing scientific investigations; or
 2. rejecting the hypothesis and promoting an alternative hypothesis that better explains observed information.
- c) to begin implementing at level 3 because a time limit for a hypothesized action has been reached and results remain equivocal (studies at levels 1 and 2 might continue concurrently)

In general, the details of contingent actions are difficult to specify because the scope, scale, timing, distribution, etc., of those actions will depend upon the knowledge gained from previous levels of implementation. However, contingent actions at level 3 that are triggered by the time limits are an exception. These are specified in the form of a required minimum and maximum implementation rate that is to be followed unless and until knowledge gained from those actions and from previous and ongoing studies at levels 1 and/or 2 demonstrate that a different rate is required.

Level 1 and 2 Components and Decision Criteria: Levels 1 and 2 include activities focused on increasing the state of scientific knowledge about the factors most likely limiting pallid sturgeon survival and are intended to systematically and efficiently address critical uncertainties regarding what management actions are needed to address impacts of the Corps' Missouri River operations on pallid sturgeon. Level 1 and 2 studies are directly tied to those uncertainties and management hypotheses highlighted in the Effects Analysis that, if resolved, could significantly affect the implementation of management actions. They can continue concurrently with level 3 efforts, but are generally intended to inform actions at level 3. Although level 2 studies have learning as a primary objective, they can also provide measurable benefits to pallid sturgeon populations and, in such cases, would be counted toward targets in the same manner as level 3 actions. Criteria for accepting or rejecting specific hypotheses, for assessing the results of scaled experiments, and for moving from level 1 to level 2 or level 2 to level 3 actions are described in Appendix C of the AM Plan. A summary is presented in Table 2.

Table 2. Summary of decision criteria associated with level 1 and 2 studies.

Question, Level and Study Components	Metrics and Decision Criteria
Big Question 1:Spawning Cues	
L1/C1-Design complementary passive telemetry network	
L1/C2 - Opportunistic tracking or reproductive behaviors	
L1/C3 - Mesocosm experiments, reproductive behaviors	
L2/C4 - Engineering study effects on other authorized purposes	
L2/C5 - Experimental flow releases, Gavins Point	
Big Question 2:Temperature Control	
L1/C1 – Model water temperature management options, Gavins Point	
L1/C2 - Field studies temperature and reproductive behaviors, surrogates	
L1/C3 - Mesocosm studies temperature and reproductive behaviors	
L2/C4 - Field tests of water temperature management, Gavins	

Point	
L2/C5 - Experimental warm water releases, Gavins Point	
Big Question 3: Food and Forage	
L1/C1 - Screening: limitations of food or forage habitats	
L1/C2 - Technology development for IRC sampling, modeling, measurement	
L1/C3 - Field studies along gradients, food and forage habitats	
L1/C4 - Mesocosm studies: quantitative habitat-survival relations	
L2/C5 - Design studies for IRC experiments	
L2/C6 - Manipulative field experiments with IRCs	
Big Question 4: Drift Dynamics	
L1/C1 - Technology development surrogate particles, particle tracking	
L1/C2 - Resilience, stamina in turbulent flows	
L1/C3 - Field studies on free embryo exit paths	
L1/C4 - Field gradient study, age-0 survival and complexity	
L1/C5 - Free embryo transport to Mississippi River	
L1/C6 - Field experiments with particle tracking, embryos, models	
L2/C7 - Engineering designs for interception experiments	
L2/C8 - Field experiment: discharge and dispersion	
L2/C9 - Field experiment: IRC complexes	
Big Question 5: Spawning Habitat	
L1/C1 - Study of functional spawning habitat, Yellowstone River	
L1/C2 - Field gradient study, habitat conditions LMOR	
L1/C3 - Mesocosm studies on spawn conditions, behaviors	
L2/C4 - Engineering studies for sustainable design	
L2/C5 - Manipulative field experiment for spawning habitat	

Big Question 6:Population Augmentation	
L1/C1 - Engineering feasibility hatchery needs, facilities, operations	
L1/C2 - Retrospective study survival linked to hatchery operations	
L1/C3 - Simulation models, population sensitivity to size, health, genetics	
L2/C4 - Field experimentation with varying size, location of stocking	

Level 3 Actions, Targets and Decision Criteria: Requirements for level 3 were developed collaboratively by the USACE and USFWS and reflect both best available science and policy considerations. The nature, scope and implementation timeframe of management actions at level 3 outlined in this document are intended to 1) provide a commitment and pathway to the scope of actions (including at level 4) necessary to abate the effects of the Federal action and avoid jeopardizing the continued existence of the pallid sturgeon on the lower Missouri River, 2) afford an opportunity for study and learning while also ensuring risks to the pallid sturgeon are managed, and 3) serve as a basis for the range of actions to be assessed as part of the MP-EIS. Further refinement of the accompanying decision criteria and added detail will be developed through subsequent interagency discussions as part of development of the AM Plan. The AM decision process will ensure the flexibility to adjust actions, objectives, timelines and decision criteria while maintaining a focus on the fundamental objectives. This flexibility will be assessed through analysis of several scenarios that highlight need for change; the scenarios will be addressed with both internal and external parties, including the MRRIC ad hoc work groups.

Implementation of management actions at level 3 for any limiting factor would commence at the earlier of two triggers: 1) within two years of affirmative results from level 1 and/or 2 studies indicating an action is needed for a limiting factor, or 2) the established time limits should the results of studies/tests at levels 1 and 2 of the associated hypotheses remain equivocal. The first trigger might be affected by the criteria summarized in Table 2 and presented in detail in the AM Plan appendices. In many cases, definitive criteria for accepting or rejecting hypotheses are not readily identifiable, or the available data is not likely to provide unequivocal results. In those situations, a lines-of-evidence approach may be applied.

To help find an appropriate balance between taking action versus decreasing uncertainty, a series of five questions (Table 3) were developed as a proposed checklist to guide decisions to advance to implementation at level 3 for any of the hypotheses identified by the EA. If all five questions can be answered “Yes”, advancement to Level 3 implementation would be triggered. If an affirmative answer to four of the five questions exists and either question 1 or question 2 is equivocal, implementation of level 3 management actions would be triggered within two years (unless the hypothesis is rejected in that timeframe). The five questions are listed in Table 3.

Table 3. Supplemental lines of evidence strategy for triggering level 3 implementation.

Question		Y	U	N
1	Is this factor limiting pallid sturgeon reproductive and/or recruitment success?			
2	Are pallid sturgeon needs sufficiently understood with respect to this limiting factor?			
3	Do one or more management action(s) exist that could, in theory, address these needs?			
4	Has it been demonstrated that at least one kind of management action has a sufficient probability of satisfying the biological need?			
5	Have other biological, legal, and socioeconomic considerations been sufficiently addressed to determine whether or how to implement management actions to Level 3?			
Criteria for level 3 implementation				
1 - A "Yes" to all five questions triggers level 3 implementation				
2 - A "Yes" to four of five, with an "Uncertain" for either #1 or #2 triggers a two-year clock to either reject the hypothesis or implement at level 3				

Table 4 lists the actions currently defined for the Lower basin pallid sturgeon and evaluated under the MP-EIS. In the absence of affirmative results from level 1 and 2 studies or the lines-of-evidence analyses, the time limit column in the table reflects the latest point in time (in years after the Record of Decision) to initiate the listed actions. Targets are defined in terms of implementation rates, and the acceptable range is shown by the Minimum and Maximum Scope columns. For example, if the ROD is signed in 2016, the IRC habitat actions (time limit 2 years) must begin no later than 2018, and are to be implemented at a rate of 260-500 new ac-day/yr of IRC habitat (note that these values are placeholders until actual targets are calculated). Progress toward the targets will be determined by field measurement of project outcomes (as part of the monitoring program), and could be derived from either Level 2 or Level 3 actions. The implementation scope could deviate from that described below as dictated by the results of level 1 and/or 2 studies. However, management actions outside the scope of that evaluated under the MP-EIS would require additional (i.e. supplemental) environmental assessment and coordination with MRRIC.

Table 4. Summary of time limits for level 3 implementation and scope of actions.

Action Category	Time Limit*	Minimum Scope	Maximum Scope
Population augmentation	Immediate	Current avg. stocking rate	Variable over time
IRC habitat development	2 years	260K ac-d/yr	Add 500k ac-day/yr
Spawning habitat	2 years*	3 spawning sites	See decision tree**
Spawning cue flows	9 years	Max. implementation scope assumed to be 1 in 3 years for impacts analysis within MP; minimum and maximum required implementation scope will be developed and informed by population models and impact assessments***	

* Anticipated as Level 2 pilot projects focused on developing and evaluating high-quality spawning habitat.

** Spawning habitat implementation will be guided by the decision tree and associated decision criteria as described in the section below on spawning habitat.

*** Pallid population modeling will be used to set minimum spawning flow needs; bird impacts and status may inform decisions regarding spawning cue flows below Gavins Point Dam in any particular year.

Because of the uncertainty regarding the hypotheses and the effectiveness of proposed management actions in increasing pallid sturgeon recruitment, the targets are based on the best information currently available for that particular management hypothesis. As knowledge is gained from level 1, 2 and 3 actions, the timeframe for implementation may be adjusted, targets may be changed, management actions may be refined, and hypotheses may be dismissed. The “rules” by which these decisions will be made are outlined in the decision criteria for the respective management hypotheses, subject to the overarching MRRP governance and decision process laid out in the AM Plan.

Population Augmentation

Action Description: Population augmentation (stocking) of pallid sturgeon is already taking place at a level having a measurable effect on the population (i.e. level 3), and will continue under the Framework. While population augmentation is *necessary* for recovery of the pallid sturgeon, by itself it is not *sufficient* as the Endangered Species Act requires a self-sustaining population. Augmentation can help severely depleted populations recover numbers of individuals needed to evaluate what works and what doesn’t in recovering the population. Additionally, some concurrent level 1 and level 2 components are proposed to develop information to improve on the level 3 implementation (see Figure 1 for an approximate schedule).

Propagation	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Level 1																	
C1 Eng. Feasibility of hatchery needs, facilities, operations																	
C2 Retrospective study of survival/hatchery ops																	
C3 Simulation models, pop sensitivity to size, health, genetics																	
Level 2																	
C4 field exps. w/size, location...																	
Level 3																	
Stocking																	

Figure 1. Preliminary schedule of actions related to propagation.

This action will be closely coordinated with the new Pallid Sturgeon Propagation Plan being developed by the Pallid Recovery Team (Wyatt Doyle is the Lead) because of important concerns related to fish health/disease, genetics, stocking size, stocking practices, etc. Once the Propagation Plan is developed, the target values in Table 4 will be adjusted to reflect the role of the MRRP in meeting plan objectives. The target values in the table may best be represented by running averages In addition to or rather than annual minimums or maximums. It is important that the Propagation Plan rely upon the population model being developed as part of the Effects Analysis and Adaptive Management Plan (and in support of the recovery plan) and not other, competing models. The rationale for these decisions will be further articulated in Chapter 4 of the AM Plan.

Objectives: The stocking rate and target number of fish stocked is intended to ensure a 95% probability of persistence for the species over a 50-year period. Short-term objectives are to increase the number of adult pallid sturgeon in the lower Missouri River. Long-term objectives are to reduce and eventually eliminate the need for supplemental stocking by demonstrated wild recruitment at a level sufficient to meet the fundamental objectives. In addition to the above primary objectives, more specific, means objectives for propagation have been identified and include increased fitness and genetic diversity of

released fish, improved brood stock collection, and adjusting hatchery capacity. Some of these efforts are being addressed through Level 1 and 2 studies.

Metrics: The metric for reporting and assessing stocking rates will be yearling equivalents; performance measures will be based on a three-year running average of annual yearling equivalents. Number and survival rates for stocked pallid sturgeon by stocked size, hatchery of origin, and condition; Catch rates of adult pallid sturgeon, along with other measures of fitness or genetic makeup might be employed as supplemental metrics for the primary objective, and metrics for the more specific objective listed above will be identified in the Propagation Plan. *(Note: this is subject to adjustment upon coordination with the Recovery Team on the new Propagation Plan)*

Decision Criteria: Adjustments to the number of fish and their age structure will be based on the results of population modeling and sensitivity analyses using the most up-to-date version of the model available each year. Until the model is sufficiently robust to meet this need, a target of 5000 adult pallid sturgeon in each management unit will serve to guide stocking rates. *(Notes: 1. This is subject to adjustment upon coordination with the Recovery Team on the new Propagation Plan. 2. Criteria for more specific objectives listed above will be presented in the Propagation Plan).*

Triggers for Moving to Higher Implementation Level: No clear transition from level 3 to level 4 exists; implementation at level 3 will continue until such time as supplemental stocking is no longer required.

Trigger for abandoning population augmentation actions: Population augmentation may be halted when population monitoring demonstrates that a self-sustaining population in excess of 5000 fish exists in each management unit, when the threat of extirpation is less than 5 percent in 50 years, or as based on new criteria introduced through the Propagation Plan.

Triggers for adjusting augmentation practices to optimize fitness or genetic diversity: TBD

Timeframe: No specific timeframe for transition is identified. Implementation at level 3 is to begin immediately (i.e. continue from present) following issuance of the ROD.

Level 3 Contingent Actions: Contingency plans for artificial propagation are limited to those associated with the secondary objectives; adjustments to the propagation program will focus on achieving the necessary fitness and genetic diversity.

Monitoring Requirements: See Appendix D of AM Plan

Interception and Rearing Complexes (IRCs)

Action Description: Interception and rearing complexes (IRCs) are areas that meet the functional definitions laid out in the Effects Analysis Integrative Report. For the purpose of establishing targets and measuring progress, the physical definitions of IRCs are currently identified as follows: 1) food-producing

habitat occurs where velocity is less than 0.08 m/s, 2) foraging habitat is defined as areas with 0.5 – 0.7 m/s velocity and 1-3 m depth, and 3) interception habitat has been qualitatively described as zones of the river where hydraulic conditions allow free embryos to exit the channel thalweg. A functional IRC exists where the juxtaposition of the described habitats is such that all three functions are performed and collectively contribute to survival to age-0. The above requirements will be adjusted as needed based on new knowledge regarding the suitability of conditions for IRC habitat.

The availability of food-producing and foraging habitats varies with flow, as does the local hydraulic field at any location (and hence the potential for interception and retention). Consequently, IRC habitat is flow-dependent and time-variant and can be affected by both mechanical manipulations of river geometry and flow management actions. For the timeframe addressed by this EIS (approximately 15 years), flow management will not be required to meet any IRC targets associated with Level 3 unless information developed during Level 1 and Level 2 implementation unequivocally demonstrates the need for flow manipulation. Because flow manipulations will not be assessed under the current actions for Level 3, additional NEPA analysis of those actions would be required before any implementation efforts are undertaken.

Level 1 and 2 activities associated with IRCs focus on 1) the need for additional IRC habitat, 2) refining the relationship between the habitat components, flow (utilizing current operations), and the biological requirements of each habitat type, 3) the needed habitat characteristics and their spatial and temporal distributions, and 4) determining the effectiveness of various mechanical activities and the potential for flow management actions to contribute to future IRC needs. A proposed sequencing for actions associated with IRCs is shown in Figure 2. To the extent possible and where appropriate, Level 1 and 2 activities will incorporate habitat projects which have already been completed. Although the habitat focus has changed from SWH, there is likely much that can be learned from existing SWH projects.

Level 3 actions include physical manipulation of habitats and structures on the Missouri River to create or improve areas having hydraulic conditions to intercept drifting free embryos combined with food-producing habitats and foraging habitats. Actions might be directed at one or any combination of the three components of IRCs. Examples include adjustments to navigation training or bank stabilization structures, channel widening, floodplain modifications or other adjustments to channel geometry, placement of structures to encourage development of needed habitat or habitat complexity, chute development or adjustments to existing chutes, etc. In addition to development of functional IRCs, management actions will be aimed at ensuring availability of IRC habitats over a wide range of flows as well as the necessary spatial characteristics (distribution, concentration, proportions, etc.,) on the lower Missouri River such that interception, food production, and foraging are not preventing the achievement of the pallid sturgeon fundamental objectives.

Interception/Rearing Habitat	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Level 1																	
C1 Screening: Limitations of food and forage hab.																	
C2 Technology: Development for IRC sampling, modeling and measurement																	
C3 Field studies along gradients, food and forage hab.																	
C4 Mesocosm study quantitative habitat/survival rel																	
Level 2																	
C5 Design for IRC experiments																	
C6 Manipulative field experiments with IRC's																	
Level 3																	
Creation of IRC																	

Figure 2. Preliminary timeline for IRC action Implementation.

The targeted longitudinal distribution of IRCs will be influenced by biological needs as outlined in the EA and supported by results of larval drift modeling as well as other practical considerations. It is anticipated that IRCs will be concentrated downstream from RM 595 but, due to uncertainty regarding drift behavior and potential benefits of temporal retention, IRCs will not be restricted to areas below RM 595, and the strategy for site selection will be based on maximizing knowledge. Projects with potential to quickly reduce uncertainties will be emphasized to the extent practicable. New IRC habitat resulting from both level 2 and level 3 actions that meets the IRC criteria will be counted as contributing to the targets for level 3 (i.e. credit is based on measured project outcomes). Level 3 actions and outcomes are focused on helping understand and describe what level 4 actions and targets will be.

Long-term (Level 4) targets will be based on bioenergetics requirements of the Missouri River pallid sturgeon population. Lacking the ability to reliably establish those needs at present, Level 3 targets for IRC are to be based on the rate the Corps has demonstrated that they can create shallow water habitat (SWH). The SWH historical implementation rate (acres/year) will be converted into a flow-variant metric for IRCs (in acre-days per year) that accounts for food-producing and foraging habitat availability in proximity to areas of effective interception and retention of larval pallid sturgeon. The result of this transformation will be to characterize (as a range, an average over some reasonable timeframe, or both) the expected amount of “lift” in availability of IRC habitat during the (temperature dependent) growth period for pallid sturgeon. Growth period for larval and juvenile pallid sturgeon occurs from May through October. Because of early life history transition to first feeding the month of June will be the highest priority with a focus on learning and refining our understanding of the relationship between temperature, flow and river geometry. We will continue to look into the best way to categorize time frame to assess this relationship.

Associated Hypotheses: 1). Interception habitat - Improved or increased interception of drifting free embryos from the thalweg and transport to supportive channel-margin habitats will increase survival of free embryos to exogenously feeding age-0. 2). Food production habitat - A lack of food limits survival of age-0 pallid sturgeon. 3). Foraging habitat - An increase in availability and quality of foraging habitat will increase survival of age-0 pallid sturgeon.

Objectives: Primary - Ensure that interception of drifting free embryos, food production and effective foraging for age-0 pallid sturgeon do not seriously limit recruitment in the lower Missouri River, either locally or systemically; Secondary - 1) progress toward the Targeted amount and distribution of IRC

habitat, and 2) number of specific means objectives will be established as appropriate to promote the optimization of IRC development and to protect HC interests.

Metrics: The means objectives by which the Corps will be evaluated in meeting their obligations under the BiOp are based on the net increase in “effective” acreage of IRC habitat (in acre-days/yr) listed in Table 4. “Effective” acreage is determined by integrating the developed or available IRC habitat with mean daily flows for June through September, expressed as acre-days. These dates correspond with the period of growth for pallid sturgeon ($T > 13^{\circ} \text{C}$). IRC habitat occurs where foraging habitat is collocated with or proximal to and downstream of food-producing habitat, and is intersected with hydraulic conditions in June that would promote interception and retention of free embryos drifting in the channel. Habitat metrics will be based on measures of depths, velocities, and substrate, including central tendency and variance, potentially complemented with metrics of spatial complexity. Figure 3 below is an example of how IRC habitat is counted. The algorithm for calculating IRC habitat might weight the hydrograph in June higher because of the importance of first feeding to survival. Distribution will be evaluated as deviation from a target distribution.

(need Figure) [Figure was not submitted with the planning aid letter.]

Figure 3. Example of IRC habitat accounting.

Performance of IRC actions will also be based on a subset of metrics addressing the primary objectives outlined above. The effectiveness of projects in promoting interception will be based on CPUE of age-0 sturgeon at project (pre- and post-implementation) and reference sites in the months of June through September. Effectiveness in terms of food production will be based on production of food per unit area, survival and indicators of starvation or impending death of age-0 pallid sturgeon (percentages of

empty/full stomachs; lipid content). Effectiveness in terms of foraging will be based on gut content and survival of age-0 pallid sturgeon with consideration for bioenergetics requirements of age-0 pallid sturgeon. Survival rates of hatchery-reared first-feeding pallid sturgeon larvae released in the Missouri River may serve as a metric for all three IRC elements.

A suite of metrics for assessing the hypotheses underpinning IRCs and the associated Level 1 and 2 studies are presented in the AM Plan.

Decision Criteria: The targets for implementation rate afford a straight-forward measure of compliance with the means objectives for IRCs at level 3. Net increases in habitat will be computed on an annual basis. To permit flexibility to address needs while promoting learning through level 2 actions and to address programmatic requirements related to piping plovers, performance relative to targets will be assessed using a running average of annual lift in IRC habitat. Acceptable performance is meeting or exceeding targets based on a three-year running average for at least 4 of every 5 years (80% success rate).

A host of additional decision criteria are expected in association with specific management actions and level 1 or 2 studies. These will be summarized in the AM Plan. Assessment of overall performance of many actions with statistical relations will likely not be robust, and decisions will therefore require a judgement based on lines of evidence. If experimental results in level 2 studies fail to support systematic increase in habitat and fish condition, then the hypothesis may need to be refined or abandoned. If the experimental results support the hypothesis that channel reconfigurations can provide increased food-producing and foraging functional habitats, and increase pallid sturgeon condition, then the decision would be to move toward level 3 implementation.

Triggers for Moving to Higher Implementation Level: The decision to move from level 3 to full implementation at level 4 will be based on a systematic relation between IRCs and increases in growth and survival of age-0 sturgeon that permits modeling of the needed scope of IRC implementation to meet the fundamental objectives. This judgement should be based on the strength and replicability of relations between abiotic habitat variables describing food and forage habitats, and growth and survival of age-0 sturgeon. In addition, the need for supplemental flow management at level 3 or 4 would be based on the availability of sound relations between flow conditions, IRC habitat, and growth and survival of age-0 sturgeon.

Timeframes: Implementation of IRC habitat at level 3 will occur no later than two years post-ROD. No time limit for transition to level 4.

Level 3 Contingent Actions: Contingency plans for IRCs are mainly associated with the secondary objectives (e.g. structure manipulations will not adversely affect navigation); however, adjustments to the targets, habitat criteria, methods, etc. might be required if performance fails to meet expectations. Details of contingency plans will be presented in the AM Plan.

Monitoring Requirements: See Appendix D of AM Plan

Spawning Habitat

Hypothesis: The spawning habitat hypothesis is highly uncertain with multiple hypotheses influencing potential directions and action. The hypothesis with the highest potential to provide rapid learning and insight is that high quality spawning habitat is limiting. Pilot projects (at Level 2) to address this hypothesis can be implemented within a few years and could greatly improve our understanding of the relationship between spawning habitat and successful reproduction. The decision tree below shows the strategy for moving forward on this hypothesis and potentially it's alternate.

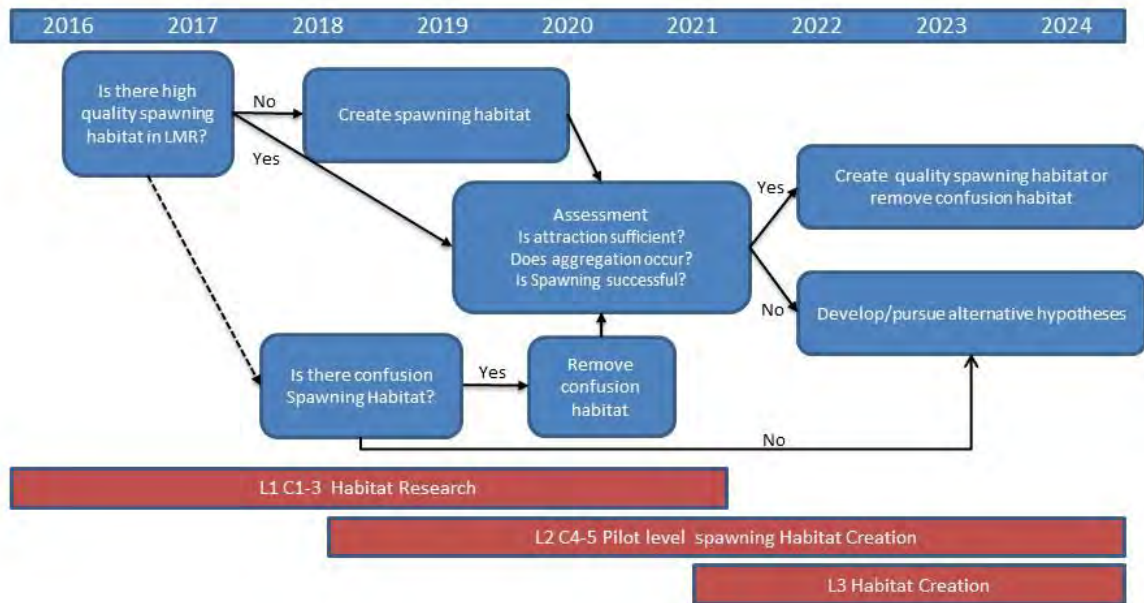


Figure 4. Decision tree for spawning habitat.

Description and Objectives: We presently do not have sufficient understanding to characterize the necessary actions at level 3 or determine quantifiable targets for spawning habitat. The focus of Level 1 and 2 will be to reduce the uncertainty regarding spawning habitat characteristics and needs for successful recruitment. There are two competing high-level hypotheses regarding spawning habitat concerns; one hypothesis is that additional high-quality spawning habitat is needed, while the opposing hypothesis is that too much poor-quality (i.e. “confusion”) spawning habitat exists on the river. Because the first hypothesis is much easier to test, the AM strategy will focus on that hypothesis first and pursue the confusion habitat hypothesis only if Level 1 or 2 studies reject the first hypothesis or provide added support to the second. A decision tree has been developed to guide the development of decision criteria related to the spawning habitat activities at levels 1 through 3.

An early emphasis will be to utilize information from the Yellowstone River to inform Level 2 pilot projects on the Lower Missouri River, which will be monitored for effectiveness based on metrics

ranging from observed aggregation to the number of free embryos in the water column. Level 3 targets for spawning habitat may be beyond the 15 year timeline under the planning process, depending on the rate of learning from Level 2 activities. However, the amount of habitat required to support successful spawning, the relative costs and ease of construction, and the anticipated low level of impacts to other uses suggests that even arbitrary and conservative targets for spawning likely won't have a big impact when associated with the first hypothesis. In contrast, should the confusion hypothesis bear out, the impacts and costs are likely to be substantial.

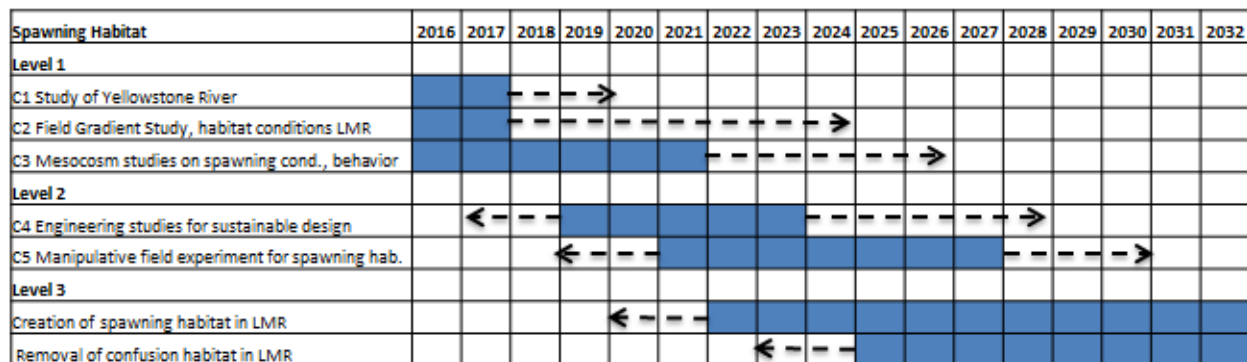


Figure 5. Preliminary sequencing of actions and studies for spawning habitat.

Metrics: The ultimate metric for spawning habitat is hatch rate as a function of habitat availability. Habitat might be characterized using different combinations of depth, velocity, substrate, and derivative hydraulic variables, with covariates relating to water quality and fish behaviors. Intermediate metrics will be fundamental measures of fish aggregation and spawning behaviors (for example, optimum male: female ratios in spawning aggregations), degree of attraction/specificity of adults to different spawning substrates, and biomechanics of egg adhesion and dispersal.

Several other metrics will provide information on relative performance of different designs. Repeat high-resolution multibeam maps of the spawning patches during incubation will indicate whether the substrate is subject to burial or erosion, which is likely to result in zero hatch. Measured hydraulic variables can be compared to fall velocities of unfertilized eggs to evaluate whether eggs are likely to be deposited in the manipulated habitats; multi-receiver, 3D telemetry and acoustic video can be used to evaluate behaviors of reproductive adults on the spawning patches to identify spawning aggregations and egg-release events.

Decision Criteria: The relevant decision for the level 2 studies associated with the first hypothesis would be whether to move forward into full implementation, change the experimental patch design, or abandon the habitat quality hypothesis and pursue the confusion habitat hypothesis. Robust statistical results cannot be expected for the preferred metric (hatch rate) because of the difficulties in enumerating this under field conditions. However, the results of other metrics described above should contribute to a lines-of-evidence decision of whether the spawning patches are functioning as intended.

Criteria for Accepting or Rejecting Hypotheses: Lines of evidence.

Triggers for Moving to Higher Implementation Level: (list time, performance, or other criteria for moving from L1 to L2, L2 to L3 and from L3 to L4) Evidence based criteria: Fish use of created habitats in multiple years; larval fish below spawning sites; increased catches of 2-3 year old pallid.

Timelines: No specific timeline for these hypotheses has been established, though the timelines in the above figures provide a sense of the expected outlay of effort and the sequencing/dependencies of certain activities.

Level 3 Contingent Actions: Information provided through field experimentation will indicate whether channel geometries and/or substrate should be altered to improve performance of spawning patches, and whether additional locations would contribute to spawning success and population growth. Rejection of the “quality habitat” hypothesis would result in pursuit of the alternative “confusion habitat” hypothesis, though the daunting nature of that undertaking has prevented an outlay of the necessary actions to date.

Monitoring Requirements: See Appendix D of AM Plan

Spawning Cue Flows

Hypothesis: Spring flow pulses from Gavins Point will provide aggregation and spawning cues.

Action Description: A description of a spring pulse sufficient to define a level 3 implementation is presented below. The frequency highlighted in Table 4 is uncertain due to insufficient understanding of the requirements for pallid sturgeon and potential effects of frequency on tern and plover nesting success. Further sensitivity analyses will be conducted with both population models to provide greater understanding of the bounds of this action through evaluation of the effects of releases on the bird and fish population trends and the pallid sturgeon population model will be used to guide the ultimate frequency of pulse implementation. A suggested maximum frequency of 1 in 3 years was agreed upon as an estimate for the purposes of assessing effects on stakeholders.

Level 3 spawning cues consist of deliberate bi-model pulse flows from Gavins Point dam as described below. The flows would be implemented at a frequency sufficient to elicit successful spawning in at least 1 of 3 years, or as dictated by the results of the population model (*<needs further characterization>*). Options for increasing the variability in the overall pulse height should be explored to more closely mimic the variability that occurred naturally as a means of precluding impacts on sandbar nesting birds.

The first pulse from Gavins Point would conform to the following guidelines:

- Rise begins on first day after flow to target navigation flows are achieved.
- Peak release from Gavins Point is equal to double the flow to target level release the first day of navigation flow to target levels are achieved from Gavins Point
- Increase to peak by 2,200 cfs per day
- Maintain peak for 2 days

- Reduce pulse by 1,700 cfs/day until releases are back to base flow to target levels

The second pulse is cued by water temperature (**16-18 degrees**) at a particular point as follows.

- Checks to implement release increases
 - > 40.0 MAF in System Storage on March 15 storage check
 - Steady release has been set and implemented for 3 days
- Releases from Gavins Point
 - Rise begins on May 18 or later based upon water temperature and implementation of steady release for at least 3 days
 - Increase to peak by 2,200 cfs per day
 - Peak release from Gavins Point is equal to twice the steady release from Gavins Point
 - Maintain peak for 2 days
 - Reduce pulse by 1,900 cfs per day until the steady release flows are reached
- Flood targets will be the full service flood targets increased by the steady release level
 - If the steady release is 31 kcfs and the full service flood targets are 41 kcfs, 47 kcfs, and 71 kcfs at Omaha, Nebraska City, and Kansas City, respectively, the new flood targets will be 72 kcfs at Omaha (31 + 41), 78 kcfs at Nebraska City (31 + 47), and 102 kcfs at Kansas City (31 + 71).

Spawning Cues	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Level 1																	
C1 Design Passive telemetry																	
C2 Opportunistic tracking of reproductive behaviors																	
C3 Mesocosm exp. On reproductive behavior																	
Monitoring of natural flows																	
Level 2																	
C4 Engineering study on effects to authorized purposes																	
C5 Exp. Flow releases from Gavins Point																	
Level 3																	
Spawning flows																	

Figure 6. Preliminary sequencing of actions and studies for spawning flow cues.

Objectives: Spawning cue flows are intended to 1) elicit a movement response in gravid pallid sturgeon that 2) results in an aggregation of reproductively ready pallid sturgeon

Metrics: Success metrics for spawning cues are generally related to fish behavior (reproductive migrations and successful spawning with monitored experimental flow pulses) and successful reproduction (hatch rate, capture of free embryos, etc.). Practical assessment of spawning success in the near-term is extremely difficult, so the need to rely upon behavioral monitoring is likely. Intensive telemetry tracking data of reproductive adults (males and females) will be evaluated against time series of hydrologic characteristics and will be analyzed for degree of association. Reproductive success or failure could be inferred by recapturing reproductive fish soon after expected spawning events to determine if they have released gametes. Monitoring of a series of pulsed flow releases over several years may be required to establish a functional relationship between flow-pulses and probability of producing viable larvae.

Decision Criteria: The significant experimental control that could be exerted over this action (for the upper river) will add to the ability to detect and quantify reproductive behavioral changes related to flow pulses; however, the flow pulses will still take place within a system where many sources of variability are not controlled, such as weather systems and tributary inputs. It is therefore unlikely that these experiments will result in a statistically rigorous result. Instead, a decision to accept the value of manipulated flow pulses in increasing pallid sturgeon reproductive success, or to reject it, will probably be based on judgement of multiple lines of evidence.

Timelines: The time to implementation at Level 3 and sequencing of this action should be considered in light of other actions, i.e., before we run a flow pulse, availability of spawning habitat with reasonable expectation of functionality and a sufficient number of fish in the system to assess aggregation should be assured. This could mean that additional engineered spawning habitat be in place (see previous section), but presently available spawning sites may suffice to address behavioral metrics. A nine-year time limit for Level 3 implementation was agreed upon to allow for habitat and propagation efforts to enhance the potential success of spawning cue flows. Information derived from Level 1 or 2 studies and/or passive monitoring of natural flow events could move the time frame up or could result in a rejection of the hypothesis. At nine years we would expect a minimum of two implemented pulses to have occurred within the temporal scope of the current EIS. This would allow for future NEPA analysis to better discern how and/or if pulses should be subsequently implemented.

Triggers for Moving to Levels 3 or 4: TBD

Level 3 Contingent Actions: TBD

Monitoring Requirements: See Appendix D of AM Plan



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
31247 436th Avenue
Yankton, SD 57078



October 27, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding Task B1 in the Missouri River Recovery Program FWCA
Scope or Work – FY 2015

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service) provides this planning aid letter (PAL) to assist in the development of the U.S. Army Corps of Engineers' (Corps) Missouri River Recovery Management Plan / Environmental Impact Statement (MRRMP-EIS) in accordance with the Fiscal Year 2015 Fish and Wildlife Coordination Act (FWCA) scope of work agreed to by our agencies. This letter fulfills Task B1 contained in the FY-2015 scope of work. As a cooperating agency on the MRRMP-EIS, the Service provides the following comments pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the NEPA of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.).

This PAL does not constitute the final report of the Secretary of the Interior as required by Section 2 (b) of the FWCA for the MRRMP-EIS, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

The purpose of the MRRMP-EIS is to develop a suite of actions to meet ESA responsibilities for the threatened Northern Great Plains (NGP) population of the piping plover (*Charadrius melodus*), the endangered interior least tern (*Sternula antillarum*) (ILT) and the pallid sturgeon (*Scaphirhynchus albus*); and the authorized purposes of the operations of the dams using Corps authorities. The geographic scope of the MRRMP-EIS encompasses the main stem portions of the Missouri River from Fort Peck, Montana to St. Louis, Missouri. The EIS will assess the

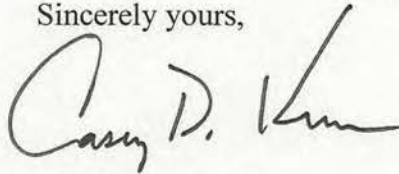
current Corps programmatic impacts, cumulative effects and a range of potential alternatives. The MRRMP-EIS will include an adaptive management process for all Missouri River Recovery Program (MRRP) activities to ensure management decisions and actions are continuously improved by the learning that takes place from research and regular monitoring of the river.

To support the development of the MRRMP-EIS, Service staff assisted with the effects analysis of the piping plover and least terns, pallid sturgeon, and habitat (hydraulics and hydrology) of the Missouri River. Three working groups, lead by Dr. Kate Buenau (Pacific Northwest National Laboratory), Dr. J. Craig Fischenich (U.S. Army Engineer Research and Development Center (ERDC)), and Dr. Robert B. Jacobson (U.S. Geological Survey), produced the Draft Interim Effects Analysis Integrated Reports.

The Service hereby acknowledges the receipt of these three reports and fully supports their results and use in completion of the MRRMP-EIS for the Missouri River Recovery Program.

We look forward to our continuing collaboration with the Corps and other conservation partners in support of this important effort to ensure the success and ultimate implementation of the MRRMP-EIS for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. If you have any questions, please feel free to contact me at (605) 665-4856.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Casey D. Kruse". The signature is fluid and cursive, with a large initial "C" and a distinct "K" at the end.

Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis)ARD
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
31247 436th Avenue
Yankton, SD 57078



November 5, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding the Missouri River Recovery Management Plan-EIS:
USFWS 2003 BiOp Projected Actions Alternative

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service) provides this planning aid letter (PAL) regarding the development of the U.S. Army Corps of Engineers' (Corps) Missouri River Recovery Management Plan Environmental Impact Statement (MRRMP-EIS) in accordance with the Fiscal Year 2015 Fish and Wildlife Coordination Act (FWCA) scope of work agreed to by our agencies. The Service provides the following comments pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the NEPA of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.).

This letter transmits parameters for modeling the USFWS 2003 Biological Opinion (BiOp) Projected Actions Alternative for the MRRMPP-EIS as part of the alternative development process and should not be construed as Section 7 input. We appreciate the dialogue that has occurred between the Corps PDT and Service staff to date on this effort. We especially appreciate the efforts of the Corps modeling team of Jeff Tripe, Don Meier, Dan Pridal, Jean Reed, Christine Cieslik, Ryan Larsen, Alex Flanigan and others who worked patiently and professionally through the modeling parameters with our staff. Please include the USFWS 2003 BiOp Projected Actions Alternative within the MRRMP-EIS.

The USFWS 2003 BiOp Projected Actions Alternative provides our interpretation of the ultimate implementation of the BiOp RPA. Whereas the No-Action alternative projects only current actions being implemented long term, the USFWS 2003 BiOp Projected Actions Alternative includes projections of additional iterative actions and expected actions which the Service anticipated would ultimately be implemented as part of the BiOp Reasonable and Prudent Alternative (RPA) through adaptive management and as impediments to implementation were removed. The Service recognizes that all of the actions listed and included for modeling from the 2003 BiOp would not have been implemented immediately. Nevertheless, we believe it is

important to understand the projections, consequences and benefits from the ultimate implementation of the 2003 BiOp through complete analysis of the USFWS 2003 BiOp Projected Actions Alternative. We believe including the USFWS 2003 BiOp Projected Actions Alternative provides a necessary portion of a complete range of alternatives. Moreover, it is a necessary component for the Service to assess the difference and benefits of any of the other alternatives in terms of the efficacy in achieving objectives for the pallid sturgeon, interior least tern and piping plover.

Modeling parameters and documentation of rationale follow and are separated into three components: Flows, Shallow Water & Floodplain Habitat, and Emergent Sandbar Habitat. Specific relationships of BiOp actions to species needs/actions are included to enable direct comparison of the USFWS 2003 BiOp Projected Actions Alternative with other MRRMP-EIS alternatives.

FLOWS:

The Service provides these relationships to facilitate comparison with other alternatives. The flow parameters are associated with the lower Missouri River pallid sturgeon, the interior least tern and the piping plover specifically as follows:

- Least terns and piping plovers – Reservoir Unbalancing
- Pallid Spawning Cue – First and Second Pulse
- Spring ESH Creation – First and Second Pulse
- IRC Habitat – First and Second Pulse & Summer Low Flows
- Low Nesting Season Flows – Summer Low Flows

FLOW PARAMETERS

- Reservoir unbalancing as described in the master manual
- If “no service” is determined on March 15, GAPT releases are to be determined based on meeting water supply targets until the winter season; first and second pulses will not be carried out.
- Max winter GAPT release: 16 kcfs
- First Spring Pulse from GAPT
 - Start about March 15 to coincide with normal come-up for navigation
 - Rise to 31 kcfs
 - 7 day ascending limb
 - 7 days at peak (31 kcfs)
 - 7 day descending limb
 - Disregard pulse if storage evacuation service level is determined by March 15 assessment
- Following first spring pulse, return to flow to target (FTT) operations based on service level from March 15 storage check
- Second pulse to initiate between May 1 and May 15
 - Ascending limb not less than 7 days, but no longer than 10

- Descending limb not less than 7 days
- Pulse rise based on March 1 runoff forecast
 - Median = 16 kcfs
 - Upper quartile or higher runoff = 20 kcfs rise
 - Lower quartile or lower runoff = 12 kcfs rise
- Pulse duration at peak
 - 14 days – lower quartile or lower runoff
 - 25 days – median runoff
 - 35 days – upper quartile or higher runoff
- Flood control constraints
 - Add pulse magnitude to the current USACE flood control constraints outlined in Tables VII-7 and VII-8 in master manual
 - Limit max pulse release from GAPT to 60 kcfs.
- End of second pulse to June 23: return to “steady release” scenario to specify GAPT releases
 - Use June release value from the Annual Operating Plan “Gavins Point releases Needed to Meet Target Flows”
 - Median, Upper Q, Upper D: 27.9 kcfs full service, 21.9 kcfs min service
 - Lower Q, Lower D: 31.2 kcfs full service, 25.2 kcfs min service
- Summer Low Flows
 - If steady releases are lower than 25 kcfs – stay on the steady release level until the summer low flow reduction to 21 kcfs.

June 23rd to July 1

- 25 kcfs GAPT release
- July 1: Assess navigation season length
 - If there is a shortened navigation season as determined by the Master Manual
 - GAPT releases are to be determined based on meeting water supply targets (open channel non-navigation season)
 - The duration of those releases is equivalent to that of the number of days the season is shortened less the 8 days in June (eg. if season is shortened 30 days,
 - Following that duration, set flow to 25 kcfs until July 15 then drop the release to 21 kcfs until August 15 and then return to 25 kcfs until Sept 1
 - FTT operations from Sept 1 until Dec. 1
 - If there is not a shortened navigation season
 - Continue 25 kcfs from July 1-July 15 then drop the release to 21 kcfs until August 15 and then return to 25 kcfs until Sept 1
 - Flow to target operations from Sept 1 until Dec. 1 or Dec 10 if a ten day extension is determined

Frequency of the bimodal pulse and summer low flows

- An attempt should be made to run the bimodal pulse every year. The Service recognizes that the full bimodal pulse will only be realized about once in every eight years based upon preliminary modeling results and discussions with USACE staff.
- Summer low flows should only be implemented in years when the full bimodal pulse occurs.

The flow parameters are primarily outlined in RPA VII of the 2003 Amended BiOP.

Variations of the technical criteria within RPA VII are founded in the following statements resulting in a shift from those criteria and ultimately projecting implementation of an Adaptive Management Program as defined in RPA I.

"The long-term flow regime shall be reflective of the normalized river hydrology in order to be responsive to dry, intermediate, and wet conditions." p. 234 of the 2003 Amended BiOP

We have included the following excerpt to clarify why the USFWS 2003 Biological Opinion Projected Actions Alternative includes low summer flows:

"the Corps shall ensure that the Master Manual and the corresponding NEPA document provide the latitude for the eventual implementation of a spring rise and summer low flow of at least a magnitude identified in the Draft Environmental Impact Statement (USACE, 2001) as alternative GP2021." p. 233 of the 2003 Amended BiOP

SHALLOW WATER HABITAT and FLOODPLAIN HABITAT

Shallow Water Habitat and Floodplain Habitat are both associated with lower Missouri River pallid sturgeon.

The Service provides this relationship to facilitate comparison with other alternatives. Shallow water and floodplain habitat are associated with the lower Missouri River pallid sturgeon as follows:

- IRC Habitat – Shallow water habitat and Floodplain habitat

Key references to the suite of parameters include the following:

Pallid Sturgeon RPA

III. Habitat Restoration/Creation/Acquisition

"Continued survival of pallid sturgeon depends on restoration of riverine form and functions, as well as some semblance of the pre-development or natural hydrograph.

Missouri River habitat restoration is, therefore, multi-faceted, and involves a combination of reservoir operational changes (e.g., hydrograph and temperature), structural modifications (e.g., chute restoration), and non-structural actions (e.g., floodplain acquisition or easements). The maximum benefits of physical habitat projects to listed species can only be realized when coupled with complementary hydrology.” p. 226 of the 2003 Amended BiOP

VI. Feasibility, Flow Development, and Adaptive Management

“determine impediments to implementing the flows necessary to ensure the survival of pallid sturgeon, and identify mitigation measures to address the impacts of removing impediments to implementation (e.g. floodplain easements, scouring easements, navigation off-sets).” p. 231 of the 2003 Amended BiOP

VII. Flow Modification

“flows that provide for connection of low-lying lands adjacent to the channel. Inundation of low-lying lands is important processes for pallid sturgeon survival. This provides organic material and redistribution to produce forage for rearing fish at a time synchronized with the presence of larval and juvenile fish. Flows that are sufficiently low to provide for shallow water habitat as rearing refugia and foraging areas for larval, juvenile, and adult pallid sturgeon are also necessary.” p. 232-233 of the 2003 Amended BiOP

“This long-term flow regime must address, based on the best available information, spawning, rearing, maximization of floodplain connectivity, forage production and shallow water habitat.” p. 234 of the 2003 Amended BiOP

“By providing flows that are sufficiently high in the spring, connectivity to low-lying lands will be enhanced thereby providing additional production and input of nutrients and forage items for YOY fish at a time needed to enhance survival through the first year. Habitat flows will subsequently provide low velocity refugia habitat, enhanced in-channel productivity and provide for the spatial and temporal concentration of forage and prey items to areas where YOY and adult fish can exploit the prey base.” p. 235 of the 2003 Amended BiOP

IX. Habitat Development, Shallow Water and Floodplain

“Floodplain inundation and connectivity is essential in order to maximize the production of the forage base for pallid sturgeon. The forage base production must occur at a time that coincides with larval sturgeon becoming active, free swimming feeders. Floodplains

are highly productive habitats in the late spring and early summer when warm, shallow water floods over the area and produces a bloom of forage that is of the appropriate size for larval fish to eat. Since larval and juvenile pallid sturgeon feed along the river margins, the productivity must be transported from the inundated low-lying lands to the river as flows recede. Additionally, low-lying are an extremely important source for other floodplain spawning fish which subsequently support the forage base for adult pallid sturgeon through the summer and fall. Highly productive floodplains are necessary on a frequent annual basis to provide necessary life requisites for pallid sturgeon survival." p. 237 of the 2003 Amended BiOP

"Shallow water and floodplain habitat... maximize habitat potential under the range of flows that will be provided under the flow enhancement components of this opinion...shallow water habitat elements should consider, and be implemented with, a flexible and diverse flow regime in mind." p. 237 of the 2003 Amended BiOP

"The Corps shall design and implement floodplain connectivity to produce the intended ecological functions for production of nutrients and forage fish and plankton over a range of flow regimes developed under elements VI and VII above." p. 238 of the 2003 Amended BiOP

The 2003 Amended BiOP also considered interrelated and interdependent actions during consultation. It is assumed that these actions would be completed and factors into the Service determination and resultant opinion. It was assumed that 100,000 of the 166,750 acres of the Missouri River Fish and Wildlife Mitigation Project would be utilized for shallow water habitat and available for floodplain connectivity (Mike Thabault, ARD-ES USFWS Region 6, pers. comm.).

INTERRELATED AND INTERDEPENDENT ACTIONS

Least Tern, Piping Plover, and Pallid Sturgeon

Missouri River Fish and Wildlife Mitigation Project

In the Water Resources Development Act of 1999, the Missouri River Fish and Wildlife Mitigation Project (MRFWMP) was reauthorized to include an additional 118,650 acres of land to be purchased from willing sellers on which to develop, restore or enhance fish and wildlife mitigation sites along the Missouri River. The total acres for the program now stand at 166,750." p. 173 of the 2003 Amended BiOP

FLOODPLAIN HABITAT

We provide the following criteria to allow for analysis/comparison/contrasting/modeling of what the 2003 BiOp did say for this process:

1. Maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20% annual chance exceedence (ACE) (or 5-yr).
2. Distribute floodplain habitat to the extent possible based on the table below:

State *	Portion of authorized acres available for floodplain connectivity	Existing acres of floodplain connectivity (20% ACE inundation)*	Additional acres of floodplain habitat to add to HEC-RAS model
Iowa	14,228	16,120	0
Kansas	6,976	8,560	0
Missouri	62,813	99,980	0
Nebraska	15,983	31,820	0
Total	100,000**	156,480***	0

*Does not imply ownership, includes both public and private lands.

**The 100,000 inundation acreage includes both the main channel and connected floodplain area.

The 77,410 inundation acreage includes only the connected floodplain area.

***Does not include main channel acres as defined by median August flows.

3. Acres of existing floodplain connectivity were reported by USACE based on HEC-GeoRAS mapping. Upper Mississippi River System Flow Frequency Study (UMRSFFS) 20% ACE flows were run as steady flows in the existing conditions HEC-RAS model, and inundation boundaries were created using the best available terrain data.
4. Existing acres of floodplain inundation with connectivity includes:
 - a. Areas lower in elevation than the computed 20% ACE water surface and judged to be connected to the main channel.
 - b. Private lands not protected by levees, including fringe areas between levees and river bank and areas without any discernable protection that would be inundated at the reference flow.
5. Excluded from existing floodplain acres:
 - a. Area behind all active/maintained levees, including federal levees, levees in the PL 84-99 program and smaller agriculture levees often found between the federal/program levees and the river bank. No distinction was made as to levee reliability or performance risk. All levee areas were excluded from the count of existing acres of floodplain connectivity.
 - b. Inundated area well outside the bluff line or in tributary backwater areas.
 - c. Missouri River main channel as determined by the boundary of the August 50% duration flow extent.

6. Modeling efforts and assessment should strive towards the following (repeated from above RPA IX):
 - a. Floodplain inundation and connectivity is essential in order to maximize the production of the forage base for pallid sturgeon. The forage base production must occur at a time that coincides with larval sturgeon becoming active, free swimming feeders. Floodplains are highly productive habitats in the late spring and early summer when warm, shallow water floods over the area and produces a bloom of forage that is of appropriate size for larval fish to eat. Additionally, low-lying lands are an extremely important source for other floodplain spawning fish which subsequently support the forage base for adult pallid sturgeon. Highly productive floodplains are necessary on a frequent annual basis to provide necessary life requisites for pallid sturgeon survival.

SHALLOW WATER HABITAT PARAMETERS

1. Add shallow water habitat (SWH) to the HEC-RAS models based on the 2003 Amendments to the 2000 Biological Opinion (BiOp) and in accordance with subsequent discussions between the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service.
2. Future habitat will be modeled, to the extent possible, by selecting locations along the river with reasonable characteristics for habitat construction and that do not interfere with existing human infrastructure.
3. Total SWH to be placed in models downstream of Gavins equals 11,265 acres. This is equal to the amount required by the BiOp to achieve 30 acres/mile (753 miles x 30 ac/mi = 22,590 acres) minus the existing acres of SWH as reported by USACE in the 2014 SWH Accounting Report (11,325 acres).
4. Distribute SWH acreage based on the table below.

Reach	Segment	Required Acres of SWH (30 ac/mi)	Existing Acres of SWH (2014 SWH accounting report)	Additional acres of SWH to add to HEC-RAS model
Ponca to Sioux City	Segment 11	540	120	420
Sioux City to Platte River	Segment 12	4,200	1,682	2,518
Platte River to Kansas River	Segment 13	6,840	2,560	4,280
Kansas River to Osage River	Segment 14	7,110	3,710	3,400
Osage River to Mouth	Segment 15	3,900	3,253	647
Total		22,590	11,325	11,265

* Platte River to Kansas City reach will be pro-rated between the two districts by river length, 57% will be accomplished by NWK and 43% by NWO.

5. SWH will be some combination of in-channel habitat and off-channel habitat. Diversity is important, however, added habitat will favor in-channel widening to the extent possible.
6. New in-channel SWH will be modeled to function at three different flow levels. The mean river flows for these calendar periods will be added to the Gavins Point discharge to account for increasing river flows downstream from Gavins Point.
 - a. 1/3 of the new SWH will be placed to provide 0-5 feet of depth at low summer flow. Low summer flow is defined as 21-kcfs release from Gavins Point, plus July incremental flows downstream.
 - b. 1/3 of the new SWH will be placed to provide 0-5 feet of depth at mid-August. Mid-August is defined as the median August release from Gavins point, plus August incremental flows downstream.
 - c. 1/3 of the new SWH will be placed to provide 0-5 feet of depth at the spring pulse. Spring pulse is defined as the median May release plus 20-kcfs from Gavins Point, plus May incremental flows downstream.
 - d. In order to simplify HEC-RAS model construction, the width of each new SWH area will be determined as roughly 1/3 for each of the above flow profiles with side slope to attain the desired total top width of the widened area
 - e. SWH already in the system through 2012 was placed to provide 0-5 feet of depth at mid-August. Mid-August is defined as the August 50% duration flow based on gauge statistics.
7. Incremental flows will be from the USACE Missouri River Basin Water Management Division report titled Missouri River Incremental Flows Below Gavins Point (2014). Flow changes will be made at major tributary locations, portioned by tributary basin area.
8. Model all new in-channel and off-channel SWH based on the projected channel degradation expected for the future without project condition, making the assumption that constructed habitat will be modified as necessary in the future to avoid loss of habitat to channel degradation.
9. New in-channel SWH is to be represented as channel widening. SWH will be modeled as 250-ft wide in the reach from Gavins to Rulo and 300-ft wide from Rulo to St. Louis. Habitat will be placed as sloping from the elevation of water surface indicated by the model by the reference flows (for the three different flow levels described above).
10. New off-channel SWH will be represented as chutes in the Kansas City District, and chutes and backwaters in the Omaha district. Chutes will be represented with a fully developed top width of 300-ft.
11. Existing chutes that are currently represented in the model will be modified to represent an anticipated fully developed width of 300-ft with inverts modified for projected degradation.

FORT PECK FLOW ENHANCEMENTS AND WATER TEMPERATURE CONTROL DEVICE FEASIBILITY

The BiOp recognized water temperatures and flows as controlling factors for spawning cues, larval pallid sturgeon development as well as supporting forage in the Missouri River below Fort Peck Dam. The BiOp called for mini- and full-test of Fort Peck flow enhancements in addition to a study of the feasibility of temperature control device at Fort Peck.

Because of a drought followed by damages to the Fort Peck spillway during the 2011 high release events, the mini- and full-tests have not been completed. Unlike the Gavins Point release scenarios in which flow parameters were articulated in the BiOp, the BiOp relied heavily upon results from the Fort Peck flow tests to ultimately determine the long term flow implementation plan from Fort Peck. Therefore, it would be speculative at this time to determine modeling parameters for a long term flow implementation plan from Fort Peck.

Our understanding of the current science indicates larval drift distances are thought to be the leading factor in the lack of natural recruitment in the pallid sturgeon population below Fort Peck. Options to increase drift distances could include modifying infrastructure and operations at Fort Peck Dam to improve release timing and duration and to increase water temperature have been evaluated. We understand that your analysis of these options results in unacceptable dam safety risks and threatens compliance with congressionally authorized project purposes including flood control. Recent modeling for the effects analysis indicated that even if these issues could be overcome, actively managing the hydrology below Fort Peck Dam to provide the appropriate volume and temperature at the correct time would be a significant challenge containing hydrological, physical and biological uncertainty with a small probability of success. Additionally, for necessary larval drift distance to be achieved in this reach, the pool elevation of Lake Sakakawea would need to be lowered to historically low levels.

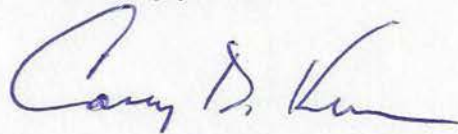
EMERGENT SANDBAR HABITAT PARAMETERS

1. The BiOp has a goal of 11,886 acres of ESH, which was further subdivided into acreage goals by river reach to be achieved by the year 2015 Existing Habitat/Existing Conditions
 - a. Below Gavins Point Dam – 80 acres of habitat per river mile;
 - b. Below Garrison Dam - 50 acres of habitat per river mile;
 - c. Below Fort Randall Dam - 20 acres per river mile;
 - d. Lewis & Clark Lake - 80 acres per river mile;
 - e. The USFWS 2003 BiOp Projected Actions Alternative modeling effort should focus on the above acreage goals. How those acreage goals are achieved is at USACE's discretion. Fledge ratios were included within the BiOP to reduce incidental take.

- f. Acreages should be measured in late July and consist of 60 percent dry sand.
2. The Corps will assume construction or maintenance activities to perpetuate the acreages determined.
3. Due to a lack of tern or plover presence in the Ft. Peck reach, no habitat would be included or modeled for the Ft. Peck reach.

Please contact Wayne Nelson-Stastny at (605) 660-5349 for further questions and clarification regarding the modeling of this alternative. The Service looks forward to our continuing collaboration with the Corps and other conservation partners in support of this important effort.

Sincerely yours,



Casey D. Kruse

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis)
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE



IN REPLY REFER TO:
FWS/R6/ES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
31247 436th Avenue
Yankton, SD 57078



November 13, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding Task B3 in the
Missouri River Recovery Program FWCA Scope or
Work – FY 2015

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service or USFWS) provides this planning aid letter (PAL) to assist in the development of the U.S. Army Corps of Engineers' (Corps or USACE) Missouri River Recovery Management Plan and associated Environmental Impact Statement (MRRMP-EIS) in accordance with the Fiscal Year 2015 Fish and Wildlife Coordination Act (FWCA) scope of work agreed to by our agencies. This letter fulfills Task B3 contained in the scope of work. As a cooperating agency on the MRRMP-EIS, the Service provides the following comments pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.). Appendix 1 of this letter contains a list of definitions that will help to clarify the terms used in this letter.

The purpose of the MRRMP-EIS is to develop a suite of actions to meet the Corps ESA responsibilities regarding the threatened Northern Great Plains (NGP) population of the piping plover (*Charadrius melodus*), and the endangered interior least tern (*Sternula antillarum*) (ILT) and the pallid sturgeon (*Scaphirhynchus albus*), and the authorized purposes of the operations of the dams using Corps authorities. The geographic scope of the MRRMP-EIS encompasses the main stem portions of the Missouri River from Fort Peck, Montana to St. Louis, Missouri. The MRRMP-EIS will assess the current Corps programmatic impacts, cumulative effects and a range of potential alternatives. The MRRMP-EIS will include an adaptive management process for all Missouri River Recovery Program (MRRP) activities to ensure management decisions and actions are continuously improved by the learning that takes place from research and regular monitoring of the river.

This PAL does not constitute the final report of the Secretary of the Interior as required by Section 2 (b) of the FWCA for the MRRMP-EIS, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and

Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

In 2011, the Independent Science Advisory Panel (ISAP) provided a report per the request of Missouri River Recovery Implementation Committee (MRRIC) on the efficacy of the managed Spring Pulse and Adaptive Management. In its final report the ISAP recommended that the Service should specify the species objectives and targets for jeopardy avoidance, survival, and recovery in relation to Missouri River project impact and that the species objectives should be consistent with the findings of the ongoing Effects Analysis (EA) (Buenau et al. 2014, Fisichenich et al. 2014).

This letter transmits the quantitative population and habitat targets for the Missouri River piping plover sub-population to assure that each management action and alternative in the MRRMP-EIS is working towards meeting the agreed upon species objectives during implementation. We are pleased to provide these targets using the best available information to help the Corps in their efforts to better define management actions on the Missouri River to avoid jeopardizing these species due to the operation of the main stem dams and the operation, and maintenance of the BSNP. These targets are subject to change as necessary within the adaptive management process depending on monitoring and research information obtained during the implementation phase.

The Service greatly appreciates the ongoing effort of the EA team in supporting the development of these quantitative targets. This effort, led by Dr. Kate Buenau and Dr. Craig Fisichenich, has resulted in the creation of cutting edge population and habitat models that were vital to our analysis and establishment of these targets. Advancing this effort and continued refinement of these models will be imperative to a successful adaptive management program and to the implementation of effective management actions. The Service fully supports the utility and further development of these important analytical and predictive capabilities.

Jeopardy Versus Targets

The determination of jeopardy or adverse modification is based on the effects of the action on the continued existence of the entire population of the listed species or on a listed population, and/or the effect on critical habitat as designated in a final rulemaking. (USFWS Consultation Handbook, page 4-34)

The Service does not define jeopardy as a particular number, target, or a particular threshold. Rather, under the ESA, jeopardy occurs when there is an action that reasonably would be expected, directly or indirectly, to appreciably reduce the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. If a species population starts declining, jeopardy may be occurring.

Jeopardy of a species is a determination the Service makes after going through a process under the ESA of accessing the suite of alternative actions for a proposed federal project. Through that process the Service will determine what actions a federal agency needs to implement in relationship to where the species needs to be to remove any negative impacts to the species due to the agency proposed actions. A "jeopardy" determination is based on four factors: 1) status of the species, 2) environmental baseline, 3) effects of the Federal action, and 4) cumulative actions. These quantitative population and habitat targets of themselves do not constitute a

jeopardy determination; rather it is our intent to provide these targets to assist in the development of alternatives that achieve the fundamental objectives. The Service will be making a draft jeopardy determination after a preferred alternative has been identified. The final jeopardy determination will be made when a alternative has been selected in the Final EIS.

Use of the Piping Plover Targets for the Interior Least Tern and the Delisting Process

As part of the ILT delisting process, under the conservation mandate of section 7(a)1 of the ESA, there are efforts under way to develop conservation plans throughout the least tern population range. Section 7(a)1 of the ESA requires Federal agencies to use their authorities to develop and carry out conservation programs for listed species. The Corps Mississippi Valley Division on the lower Mississippi River, the Louisville District for the lower Ohio River, and the Southwestern Division for the Red and Arkansas rivers are developing 7(a)1 plans with post-delisting management commitments. After the Corps management strategies are drafted, there will be a 7(a)1 consultation with the relevant Service office. When these management plans are finalized, nearly all of the ILT population will be covered under post-delisting management commitments.

As previously discussed, we are anticipating that the MRRMP-EIS will serve as the conservation plan that will meet this ILT delisting requirement for the Missouri River. The MRRMP-EIS should discuss how the management practices contained therein are beneficial to ILT conservation, as well as demonstrate monitoring commitments which will continue post-delisting.

Much effort has been expended in the last year to develop objectives, metrics, and targets for the NGP piping plover for the MRRMP-EIS. We believe that managing for sufficient nesting habitat to sustain a NGP piping plover population in the Missouri River will also provide sufficient nesting habitat for the ILT in the Missouri River. Piping plovers and least terns are sympatric nesters, often using the same breeding sites throughout the Missouri River basin. Therefore, the efforts listed in this document will be referring to the needs of the piping plover only from here on. However, as mentioned above, to serve as the conservation plan required for delisting of the ILT, it will be important to include an assessment of how the management actions contained within the MRRMP-EIS may affect the ILT.

Piping Plover Fundamental Objective, Sub-Objectives, Metrics and Targets

The following is a summary of the Fundamental Objectives for both bird species and the Sub-Objectives, Metrics and Targets for the piping plover. In order to facilitate a clear understanding of the Service's determination of the piping plover objectives, metrics, and targets, the definitions of these terms can be found in Appendix 1. A more detailed description of the methods that were used to determine these targets will be provided in a future document.

After considering all the comments and input from species experts in two workshops the Service conducted in the summer of 2013, external reviewers, the MRRIC Science and Adaptive Management (SAM) Work Group, the MRRIC Strategic Programmatic Assessment (SPA) Task Group, and ISAP; the Service and the Corps developed the following **Fundamental Objectives** for the two listed bird species:

- Avoid jeopardizing the continued existence of the threatened Northern Great Plains population of the piping plover due to the US Army Corps of Engineers actions on the Missouri River.
- Avoid jeopardizing the continued existence of the endangered Interior Least Tern due to the US Army Corps of Engineers actions on the Missouri River.

While these fundamental objectives are consistent with the Service's current established recovery goals for the piping plover and least tern, they are prepared specifically to avoid and prevent jeopardy to the species due to Corps' operation and maintenance of the Missouri River System. These fundamental objectives and subsequent sub-objectives described below are the desired outcomes from the Corps' actions as part of the MRRMP-EIS. We believe that if the targets for the sub-objectives described below are attained it will result in the achievement of the stated fundamental objectives. The Service anticipates regular assessment and refinement of the sub-objectives, mean objectives, performance metrics and target levels through the adaptive management process. For this to occur, monitoring must be designed to measure metrics and assess whether targets are achieving the anticipated outcomes. This data would then be used to make any necessary adjustments to the Corps actions to meet the fundamental objectives. The Service looks forward to working with the Corps as development of these monitoring plans is progressed.

The following sub-objectives, means objectives, metrics, and targets are based on the following documents and events:

- information in the 2000 and 2003 amended Biological Opinion
- recent studies and research
- conceptual ecological models (CEMs) developed by both agencies with the help of internal and external species experts
- June 11, 2013 memo from ISAP to the SAM Work Group and MRRIC
- June 27, 2013 memo from ISAP to the Strategic Programmatic Assessment (SPA) Task Group
- discussions at the Species Objectives Workshops in July 2013
- interagency charrette in September 2014
- Corps' January 10, 2014 "Sideboards" document, and the geographic scope of the main stem of the Missouri River from the upper end of Fort Peck reservoir to the confluence with the Mississippi River
- Draft Interim Effects Analysis Integrated Report: Piping Plovers and Least Terns October 2014 (EA) (Buenau et al. 2014)
- Modeling to Support the Development of Habitat Targets for Piping Plovers on the Missouri River (Buenau 2015)
- Preliminary draft NGP Piping Plover Recovery Plan (in review)
- 2015 Draft Science and Adaptive Management Plan: Missouri River Recovery Program. Version 3. (Fischenich et al. 2015)

The EA (Buenau et al. 2014, Fischenich et al. 2014), including the hydraulic, emergent sandbar habitat (ESH) and population models, provided an empirical relationship linking hydrology, habitat, and bird populations. These models, created specifically for the Missouri River, consider the dynamic river processes and variable amounts of nesting habitat from year to year along with

density dependent reproductive rates to calculate the acres of ESH necessary for a resilient population of piping plovers. Population resiliency is primarily determined by habitat availability rather than an initial population size (Buenau 2015). As a result and as indicated in the targets below, we propose using acres of ESH as a target to ensure a resilient population of birds on the Missouri River for the adaptive management process. Acres of ESH are calculated in two ways:

Standardized ESH: The area above water when releases from Gavins Point Dam are 31.6 kcfs, Fort Randall Dam are 30.5 kcfs, and Garrison Dam are 23.9 kcfs. Used to track the amount of ESH structure in the river independent of flows.

Available ESH: The area above water during maximum July release for a specified year. Estimate of usable habitat for the birds during the nesting season. Reported as acreage of ESH exceeded during a percentage of years, e.g. 10, 25, 50, 75%.

Geographic distribution of the Missouri River piping plover population (sub-population of the NGP population) is described by two distinct geographic regions:

Northern Rivers Region: Missouri River from Fort Peck Lake Montana to Fort Randall Dam, South Dakota.

Southern Rivers region: Missouri River from Fort Randall Dam, South Dakota to Ponca, Nebraska.

- **Sub-objective 1 (Population):** Maintain a total population number of Missouri River piping plovers that keeps the population resilient on the Missouri River in the long term.

Means Objective: Provide enough ESH habitat on the Missouri River to maintain a 95% probability (resiliency) that a population of at least 50 individuals will persist for at least 50 years on the Missouri River.

Metric: Number of standardized and available ESH acres measured annually.

Target:

		Acres Of Sandbar Habitat		
		Lower 95% CI	Median	Upper 95% CI
Standardized ESH Acres		675	1433	6033
Percent	75%	510	710	1330
Exceedance	50%	930	1430	2675
of Available	25%	1580	2880	5070
ESH Acres	10%	2420	4550	8470

- **Sub-objective 2 (Reproduction):** Maintain a long-term trend in population growth rate (λ) that is at least stable.

Means Objective: Maintain a stable or increasing population.

Metric: Population growth rate: the change in population size between years; calculate annually.

Target: $(\lambda) \lambda \geq 1$

- **Sub-objective 3 (Chick Survival/Reproduction):** Increase and maintain the success of breeding pairs on Missouri River.

Means Objective: Increase nest success and chick survival to fledge.

Metric: Fledge Ratio: Number of fledglings observed/(number of adults/2).

Target Range: ≥ 1.25 chicks fledged per breeding pair (Catlin et.al. 2015).

- **Sub-objective 4 (Distribution):** Maintain a geographic distribution of plovers in the river and reservoirs in which they currently occur in both the Northern and Southern River Regions.

Means Objective: Provide enough ESH habitat on the Missouri River to maintain a 95% probability (resiliency) that a population of at least 50 individuals will persist for at least 50 years in each region.

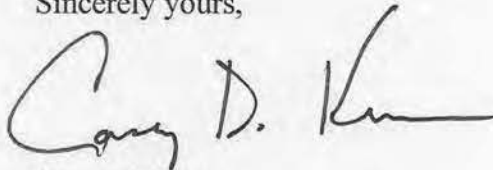
Metric: Number of standardized and available ESH acres measured annually.

Target:

		Acres of Sandbar Habitat					
		Northern Rivers Region			Southern Rivers Region		
		2.5%ile	Median	97.5%ile	2.5%ile	Median	97.5%ile
Standardized ESH Acres		200	428	1996	264	782	3907
Percent	0.75	140	210	470	280	370	700
Exceedance	0.5	380	630	1000	460	720	1580
of Available	0.25	770	1420	2010	780	1370	3285
ESH Acres	0.1	1340	2230	3625	1130	2320	5275

The Service looks forward to continuing to work collaboratively in support of this important effort, ensuring the success and ultimate implementation of the MRRMP-EIS for the conservation of Missouri River fish and wildlife resource. If you have any questions, please feel free to contact me at (605) 665-4856.

Sincerely yours,



Casey D. Kruse
Missouri River Coordinator

Enclosures

cc: Service, Region 6 ARD/ES, Lakewood, CO (Thabault)
Service, Region 3 ARD/ES, Bloomington, MN (Lewis)ARD
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE

Literature Citations

Buenau, K.E., V. Cullinan, C.J. Huber, and C.R. Vernon. 2014. Draft Interim Effects Analysis Integrated Report: Piping Plovers and Least Terns. Pacific Northwest National Laboratory, Richland, Washington. Prepared for the U.S. Department of Energy.

Catlin, D.H., J.D. Fraser, and J.H. Felio. 2015. Demographic Responses of Piping Plovers to Habitat Creation on the Missouri River. *Wildlife Monographs* 192: 1-42.

Fischenich, J.C., R. McComas, D. Meier, J. Tripe, D. Pridal, P. Boyd, S. Gibson, J. Hickey, T. Econopouly, and L. Strong. 2014. Habitat Analyses for the Missouri River Effects Analysis, Hydrogeomorphic Team Draft Integrative Report, US Army Engineer Research and Development Center (ERDC), 148 pp.

Fischenich, J.C., Buenau, K.E., Jacobson, R.B., Bonneau, J.L., and Fleming, C.A. 2015. Draft Science and Adaptive Management Plan: Missouri River Recovery Program. Version 3. ERDC.

McGowan, C.P., D.H. Catlin, T.L. Shaffer, C.L. Gratto-Trevor, and C. Aron. 2014. Establishing endangered species recovery criteria using predictive simulation modeling. *Biological Conservation* 177: 220-229.

USFWS. 2000. U.S. Fish and Wildlife Service biological opinion on the operation of the Missouri River main stem reservoir system, operation and maintenance of the Missouri River bank stabilization and navigation project, and operation of the Kansas River reservoir system.

USFWS. 2003. U.S. Fish and Wildlife Service 2003 amendment to the 2000 biological opinion on the operation of the Missouri River main stem reservoir system, operation and maintenance of the Missouri River bank stabilization and navigation project, and operation of the Kansas River reservoir system.

Correspondence

Independent Science Advisory Panel memorandum to the MRRIC SAM Work Group and MRRIC. 11 June 2013.

Independent Science Advisory Panel memorandum to the MRRIC SPA Task Group. 27 June 2013.

Independent Science Advisory Panel memorandum to the Missouri River Recovery Management Plan and Effects Analysis Teams. 26 February 2014.

Kate Buenau (Personal Email Communication) December 7, 2014

Kate Buenau (Personal Email Communication) December 9, 2014

Kate Buenau (Personal Email Communication) March 31, 2015



IN REPLY REFER TO:
FWS/R6/ES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
31247 436th Avenue
Yankton, SD 57078



December 4, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter regarding development of
the Missouri River Recovery Management Plan/EIS

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service or USFWS) provides this planning aid letter (PAL) to assist in the development of the U.S. Army Corps of Engineers' (Corps or USACE) Missouri River Recovery Management Plan and associated Environmental Impact Statement (MRRMP-EIS). The Service provides the following comments pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.).

This PAL does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of the FWCA for the MRRMP-EIS, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

The purpose of the MRRMP-EIS is to develop a suite of actions to meet ESA responsibilities for the threatened Northern Great Plains (NGP) population of the piping plover (*Charadrius melodus*), and the endangered interior least tern (*Sternula antillarum*) and pallid sturgeon (*Scaphirhynchus albus*), and the authorized purposes of the operations of the dams using Corps authorities. The geographic scope of the MRRMP-EIS encompasses the main stem portions of the Missouri River from Fort Peck, Montana to St. Louis, Missouri. The MRRMP-EIS will assess the current Corps programmatic impacts, cumulative effects and a range of potential alternatives. The MRRMP-EIS will include an adaptive management process for all Missouri River Recovery Program (MRRP) activities to ensure management decisions and actions are improved by the learning that takes place from research and monitoring of the river.

After discussions with the Missouri River Recovery Implementation Committee (MRRIC) and our review of recent additions to the available scientific information, the Service provides this

letter to clarify and further define our recommendations regarding development of management actions intended to provide habitat for the piping plover and interior least tern as part of the development of the MRRMP-EIS. The information provided herein should be considered in concert with previous statements provided in our letter to Corps dated November 10, 2010.

For clarity of this letter, the Service defines off-channel habitat as areas that are not connected to the main channel hydrologically, energetically, and/or through sediment degradation/aggradation processes. In-channel habitat is defined as areas within or adjacent to and connected with the main channel hydrologically, energetically, and/or to the sediment transport processes; and suitable for productive nesting as defined in the 2011 Final Programmatic Environmental Impact Statement for the Mechanical and Artificial Creation and Maintenance of Emergent Sandbar Habitat in the Riverine Segments of the Upper Missouri River. (USACE 2011)

As you know, the Effects Analysis (EA) lead by Dr. Kate Buenau and Dr. Craig Fischenich and being conducted as part of the MRRMP-EIS planning process has significantly advanced our analytical and predictive capabilities. This effort has utilized more than 20 years of Corps piping plover demographic data and linked it with habitat availability to create predictive models that estimate the extent and temporal availability of habitat necessary for persistence of piping plovers on the Missouri River. This relationship between species persistence and habitat availability relies on our understanding of piping plover reproductive ecology on riverine portions of the Missouri River particularly below Garrison, Fort Randall and Gavins Point Dams. While the relationship between habitat availability and piping plover reproductive success is less certain for reservoir habitat, the model does account for those birds and their contribution to population persistence.

It is from these predictive models that we have been able to provide numerical bird targets in terms of available habitat acres (see Planning Aid Letter dated November 13, 2015). To meet these targets and maintain least terns and piping plovers on the Missouri River, the Service recommends at this time that the Corps develop management actions for the MRRMP-EIS that prioritize creation and maintenance of habitat within the unchannelized river below Garrison, Fort Randall (including the sediment delta of Lewis and Clark Lake) and Gavins Point Dams. The Service encourages continued assessment and model development that considers all potential bird habitat associations within the MRRMP-EIS planning area, concurrent with implementation of adaptive management in continued efforts to better understand and meet species and human considerations needs on the Missouri River.

The MRRP Independent Science Advisory Panel's (ISAP) evaluation of the Draft Bird Adaptive Management Cycle Example (ISAP 2015) contained recommendations to consider "off-channel" habitat for the birds as a management action in the MRRMP-EIS. Additionally on several occasions since 2010, MRRIC has recommended the Service consider "off-channel" nesting habitat as a MRRP management action. These discussions have included habitat within reservoir pools, off-channel habitat similar to sandpits adjacent to the central Platte River and habitat creation in the navigation channel below Ponca, Nebraska. While the Service considers only the sandpit habitat to be off-channel, we do not recommend the development of management actions within the MRRMP-EIS that include the purposeful creation of tern and plover habitat in any of these habitat associations at this time. However, as our knowledge of these habitat associations increases and in the case that it is demonstrated that these habitat associations can function

successfully as tern and plover reproductive habitat, the Service will revisit its current position regarding nesting habitat within the MRRP at that time.

In certain years, Lake Sakakawea and Lake Oahe are important nesting areas particularly for piping plovers. The nesting habitat on these reservoirs is currently maintained by the inter-annual regulation of storing and releasing river basin runoff. Reproductive success is typically highest during drier basin conditions that follow periods of higher reservoir pool levels. Declining reservoir pools expose the newly scoured substrates preferred by the plovers. However, tern and plover nests are frequently at risk of being flooded in the reservoirs with storage of seasonal uncontrolled run-off and the Corps regulation of water levels to meet the Master Manual (USACE 2006) requirements. Since MRRP monitoring of the tern and plover populations within the Missouri River began in 1986, approximately 80 percent of the total incidental take of piping plover eggs and chicks and 58 percent of least tern eggs and chicks were due to rising pool levels in reservoirs. Until we better understand reservoir habitat dynamics in relation to bird densities and reproductive output, and until we develop sustainable habitat-creation techniques on reservoirs that can demonstrate desired levels of reproduction, and because it is necessary to allow the reservoirs to fluctuate in order to protect the reproductively high value habitats below the dams; the Service does not recommend purposefully developing habitat on reservoirs as a management action in the MRRMP-EIS at this time. However, all birds produced and supported on habitat associated with the reservoirs contribute towards meeting MRRMP-EIS species objectives as conferred by the Service in the planning aid letter dated November 13, 2015.

Developing off-channel habitat similar to what occurs adjacent to the central Platte River is frequently referred to as a management strategy that should be considered for piping plover and least tern habitat on the Missouri River. While similarities provide the opportunity for extrapolation of ideas, the Missouri River is different from the central Platte River both ecologically and in regards to its water resource development. The two rivers do not have the same sedimentation or hydrological processes, or predator regime (Jenniges and Plettner 2008). The 90-mile reach of the central Platte River used by the birds is hydrologically limited regarding in-channel flows to isolate nesting colonies and habitat forming and maintenance flows to scour and redistribute habitat within the river channel. This region of the Platte River has a long history of active commercial sand and gravel mining sites, which most of the terns and plovers on the central Platte use for nesting. These off-channel habitat areas on the central Platte River provide better nesting conditions than the marginal habitat occurring on the river itself. Uncertainties regarding the potential contributions of this habitat type on the Missouri River to piping plover and least tern persistence remain. Reproductive potential, habitat preferences and dispersal, land acquisition, feasibility of creation and maintenance would all need to be resolved. As such the Service does not recommend including sand pit habitat management as a management action in the MRRMP-EIS at this time.

The reach of the Missouri River below Ponca, Nebraska is defined by the Bank Stabilization and Navigation Project. Nesting of least terns on this reach has only recently been recorded. This has occurred on sand splays resulting from dike ruptures during the 2011 flood and on sediment aggradation areas within the shallow water habitat project at Deer Island. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed. Many of the same uncertainties existing for reservoir and sandpit habitats exist for habitat in this geographic extent. The value of this habitat to piping plover and least reproduction is unknown. Habitat preferences and dispersal, forage availability, land acquisition, feasibility of

creation and maintenance would all need to be resolved. Considering these uncertainties, the Service does not recommend purposefully developing habitat below Ponca, Nebraska as a management action in the MRRMP-EIS at this time.

Once again, the Service is looking forward to continuing to work collaboratively with you and the MRRIC in support of this important effort to ensure the success and ultimate implementation of a management plan for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. If you have any questions, please feel free to contact me at (605) 665-4856.

Sincerely yours,

v/r *Casey D. Kruse*

Casey D. Kruse
Missouri River Coordinator
US Fish and Wildlife Service
Yankton, SD

Enclosures

cc: Service, Region 6 ARD/ES, Lakewood, CO (Thabault)
Service, Region 3 ARD/ES, Bloomington, MN (Lewis)ARD
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE

Related Correspondence

MRRIC letter to General McMahon & Director Guertin, Approved October 19, 2010 and dated November 18, 2010.

USFWS letter dated November 10, 2010 to the Corps in response to the MRRIC recommendation.

USACE letter to MRRIC dated January 21, 2011.

October 27, 2011 Letter from MRRIC Chairman Mike Mac to the Corps.

January 11, 2012 Letter from the Corps to Chairman Mike Mac.

Literature Cited

Independent Science Advisory Panel's (ISAP) evaluation of the Draft Bird Adaptive Management Cycle Example.

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USACE. 2011. Final Programmatic Environmental Impact Statement for the Mechanical and Artificial Creation and Maintenance of Emergent Sandbar Habitat in the Riverine Segments of the Upper Missouri River., US Army Corps of Engineers, Omaha, Nebraska.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mountain-Prairie Region

31247 436th Avenue
Yankton, SD 57078



IN REPLY REFER TO:
FWS/R6/ES

December 4, 2015

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Planning Aid Letter Regarding the
Missouri River Recovery Management Plan
and Environmental Impact Statement
(MRRMP-EIS) fish and wildlife proxy

Dear Ms. Fitzner:

The U.S. Fish and Wildlife Service (Service or USFWS) provides this planning aid letter (PAL) regarding the development of the U.S. Army Corps of Engineers' (Corps or USACE) Missouri River Recovery Management Plan (Management Plan) and associated Environmental Impact Statement (EIS) in accordance with the Fiscal Year 2015 Fish and Wildlife Coordination Act (FWCA) scope of work, task B4. As a cooperating agency on the Management Plan and EIS, the Service provides the following comments in coordination with the seven Missouri River Mainstem state fish and wildlife agencies pursuant to the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.). Enclosures include letters and emails with comments and suggestions we received from five state fish & wildlife agencies.

This PAL does not constitute the final report of the Secretary of the Interior as required by Section 2 (b) of the FWCA, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

The following comments are specifically in regards to the draft human consideration objective developed for the environmental conservation/fish and wildlife topic. They are a compilation of comments provided by state agencies and Service staff.

Comments

The current methodology uses flows at the 50th percentile over the period of record to determine benefits/impacts to fish and wildlife. Analyzing those flows provides some insight into the

effects of the alternatives on fish and wildlife; however the 50th percentile may overly focus on impacts to species that are generalists. Because more extreme events play a more significant role in benefiting species adapted to extremes, we recommend analyzing the effects of upper/lower decile percentile flows and upper/lower quartile percentile flows to better understand the full range of potential biologic responses.

We recommend that open water habitat be broken into a range of depth and velocity classes. With many native Missouri River fish species in decline, it is important to consider the quantity of each habitat type and its associated functionality to more accurately estimate effects on native fish species. Depth, velocity and seasonality of inundation all play critical roles in determining impacts to floodplain and riverine fish and wildlife species. Classification of aquatic habitats based on water depth and velocity, and analyzing the acreage or percentage of each class/category would provide an index to habitat diversity within the open water category. This will be especially useful since the diverse assemblage of native Missouri River fishes have a wide range of habitat requirements, but may have particular requirements for different life stages. One category that has not normally been considered before is deeper slow water. This habitat appears to be important as a haven for many species and life stages as well as in many different seasons. We propose the Corps include a matrix of the following depth and velocity categories recognizing at this point that velocity analysis may be difficult to complete:

- Velocities: 0-1 ft/sec, 1-2 ft/sec, 2-3 ft/sec, >3 ft/sec
- Depths: 0-3 ft., 3-6 ft., 6-12 ft., 12-20 ft., and >20 ft.

Seasonality of inundation or lack thereof plays an important role in determining fish and wildlife benefits. Currently, the proxy averages inundation over a growing season generally spanning April-October. To better determine the impacts to fish and wildlife, including various life stages, we recommend the year be separated into the following five periods for the length of the Missouri River being analyzed:

- Overwintering late: January 1 – February 28/29
- Early spawning: March 1 – May 14
- Late spawning: May 15 – June 30
- Summer rearing and growth: July 1 – September 30
- Overwintering early: October 1 – December 31

Floodplain habitats can and do support a wide array of fish, wildlife and plants. Through the BSNP, degradation and construction of levees have combined to reduce aquatic habitat diversity and connectivity within the Missouri River floodplain. It is important to ensure that the fish and wildlife proxy has the ability to discriminate between alternatives in regards to habitat diversity and connectivity. Currently, much of the effects analysis appears focused between river levees. There is a large portion of the floodplain behind levees, especially in the lower river, that may have impacts that are not being assessed for the various alternatives. This could come about through groundwater connections of various flows and tributary backwater at high Missouri River stages. Thus, we strongly recommend adding an additional metric that measures public fish and wildlife conservation lands to determine the effects of the various alternatives on fish and wildlife via changes in terrestrial as well as aquatic habitats, and their intersection. This metric should also include a measure of potential connectivity for Missouri River fishes with an examination as to whether or not connectivity provides fish access. Finally, a helpful addition to better understanding the impact of different alternatives on floodplain and wetland habitats may be to consider different assemblages of plant communities in the floodplain and wetland habitats. With regards to the floodplain habitat types and inundation definitions provided, they appear legitimate for the analysis.

The Service, in coordination with Missouri River mainstem state fish and wildlife agencies, is looking forward to continuing to work collaboratively in support of this important effort to ensure the success and ultimate implementation of the Management Plan for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. Please contact me at (605)665-4856 or Wayne Nelson-Stastny at (605)660-5349 for further questions and clarification.

Sincerely yours,

v/r *Casey D. Kruse*

Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

Enclosures

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis)ARD
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Dave Ponganis, USACE
Mark Harberg, USACE

Enclosure 1



DEPARTMENT OF GAME, FISH, AND PARKS

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

July 8, 2015

Wayne Nelson-Stastny
USFWS
PO Box 710
Yankton, SD 57078

Dear Mr. Nelson-Stastny,

Thank you for allowing us to provide comments on the Missouri River Recovery Management Plan (MRRMP) and Environmental Impact Statement (EIS) Fish and Wildlife Proxy under the guidance of the Fish and Wildlife Coordination Act. The South Dakota Department of Game, Fish, and Parks (SDGFP) is charged with managing the fish and wildlife resources of the State of South Dakota and their associated habitats for the benefit of the public. The opportunity to comment on the Fish and Wildlife proxy allows SDGFP to actively participate in the fish and wildlife management process for this inter-jurisdictional river so important to our State.

The United States Army Corps of Engineers (USACE) has decided to use the HEC-RAS modeling to classify acres of multiple habitat types based on the amount of time land is inundated or wetted. While there are many factors that can influence which successional plant community will be present, utilizing the HEC-RAS modeling may provide a good estimate of changes that could occur due to USACE actions. We generally believe that this is a reasonable approach and that the terrestrial habitat classifications are adequate, however, we have some concerns about the current state of aquatic habitat classifications within the proxy.

We believe that there needs to be more consideration given to aquatic habitat types. Under the proposed proxy, all aquatic habitat is classified as "open water." With 51 of 67 fish species native to the Missouri River in decline, it is important to consider the quantity of each habitat type and its associated functionality in order to estimate effects on native fish species. There are two approaches that could help improve the aquatic aspect of the fish and wildlife proxy. Aquatic habitats could be classified as lakes, ponds, scour holes, main channel, side channels and tributaries, however this method may prove difficult and time consuming. An alternative method would be to classify habitats based on water depth and velocity. Analyzing either the acreage or percentage in each level of water depth and velocity could give an index to habitat diversity within the open water category. This may be a more appropriate method, since not all species have the same habitat requirements.

We were informed during the briefing webinar that there is a tool being developed by another USACE office that will facilitate the classification of aquatic habitats. Unfortunately there is great uncertainty about when the tool will be available and if the

data will be available for the round 2 tradeoff discussions or the draft EIS. Due to the importance of the aquatic habitats in the Missouri River, we recommend that the USACE coordinate within its agency to provide a timeline of when more detailed aquatic habitat classifications will be included in the fish and wildlife proxy.

Another component that appears to be missing from the proxy is the seasonality of inundation, and more specific to the aquatic habitats, depth and velocity. The list of current alternatives that are being discussed includes alternatives with both spring and fall releases for habitat creation. Each alternative will likely have different seasonal patterns in regards to inundation, depth, and velocity and could have varying effects on fish and wildlife.

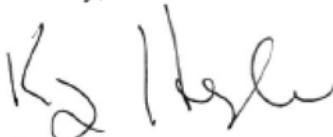
The Bank Stabilization and Navigation Project along with degradation below the dams have reduced aquatic habitat diversity and connectivity within the Missouri River floodplain. Thus it is important to ensure that the fish and wildlife proxy has the ability to discriminate between alternatives in regards to habitat diversity and connectivity. The acreage or percentage of the three wetland types (emergent wetland, scrub-shrub wetland, and riparian woodland/forested wetland) may provide the best indication of differences in floodplain connectivity between the alternatives. Additionally, early alternative discussions included the effects of degradation on human consideration proxies. Does the current fish and wildlife proxy include effects of degradation? Also, how does the model account for reduced sediment availability over the next 50 years?

During the briefing webinar, we were told that we would be provided with information about the length of the cross sections which ultimately define the scope of the habitat modeling. We look forward to receiving this information in a timely matter.

We appreciate the extended comment period and briefing webinars provided as requested. For future input requests, we suggest a similar process that includes a briefing webinar and adequate time to gather input from staff so the states can provide a comprehensive review of materials.

Thank you for this opportunity to provide comments on the fish and wildlife proxy to be used in developing the Missouri River Recovery Management Plan and EIS through the Fish and Wildlife Coordination Act. If you have questions regarding these comments or are in need of additional input please contact our Aquatics Section Chief John Lott 605.773.4508 or Senior Fisheries Biologist Chris Longhenry 605.734.4548.

Sincerely,

A handwritten signature in black ink, appearing to read 'K2 Hepler', written over a horizontal line.

Kelly Hepler,
Department Secretary

KH:da

cc: Tony Leif, John Lott, Chris Longhenry

Office of the Secretary
1020 S Kansas Ave., Suite 200
Topeka, KS 66612-1327

Robin Jensen, Secretary



Phone: 785.296.2281
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www.kdwrp.state.ks.us

Sam Brownback, Governor

June 30, 2015

Wayne Nelson Stasny
U.S. Fish and Wildlife Service
55245 NE Highway 121
Crofton, NE 68730

Dear Wayne:

RE: Fish and Wildlife Coordination Act Comments

Thank you for the opportunity to review and discuss the draft model. First, we appreciate the difficulty of the task to develop a metric or measure to describe biological response to various management actions in a system as vast as the Missouri River. Further, we are confining our comments to how we see the proposal describing a response in the river segment adjacent to the Kansas border.

It appears that what has been presented is an attempt to use a single quantitative measure (water level or stage only) to make a qualitative assessment. The assumption being that more or less is better or worse for fish and wildlife. This approach lacks any qualitative measure. There is no assessment of the varying types of habitat available at a given water level stage. The very basic measures of depth, substrate and velocity and refinements of those typically used to assess habitat suitability are not included.

As an example, slide 10 of the presentation illustrates a "typical" cross section of the system. Within that "typical" cross section there is a wide range of flows or depths in which it appears there is no apparent change in available habitats or diversity of habitats. The apparent implication of the model is that conditions for the pallid sturgeon may be better or worse with more or less flow when the "typical" cross section only indicates vertical movement within a confined channel over a wide range of flows or stages, vertical movement within a confined channel. Similarly, the seasonal habitat needs or habitat needs for various life stages of a target species, such as the pallid sturgeon, appear to be lost with this model. There are differences in the habitat and food source requirements of many species at different stages of their life history. Larval, juvenile, adult and spawning habitat and food needs are not the same. It is not apparent to us the model captures either those needs or how changes affect those needs.

Also, as stated in slide 8 the 50th percentile flow (median flow) is used as the basis for the model. Median flows appear to favor those species which would be considered generalists. Those species which have their needs met over a wide variety of conditions. In this situation the goal is recovery of a species, and other declining species, that do not appear to have their needs met by median conditions in the systems as it exists. The model should assess effects on the target species using a metric (or metrics) that address the specific needs of that species. It is not apparent to us that median flows will accomplish this.

Thank you for the opportunity to provide comments. We look forward to working with you as this effort progresses.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Adams", written in a cursive style.

Steve Adams,
Chief of Planning

Enclosure 3

MDC FWCA input on FW Human Consideration received July 6, 2015

Jennifer Campbell <Jennifer.Campbell@mdc.mo.gov>

Jul 6, 2015

Wayne,

Thanks for the opportunity to review the U.S. Army Corps of Engineers (USACE) fish and wildlife proxies, objectives and metrics for native species other than the three federally listed species. From the conference call, our understanding of the purpose of these fish and wildlife proxies is to conceptualize how a range of river management alternatives, primarily related to flow, would affect native fish and wildlife species. We further understand that the proxies will be used in a trade-offs analysis (Round 1 and 2) and impacts assessment for the Missouri River Recovery Management Plan Environmental Impact Statement (EIS). The trade-offs analysis will seek to balance how management actions are likely to affect different interests on the river, including native species, to help guide future USACE river management efforts. The EIS will seek to demonstrate that a preferred alternative, among the suite of alternatives considered, is the least environmentally damaging practical alternative.

Through a paired Hydrologic River Engineering Center-River Analysis System (HEC-RAS) and Hydrologic Engineering Center -Ecological Function Model (HEC-EFM) modeling approach, the USACE will estimate available habitat acres from the given alternative flow regime by estimating water depths longitudinally along the Missouri River and laterally within the navigation channel, as well as duration of inundation. Some river segments will also estimate water depths within portions of the floodplain. The approach assumes that water depth predicted by the model will meet the needs of native species. The reference dataset of flows is 1933 – 2012, and the 50th percentile flow will be used to estimate the median potential habitat acreage. USACE estimates that the 50th percentile flow represents the typical flow.

Predicting impacts of river management alternatives to native fish and wildlife is a complex undertaking. While Department staff are not experts in these models, there do appear to be some fundamental limitations to the approach that should be addressed. We offer the following technical comments:

1. Potentially available habitats (suitable water depth) could more likely predict functional habitats with a measure of accuracy if the prescribed inundation depth and duration were to occur:
 - A. At a biologically useful time (“correct season”);
 - B. Along with suitable flow velocity;
 - C. On a bank slope conducive to vegetation that supports various life stages and feeding guilds;
 - D. In areas that are hydrologically connected to the River such that native fish and wildlife can access these areas.

2. How will results from the modeling effort be verified? Levees and ditches with drainage tube structures can be expected to prevent areas of suitable elevation from inundation at the corresponding river elevation in some areas. Modeled inundation may not always translate to fish access. Perhaps a combination of LiDAR and field observations could help to develop the fine scale inundation maps that could accurately predict habitat availability.
3. Will using a median (50th percentile flows) approach to reference flows capture the needs of those native, non-endangered species that may be in decline? Such species are rarely generalists. It would seem that a median approach for the period of record (since river modifications began) might be biased towards benefiting the species capable of exploiting the modified river conditions.
4. Defining fish and wildlife habitat by water depth and inundation alone could overestimate the number of acres of habitat capable of supporting fish and wildlife. It is not clear what a result of this model might measure or how it might be interpreted. How would the results provide insight into effects of different alternatives on fish and wildlife species?
5. How will the model account for the effect of soil types on sites that require a longer or shorter hydroperiod to develop the desired plant community? For example, very sandy wetland sites require longer duration of inundation (longer hydroperiod) to develop the desired wetland plant community. Conversely, wetland sites with heavy clay content would need a shorter hydroperiod to achieve the same result. Soil maps are themselves not of sufficient resolution or recent revision to reflect variable hydroperiod needs.
6. Habitat Classes should include a class dominated by annual herbaceous plant species found during short hydroperiods, such as 20-30 days of inundation during the growing season. This would be a wetland habitat class dominated by annual plants with some mix of perennials and share the same Quantitative Hydroperiod as the terrestrial habitat class listed as Forest.
7. Hydroperiods may warrant reconsideration. By observation, there are times during the year when certain habitats are inundated for shorter or longer periods of time than listed in the document.
8. The five fish growing seasons (late overwintering, early spawning, late spawning, summer rearing and growth, and early overwintering) described by Nebraska look consistent with what is observed in Missouri.
9. The effort could consider establishing the life cycle of plants in these wetland habitats.

Thanks for your coordination and for the opportunity to comment. Please contact me with any questions about these comments.

Jennifer

Enclosure 4

NEGPC FWCA input on Fish and Wildlife Human Considerations. Received June 26, 2015

Zuerlein, Gene <gene.zuerlein@nebraska.gov>

Jun 26, 2015

Wayne,

In regards to the fish growing season comments, NGPC used 5 timeframes in the MesoHABSIM study on the Niobrara River. They can be found in the final report by Parasiewicz et al. 2014 located on the NGPC web site (www.outdoornebraska.ne.gov), clicking on conservation, then clicking on water, and then scrolling down to the Niobrara River. In brief the timeframes are as follows:

Overwintering late – Jan1 – Febr 28/29

Early spawning – March 1 – May 14

Late spawning – May 15 – June 30

Summer rearing and growth – Jul 1 – Sept 30

Overwintering early – October 1 – Dec 31

In the report the periods (Table 20) are switched around a bit, but I put them in calendar order sequence for a normal calendar year.

Gene

Enclosure 5

Longhenry, Chris

Aug 11, 2015

to me, Adams, Chris, dfryda, Don, Gene, Kasey, jennifer.campb., Sam, Gerald.Mestl, John

All,

Today during the MRRIC fish and wildlife proxy webinar, the issue was brought up again that the open water habitat category should be split in to multiple classifications based on depth and velocity. The facilitators asked me to provide the parameters for the different depth and velocity classes. Since this has been discussed among this group in the past, I wanted to get your input on what depth/ velocity classes you feel would be most useful for comparing alternatives. I have included a draft set of classifications to get us started. I am open to any suggestions. Also, I would like input on how each of you thinks the year should be split to evaluate seasonal changes. Right now the proxy only includes a April- October growing season. I believe previous discussions indicated the importance of estimating the acreage of each habitat type during each of four seasons, but I can't remember the specific months suggested.

I apologize for the short turnaround, but I would like to send them this information by the end of next week.

Depth	velocity
0-2 ft.	0-0.5 ft./sec
2-5 ft.	0.5-1.5 ft./sec
5-10 ft.	1.5-3 ft./sec
10-20 ft.	>3 ft./sec
>20	

Thanks for your help

Chris

Chris Longhenry

Senior Fisheries Biologist

Game, Fish and Parks

Chamberlain, SD 57325

605-734-4548

chris.longhenry@state.sd.us

Enclosure 6

Larson, Chris J [DNR] <Chris.Larson@dnr.iowa.gov>

Aug 11, 2015

to Chris, me, Adams, dfryda, Don, Gene, Kasey, jennifer.campb., Sam, Gerald.Mestl

One of the mitigation issues Iowa staff has been discussing on the lower river is the lack of deep slow velocity habitat (overwintering habitat). We believe this is also beneficial habitat during the growing season as well.

CHRIS LARSON, Southern Iowa Regional Fisheries Supervisor

Iowa Department of Natural Resources

P (712) 769-2587 | F (712) 769-2440 | chris.larson@dnr.iowa.gov

57744 Lewis Rd | Lewis, IA 51544

Enclosure 7

Zuerlein, Gene <gene.zuerlein@nebraska.gov>

Aug 12, 2015

to Chris, me, Adams, Chris, dfryda, Don, Kasey, jennifer.campb., Sam, Gerald.Mestl, John
Chris,

Different seasons for a fish life cycle. The one we used for an instream flow study was for many warm and cool season species inhabiting the Niobrara River and generally covers most species as follows:

Overwintering Late – Jan 1 – Feb 28

Early Spawning – Mar 1 – May 14

Late Spawning – May 15 – Jun 30

Summer Rearing and Growth – Jul 1 – Sept 30

Overwintering Early – Oct 1 – Dec 31

Normally spawning is on the upswing or downswing slope of a spring runoff event. If you consolidated over wintering into one, there would be 4 seasons, but in terms of water management on a calendar basis, we (Fish Division staff and Piotri-contractor) thought the above timeframes fit most species based on experience and literature.

Gene

Enclosure 8

Stukel, Sam

Aug 14 (6 days ago)

to Chris, Chris, me, Adams, dfryda, Don, Gene, Kasey, jennifer.campb., Gerald.Mestl

I agree with Chris that a deep and slow habitat should be considered as an additional category. Here in the unchannelized MNRR that would cover the #1 type of habitat we go to when we are in search of sturgeon – at any time of year. These would be the slow-water pools behind sandbars. In this reach, such a habitat might be characterized by a depth of 6 – 12' and a velocity of 1 - 2 ft./sec. They are a haven for many species. It seems to me that this type of habitat would be an important part of a diverse river reach.

Otherwise, I think the categories you listed would be helpful in comparing alternatives.

The seasonal component seems like an obvious need. I support using the periods listed by Gene.

Sam Stukel

Fisheries Biologist

South Dakota Dept. of Game, Fish and Parks

31297 496th Ave

Yankton, SD 57078

605-668-5464

sam.stukel@state.sd.us

Enclosure 9

Jennifer Campbell <Jennifer.Campbell@mdc.mo.gov>

8/20/2015

to Chris, me, Adams, Chris, dfryda, Don, Gene, Kasey, Sam, Gerald.Mestl, John
Chris,

MDC data collected through annual HAMP studies lend weight to the need for deep, slow velocity habitat. Some of the highest catch rates of YOY sturgeon species occur in river depths of 2-3 meters that had velocities of 0.5-0.7m/s. Staff suspect velocity could be more important than depth for this life stage.

More frequently staff observe greater depth water in the river correlates to higher velocities, so the results are of interest. Is there a model that defines the relationship between depth and velocity? For example, at point A with a velocity of 0.5 m/s would we get depth X. If we increase velocity to 1.0m/s at the same point would we get depth Y?

MDC staff agree with the habitat categories proposed by Nebraska for spawning times, rearing times, overwintering and migration. Note that these life stages are not limited to April – October, the period considered by USACE for a range of management alternatives, based on the navigation season. Each season and the habitat available during it has an effect on the life stages of pallids and other fish.

Thanks,
Jennifer

Jennifer K. Campbell
Policy Coordinator
Missouri Department of Conservation
(573) 522-4115x3159
Jennifer.Campbell@mdc.mo.gov



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mountain-Prairie Region

31247 436th Avenue
Yankton, SD 57078



April 28, 2016

Ms. April Fitzner
Missouri River Recovery Program
Senior Program Manager
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Missouri River Recovery Management Plan
and Environmental Impact Statement (MRRMP-
EIS) Preliminary Draft Chapter 2: Alternatives

Dear Ms. Fitzner:

As a cooperating agency in the development of the U.S. Army Corps of Engineers' (Corps or USACE) draft Missouri River Recovery Management Plan and associated Environmental Impact Statement (MRRMP-EIS), the U.S. Fish and Wildlife Service (Service) provides the following overarching comments regarding the preliminary draft Chapter 2. We provide these comments in partial completion of Task B3 contained in the draft Fiscal Year 2016 scope of work for the Service pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.). Enclosed is a list of specific comments regarding the draft Chapters 1 and 2.

This letter does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of the FWCA for the MRRMP-EIS, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

The Service appreciates the close coordination during the development of the MRRMP-EIS process and the opportunity to review early drafts of the MRRMP-EIS chapters. Continuing to work together in this effort will allow any significant issues that may impede accomplishing the objectives of the plan to be resolved early in the process and prevent delays in the schedule.

Range of Alternatives

It is the Service's understanding that the alternatives as structured in the MRRMP-EIS were developed to singularly analyze the effects of individual actions because of the difficulty of portraying a multi-faceted alternative with adaptive management to the public. As such, any one of the alternatives disparately displayed may not meet the purpose and need of the MRRMP-EIS.

Alternative 2, which represents the existing BiOp as projected, has a suite of actions that can be implemented to address the needs of the listed species, the endangered interior least tern (*Sternula antillarum*) and pallid sturgeon (*Scaphirhynchus albus*), and the threatened Northern Great Plains (NGP) population of the piping plover (*Charadrius melodus*); therefore, meeting the objectives of the MRRMP-EIS. It is our anticipation that a final selected alternative

will likely require a combination of actions from several of the analyzed alternatives at some frequency, duration, or scale. While the current suite of alternatives may not fully meet the purpose and need of the MRRMP-EIS at this time, the analysis should provide sufficient information on the scope, scale and duration of actions that can be combined to meet the objectives. As the Service and the Corps have discussed, we recommend that the Corps include language in the alternatives chapter and cumulative effects section that discusses the possibility of this approach.

Importance of the BSNP Missouri River Fish and Wildlife Mitigation Project

The 2003 Amended Biological Opinion (BiOP) considered the BSNP Missouri River Fish and Wildlife Mitigation Project (MRFWP) as an important interrelated and interdependent action during past consultations regarding actions on the Missouri River.

The goal of BSNP MRFWP is to restore fish and wildlife lands that were lost or damaged due to the channelization and bank stabilization of the Missouri River below Sioux City, Iowa. The legislation authorizes the purchase of 166,750 acres of land along the river from willing sellers. These lands are then restored with native vegetation, wetlands and water features that connect to the river. While the overarching focus of the BSNP MRFWP is on mitigating losses to the wide range of fish, wildlife, plants and associated habitats that comprise the Missouri River ecosystem, a vital component of the overall effort also provides benefits to the listed species.

The Service will be looking for a clear articulation of how the BSNP MRFWP will be utilized to enhance and enable actions to be completed, to achieve the objectives of this MRRMP-EIS.

Adaptive Management

The Service continues to be supportive and applauds the Corps' efforts in developing the Adaptive Management Plan (AM Plan) in concert with the MRRMP-EIS. While the Service recognizes that this review is focused on the proposed alternatives, we remain keenly interested in how adaptive management will be integrated within the alternatives. How the AM Plan will guide and adapt the implementation of actions through the decision space defined in this EIS; how decision criteria, thresholds, triggers and time frames will be used to initiate meaningful actions and/or subsequent regulatory requirements; and defining a clear commitment to change will be paramount to successfully achieving the objectives contained in the MRRMP-EIS.

The Service is looking forward to continuing to work collaboratively in support of this important effort to ensure the success and ultimate implementation of the MRRMP for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. Please contact me at (605) 665-4856 for further questions and clarification.

Sincerely yours,

Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

Enclosures

cc: USFWS, Region 6 ARD/ES, Lakewood, CO (Thabault)
USFWS, Region 3 ARD/ES, Bloomington, MN (Lewis)ARD
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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mountain-Prairie Region

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September 14, 2016

Ms. April Fitzner
Senior Program Manager
Missouri River Recovery Program
U.S. Army Corps of Engineers
601 E 12th Street
Kansas City, Missouri 64106

RE: Interception Rearing Complex Targets

Dear Ms. Fitzner:

As a cooperating agency in the development of the U.S. Army Corps of Engineers' (Corps or USACE) draft Missouri River Recovery Management Plan and associated Environmental Impact Statement (MRRMP-EIS), the U.S. Fish and Wildlife Service (Service) provides the following *recommended targets for Interception and Rearing Complexes*. We provide these comments in partial completion of the draft Fiscal Year 2016 scope of work for the Service pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 et seq.), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347), and pursuant to the Endangered Species Act (ESA) of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.).

This letter does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of the FWCA for the MRRMP-EIS, nor does it constitute reconsultation of the 2000 and 2003 Amended Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System (BiOp) under section 7 of the ESA.

Interception Rearing Complex Targets in an Adaptive Management Context

The Service is providing the following recommendations to the Corps with regard to Interception Rearing Complexes (IRCs) Targets in an Adaptive Management context.

The Service supports the Adaptive Management process with regards to learning, modifying, and testing the IRC hypotheses and implementation of this habitat component. Our recommendations reflect a progression of implementation based upon learning and improving IRC's provided the hypotheses remains valid for the duration of the temporal scope of this EIS. Ultimately these efforts would lead to determination of a Level 4 implementation target within the temporal scope of the EIS.

These recommendations emanate from the June 2016 In Progress Review during which a request was made of the Service to provide recommendations on three components making up the level of implementation of IRCs:

- Study phase equivalent to 2 sites/year totaling 12 sites within 6 years
- Refurbishing existing Shallow Water Habitat sites
- Define additional IRC's needed to achieve the EIS objectives

These recommendations are intended as a step-wise progression of implementation for each of the above components within an Adaptive Management context.

While the functionality of IRC habitat has been only in part defined, we recognize that further refinement of IRC habitat will continue within the AM process. We recommend inclusion of the following to aid in computation of successfully implemented IRC habitats:

- I = Interception as a binary response, interception of particles (drifting larval pallid larvae) is or isn't occurring. In the future this component could be parsed out further based upon the relative rate of interception occurring.
- RC = Rearing Complex consisting of newly produced Food Producing and Foraging Habitat. Acre-days / year is the metric that will be utilized to define the amount of Rearing Complex habitat produced. Further discussion regarding the associated hypotheses can be found within the Missouri River *Scaphirynchus albus* (pallid sturgeon) effects analysis-Integrative Report 2016 - pages 112-120 (Jacobson *et al.* 2016). We anticipate improvements in determining the effectiveness of this metric in the near future.
- For computational purposes the amount of IRC's constructed in a given year will equal the sum of I(RC). We also recommend continuation of ongoing efforts to determine the biological significance of IRC's to the pallid sturgeon and refinement of a metric(s) measuring IRC's relationship to pallid sturgeon survival.

Flows play an important role in the function of IRC habitat and provide a means for producing IRC habitat. Although the Service is not requesting that flows be manipulated to implement IRC habitat during the study phase, the role of ambient flows should be included in all assessments should the need arise to utilize flows to help achieve IRC implementation targets in the future.

Following is a series of stages of IRC implementation recommendations:

Stage 1 – Begin study phase:

- Duration three years.
- At least two IRC sites constructed per year paired with control sites.
- Amount of functional IRC habitat added each year is equivalent or greater than 33,000 acre-days/year.
- Assess existing SWH habitat sites and determine potential for refurbishing as IRC sites.

Assessment:

- Assess IRC complexes.
- If results are positive or equivocal proceed to Stage 2 (decision criteria TBD).
- If hypotheses are no longer valid, discontinue efforts (decision criteria TBD).

Stage 2 – Continuation of study phase, refurbishing of SWH sites, and determination of level 3 implementation.

- Duration three years.
- At least two IRC sites constructed per year paired with control sites.

- Amount of functional IRC habitat added each year is equivalent to or greater than 33,000 acre-days/year.
- Refurbish SWH habitat sites in addition to study sites (rate TBD).

Assessment:

- Assess IRC complexes and refurbishment.
- If results are positive or equivocal proceed to Stage 3 (decision criteria TBD).
- If hypotheses are no longer valid, discontinue efforts (decision criteria TBD).

.Stage 3 – Level 3 implementation and determination of level 4 implementation.

- Duration four years.
- Continue assessing study sites and refurbished sites.
- Culminate refurbishing existing SWH sites as warranted.
- At least 66,000 acre-days/year of functional IRC habitat added each year. The ultimate rate of level 3 implementation needed to determine level 4 implementation rates within four years will be informed by Stages 1 & 2.

Assessment:

- If the hypotheses are no longer valid, discontinue efforts (decision criteria TBD).
- Based on results determine Level 4 IRC target and implementation rate.

Stage 4 – Level 4 implementation to ultimately remove paucity of IRC habitat as an issue to pallid sturgeon survival.

- Implement IRC habitats at level 4

The Service appreciates the opportunity to provide these recommendations to realize recovery of the listed species on the Missouri River. The Service is looking forward to continuing to work collaboratively in support of this important effort to ensure the success and ultimate implementation of the MRRMP for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. Please contact me at (605) 665-4856 for further questions and/or clarification.

Sincerely yours,

Casey D. Kruse
USFWS Missouri River Coordinator
Yankton, SD

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Citation

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Fish and Wildlife Coordination Act Report
for the
Missouri River Recovery Management Plan
and
Science and Adaptive Management Plan



Prepared by:

U.S. Fish and Wildlife Service
Division of Ecological Services
Yankton, South Dakota
Region 6
Denver, Colorado



August 2018



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Acronym List

AM	Adaptive Management
BiOp	Biological Opinion
BSNP	Missouri River Bank Stabilization and Navigation Project
Corps	U.S. Army Corps of Engineers
DEIS	Draft Environmental Impact Statement
DOI	Department of the Interior
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESH	Emergent Sandbar Habitat
FEIS	Final Environmental Impact Statement
FWCA	Fish and Wildlife Coordination Act
IRCs	Interception and Rearing Complexes
ISAP	Independent Science Advisory Panel
kcfs	thousand cubic feet per second
MAF	million acre-feet
Mitigation Project	BSNP Fish and Wildlife Mitigation Project
MRMM	Missouri River Mainstem Reservoir System Master Water Control Manual
MRRIC	Missouri River Recovery Implementation Committee
MRRMP	Missouri River Recovery Management Plan
MRRP	Missouri River Recovery Program (also Program)
NEPA	National Environmental Policy Act
ROD	Record of Decision
RPA	Reasonable and Prudent Alternative
SAMP	Science and Adaptive Management Plan
System	Missouri River Mainstem Reservoir System
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WRDA	Water Resources Development Act

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Fish and Wildlife Coordination Act Report for the Missouri River Recovery Management Plan and Science and Adaptive Management Plan

Introduction

The Fish and Wildlife Coordination Act (FWCA) provides a basic procedural framework for the orderly consideration of fish and wildlife conservation measures to be incorporated into Federal and federally permitted or licensed water development projects. The FWCA requires action agencies to consult with the U.S. Fish and Wildlife Service (Service) and the relevant state fish and wildlife agency or agencies whenever any department or agency of the United States or any public or private agency under Federal permit or license proposes or authorizes the waters of any stream or body of water in the United States to be impounded, diverted, channelized, controlled, or modified for any purpose whatever with a view to conservation of fish and wildlife resources.

The FWCA also requires that “wildlife conservation shall receive equal consideration with other project features” and “be coordinated with other features of water-resource development programs through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation and rehabilitation ...” Section 2(b) of the FWCA requires reports and recommendations of the Service and state fish and wildlife agencies to be given full consideration and included in project reports to Congress or to any other relevant agency or person for authorization or approval.

This report constitutes the Service’s FWCA Section 2(b) report on the U.S. Army Corps of Engineers’ (Corps) proposed Missouri River Recovery Management Plan (MRRMP) and Science and Adaptive Management Plan (SAMP). This report will accompany the Final MRRMP/Final Environmental Impact Statement (FEIS) when published.

Habitat conservation and restoration are fundamental to achieving the Service’s mission to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Delivering sustainable conservation must rely on concerted efforts with all our partners, using their full suite of authorities and opportunities, to recognize, quantify, and enhance the value of fish and wildlife for people. The Service works with others to mitigate losses of fish, wildlife, and their habitats, and uses thereof from land and water developments using our Mitigation Policy (Federal Register, Vol. 46, No. 15, January 23, 1981 as corrected February 4, 1981). Our mitigation policy is established in accordance with the Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)-754) and (16 U.S.C. 661 – 667 (e)), the Watershed Protection and Flood Prevention Act (16 U.S.C. 1001 - 1009), and the National Environmental Policy Act (42 U.S.C. 4321 – 4347).

The purpose of the MRRMP as described in that document is “to develop a suite of actions that meets Endangered Species Act (ESA) responsibilities for the endangered pallid sturgeon (*Scaphirhynchus albus*) and interior population of the least tern (*Sternula antillarum*), and the threatened Northern Great Plains population of the piping plover (*Charadrius melodus*). Authorities used to meet this purpose may include existing Corps authorities related to Missouri River System operations for listed species and acquisition and development of land needed for creation of habitat for listed species provided by Section 601(a) of Water Resource Development Act (WRDA) 1986, as modified by Section 334(a) of WRDA 1999, and further modified by

Section 3176 of WRDA 2007, although alternatives formulation was not limited to these authorities.” The Draft Environmental Impact Statement was clear that the proposed management actions are intended to provide benefits to least terns, piping plovers and pallid sturgeon and we believe those actions may also provide benefits to other native species.

To reflect the intent to meet ESA responsibilities, the MRRMP/EIS also had the following Fundamental Objectives:

- Avoid jeopardizing the continued existence of the threatened Northern Great Plains population of the piping plover due to the U.S. Army Corps of Engineers actions on the Missouri River.
- Avoid jeopardizing the continued existence of the endangered Interior Least Tern due to the U.S. Army Corps of Engineers actions on the Missouri River.
- Avoid jeopardizing the continued existence of the pallid sturgeon due to the USACE actions on the Missouri River.

The Service anticipates, in collaboration with the MRRP, that regular evaluation of new available information obtained from monitoring and research will be undertaken, and that pertinent findings will be utilized to update the models used, adapt and refine the management actions, objectives, sub-objectives, metrics, and targets.

The purpose of this report is to identify and evaluate fish and wildlife resource concerns, opportunities, and specific recommendations for the MRRMP and SAMP to ensure fish and wildlife resources receive equal consideration with other project purposes. This report includes (1) background information for this document, (2) identification of problems or issues and opportunities regarding fish and wildlife resources, (3) planning objectives within the MRRMP planning area, (4) an impact analysis of the Corps’ planning alternatives, (5) recommendations on conservation and mitigation measures, and (6) the Service’s position regarding the MRRMP. This report is based on several planning aid letters and memorandums previously submitted to the Corps regarding the fish and wildlife issues within the project area (Appendix A), and information received from the Corps staff, Service field staff, state biologists, and species experts. The Service also considered the most recent studies and monitoring data; assumptions and uncertainties on the relationships between the populations and environmental conditions; and management actions, especially flow management and mechanical habitat creation to develop this document.

Pursuant to the FWCA, the Service coordinated development of this document with the state fish and wildlife agencies of Montana Fish, Wildlife and Parks; North Dakota Game and Fish Department; South Dakota Department of Game, Fish, and Parks; Nebraska Game and Parks Commission; Iowa Department of Natural Resources; Kansas Department of Wildlife, Parks and Tourism; and Missouri Department of Conservation. Comments received from these State Fish and Wildlife Agencies have been incorporated into this report.

Background Information

Historically, the Missouri River was a diverse, unaltered, 2,341 mile-long dynamic riverine/floodplain ecosystem of braided channels, cottonwood stands, chutes, sloughs, islands, sandbars, backwater areas, mudflats, deep pools, and natural floodplain communities. These

riverine and floodplain habitats were maintained by a dynamic equilibrium of continuous bank erosion and deposition, which constantly reshaped the channel and floodplain. The river carried a high sediment load, thus earning the nickname "Big Muddy," and had a high propensity for flooding and changing the locations of its channel. Typical river flows rose throughout the spring and peaked in late June, then declined throughout the summer and fall reaching their low point in late December. In the lowermost reach in Missouri, a slight rise occurred in October/November from fall rains. This variety of habitats supported numerous wildlife species that together made up a healthy ecosystem.

Many of the habitats, while still in existence today, are greatly reduced in size, are fragmented across the landscape and are functionally disconnected from the river's hydrology. Fish and wildlife values associated with the "natural" Missouri River ecosystem were significantly altered by construction and operation programs of the Pick/Sloan Plan (1944 Flood Control Act) and the Missouri River Bank Stabilization and Navigation Project (BSNP). These programs, administered by the Corps and the Bureau of Reclamation, transformed the free-flowing natural river into a system of seven main stem reservoirs and highly altered riverine reaches influenced by regulated flows, self-channelization, and bank stabilization. In addition to the main stem modifications, the river is influenced by: a) extensive reservoir development in the large tributary basins of the Platte, Kansas, and Osage Rivers; b) channelization of floodplain tributaries; and c) extensive levees along the lower Missouri River (hereafter river) and major tributaries.

Section 2(g) of the FWCA requires any project that controls, modifies or diverts water, or any unit of such project authorized before August 12, 1958, the date of enactment of the FWCA, that was less than 60 percent complete at the time the Act was passed, was subject to the provisions of the Act. The Corps determined at that time that the BSNP below Sioux City was 58 percent complete on the day the Act was signed into law; therefore the BSNP was subject to the FWCA. The Corps commenced work to complete a plan that recommended mitigation measures to offset some of the adverse impacts to fish and wildlife habitat caused by the BSNP.

Roughly 168,000 acres of natural channel and 354,000 acres of meander belt habitat have been lost from the lower 735 miles of the river (Table 1). The BSNP alone reduced shallow water habitat (0-5 foot depths) by up to 90 percent in some river reaches, eliminated 50 percent of the river's surface area, virtually eliminated sandbars and islands, and resulted in the conversion of nearly 67,000 acres of riverine habitat into, primarily, privately owned and leveed agricultural land. Floodplain forest was reduced from 76 percent of floodplain vegetation in the 19th century to 13 percent by 1972.

Table 1. USACE-Estimated Habitat Losses due to BSNP, 1912-2003

State	River Channel	Meander Belt		Total
	Aquatic	Terrestrial	Terrestrial	acres
Missouri	55,900	27,700	221,400	305,000
Iowa	17,100	18,700	29,600	65,400
Kansas	9,100	2,000	44,000	55,100
Nebraska	18,200	19,400	59,000	96,600
Total	100,300	67,800	354,000	522,100

While the lower river was being modified for navigation, over one third of the river's total length was inundated by reservoirs in the upper basin, converting free-flowing river, bottomland timber, marshes, grasslands, and sandbars to deep water. Although some sections of the river does not fall under the provisions of the FWCA, in Nebraska and South Dakota alone, 117,000 acres of timber, 84,000 acres of river, and 10,000 acres of sandbar were lost. Flows have been modified primarily to meet flood control, navigation, and hydropower objectives. Consequently, the normal flow pattern has been significantly altered, with spring high flows suppressed drastically and low summer and fall flows increased. Downstream of Kansas City, the effect of the dams on flows is moderated by large tributary inflows.

The Service and our state fish and wildlife conservation partners have worked with the Corps over the last 70 years to improve and conserve fish and wildlife resources in and along the Missouri River to benefit the public and ensure those resources receive equal consideration with the other project purposes in development of the Corps Missouri River System (i.e., construction and operation of the Main Stem reservoirs) as well as the 750-mile BSNP.

The Service and state agencies have provided ongoing fish and wildlife recommendations throughout that time, including planning input during the BSNP Fish and Wildlife Mitigation Project (Mitigation Project), Missouri River Master Manual (MRMM) revisions and associated Biological Opinions under the ESA, as well as regular coordination during project implementation. The BSNP Mitigation Project was authorized in Section 601(a) of the 1986 WRDA and modified by Section 334(a) of WRDA 1999 to acquire and develop lands to mitigate for lost habitats due to the BSNP.

The Service has issued Biological Opinions in 1990, 2000, 2003 and 2018 under the ESA addressing Corps operations of the Missouri River system, (i.e., Missouri River Main Stem System, operation and maintenance of the BSNP, and operation of the Kansas River Reservoir System). The Service determined that Corps operation of the system was likely to jeopardize the continued existence of the endangered interior least tern, and the threatened Northern Great Plains piping plover in 1990 and 2000, and the endangered pallid sturgeon in 2000 and 2003. To offset those effects, the Biological Opinion (BiOp) directed the Corps to restore a portion of the historic habitat and hydrological functions/processes of the river. In the short-term, pallid sturgeon population augmentation and research would complement ongoing habitat acquisition, restoration, and monitoring, within an adaptive management framework. The 2018 BiOp determined that the Proposed Action will stabilize or improve the population abundance, and increase survival of the pallid sturgeon, piping plover, and interior least tern through implementation of the Science and Adaptive Management Plan, conservation measures, and the Section 7(a)(1) plan. The 2018 BiOp conclusion is that the Proposed Action will not jeopardize the continued existence of the pallid sturgeon, piping plover, and interior least tern and will not destroy or adversely modify designated critical habitat for the piping plover.

The 2007 WRDA (SEC. 3176) expanded the Corps authority to use the funds made available for recovery or mitigation activities in the lower basin of the Missouri River for recovery or mitigation activities in the upper basin of the Missouri River, including the States of Montana, Nebraska, North Dakota, and South Dakota. Most recently, the Corps combined the BSNP

Mitigation Project with activities to comply with the ESA to become the Missouri River Recovery Program (MRRP).

The MRRMP-EIS is an effort to incorporate new scientific information into management actions for pallid sturgeon, least terns, and piping plovers and to develop an Adaptive Management Plan. The current effort is to “to develop a suite of actions that meets Endangered Species Act (ESA) responsibilities for the endangered pallid sturgeon (*Scaphirhynchus albus*) and interior population of the least tern (*Sternula antillarum*), and the threatened Northern Great Plains population of the piping plover (*Charadrius melodus*).” The MRRMP planning process provides an opportunity for the Corps to objectively assess recent scientific findings regarding Corps Missouri River management effects on federally listed species, their habitats and ecosystem processes to determine a sustainable path forward through analysis of a robust and comprehensive range of actions and alternatives. The Service considers this effort an important component of the adaptive management approach to implementing fish and wildlife conservation on the river and believes many of the actions undertaken on behalf of the identified listed species will also provide some benefits to other fish and wildlife species along the Missouri River.

Description of the Project Area and Fish and Wildlife Resources

The Missouri River basin encompasses 530,000 square miles—approximately one-sixth of the continental United States. The Missouri River flows 2,341 miles from its headwaters in southwestern Montana to its confluence with the Mississippi River near St. Louis. One-third of the Missouri River is impounded by dams/reservoirs; one-third is channelized/stabilized; and one-third is free-flowing but regulated by Corps’ operations. The Corps’ MRMM prescribes operation of system storage and release for the multiple project purposes of flood control, irrigation, downstream municipal and industrial water supply and water quality, navigation, hydropower production, recreation, and fish and wildlife.

Although anthropogenic changes have altered many of these natural processes, important habitats still remain for Federal trust species and a variety of other wildlife: at least 300 species of birds, 150 species of fish, 60 species of mammals, and 50 species of reptiles and amphibians. The dynamic nature of the Missouri River means that habitats change on a daily, seasonal, annual, and long-term basis. Erosive forces constantly transport sediment down the river, creating and modifying habitat and removing terrestrial vegetation from some areas while creating suitable conditions for new plants to grow in other areas. Seasonal river flow patterns flood river-bottom wetlands and maintain lakes in the floodplain that provide important wildlife breeding and foraging habitat. The combination of open water, floodplain wetlands, and riparian vegetation is particularly important for the large number of migratory birds that use the Missouri River during spring and fall migrations.

The following is a list of fish and wildlife habitats that can be found in and along the Missouri River (Copied from Gagnon, et al. 2013 Unpublished Paper).

1. **Thalweg/Mid-channel:** This habitat includes the line of maximum depth and velocity in the river channel as well as the area of channel from the edge of the thalweg to the edge of the channel border on both sides. It supports flow, sediment transport, longitudinal connectivity, and vertical water movement in the river system. Included in this habitat are channel crossovers that connect habitat on one bank to the opposite bank and provide

habitat for many fish and invertebrate species. Bedform topography and contour, depth, velocity, substrate, and sediment regime vary throughout this area.

2. **Riverbank/Cut Bank:** Riverbank habitats are the shifting channel margins containing diverse and dynamic microhabitats with varying slopes, vegetation types, shading, woody debris, and sediments. The riverbank/cut bank is a major source of sediment to the river system due to erosion and deposition processes as well as avulsion and meandering. Where rocky outcrops form the riverbank, boulders, cobbles, and gravels form the underlying river bed, although this is a relatively uncommon substrate type throughout most of the river which typically has a sandy bed. Riverbank/cut bank habitat may include small pools along the bank, which are fed by hyporheic flow. The riverbank/cut bank is utilized as refuge, nesting, and forage habitat by numerous species.
3. **Channel Margin:** The channel margin is the shallow water habitat between the floodplain and the thalweg/midchannel. This area generally is a low-energy and low-velocity habitat.
4. **Secondary Channel:** Secondary channel habitats including chutes and side channels are connected by surface flows to the main channel and typically contain less flow and reduced velocity and depth compared to the mainstem channel. Most secondary channels are connected at the upstream and downstream ends, although some exhibit this connectivity only during high flows.
5. **Pool:** Pools are generally areas of slower velocity and greater depth within the river channel. They are dynamic in nature and are formed and actively altered by erosion and scour. Frequently they occur at river bends, downstream of in-stream sandbars, woody debris jams, or other in-stream obstructions (Keller and Swanson 1979; Abbe and Montgomery 1996; Galat et al. 2001). Pools provide overwintering habitat for fish (Berry and Young 2001).
6. **Sandbar:** A bar is a raised deposition of sand, gravel, or cobble generated by hydrological processes in the river. Bars are found within the channel and along the channel margins and include wet or dry and vegetated or unvegetated types. Bar habitats vary in relation to hydrologic regime, presence or absence of large wood, vegetation structure, temporal and spatial distribution, and topography. The water table in this habitat type is variable and flows may be slow or have zero velocity. The bar and associated shallow water habitat is dynamic, either aggrading or degrading as sediment is deposited or eroded. Sediment movement is determined by flow and grain size. During low flow, sand, gravel, cobble, or other sediment stops and settles, whereas during high flow, habitats are created and exposed. A wide range of species utilize this habitat, including birds, amphibians, reptiles, fish, and shellfish.
7. **Island (habitats overlap with floodplain ecosystems):** Islands are areas of elevated substrate within the channel that contain well developed vegetative structure. Islands form either from flood deposited sediment that has developed more permanent vegetation or through the isolation of floodplain fragments from avulsion (Hesse 1996). Some islands may have formed from substrate deposition around large snag piles. Vegetation is diverse, and varies depending on the stability of the reach. It may consist of woody vegetation, savanna, or multiple succession stages, although the common woody species of this habitat is the cottonwood. Inundation is infrequent due to higher elevations; however, islands can contribute organic matter to the river system when flooding occurs (Hesse et al. 1988). Islands split the waterbody channel, thereby creating a more varied habitat.
8. **Floodplain (habitats overlap with floodplain ecosystems):** The floodplain consists of

lands adjacent to the river channel. The elevation of the floodplain generally occurs at about the stage of the mean annual flood. Through natural riverine processes of flooding, erosion, and deposition, the floodplain contributes nutrients, sediments, and large wood to the river system (Ward and Stanford 1995). During high-flow events, floodwaters erode and deposit alluvial features throughout the floodplain, dissipating energy from the flood pulse. After the flood pulse recedes, the floodplain does not remain uniformly wet.

9. **Fringe Wetland/ Vegetated Mudflat:** Fringe areas consist of wetlands and vegetated mudflats along areas of flow. They provide a link between the channel and mudflats or backwaters. Fringe areas are a transitional state of mudflats. This habitat is characterized by low flow and low sediment inputs although when sedimentation occurs, it is fine sized and high in organic content. Fringe habitat provides a refuge for young of the year fish and juvenile turtles as currents are slow and predators are less abundant.
10. **Oxbow Basin:** Oxbows are formed by channel migration and cutoff, leaving an open water area isolated from the main channel except during high-flow events. Hydrologic connectivity is provided by groundwater or overland inundation. Water levels are deep; however, they become shallower as they fill with sediment and organic debris, eventually transitioning into emergent marshes.
11. **Backwater:** Backwaters consist of shallow low-flow lakes and wetlands connected by surface water to the main channel at the downstream end. Backwaters are unstable and form during flooding events, following subsidence and compaction of floodplain soils, or develop from channel migration and infilling. Flow occurs on a seasonal cycle and depends on inundation from the main channel but is generally very low or lacking for most of the year. Backwaters are generally warm, high in organic matter, and potentially low in dissolved oxygen (Eckblad et al. 1984; Bayley 1995; Sargent and Galat 2002) at some times of the year.
12. **Unvegetated Mudflat:** The primary characteristics of unvegetated mudflats are a lack of vegetation and fine sediment size (silt or clay). Flow is low and the water table fluctuates, often causing the formation of ephemeral pools. Organic matter content is high.
13. **Emergent Wetland/ Marsh:** Emergent areas are found as part of mudflats, oxbows, and backwater lakes. They are dominated by macrophytes, such as broad-leaved cattails and phytoplankton such as diatoms. This habitat experiences frequent disturbance from flooding, scouring, herbivory, trampling, and fire (LANDFIRE 2009). Sediment is transported to and from the habitat with flood events.
14. **Open-water Wetland Depression (habitats overlap with floodplain ecosystems):** Relatively shallow, undrained depressions with year-round open water and without surface water connection except during flood flows. These habitats include sloughs and lentic areas of various shapes and sizes. Many of these habitats have formed in former primary or secondary river channels. It is connected to the main channel during high-flow events (Knowlton and Jones 1997).

The significant degradation and alterations to the key physical drivers of the Missouri River ecosystem (river flows, sediment transport, river habitat quality, and river-floodplain connectivity) have cascading and compounding effects on each other and on other important physical conditions (water chemistry and temperature, river-floodplain habitat turnover, river habitat size and connectivity, and floodplain habitat quality); and the effects of all these alterations on the ecosystem-scale biotic conditions that depend on them (river food web, native river wildlife, native floodplain wildlife, native river and floodplain vegetation) (Table 2). The

severely degraded and altered key physical drivers of the Missouri River ecosystem have had severe ecosystem-scale biological effects. The riverine alterations also combine with alterations affecting the river and floodplain systems together (e.g., altered river-floodplain connectivity), and alterations affecting the floodplain ecosystem alone (e.g., conversion of floodplain habitat to intensive land uses), to produce even greater biological alteration to the Missouri River floodplain ecosystem.

Many of the natural habitats remaining in the project area occur in or adjacent to public lands managed for conservation. The Department of Interior (DOI) and each state along the river manage portfolios of conservation lands for the benefit and enjoyment of the public. These public lands include some of the best remaining habitats in the project area, and provide ecological services, economic benefits and environmental education and enjoyment to millions of people.

Currently, the BSNP Mitigation Project has acquired, protected or restored fish and wildlife habitat on over 71,000 acres of land along the Missouri River, from South Dakota through Missouri. Many of these areas provide important aquatic habitats that were lost through construction of the channel. Other state and Federal conservation land form a critical network of habitats that vary seasonally and annually to support hundreds of species. The intersection of land and water is fundamental to the ecological functions these lands provide. Connecting larger blocks of habitat allows species to move throughout the river and floodplain to meet their life requirements. Hydrologic connectivity is equally as important as spatial connectivity, especially to allow aquatic organisms to access temperature or velocity refugia, important nursery and forage areas, and high quality spawning habitats. Much of the floodplain that is connected to the river can be found on these conservation lands. River management that accounts for continued change in climate, channel morphology, and hydrologic patterns is critically important to ensure these lands continue to support fish and wildlife in the future.

Table 2. Key Missouri River Physical Drivers, Physical Conditions and Biotic Conditions

Physical Drivers	River Flows	The flow regime of a river, including the natural pattern of inter- and inter-annual variation in flows, and extreme events to which native species have adapted.
	River Sediment	The amount, size, and types of substrates carried by the river that form river and floodplain habitats and shape the organisms occupying them.
	River Habitat Quality	The natural environments in the river channel where organisms live, feed, grow and reproduce, including main channel, side channels, backwaters, pools, and channel margins.
	River-Floodplain Connectivity	The ability of the river to spread out of the channel across the floodplain, providing life requisites of numerous aquatic and floodplain species; nutrient dispersion and exchange; and creation, maintenance and redistribution of habitats.
Physical Conditions	River Water Chemistry	The dissolved and suspended components of water that strongly shape the presence, health, and survival of organisms.
	River Water Temperature	The thermal conditions that seasonally affect river morphology (e.g., ice dams), and strongly affect organismal growth, development, metabolism, and the timing of migration, spawning and hibernation.
	River-Floodplain Habitat Turnover	The ability of the river to naturally shift laterally and longitudinally across the floodplain, forming and reworking banks, meanders, sandbars, and other habitats.
	River Habitat Size & Connectivity	The amount of mainstem channel and side-channel habitat, and the extent to which mainstem and lower reaches of large tributaries are barrier-free, and allow the up- and downstream movements of aquatic species and transported matter.
	Floodplain Habitat Quality	The natural environments in the floodplain where organisms live, feed, breed, and raise their young, including marshes, wetlands, oxbow lakes, forests, prairies, and shrublands.
	Floodplain Habitat Size & Connectivity	The amount of natural habitats on the floodplain and the extent to which barrier-free movement of native organisms and materials can occur.
Biotic Conditions	River Food Web	The production, storage, consumption, and movement of energy and food resources through all trophic levels in the river system.
	Native River Wildlife	Composition, diversity, and abundance of native riverine faunal assemblages.
	Native Floodplain Wildlife	The native fauna that reside in the floodplain and depend on it for activities such as feeding, nesting, rearing young, and hibernating.
	Native River and Floodplain Vegetation	Native plant communities of the river, channel margin, and floodplain, including marshes, forests, shrubs, wetlands, tallgrass and shortgrass prairies.

Other Federally Listed and At Risk Species

The major focus of this Corps planning effort is avoiding jeopardy to three federally listed species: the pallid sturgeon, the Interior least tern and the piping plover. The EIS, associated documents, and many of the Service's documents listed above provide detailed information on current status, species needs, and recovery actions to support their conservation. This section will focus on several other federally listed or at risk species that occur in and along the Missouri

River system that would benefit from appropriate restoration activities and mitigation lands. The Corps has developed a Section 7(a)(1) Conservation Plan that would be implemented complementary to the other actions identified in the MRRMP (USACE 2017, Appendix D). This plan includes a conservation strategy to avoid adverse impacts to gray bat, Indiana bat, and northern long-eared bat.

Indiana bat (*Myotis sodalis*), federally listed endangered – From late fall through winter Indiana bats in Missouri hibernate in caves in the Ozarks and Ozark Border Natural Divisions. During the spring and summer, Indiana bats utilize living, injured (e.g., split trunks and broken limbs from lightning strikes or wind), dead or dying trees for roosting throughout the Missouri River system. Indiana bat roost trees tend to be greater than 9 inches diameter at breast height (dbh) (optimally greater than 20 inches dbh) with loose or exfoliating bark. Most important are structural characteristics that provide adequate space for bats to roost. Preferred roost sites are located in forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, which is usually within 1 km (0.6 mi.) of water. Indiana bats forage for flying insects (particularly moths) in and around the tree canopy of floodplain, riparian, and upland forests.

Northern long-eared bat (*Myotis septentrionalis*), federally listed threatened - The Northern long-eared bat occurs throughout Missouri and Iowa, and similar to the Indiana bat, roosts in caves (or habitats similar to caves) during the winter and under loose tree bark or in tree cracks or crevices during the summer. The northern long-eared bat can also be found in forested habitats in Kansas, eastern Montana, Nebraska, North Dakota and South Dakota.

Gray bat (*Myotis grisescens*), federally listed endangered - The gray bat occupies a limited geographic range in limestone karst areas of the southeastern United States, including Kansas and Missouri. With rare exception, the gray bat roosts in caves year-round. In winter, most gray bats hibernate in vertical (pit) caves with cool, stable temperatures below 10 degrees Celsius. Summer caves, especially those used by maternity colonies, are nearly always located within a kilometer (0.6 mile) of rivers or reservoirs over which bats feed. The summer caves are warm with dome ceilings that trap body heat. Most gray bats migrate seasonally between hibernation and maternity caves, and both types of caves are located in Missouri. Gray bats are active at night, foraging for insects over water or along shorelines, and they need a corridor of forest riparian cover between roosting caves and foraging areas. They can travel as far as 20 kilometers (12 miles) from their roost caves to forage.

The greatest current threat to all three species of bats is White-nose syndrome (WNS). WNS is named for the white fungus that appears on the muzzle and other parts of infected hibernating bats. WNS is associated with extensive mortality of bats in eastern North America and has spread rapidly across the eastern United States and Canada. The fungus that causes WNS has been detected as far south as Mississippi and as far west as the state of Washington. Bats with WNS act strangely during cold winter months, including flying outside in the day and clustering near the entrances of hibernacula (caves and mines where bats hibernate). Bats have been found sick and dying in unprecedented numbers in and around caves and mines. WNS has killed more than an estimated 5.7 million bats in eastern North America. In some hibernacula, 90 to 100 percent of bats have died.

The project area contains suitable habitat for all three bat species. In fact, areas in and along the Missouri River floodplain support maternity and winter bat hibernacula, potential swarming

habitat, and maternity colonies. Continued habitat protection, acquisition, and restoration are important in helping these species contend with other environmental threats, and can provide meaningful benefits towards recovery. While gray and Indiana bats occur only in the Missouri portion of the study area, the Northern-long eared bat occurs throughout the basin. Recent anecdotal sampling information in the lower basin has failed to detect this species in many areas where it has occurred just a few years previous¹. Because data indicate Northern long-eared bats are short distance migrants, it is likely that Northern long-eared bats using the Missouri River Floodplain in the summer may have winter hibernacula nearby. Thus protecting and restoring habitats to support this species can be especially important in aiding the species recovery.

Sicklefin and Sturgeon Chub (*Macrhybopsis meeki* and *Macrhybopsis gelida*) recently petitioned for listing -The sicklefin and sturgeon chub are members of the Cyprinidae, or minnow family. They are native to the Missouri River basin and the Mississippi River downstream from the confluence with the Missouri River. Both species are highly adapted for conditions found in large free-flowing rivers with relatively high levels of turbidity. They are considered to be an extremely important forage base for the federally endangered pallid sturgeon.

The sicklefin chub is usually yellowish or tan colored on the back and silvery-white on the belly with a snout protruding slightly beyond the mouth. The sicklefin chub can be most readily distinguished by its elongated pectoral fins and a sickle-shaped dorsal fin. The sturgeon chub is tan to pale green on the back and cream to white on the belly. A few black speckles occasionally are present on the sides and back. Sturgeon chub can be identified by the unique longitudinally-arranged ridges or keels on most scales. Both chub species are relatively short-lived with a maximum life-span of about 4 years.

The sicklefin chub was historically found in the Lower Yellowstone River, Missouri River and Mississippi River downstream from the confluence with the Missouri River. Sturgeon chubs have been collected at or near the same locations where sicklefin chub populations have been documented in the Yellowstone, Missouri, and Mississippi Rivers. They also ascend farther upstream in the Yellowstone and Missouri Rivers and larger tributaries of these rivers than the sicklefin chub.

In 2001, the Service issued a not warranted 12-month finding in response to a petition to list both species (USFWS 2001). In that finding, the Service noted that updated information indicated self-sustaining populations of sicklefin chub occur in three locations within the Missouri River basin: above the headwaters of Fort Peck Reservoir in Montana; in the Yellowstone-Missouri River confluence area of Montana and North Dakota; and in the Missouri River from St. Joseph, Missouri to the confluence with the Mississippi River. Missouri Department of Conservation data since 1997 indicated a viable population of sicklefin chub is present in the Middle Mississippi River and in the Wolf Island area of the Lower Mississippi River. The Service estimated sicklefin chub populations occupied approximately 54 percent of its historic range in the Missouri River basin at that time. Viable populations of sturgeon chub were found at or near the same locations where sicklefin chub populations were documented. In addition, sturgeon chub populations were present in 11 of the 30 tributaries to the Yellowstone and Missouri Rivers where they were historically collected. Sturgeon chub populations currently occupy about 1,155 miles or about 55 percent of its former range in the Missouri River.

¹ Personal Comm. Jane Ledwin, USFWS, Columbia, MO.

In August 2016, WildEarth Guardians petitioned the Service to list both species. The Service completed a positive 90-day finding for the sicklefin and sturgeon chubs on December 20, 2017 (USFWS 2017). Species Status Assessments for both chub species will be undertaken prior to completion of the 12-month finding. The petitioners cite more recent data that they believe indicate fewer occurrences within their ranges; extirpation from previous occupied river reaches; and continuing population declines. They attribute those patterns to continued habitat degradation and fragmentation, water depletions, pollution, predation, isolated populations and delays in proposed restoration projects.

Habitat degradation and fragmentation through construction of the mainstem dams and navigations channel has significantly affected these chub species. At the same time, given the habitats preferred by the chubs and their short reproductive cycles, they could serve as excellent surrogates to monitor the success of aquatic restoration for the native benthic fish community, as well as an important prey item for pallid sturgeon. In fact, previous monitoring on the river documented short-term, positive chub responses to chute construction with the appropriate seasonal water levels. Chubs that had not been documented for a number of years were found in surprising abundance in some chutes following high water events/years.

Monarch Butterfly (*Danaus plexippus plexippus*) petitioned species - The Service is undertaking a 12-month finding for this species that should be completed in fiscal year 2019. The project lies within the range of the monarch butterfly and the Service has determined that listing under the ESA may be warranted for the monarch and is currently conducting a status review of the species. Monarch butterflies are found throughout the Missouri River basin and some populations migrate vast distances across multiple generations each year. Many monarchs fly between the U.S., Mexico and Canada – a journey of over 3,000 miles. This journey has become more perilous because of increasing threats along their migratory path as well as impacts to their breeding and wintering grounds. Monarch populations have declined over 90 percent during the last 20 years. Primary threats to the species are attributed to loss of milkweeds and increased use of pesticides. Missouri River conservation lands provide important opportunities to restore suitable, sustainable monarch habitat, while also supporting numerous other wildlife species.

Fish and Wildlife Resource Concerns and Opportunities

The Service recognizes that fish and wildlife conservation is based not only on protection and conservation of individual species, but also on protection, enhancement and/or restoration of those habitats and associated physical drivers and conditions discussed above upon which they depend for survival. The problems facing the Missouri River fish and wildlife resources are, for the most part, a consequence of decades of river engineering and altered ecological processes, (physical drivers and conditions) that continue to further degrade the natural form and functions of the river, as well as threaten ecosystem-scale biotic conditions, communities and infrastructure. The lower Missouri River has undergone considerable change due to dam construction, channelization, altered flow regimes and floodplain development. The result has been a greatly reduced river corridor, with a commensurate decrease in habitat for fish and wildlife. In fact, the river continues to change. The dams and bank armoring interrupt the natural processes of sediment erosion, downstream sediment transport and deposition. This has already led to an almost complete loss of islands and sandbars in the lower river, and continues to cause bed degradation throughout the main channel as well as impact the tributaries causing bank erosion and head-cutting. Bank stabilization and channelization of the Missouri River, part

of the BSNP, have resulted in floodplain wetlands being disconnected from the underlying groundwater. Continued entrenchment of the river threatens not only fish and wildlife habitats, but the communities and residents along the river. Mitigation measures that help restore more natural physical drivers and conditions of the river, including the sediment dynamics, can serve to arrest this destructive and expensive trend. The MRRMP/EIS will incorporate new scientific information into management actions for the pallid sturgeon, least tern, and piping plover and develop an Adaptive Management Plan with objectives to benefit those species. It is anticipated that scientific information gleaned from the MRRMP will have some crossover benefits to fish and wildlife resources that may prove helpful in offsetting impacts to resources that have been heavily impacted by the extensive changes that have occurred on the Missouri River.

Climate Change

Climate change will be the overarching issue for fish and wildlife conservation in future decades. Changes in temperature and precipitation are expected to affect the northern Great Plains region and, consequently, the Missouri River Basin.

Over the last few decades, average temperatures have risen throughout the Great Plains, with the largest increases occurring in the winter months and over the northern states. Relatively cold days are becoming less frequent and relatively hot days more frequent. The temperature in the Great Plains has already increased ~1.5°F relative to the 1960–1979 baseline established by the U.S. Global Change Research Program. By late this century, it is projected to increase by anywhere from 2.5°F to more than 13°F compared with the 1960–1979 baseline, depending on future emissions of heat-trapping gases. The brackets on the thermometers represent the likely range of model projections, though lower or higher outcomes are possible (globalchange.gov). In the future, temperatures are projected to continue to increase commensurate with the levels of emissions of heat-trapping gases. Summer increases are projected to be greater than those in winter in the southern and central Great Plains. Temperatures in the Great Plains are projected to increase significantly by the end of this century, with the northern part of the region experiencing the greatest projected increase in temperature (globalchange.gov).

Precipitation is also expected to change, particularly in winter and spring. Conditions are expected to become wetter in the north and drier in the south. Projected changes include more frequent extreme events such as heat waves, droughts, and heavy rainfall. The Great Plains currently experiences a sharp precipitation gradient from east to west, from more than 50 inches of precipitation per year in eastern Oklahoma and Texas to less than 10 inches in some of the western parts of the region. Northern areas of the Great Plains are projected to experience a wetter climate by the end of this century, while southern areas are projected to experience a drier climate compared to the 1960–1979 baseline.

Climate change is likely to combine with other human-induced stresses to further increase the vulnerability of ecosystems to pests, invasive species, and loss of native species. Breeding patterns, water and food supply, and habitat availability will all be affected by climate change.

Grassland and plains birds, already stressed by habitat fragmentation, could experience significant shifts and reductions in their ranges. In addition, changes in precipitation coupled with shifts in temperature are likely to place additional stress on water resources in the project area. Although the project area is predicted to become warmer and wetter, these changes may

result in shifts in types of precipitation—for example, less snowfall and more rainfall, earlier snowmelt, earlier peak streamflow, or shifts in timing of flows in the Missouri River.

Changes in precipitation and temperature associated with climate change will directly affect fish and wildlife resources in the project area. In addition, as discussed above, the Missouri River is a highly regulated system. The shift of human populations from rural to urban areas will increase the demand on surface water resources, including the Missouri River. Such increased demand coupled with decreased groundwater supplies will result in greater pressure on Missouri River water for municipal and industrial uses, further affecting fish and wildlife populations. Climate change–induced shifts in temperature and precipitation, especially in the lower part of the Missouri River basin, may result in the need for new operating procedures for the main stem reservoirs; and these changes could further affect fish and wildlife communities in the project area.

Invasive and Injurious Species

Under the Lacey Act (18 U.S.C. 42), the Secretary of the DOI is authorized to regulate the importation and transport of species, including offspring and eggs, determined to be injurious to the health and welfare of humans, the interests of agriculture, horticulture or forestry, and the welfare and survival of wildlife resources of the United States. Under the terms of the injurious wildlife provisions of the Lacey Act, the Service maintains a list of injurious wildlife species. Species are added to the list of injurious wildlife to prevent their introduction or establishment through human movement in the United States to protect the health and welfare of humans, the interests of agriculture, horticulture or forestry, and the welfare and survival of wildlife resources from potential and actual negative impacts. Injurious wildlife are mammals, birds, amphibians, reptiles, fish, crustaceans, mollusks and their offspring or gametes that are injurious to the interests of human beings, agriculture, horticulture, forestry, wildlife or wildlife resources of the United States. The following species are determined to be injurious wildlife and are a concern for the ecological health of the Missouri River.

Asian Carp

“Asian carp” typically refer to four species of carp native to Asia: black carp (*Mylopharyngodon piceus*), bighead carp (*Hypophthalmichthys nobilis*), grass carp (*Ctenopharyngodon idella*), and silver carp (*Hypophthalmichthys molitrix*). Invasive bighead and silver carp, collectively referred to as bigheaded carps, are established in the Missouri River downstream of Gavins Point Dam. Their range expands into Missouri River Basin states via tributaries, including the James River in the Dakotas, the Platte River in Nebraska, the Kansas River in Kansas, the Grand River in Missouri, and other connected tributaries of the Lower Missouri River. Impacts of these invasive fish on our native aquatic resources in the Missouri River are largely unknown. However, literature indicates that crustacean zooplankton usually suffer population declines of 50 to 90 percent when silver carp and bighead Carp are introduced. Limited data from the Lower Missouri River are consistent with that trend. Condition of gizzard shad (*Dorosoma cepedianum*), a native planktivore, has declined in the Lower Missouri and Illinois Rivers since the bigheaded carp invasion. Impacts to native species are of utmost concern as well as developing a control strategy for the bigheaded carps in the Missouri River Basin. Large dams such as Gavins Point create a physical barrier to the expansion of these species. However, concerns remain about expansion by accidental or deliberate introduction. Missouri River Basin partners are engaged in developing the Missouri River Basin Asian Carp Control Strategy Framework, a document that briefly outlines the threat of Asian carp in the Missouri River basin

as well as actions for prevention, early detection, population control, outreach, and communication to collectively prevent further expansion, reduce populations, and better understand the impacts of Asian carp. As such, many important questions remain about bigheaded carps in the Missouri River. At this time, the Corps can contribute to this knowledge base by assessing the impacts of river regulation on spawning behavior and success as well as evaluating habitat creation projects in the Missouri River as habitat for invasive carp.

Dreissenid mussels

Zebra and quagga mussels, native to the Caspian Sea area, were introduced via ballast waters in the great Lakes in the late 1980s. They have subsequently spread across the United States. Zebra mussels were found in Lewis & Clark Lake in South Dakota in 2015. Subsequently adult mussels were found in locations throughout the reservoir and in the Missouri River downstream of Gavins Point Dam. *Dreissenid veligers* were found in two Missouri River headwater reservoirs by Montana Fish, Wildlife and Parks in 2016 samples.

Zebra and quagga mussels have extensive environmental and economic impacts. *Dreissena* species ability to rapidly colonize hard surfaces causes serious economic problems. These major biofouling organisms can clog water intake structures, such as pipes and screens, therefore reducing pumping capabilities for power and water treatment plants, costing industries, companies, and communities. Recreation-based industries and activities have also been impacted; docks, breakwalls, buoys, boats, and beaches have all been heavily colonized (Benson et al. 2016).

New Zealand mudsnail

This snail was first discovered in the middle portion of the Snake River in Idaho in 1987 and occurs in Missouri River Basin headwaters in Montana. This species is euryhaline, establishing populations in fresh and brackish water (Benson et al. 2016). It tolerates temperatures of 0–34°C (Cox and Rutherford 2000, Zaranko et al. 1997). In the United States, the mudsnail populations consist of asexually reproducing females that are born with developing embryos in their reproductive systems. The mudsnail is hardy and able to withstand a trip through a fish's gut.

Curly-leaf pondweed

This plant native to Eurasia was first found in the United States in the mid-1800s. The plant forms dense mats which inhibit growth of native species. Late summer die-off may lead to algal blooms and oxygen depletion, impacting fish. The plant may be spread by segments attached to boats and other equipment. The plant occurs in the Missouri River Basin headwaters in Montana, in Lake Sakakawea in North Dakota and in Burbank Lake (a Missouri River oxbow) in South Dakota (Thayer et al. 2016).

Eurasian Watermilfoil

This plant species is native to Eurasia, Asia and North Africa. Means of introduction to the United States is unknown but may have been introduced near Maryland in 1940 as part of the aquarium trade. Typical dense beds restrict swimming, fishing and boating, clog water intakes and result in decaying mats that foul lakeside beaches. Transport on boating equipment plays the largest role in introducing fragments to new waterbodies. (Pfingsten et al. 2016).

Most states in the Missouri River basin have developed plans or guidance to help reduce the spread of injurious and invasive species and we encourage the Corps to consult those plans and

undertake appropriate actions relevant to Corps operations. It is important to train staff to help identify invasive species they may encounter and the mechanisms they can undertake to avoid spreading invasive species in the course of their work. Many of the aquatic invasive species require extra diligence in cleaning boats, trailers and equipment to avoid transfer of aquatic invasive species when working on multiple water bodies.

BSNP Mitigation

While we recognize the purpose of the MRRMP focuses on ESA listed species, the Service is committed to an ecosystem approach for the benefit of fish, wildlife and people. We believe the MRRMP-DEIS does this in Section 3.5 Fish and Wildlife; Section 3.6 Other Special Status Species; and Section 3.23 Ecosystem Services. Lands acquired through the BSNP Mitigation Program have made important contributions to the ecological health of the Missouri River benefitting a variety of species which "include birds, fishes, mammals and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent" (FWCA, 16 U.S.C. 666(b)).

The BSNP Mitigation Project was authorized by WRDA of 1986 for a total of 48,100 acres to be mitigated. Section 334 of WRDA 1999 increased the acreage of habitat to be mitigated for the BSNP Mitigation Project by 118,650 acres, bringing the total acres to be mitigated to 166,750 acres. This authorized acreage is roughly 32 percent of the 522,000 acres of fish and wildlife habitat lost between 1912 and 1980 due to construction of the BSNP (USACE 2003). The BSNP Mitigation Project authority was further amended in Section 3176(a) of WRDA 2007 allowing funds made available for recovery or mitigation activities in the lower basin of the Missouri River to be used for recovery or mitigation activities in the upper basin of the Missouri River, including the states of Montana, Nebraska, North Dakota, and South Dakota. Under the selected alternative in the 2003 Record of Decision (ROD) of the Supplemental EIS for the BSNP Mitigation Project, restored habitat types would include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat (SWH), backwater areas, and slack water habitats and USACE (2003) states that the mitigation project implementation period is at least 30 years. To date, the important obligations of the BSNP Mitigation Project are still being undertaken and remain relevant and unchanged.

Subsequently, the preferred alternative results in limited habitat restoration activities that restore the overall natural ecology of the river separately and distinctly from activities specifically to avoid jeopardy. Habitat restoration on mitigation lands can benefit multiple non-listed species, including species at risk, such as the American eel (*Anguilla rostrata*), black buffalo (*Ictiobus niger*), burbot (*Lota lota*), flathead chub (*Platygobio gracilis*), sicklefin chub, sturgeon chub, paddlefish (*Polyodon spathula*), plains minnow (*Hybognathus placitus*), and western silvery minnow (*Hybognathus argyritis*), not just the pallid sturgeon, interior least tern and the piping plover. Over time, by focusing on the listed species only, the overlap of the value of mitigation lands for other non-listed species may be diminished. While the BSNP Mitigation Project can be complementary and beneficial to ESA compliance, it was developed for the Corps to be in compliance with the FWCA. Habitat and its associated ecological functions are the keys to a healthy ecosystem that will provide the needs of all fish and wildlife on the Missouri River.

As noted previously, the Service was recently petitioned to consider listing sturgeon chub and sicklefin chub under the Endangered Species Act and we believe the MRRMP provides an opportunity to engage in actions that can be beneficial to an array of native fish and wildlife

species and also informative when the Service makes a decision on these two petitioned chub species. In particular, we believe that further monitoring and understanding of the life histories of sicklefin and sturgeon chubs will be beneficial to the these species' status assessments which are likely to begin in 2021. Further, if the Corps is able to implement parts of the MRRMP that provides benefits for these chubs species, there should be an opportunity to consider those actions when the 12-month findings are completed in fiscal year 2023. The Corps is an important partner in the conservation of sicklefin and sturgeon chubs on the Missouri River and we believe the MRRMP can help conserve these species.

Additionally, numerous studies have documented the effects of operations on the biological and physical characteristics of the river in the upper Missouri River (Owen and Hahn 2014). Spring freshets have been eliminated resulting in severely reduced inundation of highly productive lateral floodplain habitats, hypolimnetic withdrawals have significantly decreased late spring and summer water temperatures, and suspended sediments and nutrients have been greatly reduced. The result is that the carrying capacity for pallid sturgeon and other native species has probably been reduced. Several studies have indicated that Ft. Peck Dam operations have negatively affected the abundance of several Montana species of concern including; sicklefin chub, sturgeon chub, paddlefish, shovelnose sturgeon, channel catfish (*Ictalurus punctatus*), blue sucker (*Cycleptus elongatus*) and smallmouth (*Ictiobus bubalus*) and bigmouth buffalo (*Ictiobus cyprinellus*).² Channel simplification has been occurring since impoundment with documented reductions in side channel, backwater and secondary channel habitats, which has a direct impact on habitat availability for native fishes, including forage fish for pallid sturgeon (Owen and Hahn 2014). Since Section 3176 of WRDA 2007 expanded authority to the Corps to conduct mitigation activities in upper basin states, we suggest that the Corps provide clarification in the Management Plan if mitigation activates will be conducted in the upper basin.

Again the Service recognizes the purpose of the MRRMP is focused on developing management actions to meet the needs of the federally listed species and we commend the Corps for including the BSNP Mitigation Program in the conservation strategy in the Section 7(a)(1) Conservation Plan (USACE 2017, Appendix D). We recommend the Corps further clarify and describe the role and intent of the MRRMP in meeting the needs of the BSNP Mitigation Program; and to expeditiously develop implementation guidance that describes how the expanded BSNP mitigation authority will be applied in the upper non-channelized portion of the Missouri River basin to mitigate for impacts to the non-listed native fish and wildlife species.

Fish and Wildlife Recreation

The Missouri River is a significant resource for recreation on the Missouri River that enriches the lives of the people who live and depend on it. Approximately 100,000 acres of BSNP habitat mitigation is authorized and if implemented represents an opportunity for enhanced public recreation, restoration of lost habitat for fish and wildlife, and ecological sustainability that is necessary to also maintain a wide variety of uses along the river, including agricultural, water

² (Braaten and Fuller 2007, Braaten et al. 2008, Braaten et al. 2009, Braaten et al. 2012a, Braaten et al. 2012b, Bramblett and White 2001, Clancey 1989, DeLonay et al. 2010, DeLonay et al. 2014, DeLonay et al. 2016, Dieterman et al. 1996, Fuller and Haddix 2012, Fuller and Braaten 2013, Fuller et al. 2008, Galat and Lipkin 1999, Gardner and Stewart 1987, Eichelberger et al. 2014, Liebelt 1996, Liebelt 1999, Liebelt 2000, USACE 2004, USFWS 2000, White and Bramblett 1993, Young et al. 1997)

supply, and other uses. Science-based planning can promote agriculture, ensure sustainable economic development, and enhance fish and wildlife benefits.

The states along the Missouri River have an interest in maintaining all forms of recreational use of the natural resources on the River. Missourians, for example, support fish, forest, and wildlife conservation with over 95 percent indicating their interest. Over two million residents and visitors participate in fishing, hunting, or wildlife-associated recreation in Missouri. There is over \$12 billion economic impact in Missouri from wildlife-related recreation and the forest products industry across the state; fish and wildlife recreation and the forest products industry support over 99,000 jobs. Most Missourians agree (76 percent) that the Missouri Department of Conservation should make an effort to restore animals that once lived or are currently very rare in the state. Together, these figures illustrate that Missourians place value on sport species as well as native, non-game species. Recreation impacts on the Missouri River in Missouri and along shared borders are upwards of \$38 million, which enriches the Missouri economy and quality of life. Acquisition of land for habitat mitigation within the BSNP Mitigation Project is an important tool available to restore the loss of these recreational uses in the BSNP area.

Riverine Form and Function

The Service believes the most successful strategy to provide for the long term sustainability of fish and wildlife resources of the river is to ultimately work towards a flow corridor that includes the desired physical features and biological functions while also providing for other project purposes to the maximum extent practicable. A functional flow corridor would reduce flood risks to infrastructure and other human considerations through increased conveyance and provide sustainable conditions for fish and wildlife populations. Some native fish populations in certain reaches are in very low condition and ultimately may depend on a more holistic approach to improve their habitat and the ecological processes to support their needs. In an effort to prevent further declines of other native species and avert future listings of additional species, the Service recommends that the Corps incorporate practices and principles into the future design and construction of habitat projects, to achieve benefits for all fish and wildlife resources. We believe a functional flow corridor that provides the physical features and biological functions that will sustain ESA listed species will also provide benefits to a wide array of native fish and wildlife species.

Habitat Creation

Habitat creation/restoration is a fundamental need along the river. With the loss of over 522,000 acres of meander habitats with only about 40 percent currently in public conservation, land, fish and wildlife simply need a larger habitat base if they are to maintain sustainable populations into the future. Much of the aquatic habitat restoration in the lower river may require some form of mechanical creation (i.e., structure modification, dredging of chutes/backwaters/access channels). At the same time, it is important to use our ever expanding knowledge base to find the "sweet spot" of mechanical habitat creation and habitat formation via processes naturally occurring in the river. We anticipate that aquatic habitat creation will be the most resource intensive and should use a combination of techniques depending on the opportunities at any one location.

One of the most important considerations in plan formulation should be to not preclude future opportunities to modify, improve, or redesign project features as conditions on the river continue to change. Sustainability will be critical and should be thought of in terms of sustainable

processes and a range of functions rather than a single project design (i.e., 95 percent plans and specs). This should be viewed at a reach level to incorporate synergy among multiple projects and their effects on the hydraulics of the river and other project purposes. Use of expensive and intensive project features (i.e., pumping) should be considered only in especially rare circumstances, since they will likely be unaffordable over the long term. The need to maintain a viable connection between groundwater and surface water floodplain habitats will make it all the more important to address continued bed degradation along the river.

Emergent Sandbar Habitat (ESH)

Fortunately, over 14,000 acres of ESH were created by the 2011 flood event, which exceeds even the amount of habitat recommended in the 2003 Amended Biological Opinion of 11,886 acres. Due to this increase in nesting habitat, tern and plover numbers have also greatly increased. However, the 2015 Annual Report states these acres have been reduced in 2015 to approximately 7,280 acres in the system via wind and water flow erosion and vegetation encroachment. We appreciate that the focus of the ESH program has been to maintain as much of this habitat for as long as possible through vegetation removal. Considering the high rate of ESH erosion and the multi-year budget process, construction of these habitats within the SAMP framework should be initiated now to start building new tern and plover habitat within the next couple of years. For reaches where ESH has not been constructed in the past, it is especially important to begin the learning process in these areas to inform future construction efforts.

Interception and Rearing Complexes

We recommend that we continue to learn from our existing within-channel and shallow water habitat projects which appear to have varying site-specific results, providing a range of values to the Missouri River aquatic ecosystem. Based on much of the recent science in the Missouri River on small/young fish, it appears those fish need slower water areas which are rare in most of the current channel. Enlarging the river through channel widening will allow more within bank, but off-main channel habitats to form. Ideally, these areas should be accessible by fish and other aquatic organisms over a wide range (but not necessarily all) of river stages over the course of most years. The Service recommends widening the river as wide as is needed to provide the necessary functional habitats in reaches where it has been narrowed the most. The project at Deer Island widened the river more than double the 250 feet width listed for this reach and we are not aware of any problems with other purposes.

Our understanding regarding using structural modifications to create functional habitats continues to evolve. Structural modifications have been used to modify the river and create habitat for the piping plover, least tern, and pallid sturgeon, but additional work is needed to understand and quantify what kinds and quality of habitat have been created. We support evaluating these structural modifications and the associated biological responses through the SAMP.

Sediment management

Sediment is important to river channel morphology and to maintaining complex ecological habitat (Funk and Robinson 1974; Hesse and Mestl 1993). It engenders particular morphologic channel characteristics such as sinuosity, and generates habitat types such as sandbars (NRC 2002). Sediment moves as suspended matter and as bed load, successively picked up, moved, and redeposited by the varying channel and overbank flows (Junk et al. 1989; Hesse and Mestl 1993; Poff et al. 1997; Galat et al. 2005). The size of the suspended sediment particles

transported by the river and the substrate sediment particles moved along the bed affect the quality and types of habitat conditions in the river and across its backwaters and side channels (NRC 2002; Galat et al. 2005). For example, the size and quantity of suspended sediment particles largely determine the turbidity of the water, which is a substantive factor affecting the types and densities of aquatic organisms that can live in the river (Bonner and Wilde 2002; Blevins 2006). This also affects the transport of some nutrients adhering to mineral particles (Sprague et al. 2006). Sediment is the most important building material contributing to river and floodplain macrohabitat complexity (NRC 2002; Sluis and Tandarich 2004), and helps determine the flora and fauna of the river and floodplain (Johnson 1992; Rood et al. 2003; Sluis and Tandarich 2004).

To preserve the functionality and sustainability of river habitat improvement projects and to maintain the viability of water resource and infrastructure investments, it is imperative that the Corps develop and implement a strategy to restore the dynamic equilibrium of sediment transport and associated turbidity within the SAMP. River reach specific issues associated with channel incision and sediment aggradation are already compromising opportunities to provide these important river benefits.

Levee setbacks and Floodplain connectivity

While we recognize that levee setbacks and floodplain connectivity are currently not identified as habitat improvement projects, or even identified through the Effects Analyses (Jacobson 2016) as potential management actions, we recommend that they be considered for future project development in the SAMP. Tools are rapidly developing to carefully analyze the potential benefits (i.e., habitat, flood risk reduction, economic, infrastructure) of strategic levee setbacks that may not only meet the species objectives, but also provide reach-wide benefits for flood damage reduction, and reduce Federal flood repair expenditures. Such features would allow terrestrial and aquatic habitat creation and increase floodplain connectivity with the river. That would increase seasonally available slow water habitats for fish spawning and nursery areas, and also meet the needs of a myriad of fish and wildlife species consistent with the Corps' mitigation responsibilities.

Connectivity between instream habitat types and the floodplain is an important component for a healthy functioning riparian ecosystem. The Service remains concerned about the lack of incorporation of floodplain connectivity within IRC habitat actions for the Lower River Pallid Sturgeon in Alternatives 3-6. The Effects Analysis (Jacobson 2016) describes how IRC habitats benefit from increased floodplain connectivity. Incorporating floodplain connectivity actions, while providing benefits to pallid sturgeon, would benefit a large number of other native species. Enhanced floodplain connectivity starting just below Gavins Point could provide the nutrients and processes needed to support the aquatic ecosystem and may be critically important to pallid sturgeon given the condition issues within this reach.

Flow modifications

We recommend continued progress on the previous items to provide a better foundation on which to strategically improve river flows to benefit native fish and wildlife species. The development of a flow corridor could allow for flows that do not impact infrastructure while providing for ecological needs. At the same time, a flow corridor would enhance flood risk reduction during natural high flow events. Floodplain connectivity with associated flow events

can provide for critical lower flows and warmer water to enhance productivity of the Missouri River system.

In contrast, lower flow experiments may not depend on additional land acquisition. Given the increasingly compelling need for slow water for successful native fish recruitment (based on our 10+ years of monitoring and research), and the recommendations of the Missouri River Recovery Implementation Committee (MRRIC) and the Independent Scientific Advisory Panel, we believe carefully designed, implemented and monitored flow experiments with specific decision triggers could help us answer several critical questions regarding pallid sturgeon age 0-1 life stage, as well as other native fishes. In addition, such experiments would also allow us to understand effects to other project purposes or adjacent lands and develop measures to address them as appropriate. As the MRRMP is implemented, we recommend that the Corps continue to consider the full range of flows from magnitude, seasonal, and duration perspectives along with the impacts and benefits of associated flow corridor and habitat modifications.

Flows are a critical part of aquatic habitat creation, maintenance, and function. A much larger range of habitats (macro, meso, and micro) and functions is available in the lowest reaches of the river. While some of this is simply due to the size of the river, much of it is a result of the variability of river flows over the course of the year. In monitoring aquatic habitat development, it is clear that areas with more flow diversity develop faster and provide more diverse habitats and functions than areas with consistent flow farther up the river. In a future of likely declining budgets, it is imperative to formulate project features that work with the river to the maximum extent practicable. It is also critical to carefully characterize the economic implications of all the options so decision makers and the public understand why various alternatives were chosen.

Land Acquisition and Flowage Easements

A land base is critical to implement projects necessary to meet both the species and mitigation goals. Many of the critical river processes needed to support these species can only occur with a larger land base connected to the river (i.e., much like the Mississippi and Atchafalaya River systems). Such lands should allow for both terrestrial and aquatic habitat creation/restoration and processes while providing a secure flood conveyance corridor that would minimize flood damages on adjacent lands, infrastructure, and public safety, much like the original Pick-Sloan plan. The details of this could be based on site-specific engineering, land opportunities and hydrologic modeling. Flowage easements could be considered if they facilitate modest levee relocations to a hydraulically improved (from a flood damage reduction perspective) alignment. Such a corridor would provide added operational flexibility for flood damage reduction and potentially reduce Federal investments long-term by avoiding costly and repeated levee repairs and disaster payments due to poor alignment (and which costs should be included in the cost benefit analyses).

Real estate is the foundation for conservation of fish and wildlife on the Missouri River by providing opportunities to restore and manage habitats. We recommend the Corps give equal consideration for native wildlife in addition to threatened and endangered species by continuing to acquire floodplain lands from willing sellers, of privately owned lands by fee title or conservation easement at a rate necessary to conserve and restore all habitats, such as shallow water, riparian forests, and wetlands. Land acquisition priority should include lands with river channel frontage, low-lying, poorly drained lands, lands at major tributary confluences, and lands with restorable side channels, chutes, and backwaters.

Project Plan Alternatives

The following are the descriptions of the proposed alternatives contained in the MRRMP:

Alternative 1 – No Action (Current System Operation and Current MRRP

Implementation): The MRRP would continue to be implemented as it is currently. The current program does not implement all RPAs included in the 2003 Amended Biological Opinion (USFWS 2003). The Corps would mechanically construct ESH annually at a rate of up 46 to 107 acres per year across the entire system. The Corps support of pallid sturgeon propagation and augmentation efforts would continue at current levels. Construction of habitat to support early life history requirements of pallid sturgeon would occur as part of the shallow water habitat (SWH) program. The Corps would achieve the low end of the 2003 Amended Biological Opinion (USFWS 2003) SWH target of an average of 20 acres of SWH per river mile between Ponca, Nebraska, and the mouth of the river. The Corps would also continue to implement the plenary spring pulse as described in the Master Manual and Corps monitoring and research program for pallid sturgeon. An adaptive management (AM) approach would also continue to be implemented for the ESH (USACE 2011) and the SWH creation (USACE 2012c) programs.

Alternative 2 – U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions:

This alternative represents the Service's interpretation of the management actions that would be implemented as part of the 2003 Amended Biological Opinion RPA (USFWS 2003). This alternative includes Alternative 1 and additional iterative actions and expected actions that the Service anticipates would ultimately be implemented through AM and as impediments to implementation were removed. Actions would include:

- Mechanical Emergent Sandbar Habitat Construction
- Spring Habitat-Forming Flow Release
- Lowered Nesting Season Flows
- Pallid Sturgeon Propagation and Stocking
- Pallid Sturgeon Early Life History Habitat Construction
- Spring Pallid Sturgeon Flow Releases
- Summer Low Flow
- Floodplain Connectivity
- Monitoring, Research and Adaptive Management
- Additional land purchases

Actions Common to Alternatives 3–6

Under Alternatives 3–6, the USACE would implement an AM program. Specific AM actions would be implemented focused on understanding limiting factors associated with least terns and piping plovers, as well as pallid sturgeon.

- **Level 1 and 2 Studies:** The Corps would implement level 1 and 2 studies under Alternatives 3-6 for better understanding limiting factors associated with pallid sturgeon. Level 1 studies are research focused that do not change the system (Laboratory studies or field studies under ambient conditions). Level 2 studies would focus on in-river testing of actions at a level sufficient to expect a measurable biological, behavioral, or physiological response in pallid sturgeon, surrogate species, or related habitat response. Some level 2 studies would be outside the scope of the MRRMP/EIS and require additional compliance with NEPA.
- **Spawning Habitat:** Under Alternatives 3–6, the Corps would create three high-quality spawning habitat sites, and monitor the effectiveness of this action in terms of the relative

use of these sites compared to other control areas, and the relative spawning success, as determined by hatch rate, catch per unit effort of free embryos and other indicators. These sites would be constructed following initial studies to further clarify habitat specifications. An early emphasis would use information from the Yellowstone River as the best natural reference condition to inform the design of these pilot projects on the Lower Missouri River, while also continuing to examine the habitat characteristics of spawning sites on the Lower Missouri.

- **Channel Reconfiguration for Interception and Rearing Complexes:** Under Alternatives 3–6, construction of habitat to support early life history requirements of pallid sturgeon would occur following the IRC (interception and rearing complexes) concept. Best available science indicates that future acreage required to construct IRCs would most likely be achieved through channel widening. For the purposes of evaluating potential impacts to the human environment, modeling assumed that about 3,380 acres of channel widening would be implemented to create IRCs under Alternatives 3–6.

Alternative 3 – Mechanical Construction Only:

The Corps would only create ESH habitat through mechanical means at an average rate of 391 acres per year across the entire system. This amount represents the acreage necessary to meet the bird habitat targets after accounting for available ESH resulting from System operations. The average annual construction amount includes replacing ESH lost to erosion and vegetative growth, as well as constructing new ESH. The results of ESH availability modeling indicate that under Alternative 3, ESH construction would occur in 75 percent of the 50 years modeled. In the remaining years, the model indicates there would be sufficient ESH on the system that construction would not be necessary.

Alternative 4 – Spring Emergent Sandbar Habitat (ESH) Creating Release:

Alternative 4 would include the three specific AM actions focused on understanding limiting factors associated with the listed species. The Corps also would mechanically construct ESH annually at an average rate of 240 acres per year across the entire system. This amount represents the acreage necessary to meet the bird habitat targets after accounting for available ESH resulting from implementation of a Spring ESH-creating reservoir release. The average annual construction amount includes replacing ESH lost to erosion and vegetative growth, as well as constructing new ESH.

Alternative 4 reservoir operations would be similar to Alternative 1 (current operations), with the addition of a high spring release designed to create ESH for the least tern and piping plover. In any year, the implementation of this habitat-forming flow release would occur if System storage is at 42 MAF or greater on April 1, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow is below identified flood control constraints specific to this alternative. If those conditions are met, the habitat-forming flow release would be implemented on April 1 with a release of up to 60 kcfs out of Gavins Point Dam, and as often as every four years. To achieve the Gavins Point Dam release, Fort Randall Dam releases would be increased a similar amount as Gavins Point and releases from Garrison Dam would be approximately 17.5 kcfs less than the Gavins Point release.

Alternative 5 – Fall ESH Creating Release:

Alternative 5 would include the three specific AM actions focused on understanding limiting factors associated with the listed species. The Corps also would mechanically construct ESH

annually at an average rate of 309 acres per year across the entire system. This amount represents the acreage necessary to meet the bird habitat targets after accounting for available ESH resulting from implementation of a Fall ESH-creating reservoir release. The average annual construction amount includes replacing ESH lost to erosion and vegetative growth, as well as constructing new ESH.

Alternative 5 reservoir operations would be similar to Alternative 1 (current operations), with the addition of a high fall release designed to create ESH for the least tern and piping plover. In any year, the implementation of this habitat-forming flow release would occur if the service level is at 35 kcfs or greater (54.5 MAF System storage) on October 17, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow is below identified flood control constraints. Downstream flood control constraints for Alternative 5 would be the same as that for Alternative 4. If those conditions are met, the habitat-forming flow release would be implemented on October 17 with a release of up to 60 kcfs out of Gavins Point Dam, and as often as every four years. To achieve the Gavins Point Dam release, Fort Randall Dam releases would be increased a similar amount as Gavins Point and releases from Garrison Dam would be approximately 17.5 kcfs less than the Gavins Point release. As with Alternative 4, the duration of the release would increase as release magnitude is decreased. If flood targets are exceeded, the Gavins Point release would be reduced by 5 kcfs until flood targets are no longer exceeded. In instances where the Gavins Point release falls below 45 kcfs, the release would be terminated.

Alternative 6 – Pallid Sturgeon Spawning Cue:

Alternative 4 would include the three specific AM actions focused on understanding limiting factors associated with the listed species. Under Alternative 6, the Corps would also mechanically construct ESH annually at an average rate of 303 acres per year across the entire system. This amount represents the acreage necessary to meet the bird habitat targets after accounting for available ESH resulting from System operations, which includes a spring pallid sturgeon flow release. The average annual construction amount includes replacing ESH lost to erosion and vegetative growth, as well as constructing new ESH.

The Corps would attempt a spring pallid sturgeon flow release every 3 years consisting of a bimodal pulse in March and May. These flow releases would not be started or would be terminated whenever flood targets are exceeded.

Analysis of the Evaluation Methods

Estimation of project-related habitat changes is a fundamental technique used to assess project impacts to fish and wildlife resources. Those estimates also form the basis of other Corps evaluations such as alternatives analyses and benefits/costs. For this effort, the Corps used a number of models to describe potential impacts to fish and wildlife habitats. While helpful, there are important aspects of the biological response of many native fish and wildlife species that cannot be told by only evaluating modeled habitats. We recommend that current fish and wildlife monitoring data be used to complement the models results to verify fish and wildlife responses to the specific management actions in the alternatives analyses. We recommend that the AM program include monitoring for guilds of fish communities, which would be a good indicator of the health of listed species populations and functionality of their habitat.

Another important aspect of alternatives analyses is consistency and crosswalks among evaluation tools. During model development, the Service noted metrics from other HC groups could have direct applicability to fish and wildlife resources. For example, modeling of river inundation for flood risk and damages may have direct relevance to the timing, distribution, and duration of habitats important to fish and wildlife. Although the technical appendices indicate different models may have been used in estimating aquatic floodplain fish and wildlife habitats, it is not clear how or whether these analyses have been cross-walked with other evaluation tools. This is important to understand the accuracy, precision, and logic of model outputs and effects on fish and wildlife.

Connectivity between habitats via water is necessary for many species to access habitats at the right time to meet their life history needs. Future analyses should address connectivity of habitats, either through models, or the discussion of model results to put them in proper context. This is an example where habitat for one suite of species is not accessible habitat for other groups. This level of analyses is currently not found in the model results or discussion of fish and wildlife effects.

Evaluation of the Alternatives

The Service recognizes the difficulty in developing and analyzing alternatives that rely on adaptive management to define the alternatives themselves. We understand the current range of alternatives and applaud the Corps on their efforts to disclose their impacts on fish and wildlife resources of the Missouri River Basin. The Service acknowledges that each of the described action alternatives, bounded within the adaptive management framework, achieves the Management Plan's fundamental objectives; with this it is difficult to ascertain how much they advance other native fish and wildlife conservation in general. Specifically, it should also be recognized that success may ultimately only be achieved through the implementation of an array of actions currently not contained in any one specific alternative or even fully realized to date.

The draft MRRMP indicates that the BSNP Mitigation Project is intended to help reestablish a part of the natural ecology of the river and that the need to meet the objectives of the BSNP Mitigation Project are still relevant and remain unchanged. The Service encourages the Corps to describe in the MRRMP how the plan fulfills the scope and intent of the BSNP Mitigation Project for fish and wildlife resources. Doing so could help dispel concerns that the BSNP mitigation program is being deemphasized. Again, as noted in the planning aid letters dated June 18, 2014, April 28, 2016, and October 7, 2016, the Corps should describe plans to meet their mitigation responsibilities to all native fish and wildlife species on the river throughout the basin.

Monitoring

We recommend that changes to the monitoring program for implementation of the MRRMP also be in cooperation with technical experts in the Service and the state fish and game agencies. Further, we believe there are benefits to a more holistic approach that includes not only threatened and endangered species monitoring, but monitoring other species of concern, native species, and aquatic invasive species which will help our agencies understand the effects of implemented management actions.

A holistic monitoring approach should assess the status of physical drivers, physical conditions and ultimately ecosystem biotic conditions as outlined in Table 2. A monitoring program that incorporates such an approach will be important to understanding how alterations to the Missouri River system to facilitate recovery efforts for the listed species may provide information to inform other fish and wildlife species and provide conservation benefits to other fish and wildlife species and their needs. The opportunities to monitor other native fish and wildlife species while conducting monitoring for the three listed species can provide important data to inform management for multiple species. For example, while doing pallid sturgeon monitoring, it may be possible to also evaluate the forage fish community which can help inform pallid sturgeon recovery but also help address specific Endangered Species Act Petitions for fish like sicklefin and sturgeon chubs.

Recommended Fish and Wildlife Conservation Measures

We recognize the MRRMP-EIS is an effort to incorporate new scientific information into management actions for pallid sturgeon, least terns, and piping plovers and to develop an Adaptive Management Plan. While we believe the MRRMP will also have benefits to other fish and wildlife resources even though its focus is for listed species, a FWCA report provides an opportunity to discuss conservation actions that are broader than listed species. The Service provided preliminary recommendations on several specific measures we believe are valuable to realize our conservation objectives along the river, consistent with other project purposes and meeting the Corps BSNP Mitigation Project obligations. We encourage these measures be incorporated wherever possible as implementation, assessment and adaptation of the MRRMP and SAMP move forward. We reiterate them here:

BSNP Mitigation - We continue to believe this is an important component of Missouri River recovery and encourage the Corps to seek funding through various mechanisms available to your agency. We recommend the Corps continue to seek ways to maintain flexibility to meet the needs of all fish and wildlife species and seek opportunities to continue to implement the BSNP Mitigation Project within the MRRP. In concert with state partners, develop guidance on how mitigation will be applied in the upper non-channelized portion of the river to mitigate for impacts to the non-listed native fish and wildlife species.

Ecosystem Management - We recommend that as the MRRMP and SAMP commences, they progress towards a comprehensive approach to river management and that we analyze the impacts of the current and future Corps actions in the context of a functioning and resilient river ecosystem, in addition to the three listed species.

Floodplain Connectivity - We recommend that the Corps continue to acquire floodplain lands from willing sellers, by fee title or conservation easement at a rate necessary to conserve and develop habitat to sustain all endemic fish and wildlife, such as cottonwood forests, and wetlands; and restore lost recreational opportunities. Develop floodplain connectivity starting just below Gavins Point to the confluence to provide the nutrients needed to drive the aquatic ecosystem and restore habitat connectivity.

Flows - We recommend that the Corps continue to consider the full range of flows from magnitude, seasonal, and duration perspectives along with the impacts and benefits of associated land purchases and habitat modifications. We support developing experiments for flows to

assess the ability to attract spawning adult pallid sturgeon during May-July to help us answer several critical questions regarding pallid sturgeon early life history during July-September, and to understand the resiliency of other native fishes and their roles as pallid sturgeon forage. In particular, for the Missouri River between Fort Peck Dam and Lake Sakakawea, understanding the relationship between flows, temperature, drift distance, and the survival of larval pallid sturgeon could be key in the recovery of the species. Additionally, any scenario that evaluates the modification of Fort Peck Dam operations to enhance pallid sturgeon reproductive opportunity and larval survival in this stretch of river must also concern itself with the potential impact of those operational changes on river-reservoir dynamics in the Missouri River above Fort Peck Dam and how pallid sturgeon and other fisheries might be affected.

We also recommend that the analysis of this alternative include the additional life history benefits to the sturgeon and other fisheries that a spring flow would provide; and that the description of this alternative reflect the larger role that flow plays in the life history of the pallid sturgeon and other aquatic organisms.

Invasive and Injurious Species - We recommend that the Corps coordinate with the states on best management practices for dealing with specific invasive species. Field crews that work within the range of these species should be trained to identify invasive species and be familiar with the best management practices to prevent the spread of these species. We recommend that the Corps contribute to the knowledge base of Missouri River bigheaded carps by assessing the impacts of river regulation on spawning behavior and success, evaluating habitat creation projects in the Missouri River as habitat for invasive carp and what can be done to avoid increasing carp populations. Consider the cumulative impacts of other invasive and injurious species in the MRRMP.

Sediment management and bed degradation - We recommend the Corps continue their efforts to address bed degradation along the river, or any habitats we try to restore will likely be ineffective and/or short-lived. As the river bed degrades, water becomes less available to flow into constructed habitats, provide floodplain connectivity, or human uses. River bed degradation underpins all other issues and it is one of great interest to the basin stakeholders.

Monitoring - We recommend that changes to the monitoring program also be in cooperation with the Service and State Fish and Game Agencies and include a holistic approach that includes not only threatened and endangered species, but other species of concern, native species, and aquatic invasive species to help understand the benefits or detriments of implemented management actions. The holistic monitoring approach should assess the status of physical drivers, physical conditions and ultimately ecosystem biotic conditions as outlined in Table 2.

Coordination with Partners - We recommend the Corps continue to coordinate with the Service and State Fish and Game Agencies as individual projects are developed. In particular, when habitat improvement projects are being planned by the Corps, if those site specific projects are coordinated with the relevant State Game and Fish Agency, it would give an opportunity to cooperate on actions that might provide additional conservation benefits to fish and wildlife resources. For instance, when a project has mobilized the necessary equipment to undertake a project, if there are adjacent or nearby projects that could benefit from those resources being in the area, coordination could magnify the conservation benefits accrued if additional projects could be addressed at the same time.

Summary of Findings and FWS Position

The Service commends the Corps for committing to an adaptive management process, commencing with the science based effects analysis, and engaging with the Missouri River Recovery Implementation Committee in developing this management plan for the three listed species. These are critical components in successfully sorting through the highly complex issues and great uncertainty that has confounded previous attempts to establish management paradigms. As the MRRMP and SAMP commence implementation, it will be imperative to maintain a similar level of focus on the science, transparent communication with stakeholders, and deliberative analysis of emerging information to ultimately address the species ecological needs, and determine the best tools and actions with which to meet those needs.

As noted in our February 5, 2014 letter, as part of the MRRP, the Service encourages, the Corps to continue to seek opportunities to accelerate the effort to fulfill their BSNP mitigation responsibilities and advance opportunities to maintain flexibility to meet the needs of all fish and wildlife species while simultaneously implementing the MRRMP.

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Appendix A

Reports, letters, and memorandums previously submitted to the Corps

- USFWS. 1980. Fish and Wildlife Coordination Act Report, Missouri River bank stabilization and navigation project. U.S. Fish and Wildlife Service, Division of Ecological Services, Kansas City, Missouri. 77pp.
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and Comprehensive conservation strategy for the piping plover (*Charadrius melodus*) in its coastal migration and wintering range in the continental United States. Denver, Colorado. 166 pp.

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- USFWS. 2018. Biological Opinion on the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan Draft Fish and Wildlife Coordination Act Report for the Missouri River Recovery Management Plan and Science and Adaptive Management Plan. April 2018. 148 pp.
- Several planning aid letters and memorandums have previously been submitted to the Corps regarding the existing environmental conditions within the project area.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

Planning and Policy Division

AUG 24 2018

Michael Thabault
Assistant Regional Director, Ecological Services
U.S. Fish and Wildlife Service
Mountain-Prairie Region
134 Union Blvd.
Lakewood, Colorado 80228

Dear Mr. Thabault:

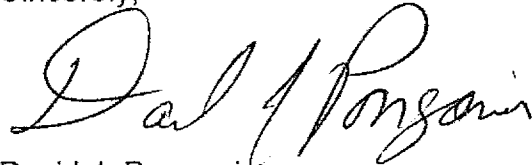
We have received your report entitled "Fish and Wildlife Coordination Act Report for the Missouri River Recovery Plan and Science and Adaptive Management Plan" (Report). Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) requires reports and recommendations from the U.S. Fish and Wildlife Service (Service) and state fish and wildlife agencies on certain water resource projects to be given full consideration. The section also requires the recommendations to be included in project reports to Congress and any other relevant agency or person with approval authority over the project. The Report constitutes the Service's Section 2(b) report on the U.S. Army Corps of Engineers' (USACE) proposed Missouri River Recovery Management Plan Environmental Impact Statement (MRRMP-EIS) and Science and Adaptive Management Plan (SAMP).

As stated in the Report, the Service and state fish and wildlife agencies have worked with the USACE over the last 70 years to improve and conserve fish and wildlife resources in and along the Missouri River to benefit the public and ensure those resources receive equal consideration with the other project purposes of the Missouri River Mainstem Reservoir System (System) and the Bank Stabilization and Navigation Project (BSNP). The Service and state agencies have provided ongoing fish and wildlife recommendations throughout that time, including planning input to the BSNP Fish and Wildlife Mitigation Project and Missouri River Master Water Control Manual revisions and associated Biological Opinions under the Endangered Species Act (ESA), as well as regular coordination during project implementation. The USACE appreciates the continued participation and input from the Service and state agencies in Missouri River fish and wildlife issues, most recently, their participation in the MRRMP-EIS process. These efforts have resulted in important habitat improvements and other benefits to Missouri River fish and wildlife.

We appreciate the information and perspectives provided in the Report and look forward to continued cooperation between our agencies on Missouri River fish and wildlife issues. The Report provides information that has been shared previously through planning aid

letters and other communications through our continued coordination during the MRRMP-EIS process. The issues and information described in the Report have therefore been fully considered in the planning process. The Report, along with this response letter, will accompany the Final EIS (FEIS) that will be released to the public, and will thus be provided to the USACE Northwestern Division (NWD) Commander prior to a signing of a Record of Decision (ROD). Issues and recommendations provided in the Report and clarifications on the MRRMP-EIS and SAMP effort are included in the attachment to this letter. We look forward to continuing the long history of engagement with the Service and state fish and game agencies on Missouri River fish and wildlife management as we move forward.

Sincerely,

A handwritten signature in black ink, appearing to read "David J. Ponganis". The signature is fluid and cursive, with the first name "David" being more prominent and the last name "Ponganis" following in a similar style.

David J. Ponganis
Director of Programs Directorate
Northwestern Division
U.S. Army Corps of Engineers

USACE Responses to the final “Fish and Wildlife Coordination Act Report for the Missouri River Recovery Plan and Science and Adaptive Management Plan”- August 2018

Scope and Focus of the FWCA Report

The Report’s title and identified scope both indicate that the program being reviewed is the MRRMP-EIS and SAMP. While the Report does address the MRRMP-EIS and SAMP, the majority of the Report is focused on negative fish and wildlife impacts from construction of the System and BSNP rather than benefits to fish and wildlife from the alternatives identified in the MRRMP-EIS and SAMP. Because the scope and focus of the report is broader than the MRRMP-EIS and SAMP, we are concerned that the public, stakeholder groups, state and local governments, and Tribes may misunderstand or overlook the anticipated fish and wildlife benefits of the MRRMP-EIS alternatives and the SAMP. As a result of the Report, they may also be left with the impression that the MRRMP-EIS and SAMP falls short of its objectives and Purpose and Need. However, the MRRMP-EIS, the SAMP, the 2017 Biological Assessment (BA), and the 2018 Biological Opinion (BiOp) all conclude that the preferred alternative implemented through the SAMP will achieve the Purpose and Need and objectives. It is important to emphasize that the alternatives in the MRRMP-EIS and the SAMP are designed to benefit the least tern, piping plover, and pallid sturgeon. Furthermore, the MRRMP-EIS concludes that actions for the three listed species will not only achieve the listed species objectives, but will also have ancillary benefits to other Missouri River fish and wildlife. These benefits and impacts to fish and wildlife are presented in several sections of the MRRMP-EIS: Section 3.5 Fish and Wildlife Habitat, Section 3.6 Other Special Status Species, and Section 3.23 Ecosystem Services.

The Relationship of the BSNP Fish and Wildlife Mitigation Project and the MRRMP-EIS and SAMP

Several sections of the Report ask the USACE to further clarify and describe the role and intent of the MRRMP-EIS and SAMP in meeting the needs of the BSNP Mitigation Project. The USACE has been clear in the relationship between the BSNP Mitigation Project and the MRRMP-EIS. The focus of the MRRMP-EIS and SAMP and relationship to the BSNP Fish and Wildlife Mitigation Project are described in several sections of the FEIS and provided below:

Section 1.2 of the MRRMP-EIS presents the purpose of the MRRMP-EIS and SAMP:

“The purpose of this MRRMP-EIS is to develop a suite of actions that meets USACE ESA [Endangered Species Act] responsibilities for the pallid sturgeon, piping plover, and interior least tern. Authorities used to meet this purpose may include existing USACE authorities related to Missouri River System operations for listed species and acquisition and development of land needed for creation of habitat for listed species provided in Section 601(a) of WRDA [Water Resources Development Act] 1986, as modified by Section 334(a) of WRDA 1999, and further modified by Section 3176 of WRDA 2007 although alternatives formulation was not limited to these authorities.”

Section 1.4, presents the fundamental Objectives of the MRRMP-EIS and SAMP:

- Pallid sturgeon fundamental objective: avoid jeopardizing the continued existence of the pallid sturgeon from USACE actions on the Missouri River.
- Piping Plover fundamental objective: avoid jeopardizing the continued existence of the piping plover due to USACE actions on the Missouri River.

Section 1.5 further clarifies the scope of the MRRMP-EIS and SAMP in relation to the Mitigation Project:

"This document does not re-evaluate the entire BSNP Mitigation project but addresses the effects of land acquisition during the implementation timeframe of this EIS. The land acquisition authority and types of habitat development as described in the *Final Supplemental EIS for the Missouri River Fish and Wildlife Mitigation Project* (USACE 2003a), and the *Missouri River Bank Stabilization and Navigation Project Final Feasibility Report and Final EIS for the Fish and Wildlife Mitigation Plan* (USACE 1981) are still considered to be adequate and reasonable to mitigate the effects of the BSNP."

Section 1.8.2 of the EIS describes how the land acquisition authority from the Mitigation Project would be used to support the MRRMP-EIS and SAMP:

"The land acquisition authority used by the MRRP [Missouri River Recovery Program] for BiOp compliance is derived from Section 601 of WRDA 1986, as amended by Section 334 of WRDA 1999 and Section 3176 of WRDA 2007. This authority is limited to habitat mitigation for the effects of the BSNP and therefore cannot be separated from the requirement that lands acquired also serve to offset the impacts of the BSNP. USACE has no independent authority to acquire land for ESA compliance along the Missouri River, but USACE is able to acquire lands in areas that also constitute a necessary and proper expense under the WRDA land acquisition authority."

Section 2.5.4 describes habitat development and land management that will continue to occur on MRRP lands:

"USACE must typically purchase enough land to accommodate the habitat project and provide a buffer between the project and adjacent lands. Based on an assessment of past pallid sturgeon SWH projects implemented by USACE, it was determined that an average of 7.7 acres of land are acquired for every 1 acre of pallid sturgeon habitat needed. USACE would develop habitat on lands consistent with its authorizations under the WRDA 1986, 1999, and 2007. Habitat development has included chutes and side channels, shallow water habitat, backwater areas, slack water habitats, wetlands, bottomland forest, and native prairie. The WRDA land acquisition authority is a result of USACE mitigation recommendations under the Fish and Wildlife Coordination Act and therefore cannot be separated from the requirement that lands acquired for pallid sturgeon habitat construction also serve to mitigate for the BSNP impacts. The land acquisition authority for mitigation of the construction of the BSNP is not being reassessed through this Management Plan, and the total mitigation authority acres remain at 166,750 acres. USACE has acquired approximately 66,616 acres of the authorized 166,750 acres, nearly 40 percent. Land acquisition and habitat development under the BSNP mitigation authority is not limited to pallid sturgeon habitat and can include restoration of native vegetation, wetlands, bottomland forest, backwaters and other Missouri River habitats lost due to the BSNP. It is assumed real-estate purchases for the 15-year implementation timeframe would continue to prioritize land that contributes to jeopardy avoidance, while still constituting appropriate acquisition and development under the aforementioned WRDA authorities. Land acquisition itself does not necessarily equate to Fish and

Wildlife Coordination Act mitigation, rather, the determination of the appropriate land cover and habitat types for a parcel of land requires a site-specific analysis, which would be conducted in tandem with planning for site-specific aquatic habitat related specifically to jeopardy avoidance.

USACE has worked with USFWS and the natural resource or conservation agencies of the four lower basin states (Iowa, Kansas, Missouri, and Nebraska) to develop and implement fish and wildlife habitat restoration plans for MRRP lands acquired under WRDA authorities. Historically, USACE has established native vegetation, created wetlands, restored riparian buffers, and performed other restoration activities.

Acquired lands are managed by USACE, state fish and wildlife agencies, or USFWS."

The Section 7(a)(1) Plan (Appendix D of the Final BA) describes additional conservation strategies and measures that could be undertaken by the USACE to benefit listed species and fish and wildlife:

- Conservation Strategy 1: Identify opportunities to operate the System to benefit listed species
- Conservation Strategy 2: Support the Pallid Sturgeon Propagation and Augmentation Program
- Conservation Strategy 3: Identify opportunities to maintain the BSNP in a manner that could contribute beneficially to aquatic habitat
- Conservation Strategy 4: Prioritize land acquisition that contribute to meeting pallid sturgeon habitat requirements when consistent with BSNP Fish and Wildlife Mitigation Project authority
- Conservation Strategy 5: Consider Indiana bat and northern long-eared bat habitat needs in planning of site-specific habitat development for Mitigation Project lands
- Conservation Strategy 6: Evaluate potential for levee modifications at existing and future mitigation sites
- Conservation Strategy 7: Determine if there is potential to operate the Kansas River projects in a manner that would increase benefits to native species

Full Consideration of Fish and Wildlife Resources and Evaluation Methods

As explained in the MRRMP-EIS and SAMP, the fundamental objectives and purpose and need for the plan are focused on the three listed species. Therefore, the alternatives are focused on the three listed species. Impacts and benefits to fish and wildlife from implementation of the alternatives were given full consideration in the MRRMP-EIS effort. Three different sections describe impacts and benefits to Missouri River fish and wildlife from the MRRMP-EIS alternatives: Section 3.5 Fish and Wildlife; Section 3.6 Other Special Status Species; and Section 3.23 Ecosystem Services. The same level of effort was used to determine impacts and benefits to fish and wildlife as was used in determining impacts and benefits to the Missouri River authorized purposes and other river uses. This included using the same state-of-the-art hydrology and hydraulic modeling tools that were used to determine impacts and benefits to Flood Risk Management and other authorized purposes, in addition to other lines of evidence. The analyses in the MRRMP-EIS show that all of alternatives would have benefits to a variety of fish and wildlife species as described in those sections of the EIS.

The Report also states that the MRRMP-EIS did not analyze connectivity between habitats via water. It should be noted that habitat connectivity with river flows, and how the different alternatives might change those habitats given different flows, was the focus of our modeling efforts.

Recommended Fish and Wildlife Conservation Measures

The Report concludes by providing specific fish and wildlife conservation measures that the Service encourages to be incorporated wherever possible as implementation, assessment and adaptation of the MRRMP-EIS and SAMP move forward. We have fully considered these recommendations and provide our responses below:

BSNP Mitigation: The USACE will continue to acquire lands from willing sellers and construct habitat for listed species under the MRRMP and SAMP which will also benefit other species of fish and wildlife. The land acquisition authority and types of habitat development as described in the *Final Supplemental EIS for the Missouri River Fish and Wildlife Mitigation Project* (USACE 2003a), and the *Missouri River Bank Stabilization and Navigation Project Final Feasibility Report and Final EIS for the Fish and Wildlife Mitigation Plan* (USACE 1981) are still considered to be adequate and reasonable to mitigate the effects of the BSNP.

Ecosystem Management: While USACE understands the importance of a functional and resilient ecosystem for all species of Missouri River fish and wildlife, the USACE has been charged by Congress to meet the Missouri River authorized purposes, to meet responsibilities under the ESA, and to mitigate the effects of the BSNP through the BSNP Mitigation Project. The USACE has identified a preferred alternative that attempts to identify and correct limiting factors in the ecosystem that will allow the USACE to avoid jeopardy to the listed species and allows USACE to meet the authorized purposes.

Floodplain Connectivity: As described in the 7(a)(1) conservation plan, the USACE will evaluate potential for levee modifications at existing and future mitigation sites and continue to prioritize land acquisition that contributes to meeting pallid sturgeon habitat requirements when consistent with BSNP Fish and Wildlife Mitigation Project authority. These conservation measures will be a benefit to a variety of fish and wildlife species in addition to the pallid sturgeon.

Flows: First, The USACE has examined a full range of flows in the MRRMP-EIS process. Alternative 3 contains a one-time test of the spring pallid spawning cue pulse. Through proper implementation of Adaptive Management, if a spring pulse is found to be important to the pallid, the one-time spawning cue test will be scientifically designed to elicit meaningful results. Second, modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. Finally, in recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan, through an amendment to the BA. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of the MRRMP-EIS.

Invasive and Injurious Species: The impacts from non-native/invasive species, including cumulative impacts, to fish and wildlife were described in Section 3.5.2.10 Invasive Species. Management actions would be performed in accordance with applicable guidance and regulation. For example, pursuant to Executive Order 13122 federal agencies may not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species. Any management actions taken would be evaluated on a site-specific level to ensure that compliance with Executive Order 13122 is met. It is not expected that any invasive aquatic wildlife species would spread because of any of the management actions in the MRRMP-EIS.

Sediment Management and Bed Degradation: The USACE will continue to design habitat projects to function under a variety of flows in recognition of ongoing bed degradation issues. Sediment management and bed degradation and aggradation are the subject of several ongoing USACE efforts and information from these efforts will continue to be used where it overlaps with fish and wildlife issues.

Monitoring: The continued participation of the USFWS and state fish and wildlife agencies in the design and revision of monitoring programs is critical to their success. Ongoing progress on the Pallid Sturgeon Population Assessment Program (PSPAP) redesign (and opportunities for comment) can be accessed here: <https://mcolvin.github.io/PSPAP-Reboot/>. These suggestions will be considered as part of the revision of the PSPAP, as well as in development of monitoring plans to assess the effectiveness of actions.

Coordination with Partners: As stated in the MRRMP-EIS, USACE has worked with USFWS and the natural resource or conservation agencies to develop and implement fish and wildlife habitat restoration plans for MRRP lands acquired under WRDA authorities. Historically, USACE has established native vegetation, created wetlands, restored riparian buffers, and performed other restoration activities. Acquired lands are managed by USACE, state fish and wildlife agencies, or USFWS. The USACE intends to continue coordination and cooperation with partners on habitat creation efforts.

APPENDIX C: CUMULATIVE ACTIONS DESCRIPTIONS

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Appendix C: Cumulative Actions Descriptions

This section presents the cumulative actions that were identified and a description of each action.

Missouri River Mainstem Reservoir System Construction: The 1944 Flood Control Act (FCA) authorized the construction and operation of five large dams on the Missouri River mainstem. The projects authorized by the FCA, along with their reservoirs, are Garrison Dam (Lake Sakakawea) in North Dakota; and Oahe Dam (Lake Oahe), Big Bend Dam (Lake Sharpe), Fort Randall Dam (Lake Francis Case) and Gavins Point Dam (Lewis and Clark Lake) in South Dakota. The construction of Fort Peck Dam (Fort Peck Lake) in Montana was authorized in the Rivers and Harbors Act of 1935; however, the 1944 FCA incorporated the Fort Peck Dam along with the other five dams and reservoirs to form the System. Construction of the dams was completed in 1964.

Bank Stabilization and Navigation Project Construction: The BSNP consists mainly of rock pile structures and revetments along the outsides of bends and transverse dikes along the insides of bends to force the river into a single active channel that is self-maintaining. As authorized, the BSNP provides a 9-foot-deep channel with a minimum width of 300 feet during the navigation season from April 1 to November 30 between Sioux City, Iowa, and the mouth of the Missouri River near St. Louis, Missouri.

Missouri River Bed Degradation/Aggradation: Sediments carried by the upper Missouri River and its tributaries are deposited in the upper ends of the reservoirs. As a result, the river channel downstream of the dams deepens (degrades) as sediment that erodes from the channel floor is not replenished with sediment from upstream sources (USACE 2014d; USACE 2014e). Aside from degradation, the riverbed experiences progressive armoring. Armoring is the gradual loss of finer sediment particles and the buildup of progressively larger sediment grain sizes, such as gravel and cobbles. The channel bed at the mouths of tributaries entering a degraded reach of the mainstem Missouri River may also degrade (i.e., head cutting). In some stretches of the river, the degradation rates have decreased substantially since reservoir construction, while in other stretches degradation continues to shape the river as it seeks its dynamic equilibrium.

USACE (2017a) analyzed bed degradation in the lower Missouri River from St. Joseph to Waverly, Missouri. Within this study reach, it was concluded that commercial sand and gravel mining was the dominant cause of bed degradation observed in Kansas City since 1994 and that commercial sand and gravel mining is the dominant driver of projected bed degradation over the next 50 years.

Missouri River Depletions for Agriculture, Municipal, and Industrial Use: This action includes water withdrawals directly from the river channel and associated return flows (if any). Irrigation, agriculture, and municipal/industrial use take place on the floodplain or adjacent uplands, supplied by pumping directly from the river.

Oil and Natural Gas Production: This action includes water withdrawals for use in hydraulic fracturing technologies for oil and gas wells. Return flows of treated wastewater from these activities is possible. Hydraulic fracturing is a key element in the development of natural “shale gas” fields, of which several are under development or forecast for development in the basin. Oil

and Natural Gas Production also includes construction of infrastructure such as pipelines, roads, utilities, well pads, and staging areas.

Groundwater Withdrawal Practices: This action includes groundwater pumping for a wide range of uses, from both shallow and deep aquifers, both along the floodplain of the mainstem and tributaries and across the uplands of the basin.

Floodplain Animal Pasturing/Grazing: This action includes the use, alteration, or conversion of land in the floodplain of the mainstem Missouri River to grassland for pasturing animals.

Floodplain Development (Urban, Residential, Commercial, Industrial): This action includes a wide range of development that converts natural lands to a wide range of urban, residential, commercial, and industrial uses.

Crop Production: This action includes the conversion of land from native habitat to crop production. Extensive acreage within the floodplain of the Missouri River and its tributaries, as well as the surrounding uplands, has been converted for crop production (Bragg and Tatschl 1977; Hesse et al. 1988; National Research Council 2002).

Levee Construction (federal and private): This action includes the placement, design, and management of structures intended to prevent or control floodplain inundation.

Fishery Stocking and Management: This action includes the stocking and management of native or non-native fish that can alter the natural fish composition in an area. This includes stocking of sport-fish in reservoirs. This action also includes past, present, and reasonably foreseeable commercial fishing that has occurred on the Missouri and Mississippi Rivers.

Snag Removal: This action includes the historic removal of large woody debris from the river channel and banks. This includes removal of floating, stranded, and buried snags.

Transportation and Utility Corridor Development: This action includes the construction and maintenance of bridges, highways, local roads, railways and electrical and gas rights of way.

USACE Continuing Authority Programs (i.e., Section 514, 206, 1135): USACE has several Continuing Authority Program (CAP) ecosystem restoration authorities that have been used to restore fish and wildlife habitat in the Missouri River floodplain and could be used to fund the restoration of additional habitat in the future. These include Section 514 (Missouri and Middle Mississippi Rivers Enhancement Projects), Section 1135 (Environmental Restoration Projects), and Section 206 (Aquatic Ecosystem Restoration). The habitat created by these programs on the Missouri River has historically been minor in scope compared to the MRRP.

Management of USACE Project Properties: Missouri River project lands managed by the USACE represent a significant amount of designated fish and wildlife habitat in the study area. Project lands are divided into land classifications that govern the land uses, management activities, and level of development that are allowed. The Environmentally Sensitive, Wildlife Management, and Vegetation Management classifications are managed predominantly for fish and wildlife habitat; accordingly, the majority of restoration activities on project lands take place on these land classifications.

USACE Regulating Works Project: The USACE is responsible for providing a 9-foot-deep and not less than 300-feet-wide navigation channel on the Middle Mississippi River. This is achieved

through the Regulating Works Project. The Regulating Works Project consists of bank stabilization and sediment management to ensure adequate width and depth. Project improvements are achieved through the construction of river training structures, revetment, rock removal, and construction dredging. A record of decision was signed in August 2017 for a supplemental EIS (SEIS) prepared by the USACE to examine new circumstances and information on the potential impacts of the Regulating Works Project that were not considered in the original 1976 EIS. The Regulating Works Project is maintained through dredging and any needed maintenance to already constructed features. These present activities would continue into the future.

USFWS National Wildlife Refuge (NWR) System Lands Management: The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats. Seven national wildlife refuges are located along the mainstem Missouri River encompassing a total of 1,192,891 acres:

- Charles M. Russell NWR in north-central Montana;
- Audubon NWR in central North Dakota;
- Karl E. Mundt NWR in southeastern South Dakota;
- Desoto NWR and Boyer NWR on the Iowa/Nebraska border;
- Squaw Creek NWR in northwestern Missouri; and,
- Big Muddy NWR, which consists of several land units in the Missouri River floodplain between Kansas City and St. Louis, Missouri.

There are 40,319 acres remaining in acquisition authority for the Big Muddy NWR and 7,607 acres for Boyer Chute NWR (USACE, USFWS, 2010).

USFWS Aquatic Invasive Species Program: The USFWS Aquatic Invasive Species Program contributes to the conservation of federal trust species and their habitats by preventing the introduction and spread of aquatic invasive species, monitoring habitats to determine the distribution of invasive species, rapidly responding to new invasions, and controlling established populations. The Aquatic Invasive Species Program is made up of three elements: state plans / National Invasive Species Act of 1996 implementation, prevention, and control and management. Through the Aquatic Invasive Species Program, the USFWS provides grants for state and tribal aquatic nuisance species management plans. With approval of a state or Tribe's plan, matching funds for activities detailed in the management plan are available. Annual funding for the Aquatic Invasive Species Program nationwide is estimated at \$6.3 million.

NRCS Easement Programs (WRP and EWPP-FPE): As of 2010, a total of 67,707 acres of private lands, including Tribal lands, within the bluff-to-bluff Missouri River floodplain were enrolled in some form of NRCS easement program. These acres are primarily Wetland Reserve Program (WRP) acres (49,572 acres or 73 percent), but also include 6,527 acres enrolled in Emergency Watershed Protection Program - Floodplain Easements (EWPP-FPE), and 11,084 acres in the Emergency Wetland Reserve Program (EWRP). The EWRP was established in response to 1993 flooding in the upper Mississippi and lower Missouri River basins and is not currently active although current acreages remain in the program.

NRCS Technical and Financial Assistance Programs (e.g., CSP, EQIP, WHIP):

- **Conservation Stewardship Program (CSP):** The CSP is a conservation assistance program that supports stewardship of private agricultural lands by providing payments for maintaining and enhancing natural resources. The annual payment is based on the level of conservation stewardship achieved. The seven Missouri River basin states averaged a total of \$1 million in CSP funding annually from 2005 to 2010.
- **Environmental Quality Incentives Program (EQIP):** The EQIP program provides technical, financial, and educational assistance to farmers and other private landowners to help plan and implement conservation practices that address natural resources concerns and for opportunities to improve soil, water, plant, animal, air, and related resources on agricultural land and non-industrial private land. The seven Missouri River basin states averaged a total of \$199.7 million annually in EQIP funding from 2005 to 2010.
- **Wildlife Habitat Incentive Program (WHIP):** The WHIP is a voluntary program that assists private landowners in developing and improving wildlife habitat on agricultural land, nonindustrial private forest land, and Tribal lands. The seven Missouri River basin states averaged a total of \$17.5 million annually in WHIP funding from 2005 to 2010.

NPS Missouri National Recreational River Management Actions: The MNRR, located on the border between Nebraska and South Dakota, represents the majority of land managed by the NPS on the Missouri River. Although there has been development along the Missouri River within the national park, it is one of the few remaining segments that still exhibit some characteristics of a natural undammed and unchannelized river. To ensure this in the future, NPS staff continually monitor changes in environmental factors and implement plans and actions to preserve and protect natural resources. A general management plan and environmental impact statement for the lower 59-mile reach was issued in 1999, and for the upper 39-mile stretch was issued in 1997, which was meant to provide guidance for 10–15 years. Approximately 70,000 acres are included between the two reaches. MNRR management includes active preservation and restoration of native vegetation on roughly 300 acres. Habitat creation within the Missouri River floodplain includes two cottonwood regeneration projects near Bow Creek. Wetland creation along the MNRR is primarily through the NRCS Wetlands Reserve Enhancement Program and WRP. The MNRR includes management strategies to directly benefit both the endangered least tern and piping plover.

EPA Section 319 Non-Point Source Grant Program: The mission of the EPA is to protect human health and the environment. EPA administers regulatory and voluntary grant programs under the Clean Water Act (CWA) that contribute to mitigation, recovery, and restoration on the landscape/watershed scale. The passage and implementation of the CWA established a regulatory framework that resulted in considerable improvement in the nation's water quality. The Section 319 Non-Point Source Grant Program under the CWA provides grant money to states and Tribes to support nonpoint source control projects. A wide variety of support is provided under this program including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, watershed planning, implementation of best management practices and monitoring. Specific project actions include:

- Total Maximum Daily Load establishment and monitoring
- Best Management Practice design and implementation
- Wetland restoration/protection

- Nutrient runoff management
- Water quality assessment and monitoring
- Stormwater discharge control
- Vegetation management
- Erosion control
- Streambank stabilization

From 2007 to 2011 the seven mainstem states received a total yearly average of \$14.1 million in Section 319(h) grant funding.

Tribal Programs and Actions: The Tribes along the Missouri River are involved with natural resources management and several tribes are involved with the management of federally listed species. As an example, the Cheyenne River Sioux Tribe is involved with the management of federally listed species through their involvement with monitoring terns and plovers on the Missouri and Cheyenne Rivers (USFWS 2000). The Cheyenne River Sioux Tribe and the Lower Brule Sioux Tribe have also developed terrestrial mitigation projects under Title VI – Cheyenne River Sioux Tribe, Lower Brule Sioux Tribe, and State of South Dakota Terrestrial Wildlife Habitat Restoration (PL 105-277) and WRDA of 1999 (PL 106-53). The Cheyenne River Sioux and Lower Brule Sioux Tribes have designed their mitigation efforts to restore riparian, ecological, and cultural significance to their land adjacent to the Missouri River. Example projects on the Cheyenne River reservation include planting cottonwood saplings along the shoreline to mitigate for loss of cottonwood forests due to the impoundment of Lake Oahe, wetland restoration along Medicine Creek, and construction of an island to protect a cultural site and to provide an area for native tree, shrub, and prairie grass plantings.

Comprehensive Wildlife Conservation Plans and Protected Natural Areas (all states): Each state along the Mainstem Missouri River implements a comprehensive fish and wildlife habitat management plan (CWMP) that, at a programmatic level, serves to synthesize information on wildlife species, habitats, threats, conservation priorities and opportunities (Storms et al. 2008). The plans emphasize ecosystems and species of greatest conservation need. In the majority of states, the CWMPs represent an increased emphasis on conserving non-game species. The CWMPs also serve to identify priority conservation areas; each mainstem state identifies portions of the Missouri River as a high priority for conservation.

Yellowstone Intake Diversion Dam Modification: The goal of the Yellowstone Intake Diversion Dam modification is to improve passage for the endangered pallid sturgeon and other native fish and to reduce entrainment of fish into the main channel of the Lower Yellowstone Project. The implementation timeline for this project is currently uncertain due to ongoing litigation.

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APPENDIX D: HYDROLOGIC PERIOD OF RECORD ANALYSIS OF ALTERNATIVES

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Appendix D: Hydrologic Period of Record Analysis of Alternatives

This appendix provides the graphics of the overall long-term hydrology in the river and reservoirs based on the period of record (POR). The POR consists of average measurements of stage (or elevation) and flow for each day over 82 years between 1931 and 2012¹. The analysis evaluates key locations along the Missouri River, as well as for St. Louis at the Mississippi River downstream of the confluence with the Missouri River (Figure D-1).

General hydrologic conditions in the river and its reservoirs were analyzed using the statistical 90th, 50th, and 10th percentiles simulated for flow conditions of the 82-year POR for the six alternatives. It is noted that flows and stages presented in this analysis are not observed data. All simulated results are corrected to reflect the 2012 level of water development, commonly referred to as depletions. Depletions to streamflow result from evaporation on System and tributary reservoirs, irrigation, implementation of Tribal water rights, conservation practices in the basin, and development of the multitude of stock and farm ponds. Reservoir stages and releases are from model simulations using the depletion corrected inflow. Therefore, while the flows and stages determined for alternatives can be compared to each other, it is not possible to compare to observed data.

A percentile is a statistical measure indicating the value below which a given percentage of observations in a group of observations falls. For example, the 90th percentile of a reservoir elevation reflects the elevation below which 90 percent of the elevations may be found; only 10 percent of the elevations would be higher. Thus, the 90th percentile may be indicative of “wet period” conditions. A “period” could be a year or several years long, affecting storage and flow conditions. Similarly, the 10th percentile is the reservoir elevation below which 10 percent of the elevations may be found; 90 percent of the elevations would be higher. Thus, the 10th percentile may be indicative of “dry period” conditions. Finally, the 50th percentile of the reservoir elevation may be indicative of “average” conditions, where 50 percent of the elevations are higher and 50 percent of the elevations are lower. Similar definitions also apply to percentiles used for flow and stage in the river.

Impacts under wet, average, and dry period conditions (90th, 50th, and 10th percentile, respectively) are presented together for the six alternatives to demonstrate similarities and differences. However, hydrological conditions during individual years can result in specific changes under individual alternatives. For example, during extreme droughts such as in the 1930s and during peak flow events such as the spring and summer of 2011, rules would prevent flow releases under Alternatives 1, 2, 4, 5, and 6 to avoid a potential worsening of the effects of these extreme conditions.

Presented figures with percentile summaries superimpose all six alternatives; these figures include the following:

- Percentiles of the elevations for the upper four reservoirs (Figures D-2 to D-5).

¹ It is noted that the analysis is limited to an 82-year period of record. Consequently, the number of years with flow conditions that would trigger releases under the various action alternatives is limited and statistically small. The limited data set necessitates monitoring of impacts and adaptive management under any implemented action alternative.

- Percentiles of stage and flow, as well as maximum flows, at Bismarck, North Dakota (Figures D-6 to D-8).
- Percentiles of flow at Gavins Point Dam, South Dakota; Sioux City, Iowa; Omaha, Nebraska; Nebraska City, Nebraska; and Kansas City, Missouri (Figures D-9 to D-13).
- Percentiles of stage at Sioux City, Iowa; Omaha, Nebraska; Nebraska City, Nebraska; and Kansas City, Missouri (Figures D-14 to D-17).
- Percentiles of flow, as well as maximum and minimum flow at St. Louis, Missouri, downstream of the confluence with the Missouri River.

For the Missouri River, the analysis of Figures D-2 to D-17 is provided in Section 3.2.2.3, Impacts on Hydrology from the Alternatives. For the Mississippi River (St. Louis Station), the analysis of Figure D-18 and D-19 is provided in Section 3.24, Mississippi River Impacts.

None of the proposed management actions would change the total volume of water transported through the river System over the long term. However, the timing of flow releases and flow rates would be altered and some dominant peak flows may be introduced by high releases, which would affect geomorphological processes in the river, groundwater elevations, and riverine infrastructure. Similarly, the overall fluctuations in elevation in the upper three reservoirs are dominated by natural precipitation and snow melt patterns. However, flow releases under the proposed action would add fluctuations in the reservoir elevations; these added fluctuations could increase shoreline erosion as a result of the wetting and drying cycle.

Future Conditions

The statistical analyses in Figures D-2 to D-17 pertain to “Year 0.” Year 0 reflects conditions based on (1) the current storage volume in the six reservoirs along the upper Missouri River and (2) the current geometry of the Missouri River riverbed. Over time, these two variables will continue to change as follows: Continued sediment supply over time will gradually reduce the storage volume in the reservoirs of the upper Missouri River, and continue to cause aggradation in the reservoir headwaters and delta. Sediment captured by the reservoirs will continue to degrade the riverbed in respective downstream reaches. In addition, sand and aggregate mining in the lower Missouri River is expected to continue degrading the riverbed.

In order to account for future reservoir sediment accumulation and riverbed degradation, flows and stage/elevation for the six alternatives were also modeled for “Year 15.” Year 15 reflects conditions that are expected to exist after 15 years of operating a specific alternative. These conditions integrate continued reservoir storage loss and aggradation in the reservoir deltas as well as degradation of the riverbed from sediment capture by the reservoirs and from sand and gravel mining at currently projected rates of extraction.

Inflows in Year 15 would be the same as in Year 0. However, some flow changes would occur because of the way HEC-ResSim operates the System with different storage volumes to meet the requirements specified in the Master Manual (USACE 2006a). The mean flow release at Gavins Point Dam in Year 15 are projected to decrease by less than 70 cfs (0.03 percent) under the six alternatives compared to flows in Year 0 (Figure D-20). However, elevations in the

reservoirs and stages in the river would change in Year 15. Figures D-21 to D-30 present a comparison of elevations and stages under Year 0 and Year 15 for select locations as follows:²

- Elevations in the upper three reservoirs along the Missouri River (Figures D-21 to D-23)
- Stages at Bismarck, North Dakota (Figure D-24)
- Stages at Sioux City, Iowa; Omaha, Nebraska; St. Joseph, Missouri; and Kansas City, Missouri (Figures D-25 to D-29).
- Stages in the Mississippi River at St. Louis, Missouri, downstream of the confluence with the Missouri River (Figure D-30).

For the Missouri River, the analysis of Figures D-21 to D-29 is provided in Section 3.2.2.3, Impacts on Hydrology from the Alternatives. For the Mississippi River (St. Louis Station), the analysis of Figure D-30 is provided in Section 3.24, Mississippi River Impacts. In summary, the elevations and stages are projected to change as follows between Year 0 and Year 15:

- **Upper three reservoirs:** Elevations in the upper three reservoirs (Fort Peck Lake, Lake Sakakawea, Lake Oahe) would increase slightly (Figures D-21 to D-23). The mean elevation in the three upper reservoirs would be 1 to 2 feet higher under the six alternatives throughout the year in Year 15 as compared to Year 0. This is reflected, for example, by average period (50th percentile) elevations for the three reservoirs under the No Action alternative (Figure 3-8 in the main report); 50th percentile elevations for the other five alternatives would be similar. However, reservoir releases prior to drought years could result in higher minimum elevations (up to 20 feet) in each of the three upper reservoirs in subsequent years due to drought conservation measures (e.g., reducing service levels) being triggered earlier.
- **Lower three reservoirs:** Changes in elevations in the lower three reservoirs (Lake Sharpe, Lake Francis Case, Lewis and Clark Lake) from Year 0 to Year 15 would be negligible.
- **Upper Missouri River, Bismarck, North Dakota:** The stages in Bismarck would be slightly lower (mean of approximately 4 inches) in Year 15 under the six alternatives due to minor degradation (Figure D-24).
- **Lower Missouri River, Gavins Point Dam to Rulo, Nebraska:** In the upper portion of the lower Missouri River (Gavins Point Dam to Rulo, Nebraska), continued degradation of the riverbed due to sediment captured by the reservoirs would lower the stages slightly in Year 15 compared to Year 0. For example, the mean decrease in Year 15 as compared to Year 0 would be approximately 0.5 foot both at Sioux City, Iowa, and at Omaha, Nebraska (Figures D-25 and D-26). This decrease in stage would typically be consistent throughout the year, as shown for example by the 50th percentile stages for Years 0 and 15 under the No Action alternative (Figure 3-9 in the main report); 50th percentile stages for the other five alternatives would be similar. However, flow release

² The data on these figures are shown as box plots. The diamond in the center of each box represents the mean; the horizontal line within each box represents the median; the colored range of each box represents the 5th and 95th percentiles; and the extreme endpoints of the lines outside of each box represent the minimum and maximum values.

alterations during drought year periods (such as 1930s) could result in larger decreases in stages of the lower river.

- **Lower Missouri River, Rulo, Nebraska, to St. Louis, Missouri:** The residual degradation effect of sediment captured by the reservoirs combines with degradation from sand and aggregate mining in the lower reach of the lower Missouri River between Rulo, Nebraska, and the confluence with the Mississippi River in St. Louis, Missouri. Rates of degradation in this reach are variable because of several factors, including projected amount of sediment to be mined, response of the river channel to changes in mining volumes over time, sediment contributions from larger tributaries such as the Kansas River, and responses of the riverbed due to peak flow events.

Using assumptions based on currently available information and reasonable forecasts, HEC-RAS modeling predicted a decrease in the mean stage at St. Joseph, Missouri, by approximately 2.5 feet for the six alternatives in Year 15 compared to Year 0 (Figure D-27). In Kansas City, just downstream of the confluence with the Kansas River, the projected mean stage in Year 15 would only be slightly lower (approximately one inch) compared to Year 0 (Figure D-28). The reason for the comparatively small decrease in Kansas City is contributed to reduced sand and aggregate mining rates in recent years that has led to some recovery of the riverbed elevations, and due to sediment carried into the Missouri River from degrading reaches upstream and by the Kansas River. Longer-term, however, if sand and aggregate mining continues at current rates in the vicinity of Kansas City, degradation rates of the riverbed in this reach could increase again.

As for the reach of the lower Missouri River between Gavins Point Dam to Rulo, Nebraska, the decrease in stage downstream of Rulo is typically consistent throughout the year, as shown for example by the 50th percentile stages for the No Action alternative (Figure 3-9 in the main report); 50th percentile stages for the other alternatives would be similar. Exceptions would also be drought-related flow reductions that could result in decreases in stage by up to 10 feet in St. Joseph, Missouri, and up to 6 feet in Kansas City for several months in Year 15 as compared to Year 0.

At Hermann, Missouri, the mean stage in Year 15 would be lower by approximately 0.5 foot for the six alternatives (Figure D-29). While the lower stage would be consistent throughout the year, drought-related reductions in flow could result in decreases in stage by up to 5 feet for several months in Year 15 as compared to Year 0.

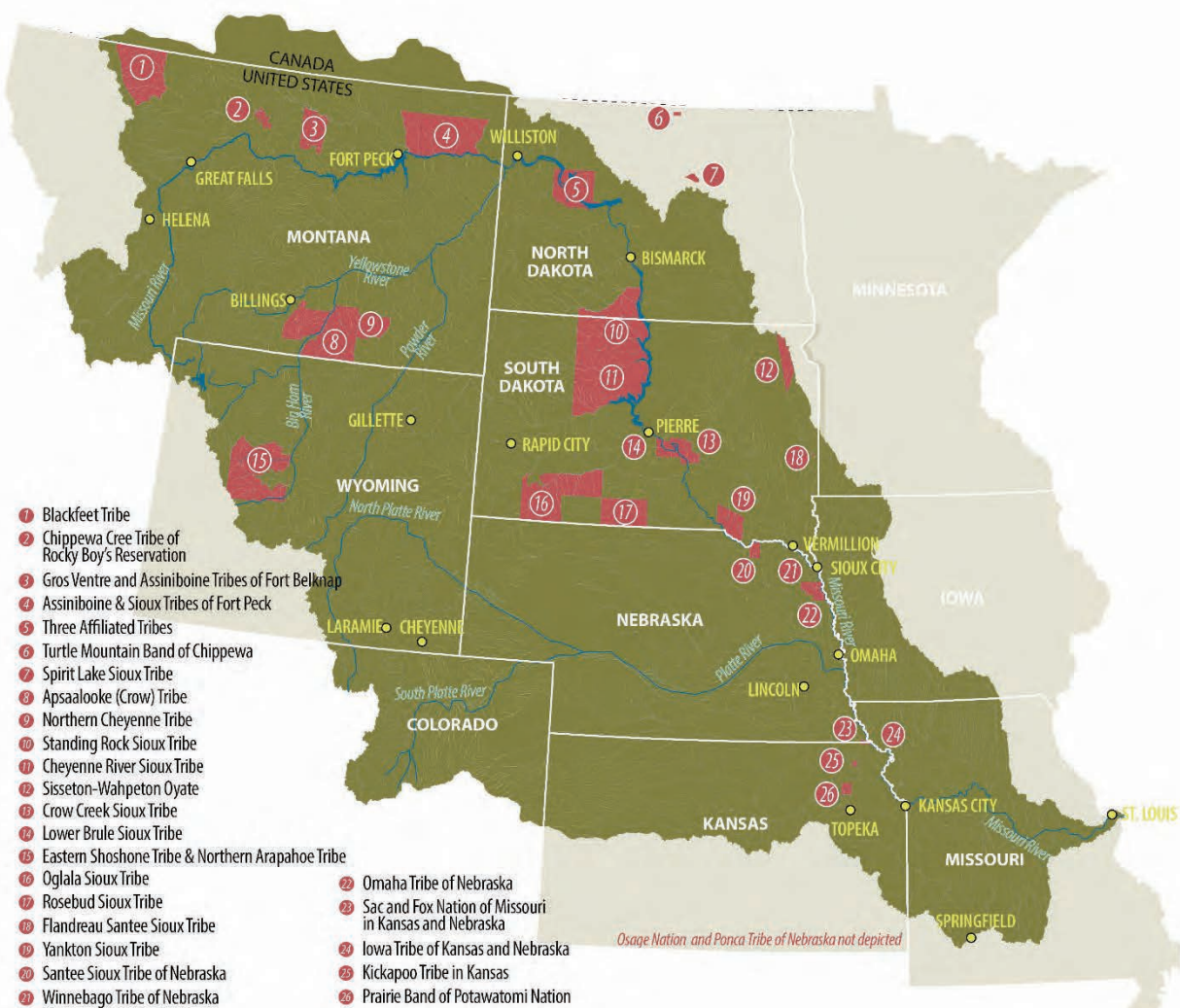


Figure D-1. Missouri River Basin, including Mainstem System Dams and Reservoirs, Tributaries, and Larger Communities

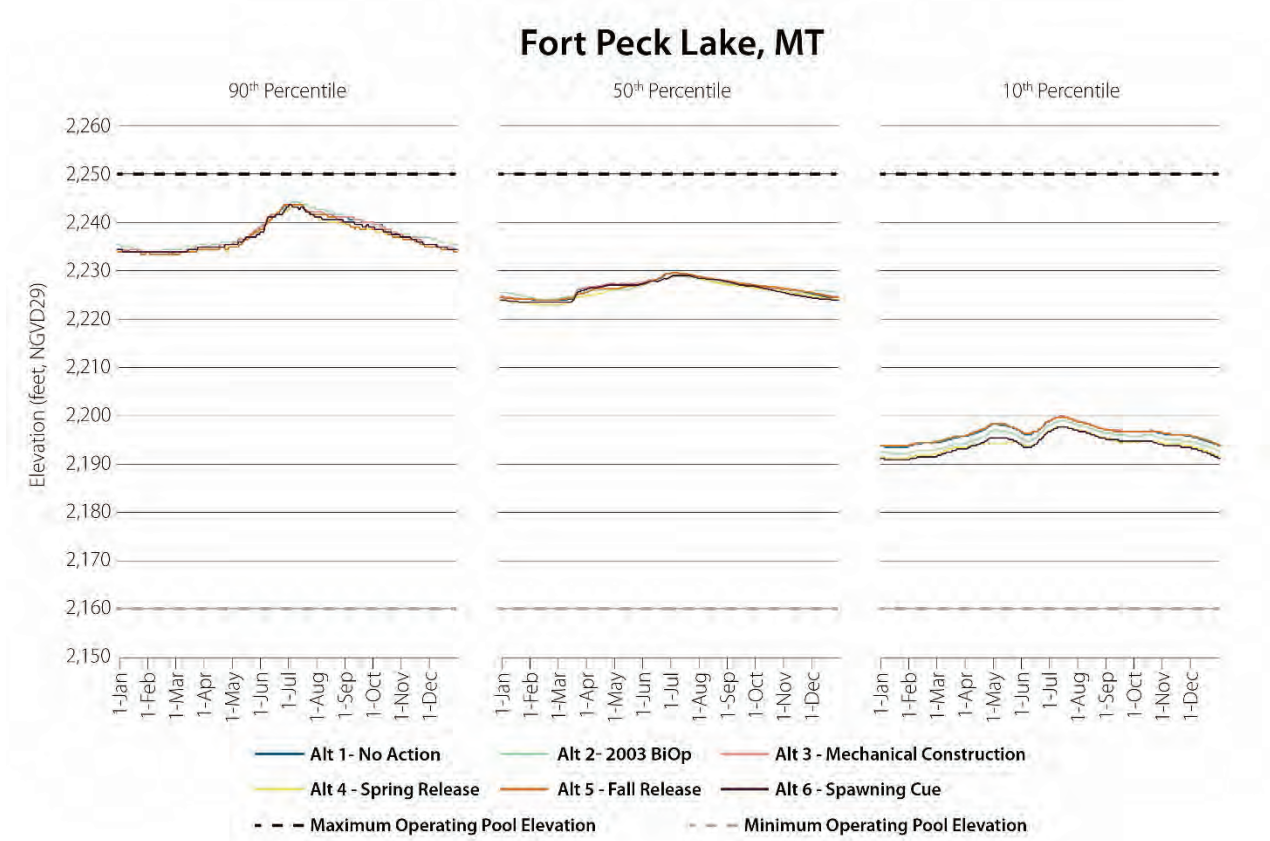


Figure D-2. Elevations in Fort Peck Lake under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

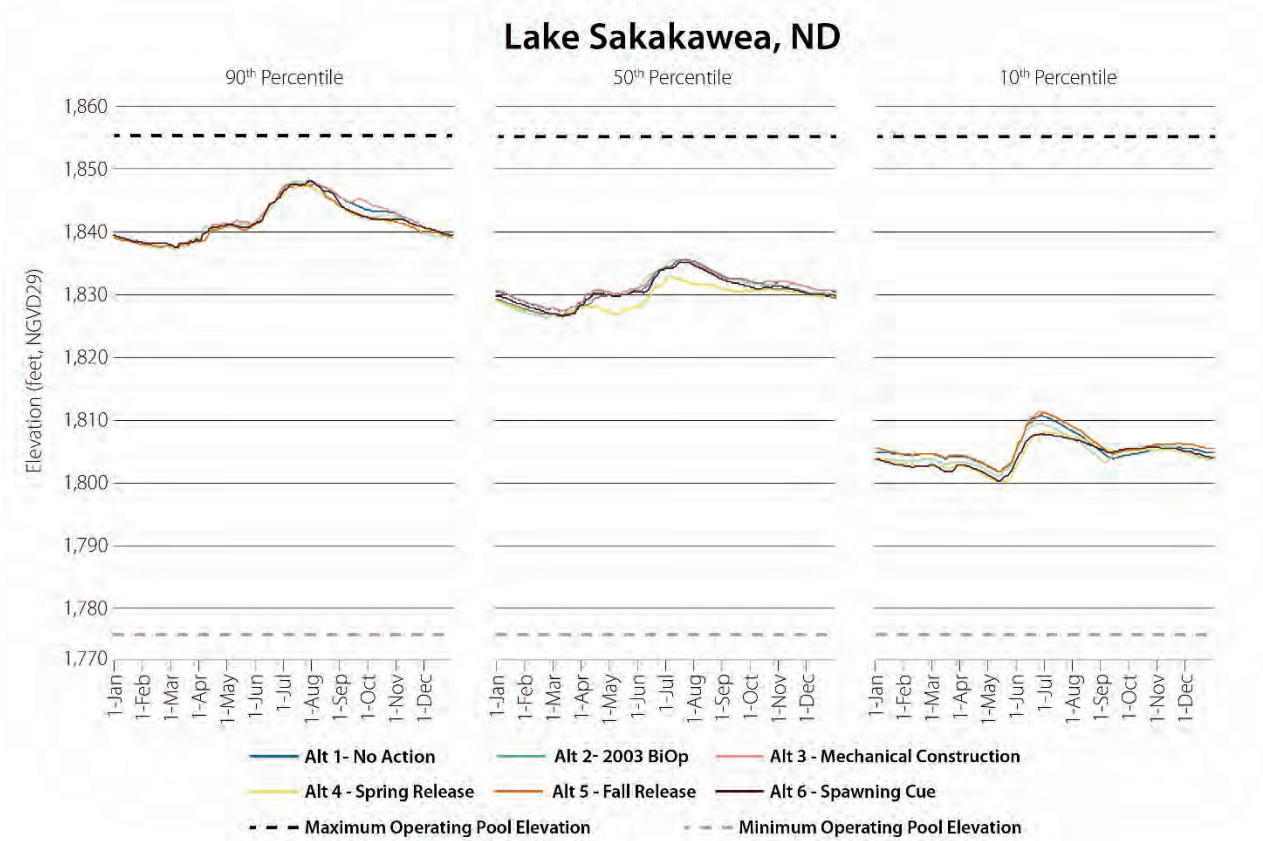


Figure D-3. Elevations in Lake Sakakawea under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

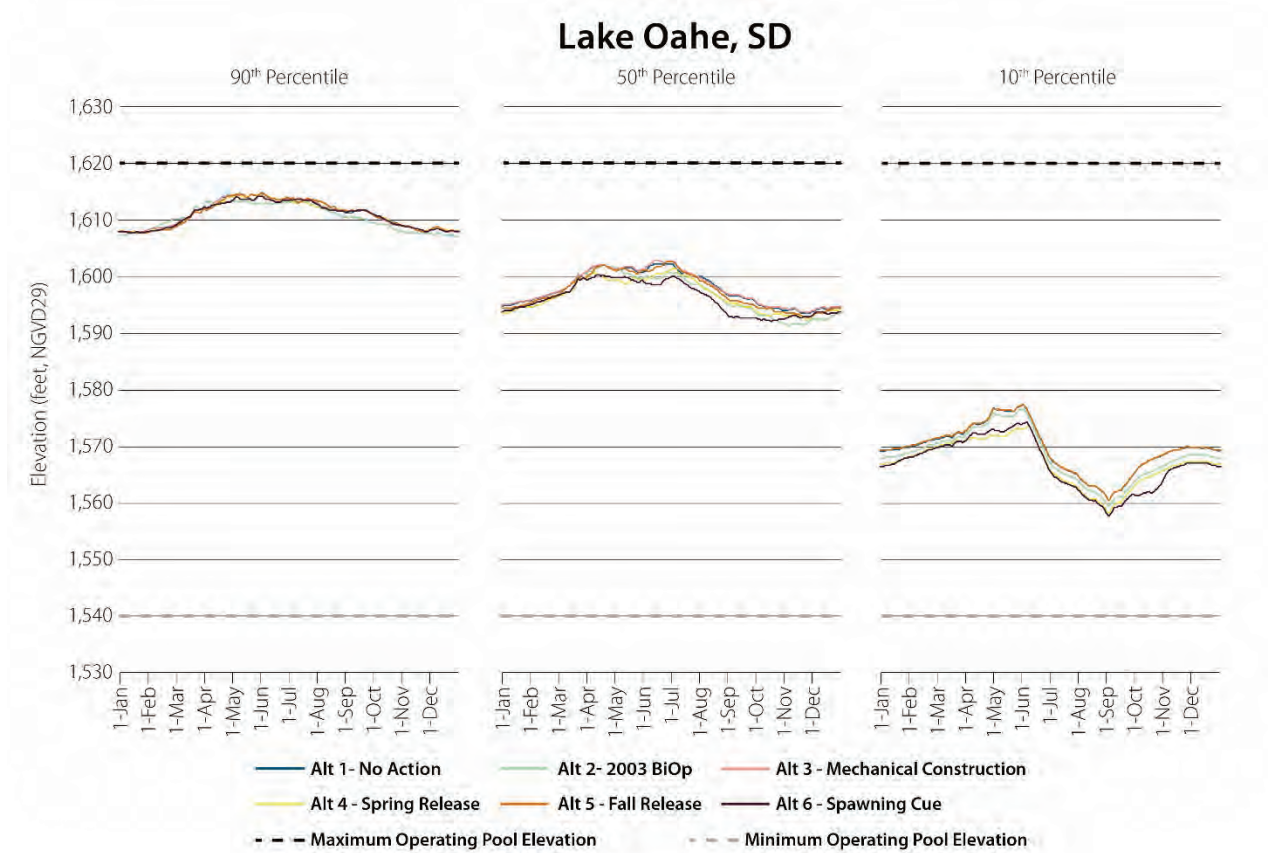


Figure D-4. Elevations in Lake Oahe under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

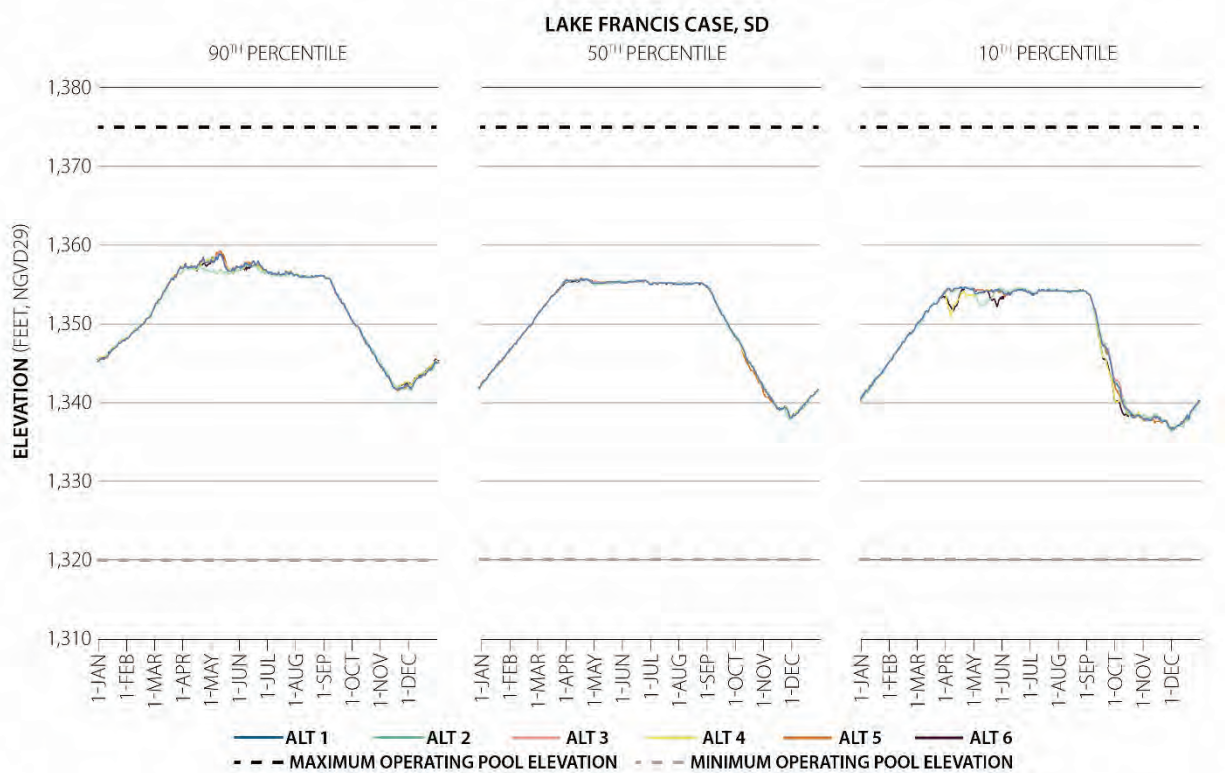


Figure D-5. Elevations in Lake Francis Case under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

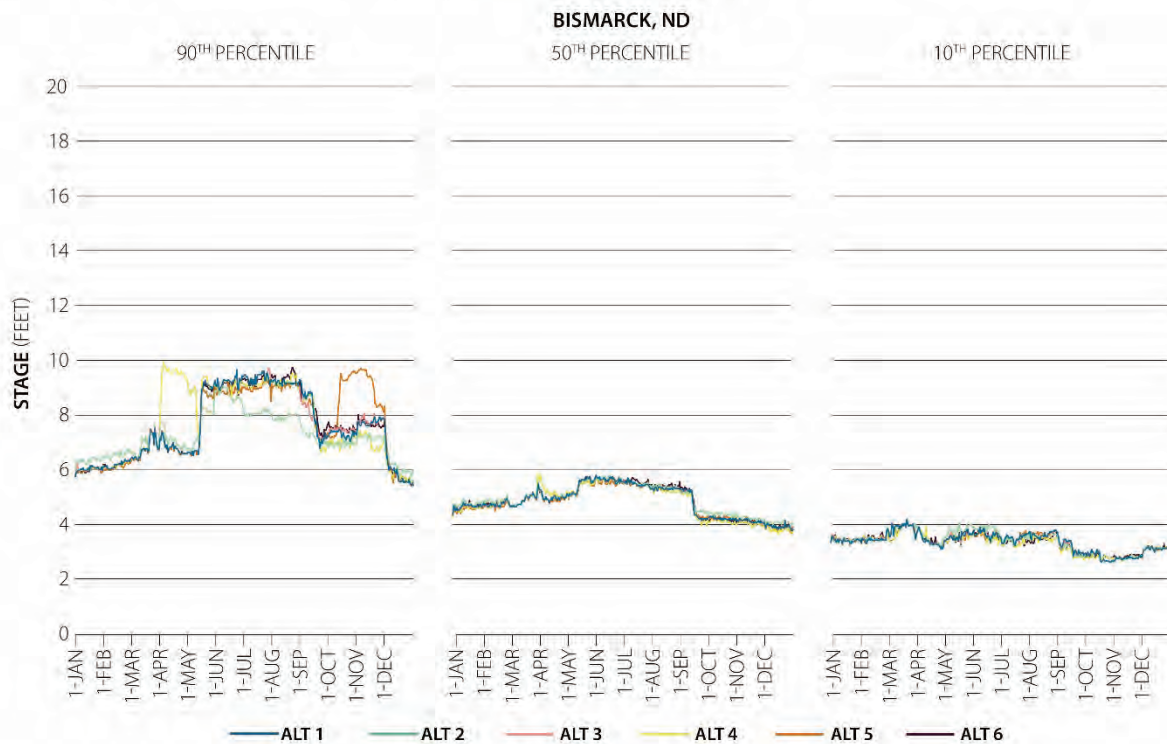


Figure D-6. Stage of the Missouri River at Bismarck, North Dakota, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

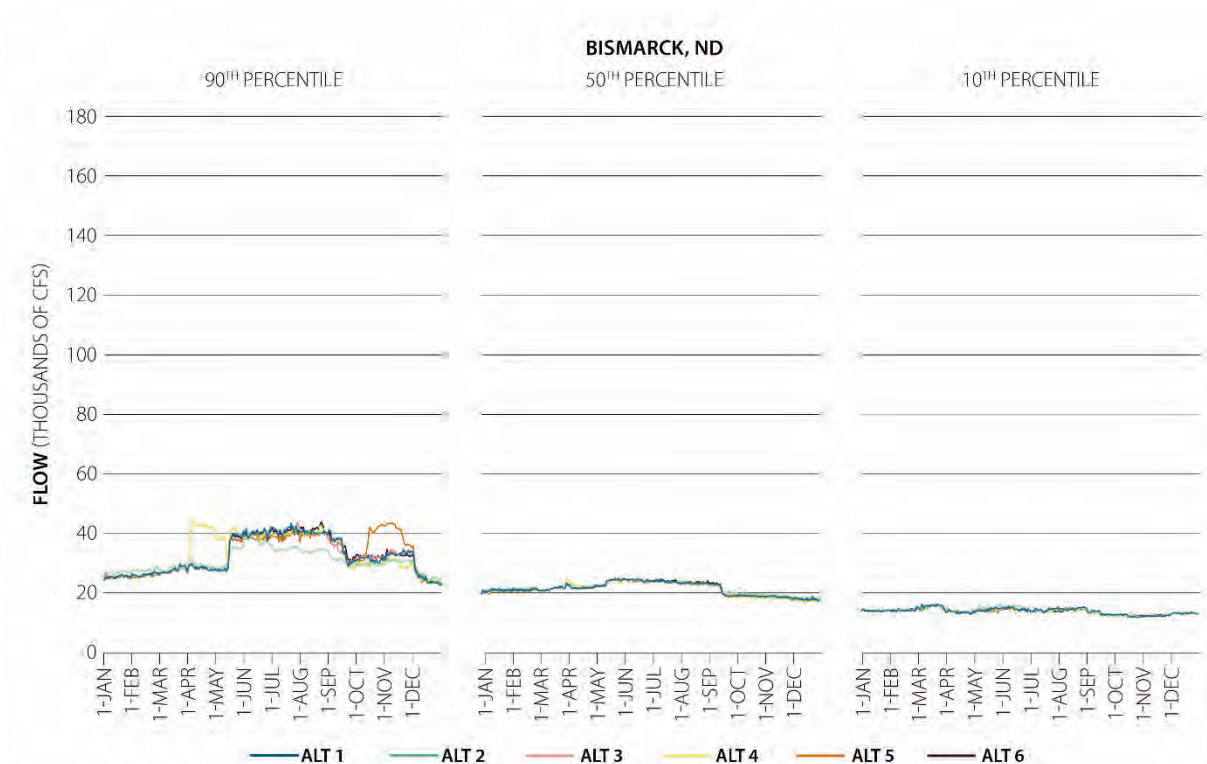
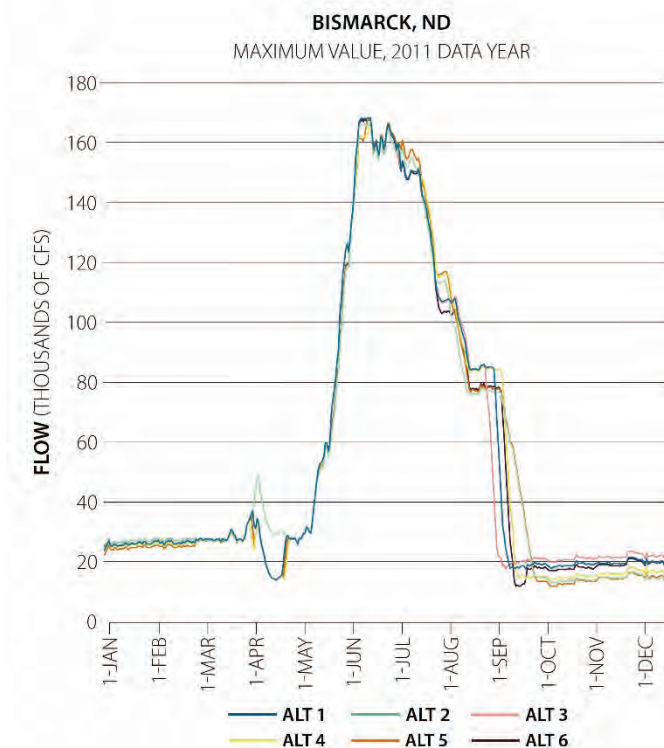


Figure D-7. Flows of the Missouri River at Bismarck, North Dakota, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)



Note: The peak flows from late spring to summer are a result of the flood of 2011.

Figure D-8. Maximum Flows of the Missouri River at Bismarck, North Dakota, under Alternatives 1 to 6 over the Period of Record

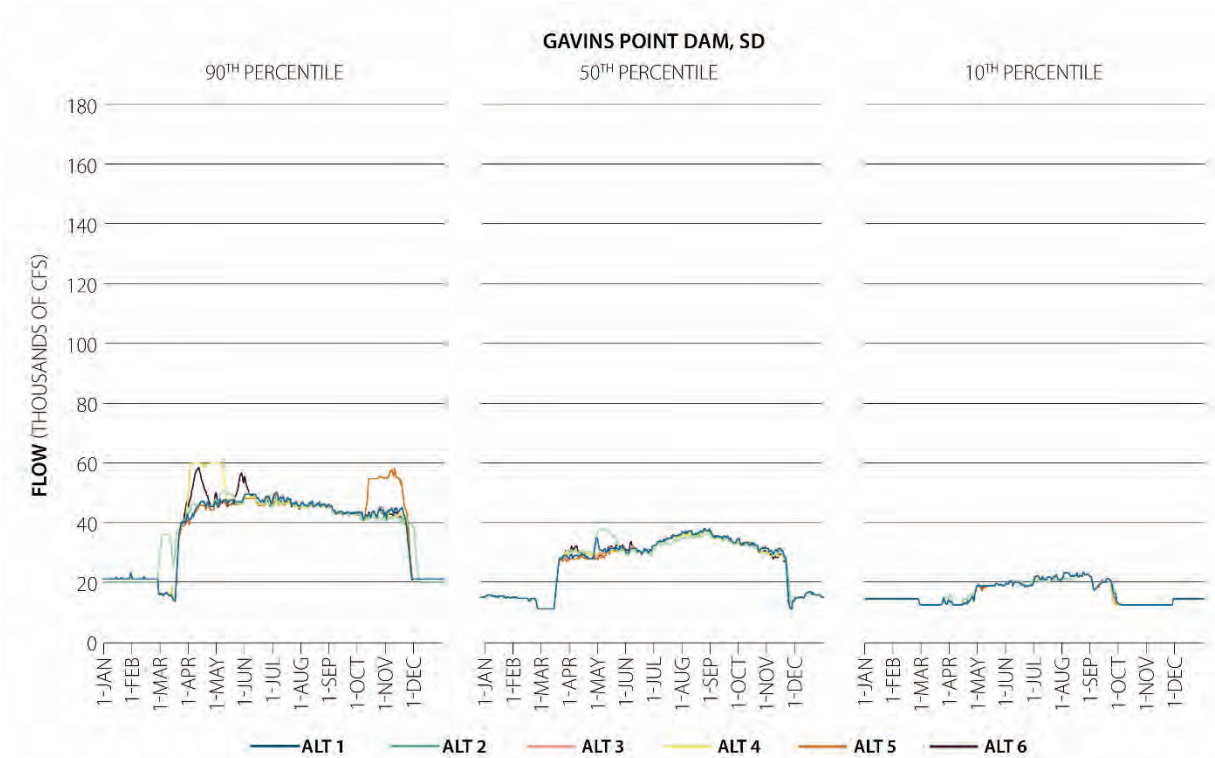


Figure D-9. Flows of the Missouri River at Gavins Point Dam under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

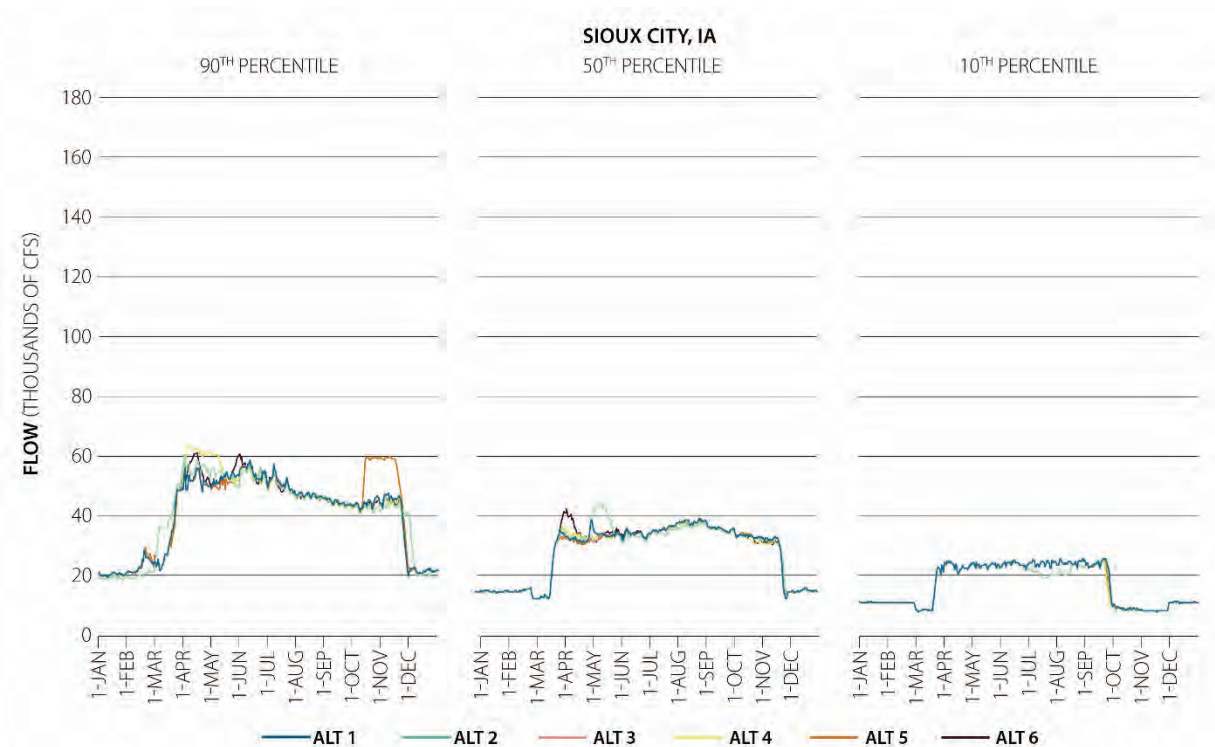


Figure D-10. Flows of the Missouri River at Sioux City, Iowa, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

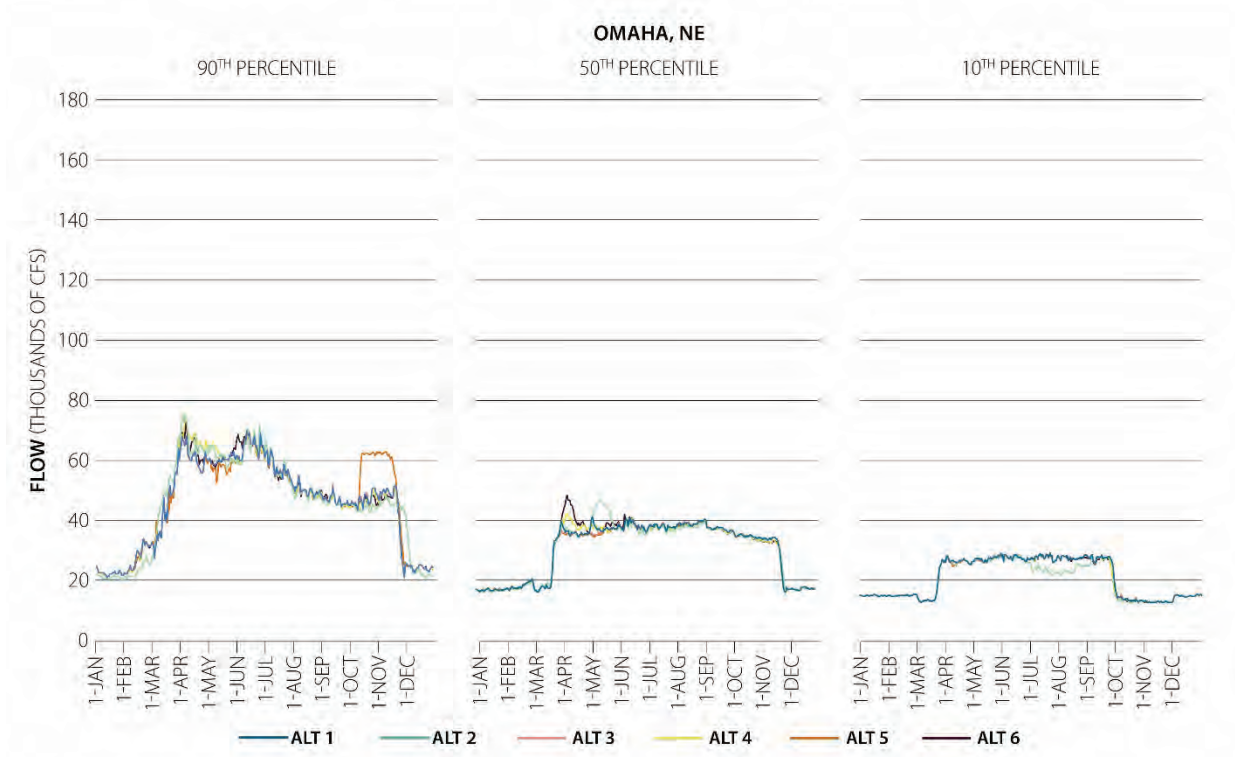


Figure D-11. Flows of the Missouri River at Omaha, Nebraska, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

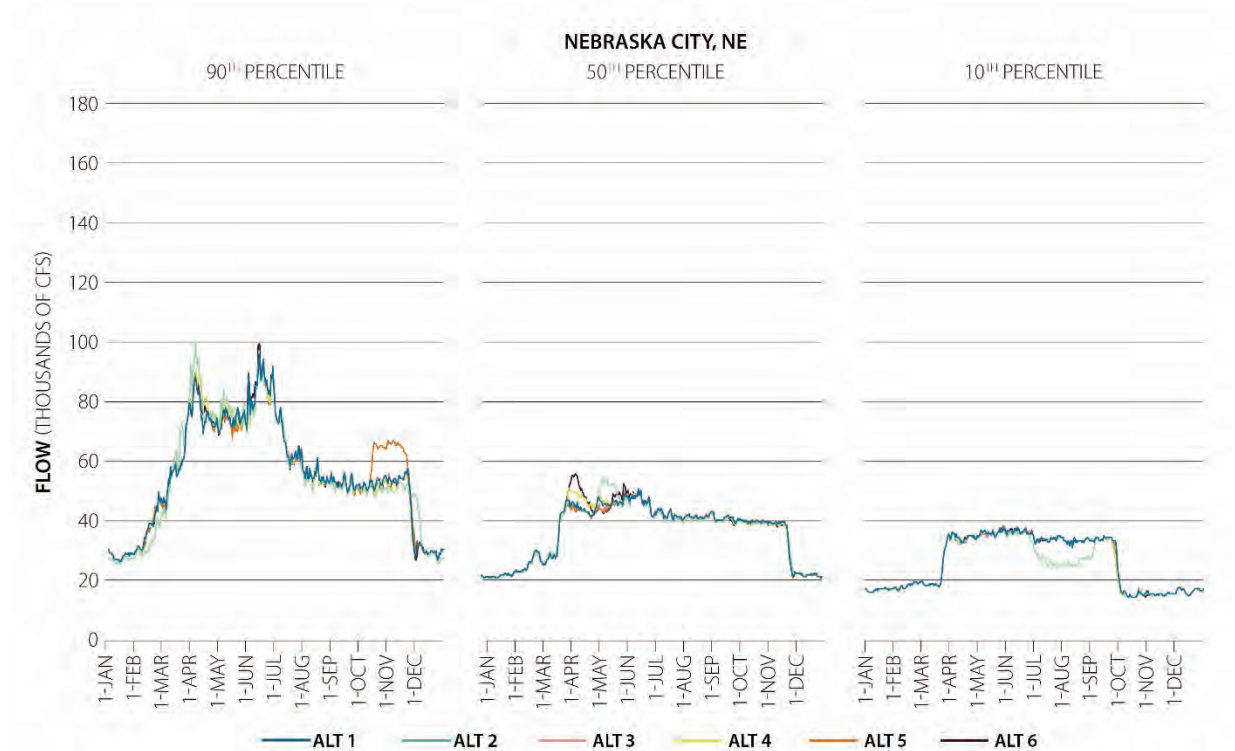


Figure D-12. Flows of the Missouri River at Nebraska City, Nebraska, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

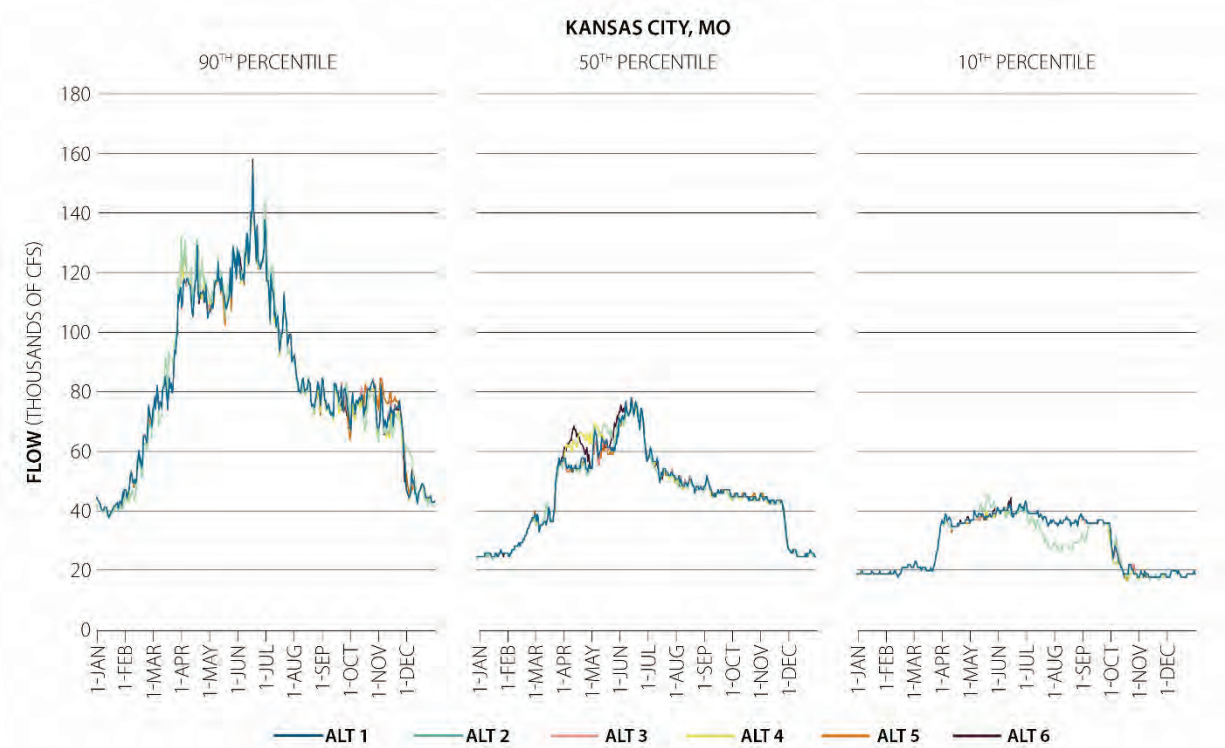


Figure D-13. Flows of the Missouri River at Kansas City, Missouri, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

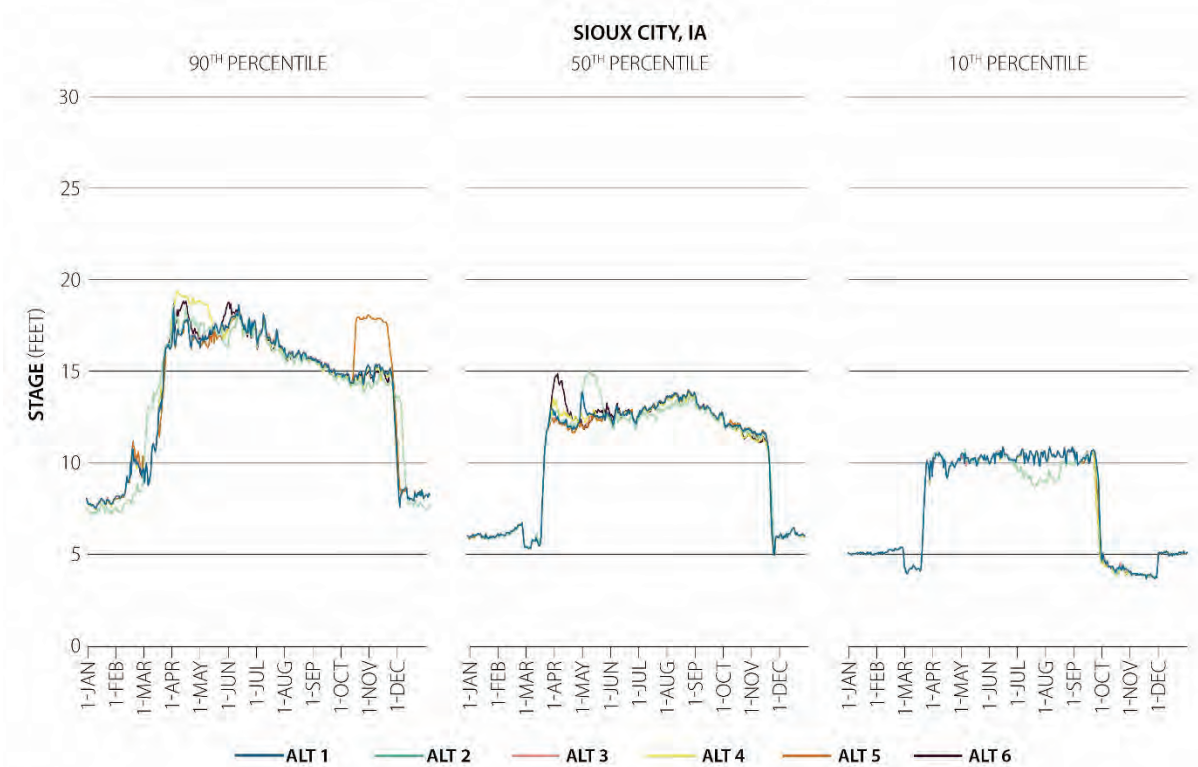


Figure D-14. Stage of the Missouri River at Sioux City, Iowa, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

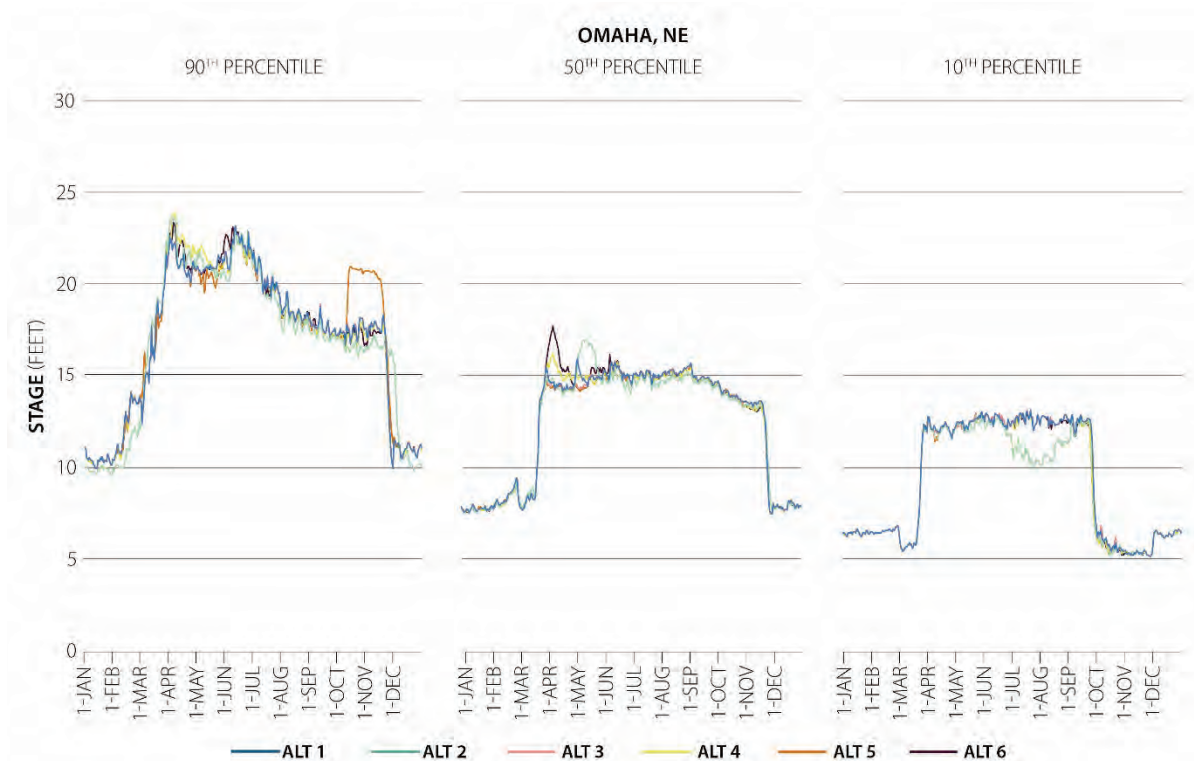


Figure D-15. Stage of the Missouri River at Omaha, Nebraska, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)



Figure D-16. Stage of the Missouri River at Nebraska City, Nebraska, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

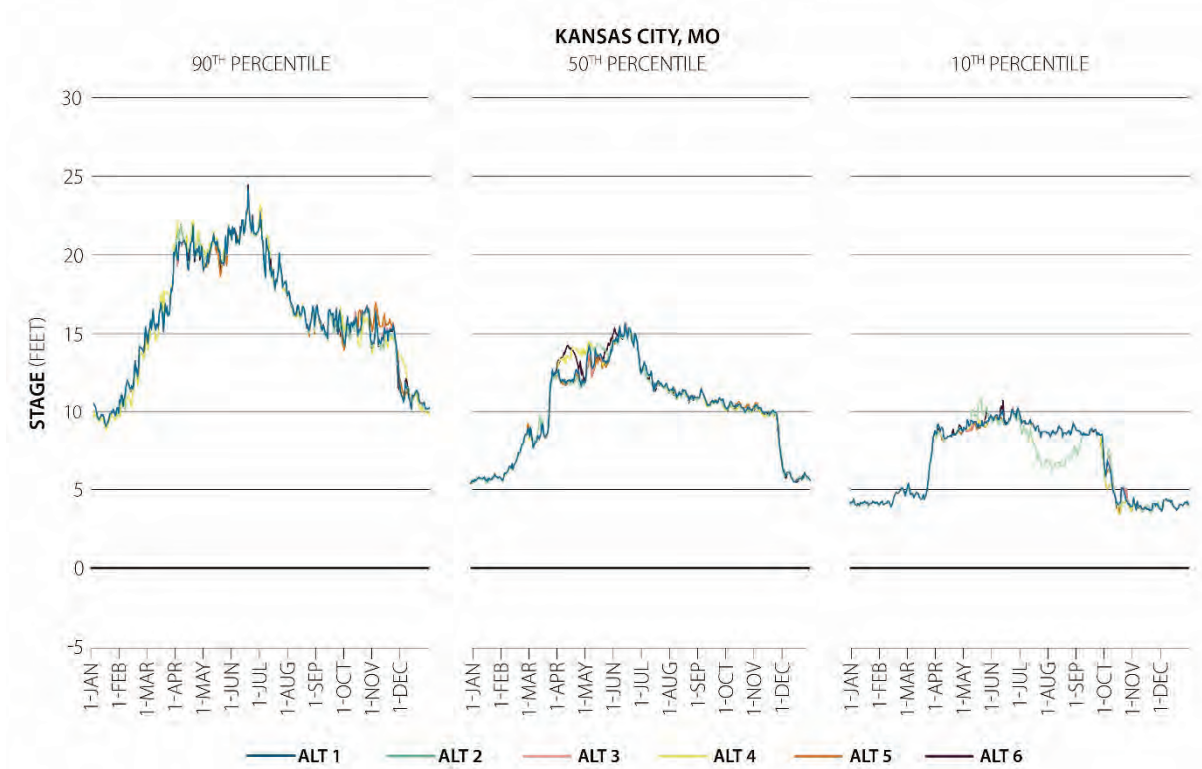


Figure D-17. Stage of the Missouri River at Kansas City, Missouri, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

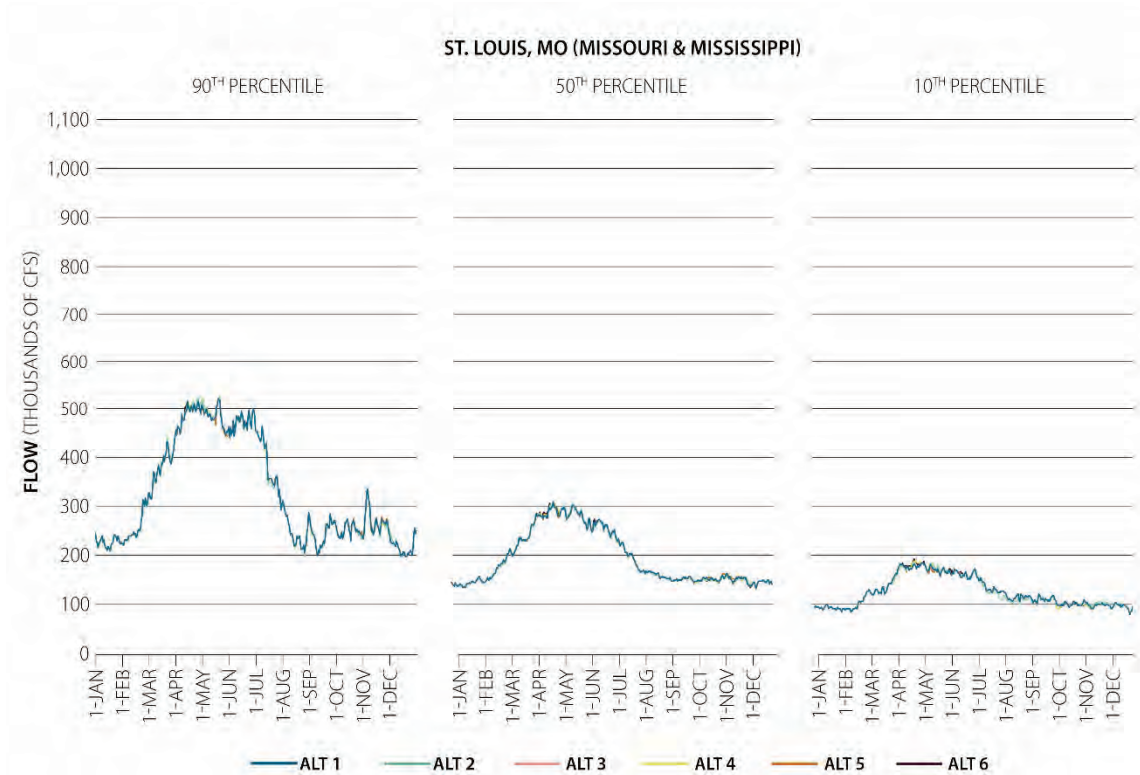


Figure D-18. Flows of the Mississippi River (downstream of the confluence with the Missouri River) at St. Louis, Missouri, under Alternatives 1 to 6 over the Period of Record (90th, 50th, and 10th percentiles)

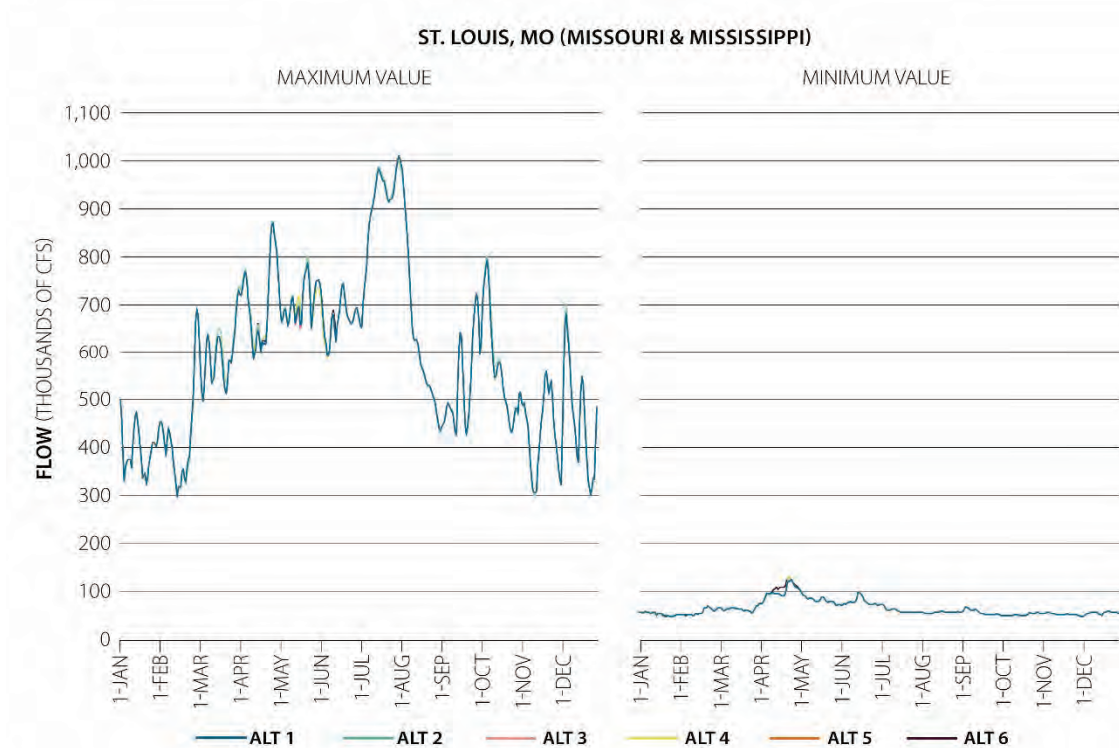


Figure D-19. Flows of the Mississippi River (downstream of the confluence with the Missouri River) at St. Louis City, Missouri, under Alternatives 1 to 6 over the Period of Record for Maximum and Minimum Conditions

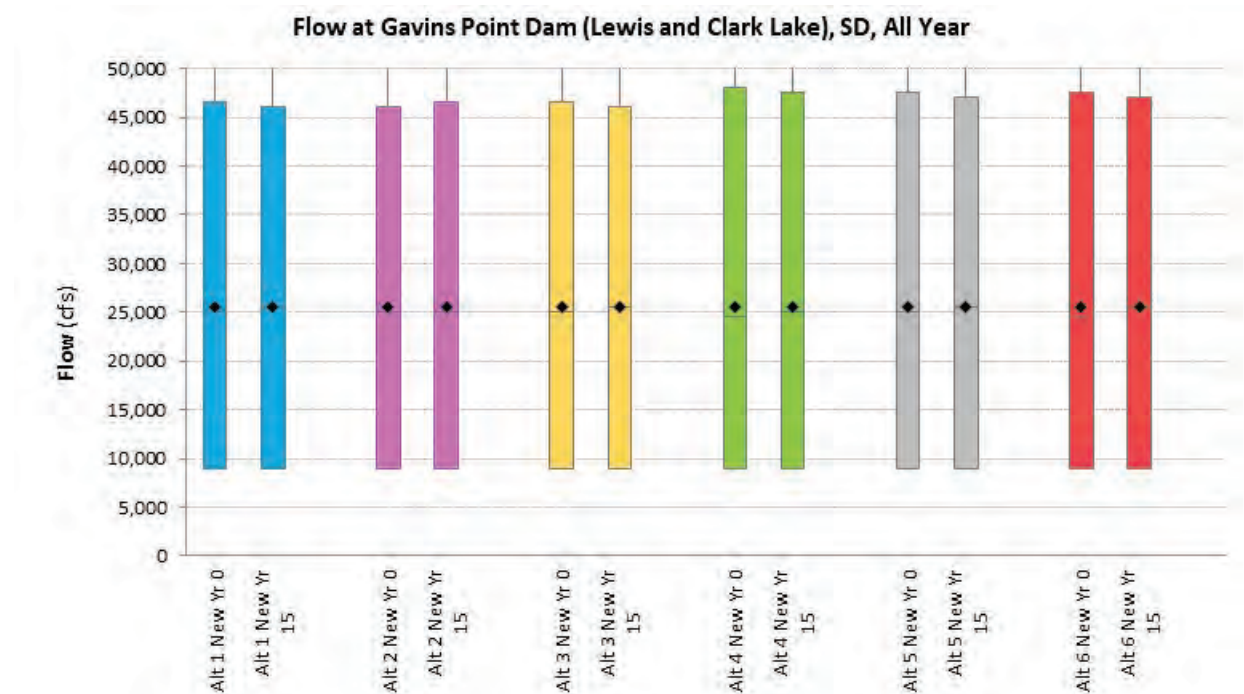


Figure D-20. Comparison of Flow between Year 0 and Year 15 at Gavins Point Dam under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

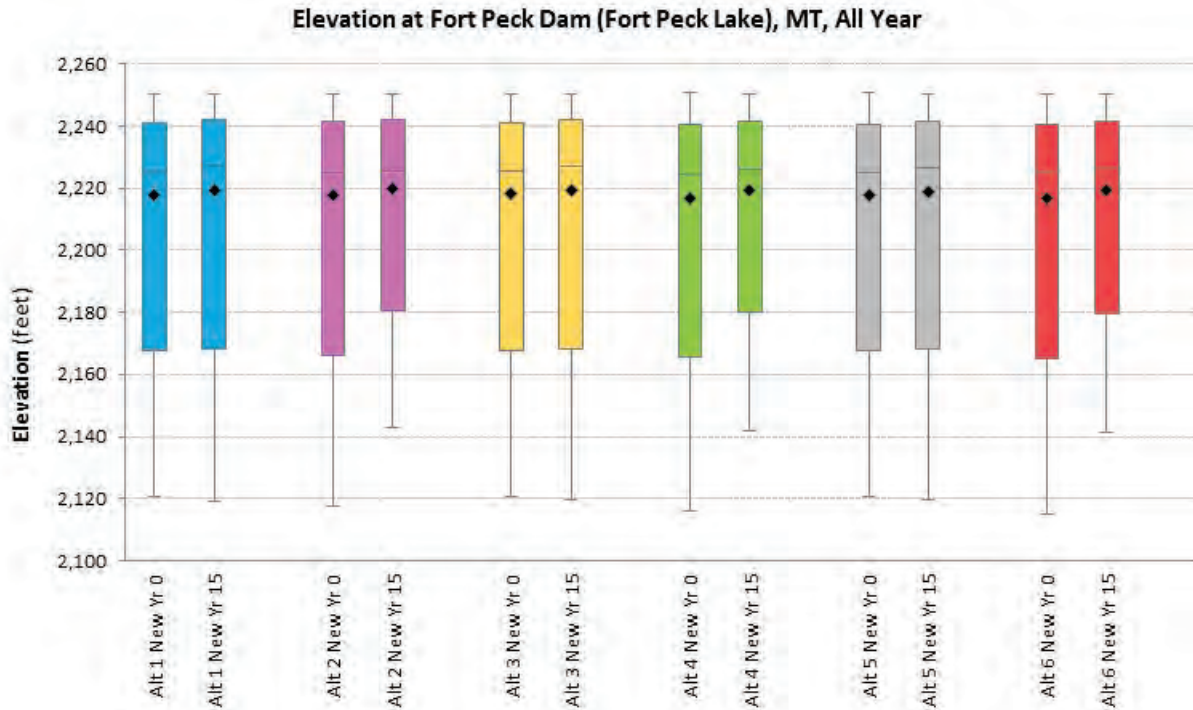


Figure D-21. Comparison of Elevations between Year 0 and Year 15 for Fort Peck Lake under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

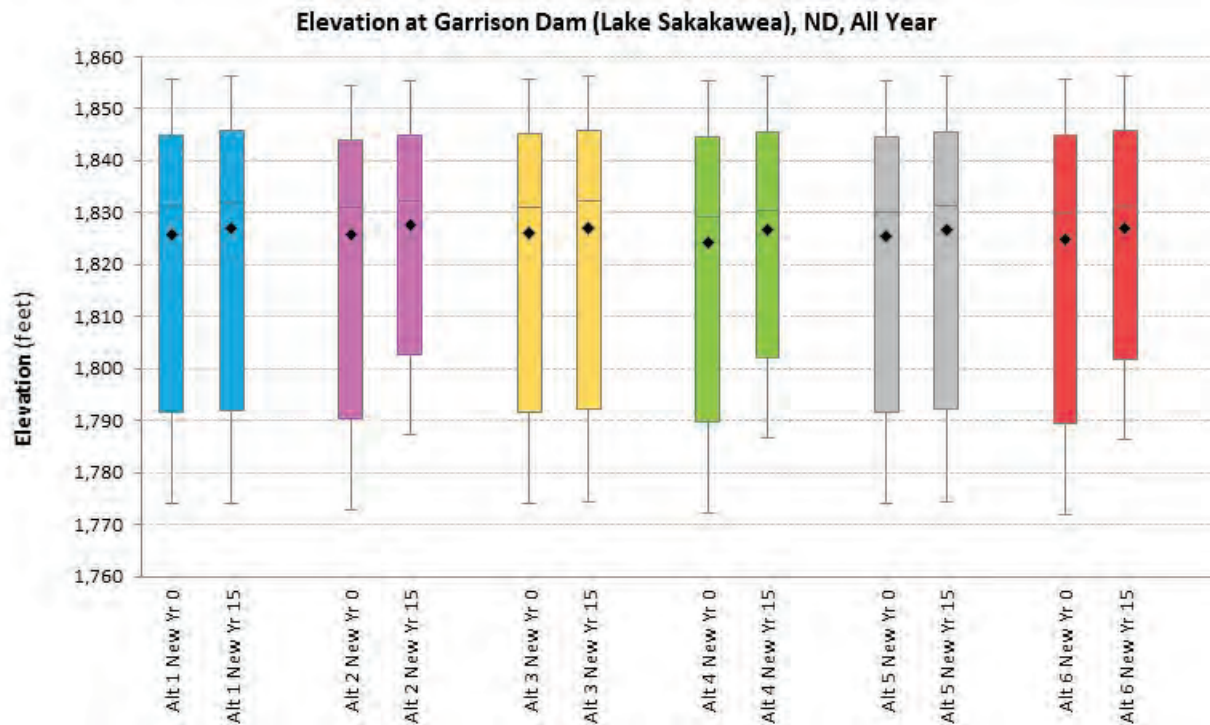


Figure D-22. Comparison of Elevations between Year 0 and Year 15 for Lake Sakakawea under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

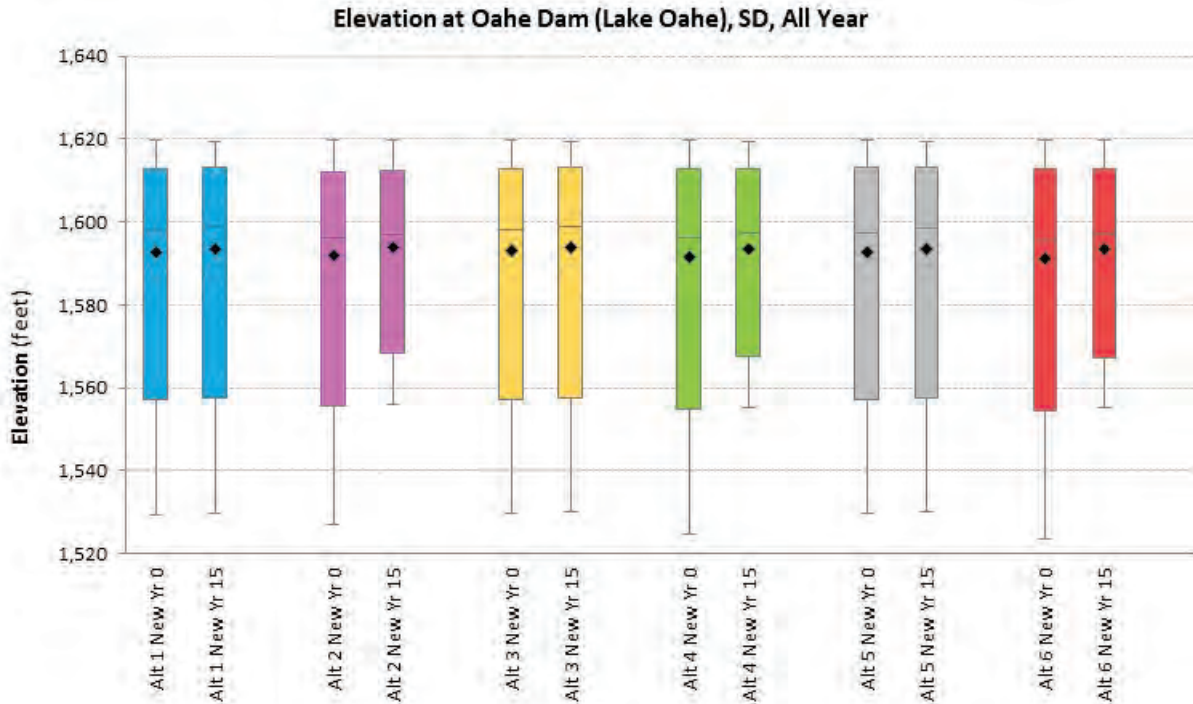


Figure D-23. Comparison of Elevations between Year 0 and Year 15 for Lake Oahe under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

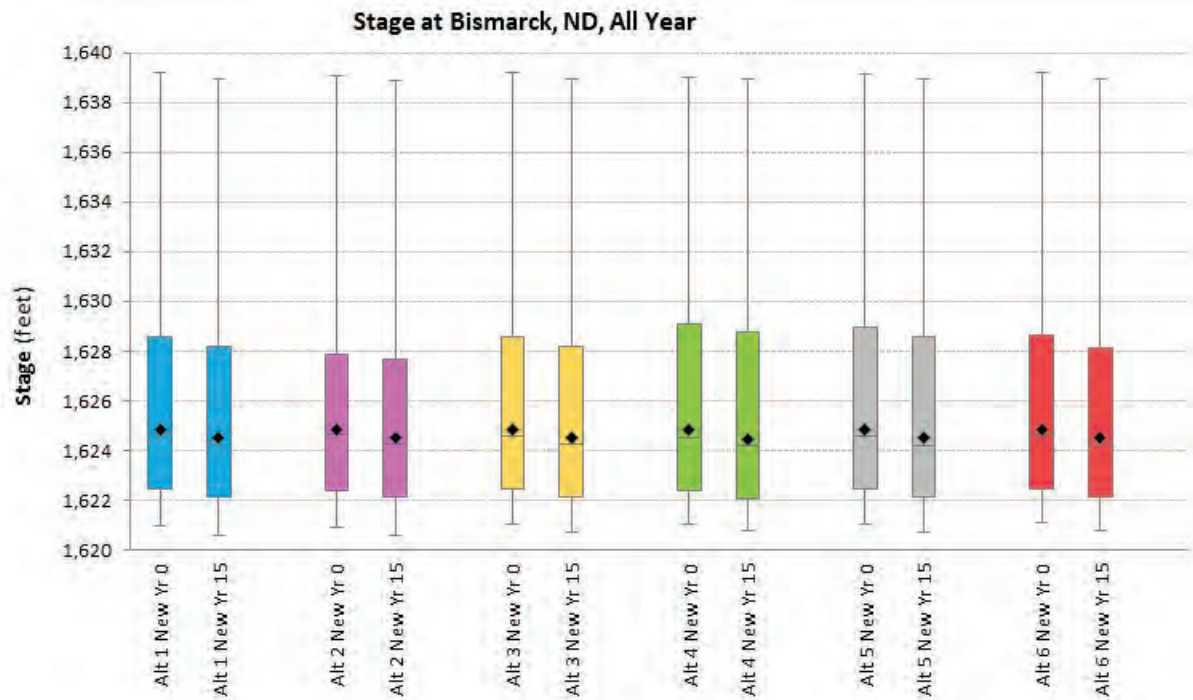


Figure D-24. Comparison of Stages between Year 0 and Year 15 at Bismarck, North Dakota under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)



Figure D-25. Comparison of Stages between Year 0 and Year 15 for Sioux City, Iowa, under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

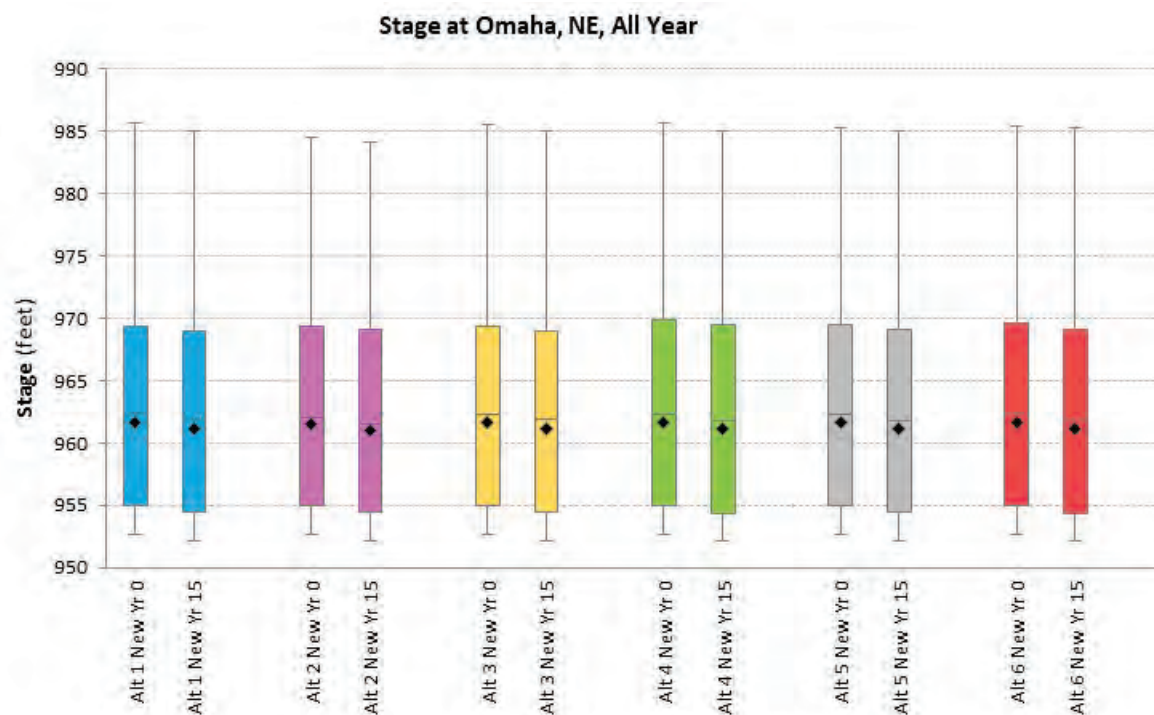


Figure D-26. Comparison of Stages between Year 0 and Year 15 for Omaha, Nebraska, under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

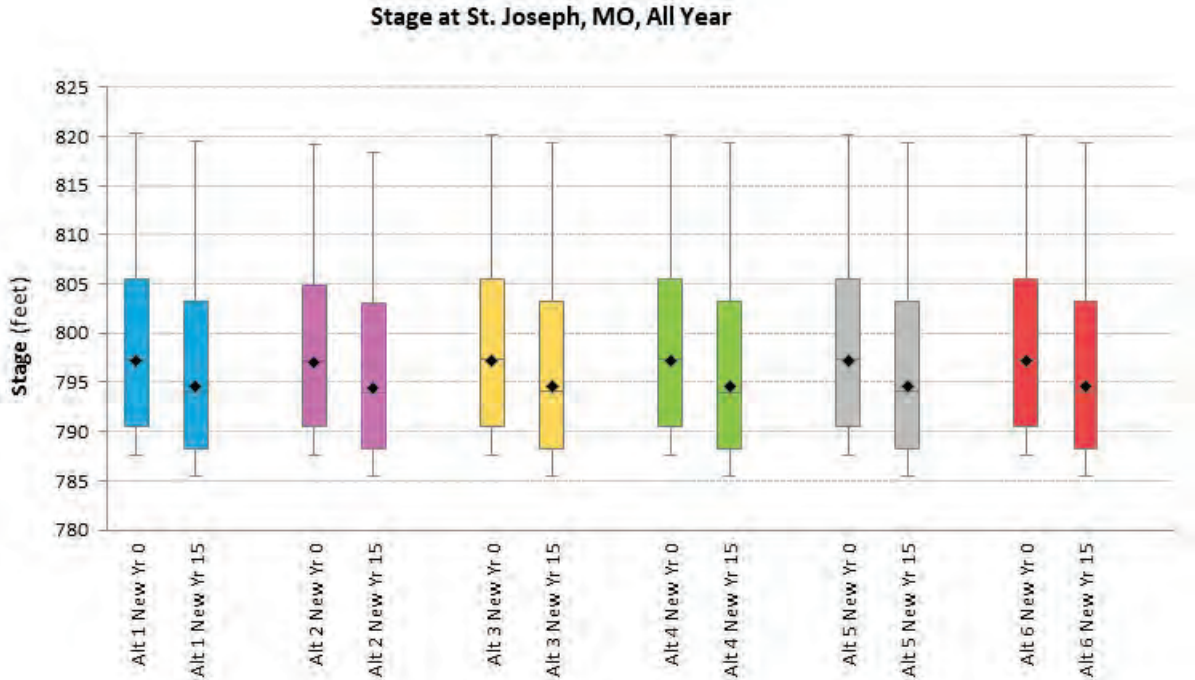


Figure D-27. Comparison of Stages between Year 0 and Year 15 for St. Joseph, Missouri, under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

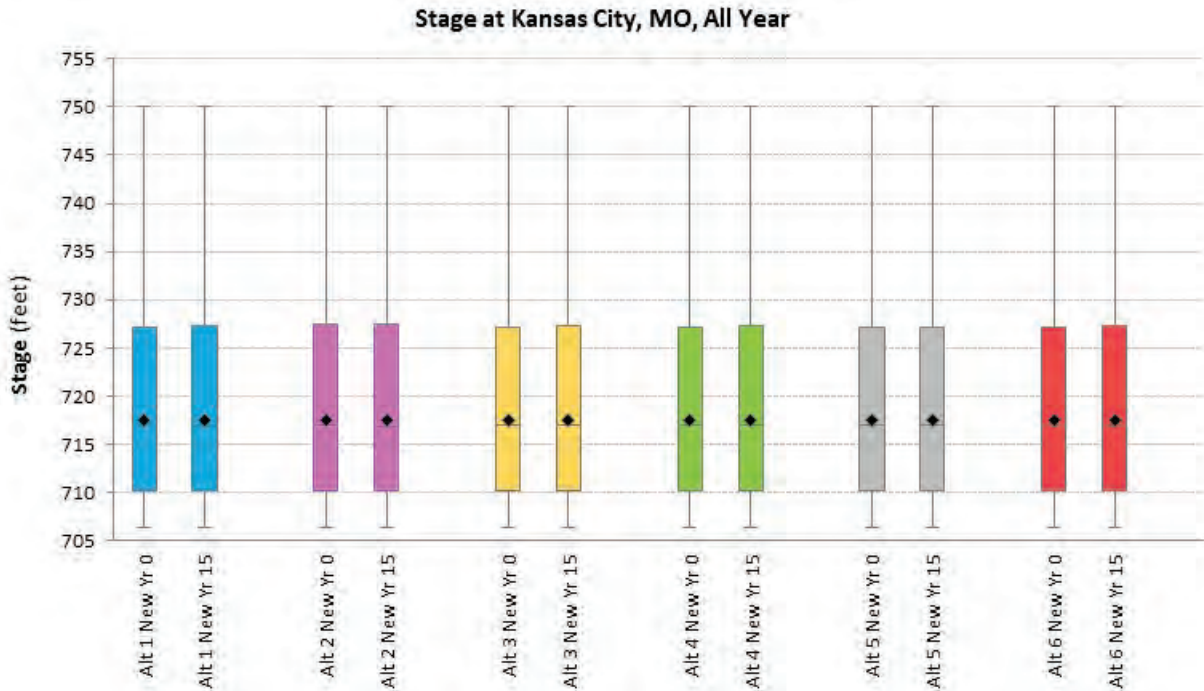


Figure D-28. Comparison of Stages between Year 0 and Year 15 for Kansas City, Missouri, under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

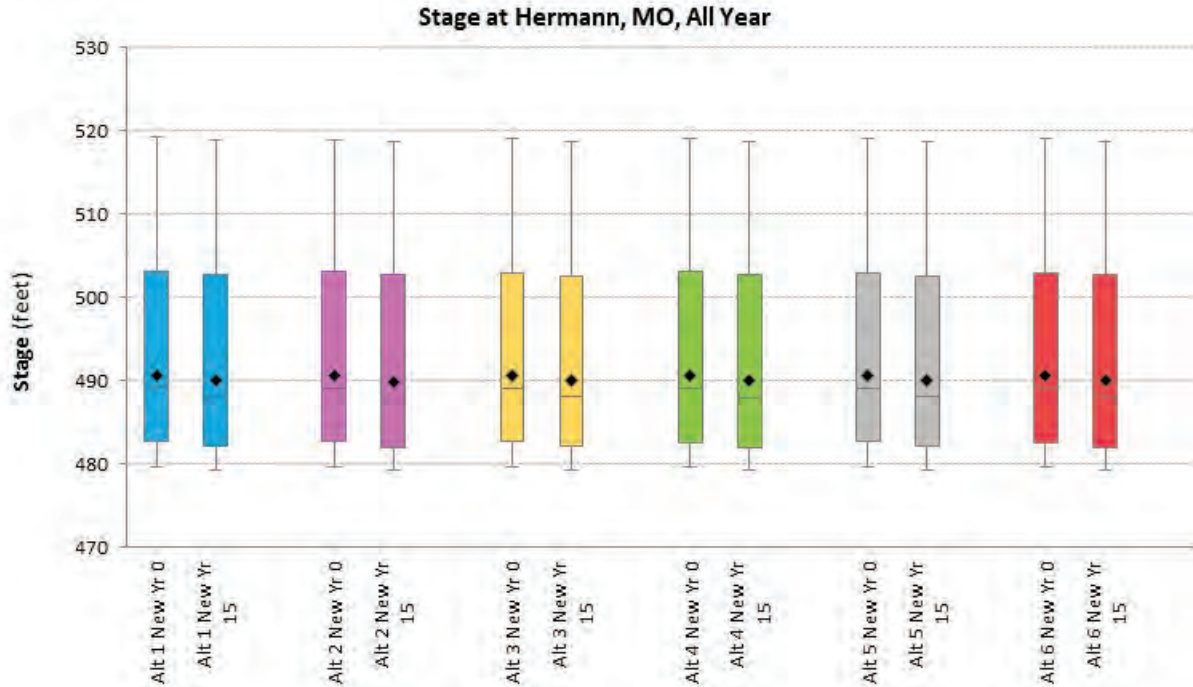


Figure D-29. Comparison of Stages between Year 0 and Year 15 for Hermann, Missouri, under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

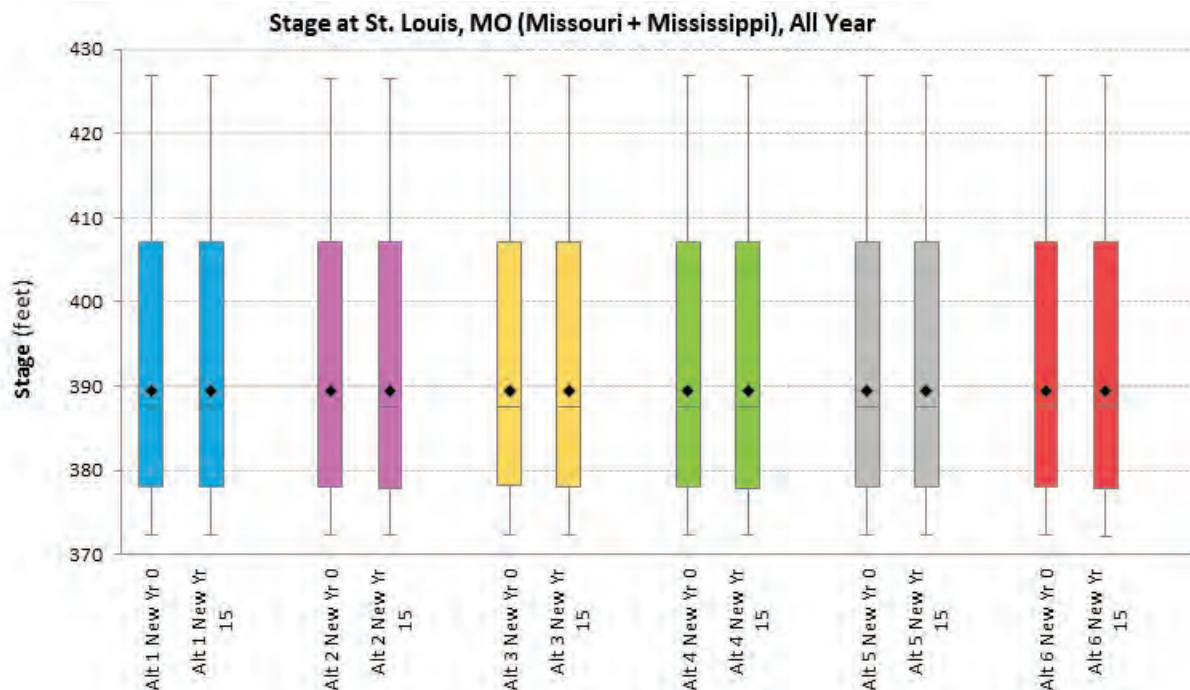


Figure D-30. Comparison of Stages between Year 0 and Year 15 for the Mississippi River (downstream of the confluence with the Missouri River) at St. Louis under Alternatives 1 to 6 over the Period of Record (mean, median, and 5th and 95th percentiles)

APPENDIX E: OTHER SPECIAL-STATUS SPECIES

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Appendix E: Other Special-Status Species

Table E-1 lists other special status species known to occur or may occur within the geographic scope of the EIS. Each species is listed by common name and scientific name along with their federal and state statuses. Habitat associations and river reaches in which each species holds a special status designation are provided along with anticipated impacts under each alternative. Impacts are not expected to differ significantly among alternatives. All of the alternatives are expected to have long-term beneficial impacts on fish and wildlife from the addition of lost terrestrial and aquatic habitat. Adverse impacts would primarily consist of short-term construction related impacts. Additional environmental analyses will be completed for site-specific management actions before they are implemented.

The criteria for identifying species and how these species are organized vary from state to state. A description of how each state designates and classifies special status species is provided below.

Montana

Montana does not have a state endangered or threatened species list. However, the Montana Natural Heritage Program maintains a list of Species of Concern for native animals and plants that are considered to be "at risk" due to declining population trends, threats to their habitats, and/or restricted distribution (MTNHP 2016a, 2016b). Designation as a Species of Concern is not a statutory or regulatory classification. Conservation measures for many Montana species of concern are outlined in the State Wildlife Action Plan (MDFWP 2015).

Montana uses a standardized ranking system employed by the international network of natural heritage programs to denote state status for Species of Concern. Species are assigned numeric ranks ranging from 1 (highest risk, greatest concern) to 5 (demonstrably secure, least concern), reflecting the relative degree of risk to the species viability, based upon available information (MTNHP 2016b). "S" indicates that the ranking is at the state level (as opposed to global rankings), "B" indicates that the ranking applies only to breeding populations, "M" indicates that the species is only present in Montana during migrations, and "H" denotes historical populations. One species (red knot) has a ranking of "SNA," which indicates that a state rank is not applicable, because of a lack of information on its migratory stopover use of Montana wetlands. However it is still considered a special status species in Montana due its federal status under ESA.

North Dakota

North Dakota does not have a state endangered or threatened species list. Only those species listed by the ESA are considered threatened or endangered in North Dakota. North Dakota has a Wildlife Action Plan that focuses on species that are considered species of conservation priority. Information relating to the distribution, abundance, habitat requirements, threats, management goals and monitoring techniques for each of these species is included in the Wildlife Action Plan (NDGF 2016). The species are categorized into three levels as described below.

- **Level I:** These species are in decline and receive little or no monetary support or conservation efforts. North Dakota Game and Fish Department has a clear obligation to use state wildlife grants funding to implement conservation actions that directly

benefit these species. Level I species have a high level of conservation priority because of declining status across their range or high rate of occurrence in North Dakota constituting the core of the species breeding range.

- **Level II:** North Dakota Game and Fish Department will use state wildlife grants to implement conservation actions to benefit these species if funding for Level I species is sufficient or conservation needs have been met. Level II species have a moderate level of conservation priority or high level of conservation priority but a substantial level of non-state funding available to them
- **Level III:** These are North Dakota species having a moderate level of conservation priority but are believed to be peripheral or nonbreeding in North Dakota (NDGF 2016).

South Dakota

The South Dakota Game, Fish and Parks maintains a list of state-designated threatened and endangered species which are separate from federally-listed species. This list is reviewed and updated biannually. State-level designations for threatened and endangered species are also used to identify species in need of state wildlife grants funding (SDFGP 2016). Conservation measures for South Dakota state-listed species are outlined in the state wildlife action plan (SDDGFP 2014).

Nebraska

Nebraska Game and Parks maintains a list of state-designated threatened and endangered species in accordance with the Nebraska Nongame and Endangered Species Conservation Act (NGPC 2015). These species are separate from federally-listed species and represent a subset of species determined to be “at-risk” in Nebraska. Animals and plants are designated as endangered or threatened when their continued existence in Nebraska is in jeopardy. The Nebraska Game and Parks Commission develops state recovery plans which set forth measures to restore populations of these animals and plants to a more secure status (NGPC 2015). Conservation measures for state-listed species are also outlined in the Nebraska state wildlife action plan, developed in partnership with the Nebraska Natural Legacy Program (Schneider et al. 2011).

Iowa

Iowa maintains a list of state-designated threatened and endangered species, which are separate from federally listed species. Species are designated by the Iowa Department of Natural Resources, in accordance with Chapter 481B of the Iowa Administrative Code: Endangered Plants and Wildlife. The designation of endangered is given to any species of fish, plant life, or wildlife in danger of extinction throughout all or a significant part of its range. The designation of threatened is given to any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, and both designations are protected by law (IAC 2009). Additionally, the Iowa Wildlife Action Plan is a 25-year proactive strategy designed to facilitate recovery of listed species and conserve other wildlife species in Iowa, before special status designations become necessary (IDNR 2015).

Kansas

The Kansas Department of Wildlife, Parks and Tourism maintains a list of state-level threatened and endangered species in accordance with the Kansas Nongame and Endangered Species Conservation Act of 1975 (KWPT 2015). State-designated threatened and endangered species statuses are reviewed on five-year intervals and recovery plans are developed to facilitate recovery of listed species. The Kansas Wildlife Action Plan also outlines measures to conserve state-listed species and is used to appropriately allocate conservation funding (Rohweder 2015).

Missouri

The Missouri Department of Conservation maintains a list of state-designated threatened and endangered species in accordance with the Missouri State Endangered Species Law 252.240 (MDC 2018). Conservation measures for state-listed species are also outlined in the Missouri State Wildlife Action Plan (MDC 2015).

Table E-1. Adverse Impacts of Alternatives 1–6 on Other Special Status Species

R1 = Fort Peck Lake to Garrison Dam; R2 = Garrison Dam to Oahe Lake; R3 = Fort Randall Dam to Gavins Point Dam; R4 = Gavins Point Dam to Rulo;
 R5 = Rulo to Kansas River; R6 = Kansas River to Grand River; R7 = Grand River to Osage River; R8 = Osage River to Mississippi River

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Plants												
American Ginseng	<i>Panax quinquefolius</i>					T				Forest	R3, R4	No impact
Annual Skeletonweed	<i>Shinnersoseris rostrata</i>						E			Upland grassland/prairie	R4	No impact
Black Chokeberry	<i>Aronia melanocarpa</i>						E			Scrub shrub wetland; Riparian wetland/forested wetland	R4	negligible short-term adverse impacts
Bog Clubmoss	<i>Lycopodium inundatum</i>						E			Emergent wetland; Forested wetland	R4	negligible short-term adverse impacts
Cordroot Sedge	<i>Carex chordorrhiza</i>						E			Emergent wetland; Forested wetland	R4	negligible short-term adverse impacts
Decurrent False Aster	<i>Boltonia decurrens</i>	T							E	Emergent wetland; Upland grassland/prairies	R8	No impact
Geyer's Milkvetch	<i>Astragalus geyeri</i>		S2							Upland grassland/prairie	R1	negligible short-term adverse impacts
Heavy Sedge	<i>Carex gravida</i>		S3							Upland grassland/prairie	R1	negligible short-term adverse impacts
Nannyberry	<i>Viburnum lentago</i>		S2S3							Upland grassland/prairie; Forest	R1	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Persistent-Sepal Yellow-cress	<i>Rorippa calycina</i>		SH							Emergent wetland; Riparian wetland; Upland grassland/prairie	R1	No impact
Roundleaf Water hyssop	<i>Bacopa rotundifolia</i>		S3							Emergent wetland; Riparian wetland	R1	No impact
Scarlet Ammannia	<i>Ammannia robusta</i>		S2							Emergent wetland	R1	No impact
Small White Lady's Slipper	<i>Cypripedium candidum</i>					T				Upland grassland/prairie; Emergent wetland	R3, R4	negligible short-term adverse impacts
Water-willow	<i>Justicia americana</i>						E			Emergent wetland; Open water;	R4	negligible short-term adverse impacts
Whiskbroom Parsley	<i>Harbouria trachyleura</i>						E			Upland grassland/prairie	R4	No impact
Birds												
American Avocet	<i>Recurvirostra americana</i>			Level II						Open water; Emergent wetland	R1, R2	negligible short-term adverse impacts
American Bittern	<i>Botaurus lentiginosus</i>		S3B	Level I					E	Open water; Emergent wetland; Upland grassland/prairies	R1, R2, R4, R5, R6, R7, R8	negligible short-term adverse impacts
American Dipper	<i>Cinclus mexicanus</i>					T				Open water; Riparian wetland/forested wetland	R2, R3, R4	negligible short-term adverse impacts
Bald Eagle	<i>Haliaeetus leucocephalus</i>			Level II						Forest; Riparian wetland; Open water	R1, R2	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Black Tern	<i>Chlidonias niger</i>		S3B	Level I						Open water; Emergent wetland; Upland grassland/prairie	R1, R2	negligible short-term adverse impacts
Bobolink	<i>Dolichonyx oryzivorus</i>		S3B	Level II						Upland grassland/prairies; emergent wetland	R1, R2	negligible short-term adverse impacts
Common Tern	<i>Sterna hirundo</i>		S3B							Emergent wetland; Open water; Upland grassland/prairie; Forest	R1	negligible short-term adverse impacts
Eskimo Curlew	<i>Numenius borealis</i>	E			E	E				Upland grassland/prairie; Emergent wetland	R2, R3, R4	negligible short-term adverse impacts
Forster's Tern	<i>Sterna forsteri</i>		S3B							Emergent wetland;	R1	No impact
Franklin's Gull	<i>Leucophaeus pipixcan</i>		S3B	Level I						Emergent wetland; Open water	R1, R2	negligible short-term adverse impacts
Golden Eagle	<i>Aquila chrysaetos</i>		S3	Level I						Upland grassland/prairie; Emergent wetland; Riparian wetland	R1, R2	negligible short-term adverse impacts
Henslow's Sparrow	<i>Ammodramus henslowii</i>						T			Upland grassland/prairies; Emergent wetland	R4	negligible short-term adverse impacts
Horned Grebe	<i>Podiceps auritus</i>			Level I						Emergent wetland; Riparian wetland; Open water	R1, R2	negligible short-term adverse impacts
King Rail	<i>Rallus elegans</i>								E	Emergent wetland; Open water	R4, R5, R6, R7, R8	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Le Conte's Sparrow	<i>Ammodramus leconteii</i>			Level II						Emergent wetland; Upland grassland/prairies;	R1, R2	negligible short-term adverse impacts
Long-billed Curlew	<i>Numenius americanus</i>			Level I						Upland grassland/prairies; Emergent wetland	R1, R2	negligible short-term adverse impacts
Long-eared Owl	<i>Asio otus</i>						T			Forest; Upland grassland/prairie	R4	No impact
Marbled Godwit	<i>Limosa fedoa</i>			Level I						Upland grassland/prairie; emergent wetland	R1, R2	negligible short-term adverse impacts
Nelson's Sparrow	<i>Ammodramus nelsoni</i>		S3B	Level I						Emergent wetland; Upland grassland/prairie	R1, R2	negligible short-term adverse impacts
Northern Harrier	<i>Circus cyaneus</i>						E		E	Upland grassland/prairie; Emergent wetland; Riparian wetland	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Osprey	<i>Pandion haliaetus</i>				T					Emergent wetland; Open water; Riparian wetland	R2, R3	negligible short-term adverse impacts
Red Knot	<i>Calidris canutus rufa</i>	T	SNA	Level III		T				Emergent wetland	R1, R2, R3	No impact
Red-shouldered Hawk	<i>Buteo lineatus</i>						E			Forest; Riparian/forested wetland	R4	negligible short-term adverse impacts
Sedge Wren	<i>Cistothorus platensis</i>		S3B							Upland grassland/prairie; Emergent wetland	R1	negligible short-term adverse impacts
Short-eared Owl	<i>Asio flammeus</i>			Level II			E			Upland grassland/prairie; Emergent wetland	R1, R2, R4	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Snowy Egret	<i>Egretta thula</i>								E	Emergent wetland; Riparian wetland; Open water; Upland grassland/prairie	R4, R5, R6, R7, R8	negligible short-term adverse impacts
White-faced Ibis	<i>Plegadis chihi</i>		S3B							Emergent wetland; Upland grassland/prairie	R1	negligible short-term adverse impacts
Whooping Crane	<i>Grus americana</i>	E	S1M	Level III	E	E				Emergent wetland; Upland grassland/prairie	R1, R2, R3, R4	No impact
Willet	<i>Tringa semipalmata</i>			Level II						Emergent wetland; Upland grassland/prairie	R1, R2	negligible short-term adverse impacts
Wilson's Phalarope	<i>Phalaropus tricolor</i>			Level I						Emergent wetland; Upland grassland/prairie; Open water	R1, R2	negligible short-term adverse impacts
Yellow Rail	<i>Coturnicops noveboracensis</i>		S3B	Level I						Emergent wetland; Scrub shrub wetland	R1, R2	negligible short-term adverse impacts
Mammals												
Arctic Shrew	<i>Sorex arcticus</i>			Level III						Emergent wetland; Riparian/forested wetland; Upland grassland/prairie; Forest	R1, R2	negligible short-term adverse impacts
Gray Bat	<i>Myotis grisescens</i>	E						E	E	Forest	R5, R6, R7, R8	No impact
Gray Wolf	<i>Canis lupus</i>	E	S4			E			E	Upland grassland/prairie; Forest	R1, R2, R3, R4, R5, R6, R7, R8	No impact

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Hispid Pocket Mouse	<i>Chaetodipus hispidus</i>			Level III						Upland grassland/prairie	R1, R2	negligible short-term adverse impacts
Indiana Bat	<i>Myotis sodalis</i>	E					E		E	Riparian/forested wetland; Forest;	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Least Shrew	<i>Cryptotis parva</i>						T			Upland grassland/prairie; Forest; Emergent wetland	R4	negligible short-term adverse impacts
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T							E	Riparian/forested wetland; Forest	R1, R2, R4, R5, R6, R7, R8	negligible short-term adverse impacts
Plains Pocket Mouse	<i>Perognathus flavescens</i>			Level III			E			Upland grassland/prairie	R1, R2, R4, R5, R6, R7, R8	negligible short-term adverse impacts
Pygmy Shrew	<i>Sorex hoyi</i>			Level II						Forest	R1, R2	negligible short-term adverse impacts
Red-backed Vole	<i>Clethrionomys gapperi</i>						E			Forest; Emergent wetland	R4, R5, R6, R7, R8	negligible short-term adverse impacts
River Otter	<i>Lontra canadensis</i>			Level II	T	T				Open water, Riparian/forested wetland; Emergent wetland; Scrub shrub wetlands	R1, R2, R3, R4	negligible short-term adverse impacts
Southern Bog Lemming	<i>Synaptomys cooperi</i>						T			Forest; Emergent wetland; Upland grassland/prairie	R4, R5, R6, R7, R8	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Reptiles and Amphibians												
Blanding's Turtle	<i>Emydoidea blandingii</i>								E	Emergent wetland; Riparian/forested wetland; Scrub shrub wetland; Open water; Upland grassland/prairie; Forest	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Canadian Toad	<i>Anaxyrus hemiophrys</i>			Level I						Emergent wetlands; Riparian/forested wetland; Scrub shrub wetland; Upland grassland/prairie; Forest	R1, R2	negligible short-term adverse impacts
Common Musk Turtle	<i>Sternotherus odoratus</i>						T			Emergent wetland; Riparian/forested wetland; Open water	R4	negligible short-term adverse impacts
False Map Turtle	<i>Graptemys pseudogeographica</i>			Level III	T					Open water; Riparian/forested wetland; Emergent wetland	R1, R2, R3, R4	negligible short-term adverse impacts
Great Plains Skink	<i>Eumeces obsoletus</i>						E			Upland grassland/prairie; Forest	R4	No impact
Massasauga	<i>Sistrurus catenatus</i>					T	E		E	Emergent wetland; Upland grassland/prairie; Riparian/forested wetland; Scrub shrub wetland	R3, R4, R5, R6, R7, R8	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Ornate Box Turtle	<i>Terrapene ornata</i>						T			Upland grassland/prairie	R4	No impact
Plains Spadefoot	<i>Spea bombifrons</i>			Level I						Upland grassland/prairie; Emergent wetland	R1, R2	negligible short-term adverse impacts
Prairie Rattlesnake	<i>Crotalus viridis</i>						E			Upland grassland/prairie	R4	No impact
Smooth Green Snake	<i>Opheodrys vernalis</i>		S2	Level I						Upland grassland/prairie; Emergent wetland; riparian wetland; Forest	R1, R2	negligible short-term adverse impacts
Smooth Softshell	<i>Apalone mutica</i>			Level III						Open water; Emergent wetland;	R1, R2	negligible short-term adverse impacts
Speckled Kingsnake	<i>Lampropeltis getula holbrooki</i>						T			Riparian/forested wetland; Forest; Upland grassland/prairie	R4	negligible short-term adverse impacts
Spiny Softshell	<i>Apalone spinifera</i>		S3	Level III						Open water; Emergent wetland;	R1, R2	negligible short-term adverse impacts
Western Chicken Turtle	<i>Deirochelys reticularia miaria</i>								E	Emergent wetland; Riparian/forested wetland	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Western Hognose Snake	<i>Heterodon nasicus</i>						E			Upland grassland/prairie	R4	No impact
Wood Turtle	<i>Glyptemys insculpta</i>						E			Open water; Forest; emergent wetland	R4	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Yellow Mud Turtle	<i>Kinosternon flavescens</i>						E		E	Open water; Emergent wetland; Upland grassland/prairie; Riparian/forested wetland	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Fishes												
Blue Sucker	<i>Cycleptus elongatus</i>		S2S3	Level I						Open water	R1, R2	negligible short-term adverse impacts
Burbot	<i>Lota lota</i>			Level II			T			Open water	R2, R2, R4	negligible short-term adverse impacts
Carmine Shiner	<i>Notropis percobromis</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Central Mudminnow	<i>Umbra limi</i>								E	Open water; Emergent wetland	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Chestnut Lamprey	<i>Ichthyomyzon castaneus</i>			Level III			T			Open water	R1, R2, R4	negligible short-term adverse impacts
Crystal Darter	<i>Crystallaria asprella</i>								E	Open water	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Flathead Chub	<i>Platygobio gracilis</i>			Level II				T	E	Open water	R1, R2, R4, R5, R6, R7, R8	negligible short-term adverse impacts
Lake Sturgeon	<i>Acipenser fulvescens</i>						E		E	Open water	R4, R5, R6, R7, R8	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Logperch	<i>Percina caprodes</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Northern Pearl Dace	<i>Margariscus nachtriebi</i>			Level I						Open water	R1, R2	negligible short-term adverse impacts
Paddlefish	<i>Polyodon spathula</i>		S2							Open water	R1, R2	negligible short-term adverse impacts
Pearl Dace	<i>Margariscus margarita</i>						E			Open water	R4	negligible short-term adverse impacts
Plains Minnow	<i>Hybognathus placitus</i>							T		Open water	R5	negligible short-term adverse impacts
River Darter	<i>Percina shumardi</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Sauger	<i>Sander canadensis</i>		S2							Open water	R1	negligible short-term adverse impacts
Shoal Chub	<i>Macrhybopsis hyostoma</i>							T		Open water	R5	negligible short-term adverse impacts
Shortnose Gar	<i>Lepisosteus platostomus</i>		S1							Open water	R1	negligible short-term adverse impacts
Sicklefin Chub	<i>Macrhybopsis meeki</i>		S1	Level I	E			E		Open water	R1, R2, R3, R4, R5	negligible short-term adverse impacts
Silver Chub	<i>Macrhybopsis storeriana</i>			Level II				E		Open water	R1, R2, R5	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Silver Lamprey	<i>Ichthyomyzon unicuspis</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Sturgeon Chub	<i>Macrhybopsis gelida</i>			Level I	T			T		Open water	R1, R2, R3, R4, R5	negligible short-term adverse impacts
Trout-perch	<i>Percopsis omiscomaycus</i>			Level II						Open water	R1, R2	negligible short-term adverse impacts
Western Silvery Minnow	<i>Hybognathus argyritis</i>							T		Open water	R5	negligible short-term adverse impacts
Mussels and Gastropods												
Black Sandshell	<i>Ligumia recta</i>			Level II						Open water	R1, R2	negligible short-term adverse impacts
Buckhorn	<i>Tritogonia verrucosa</i>						E			Open water	R4	negligible short-term adverse impacts
Creeper	<i>Strophitus undulatus</i>			Level III			T			Open water	R1, R2, R4	negligible short-term adverse impacts
Deertoe	<i>Truncilla truncata</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Ebonyshell	<i>Fusconaia ebena</i>								E	Open water	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Elephant Ear	<i>Elliptio crassidens</i>								E	Open water	R4, R5, R6, R7, R8	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Fragile Papershell	<i>Leptodea fragilis</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Mapleleaf	<i>Quadrula quadrula</i>			Level III						Open water	R1, R2	negligible short-term adverse impacts
Mucket Mussel	<i>Actinonaias ligamentina</i>						E	E		Open water	R4, R5	negligible short-term adverse impacts
Ohio River Pigtoe	<i>Pleurobema cordatum</i>						E			Open water	R4	negligible short-term adverse impacts
Pink Heelsplitter	<i>Potamilus alatus</i>			Level II						Open water	R1, R2	negligible short-term adverse impacts
Pink Papershell	<i>Potamilus ohioensis</i>			Level I						Open water	R1, R2	negligible short-term adverse impacts
Scaleshell	<i>Leptodea leptodon</i>	E				E			E	Open water	R3, R4, R5, R6, R7, R8	No impact
Sheepnose	<i>Plethobasus cyphus</i>	E							E	Open water	R4, R5, R6, R7, R8	negligible short-term adverse impacts
Slender Walker Snake	<i>Pomatiopsis lapidaria</i>							E		Emergent wetland; Riparian wetland	R4	negligible short-term adverse impacts
Slough Sandshell	<i>Lampsilis teres teres</i>						E			Open water	R4	negligible short-term adverse impacts
Threeridge	<i>Amblema plicata</i>			Level II						Open water	R1, R2	negligible short-term adverse impacts

Common Name	Scientific Name	Federal Status	State Rank							Habitat Association(s)	Reach	Adverse Impacts from Alternatives 1–6
			MT	ND	SD	NE	IA	KS	MO			
Wabash Pigtoe	<i>Fusconaia flava</i>			Level II						Open water	R1, R2	negligible short-term adverse impacts
Yellow Sandshell	<i>Lampsilis teres anodontoides</i>						E			Open water	R4	negligible short-term adverse impacts
Insects												
Brimstone Clubtail	<i>Stylurus intricatus</i>		S1							Open water; Emergent wetland;	R1	negligible short-term adverse impacts
Gray Comma	<i>Polygonia progne</i>		S2							Forest	R1	negligible short-term adverse impacts
Homoeoneuria alleni	<i>Homoeoneuria alleni</i>		S2							Open water	R1	negligible short-term adverse impacts
Lachlania saskatchewanensis	<i>Lachlania saskatchewanensis</i>		S1							Open water; Riparian wetland	R1	negligible short-term adverse impacts

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**APPENDIX F: MISSOURI RIVER RECOVERY
MANAGEMENT PLAN-EIS ALTERNATIVES – COST
ESTIMATES**

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Project Summary	Alternative 1 - No Action					Alternative 2 - USFWS 2003 BioP Projected Actions					Alternative 3 - Pallid Habitat Construction & ESH Mechanical					Alternative 4 - Pallid Habitat Construction and ESH Spring Release					Alternative 5 - Pallid Habitat Construction and ESH Fall Release					Alternative 6 - Pallid Habitat Construction and ESH Mechanical w/Spawning Cue					
Management Actions																															
	TOTAL COST	TOTAL (First 15 Years)	Annual cost (Yrs 1 - 15)	Total (Years 16-50)	Annual Cost (Years 16 - 50)	TOTAL COST	TOTAL (First 15 Years)	Annual cost (Yrs 1 - 15)	Total (Years 16-50)	Annual Cost (Years 16 - 50)	TOTAL COST	TOTAL (First 15 Years)	Annual cost (Yrs 1 - 15)	Total (Years 16-50)	Annual Cost (Years 16 - 50)	TOTAL COST	TOTAL (First 15 Years)	Annual cost (Yrs 1 - 15)	Total (Years 16-50)	Annual Cost (Years 16 - 50)	TOTAL COST	TOTAL (First 15 Years)	Annual cost (Yrs 1 - 15)	Total (Years 16-50)	Annual Cost (Years 16 - 50)	TOTAL COST	TOTAL (First 15 Years)	Annual cost (Yrs 1 - 15)	Total (Years 16-50)	Annual Cost (Years 16 - 50)	
Operations & Maintenance (O&M) Costs																															
Lower River Pallid Sturgeon																															
Spawning Habitat OMRRR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,252,696	375,809	25,054	876,887	25,054	1,252,696	375,809	25,054	876,887	25,054	1,252,696	375,809	25,054	876,887	25,054	1,252,696	375,809	25,054	876,887	25,054
Early Life Stage Habitat O & M:																															
Existing SWH operations & maintenance	392,653,049	117,795,915	7,853,061	274,857,134	7,853,061	392,653,049	117,795,915	7,853,061	274,857,134	7,853,061	392,653,049	117,795,915	7,853,061	274,857,134	7,853,061	392,653,049	117,795,915	7,853,061	274,857,134	7,853,061	392,653,049	117,795,915	7,853,061	274,857,134	7,853,061	392,653,049	117,795,915	7,853,061	274,857,134	7,853,061	
Channel Widening-total for Omaha & KC	915,670,032	274,701,010	18,313,401	640,969,022	18,313,401	2,565,125,085	769,537,525	51,302,502	1,795,587,559	51,302,502	203,482,665	61,044,800	4,069,653	142,437,866	4,069,653	203,482,665	61,044,800	4,069,653	142,437,866	4,069,653	203,482,665	61,044,800	4,069,653	142,437,866	4,069,653	203,482,665	61,044,800	4,069,653	142,437,866	4,069,653	
- Omaha reaches O&M costs	378,081,431	113,424,429	7,561,629	264,657,002	7,561,629	932,323,309	279,696,993	18,646,466	652,626,316	18,646,466	52,301,698	15,690,509	1,046,034	36,611,189	1,046,034	52,301,698	15,690,509	1,046,034	36,611,189	1,046,034	52,301,698	15,690,509	1,046,034	36,611,189	1,046,034	52,301,698	15,690,509	1,046,034	36,611,189	1,046,034	
- Kansas City reaches O&M costs	537,588,601	161,276,580	10,751,772	376,312,020	10,751,772	1,632,801,776	489,840,533	32,656,036	1,142,961,243	32,656,036	151,180,967	45,354,290	3,023,619	105,826,677	3,023,619	151,180,967	45,354,290	3,023,619	105,826,677	3,023,619	151,180,967	45,354,290	3,023,619	105,826,677	3,023,619	151,180,967	45,354,290	3,023,619	105,826,677	3,023,619	
Backwater - OMRRR	80,735,837	24,220,751	1,614,717	56,515,086	1,614,717	151,379,695	45,413,909	3,027,594	105,965,787	3,027,594	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A
Total O&M Cost	1,389,058,918	416,717,675	27,781,178	972,341,242	27,781,178	3,109,157,828	932,747,349	62,183,157	2,176,410,480	62,183,157	597,388,410	179,216,523	11,947,768	418,171,887	11,947,768	597,388,410	179,216,523	11,947,768	418,171,887	11,947,768	597,388,410	179,216,523	11,947,768	418,171,887	11,947,768	597,388,410	179,216,523	11,947,768	418,171,887	11,947,768	
Construction General (CG) Costs																															
Program Management, Integration & Coordination	300,582,937	90,174,881	6,011,659	210,408,056	6,011,659	300,582,937	90,174,881	6,011,659	210,408,056	6,011,659	300,582,937	90,174,881	6,011,659	210,408,056	6,011,659	300,582,937	90,174,881	6,011,659	210,408,056	6,011,659	300,582,937	90,174,881	6,011,659	210,408,056	6,011,659	300,582,937	90,174,881	6,011,659	210,408,056	6,011,659	
MRRC	94,850,000	28,455,000	1,897,000	66,395,000	1,897,000	94,850,000	28,455,000	1,897,000	66,395,000	1,897,000	94,850,000	28,455,000	1,897,000	66,395,000	1,897,000	94,850,000	28,455,000	1,897,000	66,395,000	1,897,000	94,850,000	28,455,000	1,897,000	66,395,000	1,897,000	94,850,000	28,455,000	1,897,000	66,395,000	1,897,000	
Lower River Pallid Sturgeon																															
Propagation and Augmentation Program	23,977,588	7,193,276	479,552	16,784,312	479,552	23,977,588	7,193,276	479,552	16,784,312	479,552	23,977,588	7,193,276	479,552	16,784,312	479,552	23,977,588	7,193,276	479,552	16,784,312	479,552	23,977,588	7,193,276	479,552	16,784,312	479,552	23,977,588	7,193,276	479,552	16,784,312	479,552	
Spawning Habitat Construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,127,426	1,127,426	125,270	0	0	1,127,426	1,127,426	125,270	0	0	1,127,426	1,127,426	125,270	0	0	1,127,426	1,127,426	125,270	0	0
SWH Refurbishment - total for Omaha & KC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	48,406,594	48,406,594	3,227,106	0	0	48,406,594	48,406,594	3,227,106	0	0	48,406,594	48,406,594	3,227,106	0	0	48,406,594	48,406,594	3,227,106	0	0
- Omaha construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24,203,297	24,203,297	1,613,553	0	0	24,203,297	24,203,297	1,613,553	0	0	24,203,297	24,203,297	1,613,553	0	0	24,203,297	24,203,297	1,613,553	0	0
- Kansas City construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24,203,297	24,203,297	1,613,553	0	0	24,203,297	24,203,297	1,613,553	0	0	24,203,297	24,203,297	1,613,553	0	0	24,203,297	24,203,297	1,613,553	0	0
Early Life Stage Habitat Construction:																															
- Omaha reaches construction	248,204,641	248,204,641	16,546,976	0	0	612,055,904	612,055,904	40,803,727	0	0	34,335,260	34,335,260	2,289,017	0	0	34,335,260	34,335,260	2,289,017	0	0	34,335,260	34,335,260	2,289,017	0	0	34,335,260	34,335,260	2,289,017	0	0	
- Kansas City reaches construction	742,450,531	742,450,531	49,496,702	0	0	2,255,022,789	2,255,022,789	150,334,853	0	0	222,888,693	222,888,693	14,859,246	0	0	222,888,693	222,888,693	14,859,246	0	0	222,888,693	222,888,693	14,859,246	0	0	222,888,693	222,888,693	14,859,246	0	0	
- Backwater - construction	66,901,575	66,901,575	4,460,105	0	0	125,440,452	125,440,452	8,362,697	0	0	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A
Total Habitat Construction Cost	1,057,556,747	1,057,556,747	70,503,783	0	0	2,992,519,146	2,992,519,146	199,501,276	0	0	257,223,953	257,223,953	17,148,264	0	0	257,223,953	257,223,953	17,148,264	0	0	257,223,953	257,223,953	17,148,264	0	0	257,223,953	257,223,953	17,148,264	0	0	
Real Estate Acquisition	41,227,347	41,227,347	4,122,735	0	0	266,191,105	266,191,105	26,619,111	0	0	10,541,078	10,541,078	1,054,108	0	0	10,541,078	10,541,078	1,054,108	0	0	10,541,078	10,541,078	1,054,108	0	0	10,541,078	10,541,078	1,054,108	0	0	
Habitat Development	8,177,861	8,177,861	545,191	0	0	51,951,901	51,951,901	3,463,460	0	0	2,199,725	2,199,725	146,648	0	0	2,199,725	2,199,725	146,648	0	0	2,199,725	2,199,725	146,648	0	0	2,199,725	2,199,725	146,648	0	0	
Land Management	7,729,427	1,472,272	98,151	6,257,155	178,776	50,148,611	9,552,116	636,808	40,596,495	1,159,900	1,942,758	370,049	24,670	1,572,708	44,935	1,942,758	370,049	24,670	1,572,708	44,935	1,942,758	370,049	24,670	1,572,708	44,935	1,942,758	370,049	24,670	1,572,708	44,935	
Spawning Cue Flow	N/A	N/A	N/A	No implementation cost	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Low Summer Flow	N/A	N/A	N/A	N/A	N/A	N/A	No implementation cost	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Floodplain Connectivity	N/A	N/A	N/A	N/A	N/A	N/A	No implementation cost	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Monitoring, Evaluation and Research:																															
PSAP	129,383,439	38,815,032	2,587,669	90,568,407	2,587,669	129,383,439	38,815,032	2,587,669	90,568,407	2,587,669	129,383,439	38,815,032	2,587,669	90,568,407	2,587,669	129,383,439	38,815,032	2,587,669	90,568,407	2,587,669	129,383,439	38,815,032	2,587,669	90,568,407	2,587,669	129,383,439	38,815,032	2,587,669	90,568,407	2,587,669	
HAMP	28,883,554	28,883,554	1,925,570	0	0	28,883,554	28,883,554	1,925,570	0	0	28,883,554	28,883,554	1,925,570	0	0	28,883,554	28,883,554	1,925,570	0	0	28,883,554	28,883,554	1,925,570	0	0	28,883,554	28,883,554	1,925,570	0	0	
Focused Research	50,571,515	50,571,515	3,371,434	0	0	50,571,515	50,571,515	3,371,434	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Level 1 and 2 studies	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	28,468,865	22,475,419	1,498,361	5,993,445	1,498,361	28,468,865	22,475,419	1,498,361	5,993,445	1,498,361	28,468,865	22,475,419	1,498,361	5,993,445	1,498,361	28,468,865	22,475,419	1,498,361	5,993,445	1,498,361
Upper River Pallid Sturgeon																															
Propagation and Augmentation Program	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above
Monitoring, Evaluation and Research:																															
PSAP	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above
HAMP	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above
Focused Research	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	Included above	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Level 1 and 2 studies	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14,745,184	14,745,184	983,012	0	0	14,745,184	14,745,184	983,012	0	0	14,745,184	14,745,184	983,012	0	0	14,745,184	14,745,184	983,0		

Assumptions applicable to all Management Actions

- | | | |
|---|-----|---|
| 1. All costs and benefits are in FY2018 (1st Quarter 2018) dollars, are unescalated beyond that and are not discounted to generate a Net Present Value. | | |
| 2. Where cost data was dated before the 4th quarter of 2015, it was escalated using the Engineering Manual on the Civil Works Construction Cost Index System (CWCCIS). The indices for Line 06 Fish & Wildlife Facilities were used to escalate costs as necessary. | | |
| 3. Various "soft costs" have been added to the construction costs to arrive at a total project cost, where applicable. These are typically as follows: | | |
| a) Project Management (PM) | 5% | |
| b) Pre-construction Engineering & Design (PED) | 10% | |
| c) Supervision & Administration (S&A) | 6% | |
| d) Operations, Maintenance, Repair, Rehabilitation & Replacement (OMRRR) | 20% | Note - doesn't apply to sandbar projects. |
| e) Operations & Maintenance (O&M) - only applies to channel widening and backwater construction projects and was developed on a cost/acre basis from information provided by USACE. | | |
| f) Engineering during construction (EDC) | 5% | |
| g) Contingency | 20% | |
| 4. As construction durations are presently unknown, no allowance has been included for interest costs incurred during construction. | | |

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Alternative Summary		Alternative 1 - No Action	Assumptions for estimates
Management Actions		TOTAL	
Operations & Maintenance (O&M) Costs			
Early Life Stage Habitat O&M:			
Existing SWH operations & maintenance	392,653,049	O&M cost of \$4,903/acre (escalated to 1st Q 2018) for existing 1,509 acres (744 acres of chutes and 366 acres of backwaters for Omaha; 399 acres of chutes for Kansas City) - assumes same cost as top width O&M. Costs are escalated to 1st Q 2018.	
Channel Widening - total O&M	915,670,032	Total for Omaha & Kansas City	
- Omaha reaches O&M costs	378,081,431	O&M - cost for O&M spread over 50 years (at \$4,893/acre, escalated to 1st Q 2018).	
- Kansas City reaches O&M costs	537,588,601		
Backwater - OMRRR	80,735,837	OMRRR spread over 50 years (at \$3,184/acre for 480 acres, escalated to 1st Q 2018)	
Total Habitat O&M Cost	1,389,058,918		
Construction General (CG) Costs			
Program Management, Integration & Coordination	300,582,937	\$5,690,000 annually (per USACE), for 50 years, escalated to 1st Q, 2018.	
MRRIC	94,850,000	\$1,897,000 annually (per USACE), for 50 years.	
Lower River Pallid Sturgeon			
Propagation and Augmentation Program	23,977,588	Annual budget of \$455,167 for 50 years, escalated to 1st Q, 2018.	
Spawning Habitat Construction	N/A		
Early Life Stage Habitat Construction:			
- Omaha reaches construction	248,204,641	Construction - cost of 3,519 acres at \$115,800 for Omaha acreage; \$243,614 for Kansas City acreage (average cost data escalated to 10/15) plus applicable mark-ups, assuming 100% material removal, spread over 15 years. Costs/acre include PED, and are escalated to 1st Q 2018.	
- Kansas City reaches construction	742,450,531		
- Backwater - construction	66,901,575	Cost of 480 acres at \$86,844 plus applicable mark-ups (escalated to 1st Q, 2018), spread over 15 years	
Total Habitat Construction Cost	1,057,556,747		
Real Estate Acquisition	41,227,347	Acquisition cost of 915 acres x 7.7 = 7,046 acres. Acquisition cost based on a weighted average of costs of agricultural land and recreational land. For Omaha Reach, using ag. land price of \$6,000/acre and rec. land at \$2,000/acre, with a 60/40 split, resulting in an average of \$4,400/acre. For KC Reach ag. land at \$5,050 and rec. land at \$3,261, with an 80/20 split, resulting in an average cost of \$4,692/acre. Assumed to be purchased over a 10-year period, with a 20% contingency applied (all costs escalated to 1st Q, 2018)	
Habitat Development	8,177,861	5,267 acres of agricultural land developed over 15 years at a cost of \$1,500 per acre, escalated to 1st Q, 2018.	
Land Management	7,729,427	6,131 acres managed over a 50-year period at an annual cost of \$29/acre, escalated to 1st Q 2018.	
Spawning Cue Flow	No implementation cost		
Low Summer Flow	N/A		
Floodplain Connectivity	N/A		
Monitoring, Evaluation and Research:			
PSPAP	129,383,439	\$2,500,000 annually for 50 years, escalated to 1st Q 2018.	
HAMP	28,883,554	\$1,860,333 annually for 15 years, escalated to 1st Q 2018.	
Focused Research	50,571,515	\$3,200,000 annually for 15 years, escalated to 1st Q 2018.	
Upper River Pallid Sturgeon			
Propagation and Augmentation Program	Included above		
Monitoring, Evaluation and Research:			
PSPAP	Included above		
HAMP	Included above		
Focused Research	Included above		
Piping Plover and Least Tern			
Mechanical ESH Creation	165,068,586	Cost of 62.67 acres being constructed annually at a cost of \$50,000 per acre, for 50 years (cost escalated to 1st Q 2018).	
Vegetation Management	15,000,000	\$300,000 annually, for 50 years.	
Predator Management	1,050,000	\$60,000 annually (incurred on average once every 3 years), for 50 years (cost escalated to 1st Q 2018).	
Human Restrictions Measures	260,000	Annual signage costs of \$5,000 (rounded), for 50 years (cost escalated to 1st Q 2018).	
Spring Reservoir Release for ESH Creation	N/A		
Fall Reservoir Release for ESH Creation	N/A		
Monitoring, Evaluation and Research:			
Monitoring	63,391,832	\$1,200,000 annually for monitoring, for 50 years (cost escalated to 1st Q 2018).	
Focused Research	26,413,263	\$500,000 annually for research, for 50 years (cost escalated to 1st Q 2018).	
Level 1 and 2 Studies	N/A		
ESTIMATED COST		\$3,403,183,014	

Lower River Pallid SturgeonOperations & Maintenance of Existing SWH

Total area included: 1,509 acres

Average cost per year: \$ 7,853,061 at \$4,893/acre
(spread over 50 years)

Study years: 50

Total: **\$ 392,653,049**Program Management, Integration & CoordinationCosts provided by USACE:Update to 1/18

Program management, integration & coordination	\$ 1,500,000	\$ 1,584,796
ISP Labor	\$ 1,590,000	\$ 1,679,884
AM Costs	\$ 1,700,000	\$ 1,796,102
Strategic annual process review	\$ 40,000	\$ 42,261
Communication support	\$ 80,000	\$ 84,522
Information management	\$ 600,000	\$ 633,918
FWCA	\$ 100,000	\$ 105,653
Tribal business	\$ 80,000	\$ 84,522
Average cost per year:	\$ 5,690,000	\$ 6,011,659

Study years: 50

Total: **\$ 300,582,937**MRRICCosts provided by USACE:In 1/18 \$

MRRIC	\$ 1,897,000
Average cost per year:	\$ 1,897,000

Study years: 50

Total: **\$ 94,850,000**Lower River Pallid Sturgeon**1 Propagation & Augmentation Program**Average cost per year: \$ 479,552
(spread over 50 years)

Study years:

50

Total:

\$ 23,977,588**3 Backwaters**

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
480	\$ 92,181	5%	10%	6%	0%	0%	5%	\$ 55,751,312	20%	\$ 66,901,575

Construction:Average cost per year:
(spread over 15 years)

\$ 4,460,105

Study years:

15

Total:

\$ 66,901,575O&M:Cost/acre:
\$ 3,364Average cost per year:
(spread over 50 years)

\$ 1,614,717

Study years:

50

Total:

\$ 80,735,837**4 Channel widening**

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	1,453	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 206,837,201	20%	\$ 248,204,641
KC	2,066	\$ 258,165	5%	0%	6%	0%	0%	5%	\$ 618,708,776	20%	\$ 742,450,531

Construction:Average costs per year:
(spread over 15 years)

Omaha
\$ 16,546,976

KC
\$ 49,496,702

Study years:

15

Total:

\$ 248,204,641	\$ 742,450,531
-----------------------	-----------------------

O&M:Cost/acre:
\$ 5,204Average cost per year:
(spread over 50 years)

Omaha
\$ 7,561,629

KC
\$ 10,751,772

Study years:

50

Total:

\$ 378,081,431	\$ 537,588,601
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5 Real Estate Acquisition

	Lands reqd	Acres purchased (x 7.7)	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	240	1,848	\$ 4,649	0%	0%	0%	0%	0%	0%	\$ 8,590,861	20%	\$ 10,309,033

EIS Alternatives - Cost Estimates

Alternative 1 - No Action

August 2018

KC 675 5,198 \$ 4,957 0% 0% 0% 0% 0% 0% \$ 25,765,261 20% **\$ 30,918,314**

6 Monitoring, Evaluation & ResearchPSPAP:

Average cost per year: \$ 2,587,669
(spread over 50 years)

Study years: 50

Total: \$ 129,383,439

HAMP:

Average cost per year: \$ 1,925,570
(spread over 15 years)

Study years: 15

Total: \$ 28,883,554

Focused Research:

Average cost per year: \$ 3,371,434
(spread over 15 years)

Study years: 15

Total: \$ 50,571,515

Piping Plover and Least Tern**7 Mechanical ESH Construction**

Acres/year	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
62.67	\$ 52,679	0%	0%	0%	0%	0%	0%	\$ 3,301,372	0%	\$ 3,301,372

Construction:

Average cost per year: \$ 3,301,372
(spread over 50 years)

Study years: 50

Total: \$ 165,068,586

8 Vegetation Management

Annual cost \$ 300,000

Study years: 50

Annual average cost, rounded \$ 300,000

(spread over 50 years)

Total: \$ 15,000,000
9 Predator Management

Study years:	50	Annual cost	\$ 63,214
		Occurs in 1/3rd of years - reduce:	\$ (42,143)
		Annual average cost, rounded	\$ 21,000
		(spread over 50 years)	

Total: \$ 1,050,000
10 Human Restriction Measures

Study years:	50	Signage material	\$	1,092
		Signage labor	\$	3,226
		Average cost per year:	\$	4,318
		Add contingency (20%)	\$	864
		Annual average cost, rounded	\$	5,200
		(spread over 50 years)		

Total: \$ 260,000
11 Monitoring

Study years:	50	Monitoring cost	\$ 1,267,837
		Average cost per year:	\$ 1,267,837
		(spread over 50 years)	

Total: \$ 63,391,832
12 Focused Research

Study years:	50	Research cost	\$ 528,265
		Average cost per year:	\$ 528,265
		(spread over 50 years)	

Total: \$ 26,413,263

Alternative Summary		Alternative 2 - USFWS 2003 BiOp Projected Actions TOTAL	Assumptions for estimates
Management Actions			
Operations & Maintenance (O&M) Costs			
Early Life Stage Habitat O&M:			
Existing SWH operations & maintenance	392,653,049	O&M cost of \$4,903/acre (escalated to 1st Q 2018) for existing 1,509 acres (744 acres of chutes and 366 acres of backwaters for Omaha; 399 acres of chutes for Kansas City) - assumes same cost as top width O&M. Costs are escalated to 1st Q 2018.	
Channel Widening - total O&M	2,565,125,085	Total for Omaha & Kansas City	
- Omaha reaches O&M costs	932,323,309	O&M - cost for O&M spread over 50 years (at \$4,893/acre, escalated to 1st Q 2018).	
- Kansas City reaches O&M costs	1,632,801,776		
Backwater - OMRRR	151,379,695	Cost for OMRRR spread over 50 years (at \$3,184/acre for 900 acres, escalated to 1st Q 2018)	
Total Habitat O&M Cost	3,109,157,828		
Construction General (CG) Costs			
Program Management, Integration & Coordination	300,582,937	\$5,690,000 annually (per USACE), for 50 years, escalated to 1st Q, 2018.	
MRRIC	94,850,000	\$1,897,000 annually (per USACE), for 50 years.	
Lower River Pallid Sturgeon			
Propagation and Augmentation Program	23,977,588	Annual budget of \$455,167 for 50 years, escalated to 1st Q, 2018.	
Spawning Habitat Construction	N/A		
Early Life Stage Habitat Construction:			
- Omaha reaches construction	612,055,904	Construction - cost of 9,858 acres at \$115,800 for Omaha acreage; \$243,614 for Kansas City acreage plus applicable mark-ups, assuming 100% material removal, spread over 15 years. Costs/acre include PED, and are escalated to 1st Q 2018.	
- Kansas City reaches construction	2,255,022,789		
- Backwater - construction	125,440,452	Cost of 900 acres at \$86,844 plus applicable mark-ups (escalated to 1st Q, 2018), spread over 15 years	
Total Habitat Construction Cost	2,992,519,146		
Real Estate Acquisition	266,191,105	Acquisition cost of 5,937 acres x 7.7 = 45,716 acres. Acquisition cost based on a weighted average of costs of agricultural land and recreational land. For Omaha Reach, using ag. land price of \$6,000/acre and rec. land at \$2,000/acre, with a 60/40 split, resulting in an average of \$4,400/acre. For KC Reach ag. land at \$5,050 and rec. land at \$3,261, with an 80/20 split, resulting in an average cost of \$4,692/acre. Assumed to be purchased over a 10-year period, with a 20% contingency applied (all costs escalated to 1st Q, 2018)	
Habitat Development	51,951,901	33,461 acres of agricultural land developed over 15 years at a cost of \$1,500 per acre, escalated to 1st Q 2018.	
Land Management	50,148,611	39,778 acres managed over a 50-year period at an annual cost of \$29/acre, escalated to 1st Q, 2018.	
Spawning Cue Flow	No implementation cost		
Low Summer Flow	No implementation cost		
Floodplain Connectivity	No implementation cost		
Monitoring, Evaluation and Research:			
PSPAP	129,383,439	\$2,500,000 annually for 50 years, escalated to 1st Q 2018.	
HAMP	28,883,554	\$1,860,333 annually for 15 years, escalated to 1st Q 2018.	
Focused Research	50,571,515	\$3,200,000 annually for 15 years, escalated to 1st Q 2018.	
Upper River Pallid Sturgeon			
Propagation and Augmentation Program	Included above		
Monitoring, Evaluation and Research:			
PSPAP	Included above		
HAMP	Included above		
Focused Research	Included above		
Piping Plover and Least Tern			
Mechanical ESH Creation	1,670,440,356	Cost of 634.2 acres being constructed annually at a cost of \$50,000 per acre, for 50 years (cost escalated to 1st Q 2018)	
Vegetation Management	15,000,000	\$300,000 annually, for 50 years.	
Predator Management	1,050,000	\$60,000 annually (incurred on average once every 3 years), for 50 years (cost escalated to 1st Q 2018).	
Human Restrictions Measures	260,000	Annual signage costs of \$5,000 (rounded), for 50 years (cost escalated to 1st Q 2018).	
Spring Reservoir Release for ESH Creation	N/A		
Fall Reservoir Release for ESH Creation	N/A		
Monitoring, Evaluation and Research:			
Monitoring	63,391,832	\$1,200,000 annually for monitoring, for 50 years (cost escalated to 1st Q 2018).	
Focused Research	26,413,263	\$500,000 annually for research, for 50 years (cost escalated to 1st Q 2018).	
Level 1 and 2 Studies	N/A		
ESTIMATED COST		\$8,874,773,076	

August 2018

Lower River Pallid SturgeonOperations & Maintenance of Existing SWH

Total area included: 1,509 acres

Average cost per year: \$ 7,853,061 at \$4,893/acre
(spread over 50 years)

Study years: 50

Total: \$ 392,653,049Program Management, Integration & CoordinationCosts provided by USACE:Update to 1/18

Program management, integration & coordination	\$ 1,500,000	\$ 1,584,796
ISP Labor	\$ 1,590,000	\$ 1,679,884
AM Costs	\$ 1,700,000	\$ 1,796,102
Strategic annual process review	\$ 40,000	\$ 42,261
Communication support	\$ 80,000	\$ 84,522
Information management	\$ 600,000	\$ 633,918
FWCA	\$ 100,000	\$ 105,653
Tribal business	\$ 80,000	\$ 84,522

Average cost per year: \$ 5,690,000 \$ 6,011,659

Study years: 50

Total: \$ 300,582,937MRRICCosts provided by USACE:In 1/18 \$

MRRIC	\$ 1,897,000
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Average cost per year: \$ 1,897,000

Study years: 50

Total: \$ 94,850,000

August 2018

Lower River Pallid Sturgeon**1 Propagation & Augmentation Program**

Average cost per year: \$ 479,552
(spread over 50 years)

Study years: 50

Total: \$ 23,977,588

2 Backwaters

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
900	\$ 92,181	5%	10%	6%	0%	0%	5%	\$ 104,533,710	20%	\$ 125,440,452

Construction: Average cost per year: \$ 8,362,697
(spread over 15 years)

Study years: 15

Total: \$ 125,440,452

O&M: Average cost per year: \$ 3,027,594
Cost/acre: (spread over 50 years)
\$ 3,364

Study years: 50

Total: \$ 151,379,695

3 Channel widening

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	3,583	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 510,046,587	20%	\$ 612,055,904
KC	6,275	\$ 258,165	5%	0%	6%	0%	0%	5%	\$ 1,879,185,657	20%	\$ 2,255,022,789

	<u>Construction:</u>	Average cost per year:	Omaha	KC
		(spread over 15 years)	\$ 40,803,727	\$ 150,334,853

August 2018

Study years: 15 Total: \$ 612,055,904 \$ 2,255,022,789

O&M:
Cost/acre:
\$ 5,204

Average cost per year:
(spread over 50 years)

Omaha
\$ 18,646,466

KC
\$ 32,656,036

Study years: 50 Total: \$ 932,323,309 \$ 1,632,801,776

4 Real Estate Acquisition

	Lands reqd	Acres purchased (x 7.7)	Cost/acre	PM	PED	S&A	OMRRR	O&M	Sub-total	Contingency	Total
Omaha	2,020	15,555	\$ 4,649	0%	0%	0%	0%	0%	\$ 72,311,063	20%	\$ 86,773,275
KC	3,917	30,161	\$ 4,957	0%	0%	0%	0%	0%	\$ 149,514,858	20%	\$ 179,417,830

5 Monitoring, Evaluation & Research

PSPAP:

Average cost per year:
(spread over 50 years) \$ 2,587,669

Study years: 50

Total: \$ 129,383,439

HAMP:

Average cost per year:
(spread over 15 years) \$ 1,925,570

Study years: 15

Total: \$ 28,883,554

Focused Research:

Average cost per year:
(spread over 15 years) \$ 3,371,434

August 2018

Study years: 15

Total: \$ 50,571,515

6 Mechanical ESH Construction

Acres/year	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
634.2	\$ 52,679	0%	0%	0%	0%	0%	0%	\$ 33,408,807	0%	\$ 33,408,807

Construction:Average cost per year:
(spread over 50 years) \$ 33,408,807

Study years: 50

Total: \$ 1,670,440,356

7 Vegetation Management

Annual cost \$ 300,000

Study years: 50

Annual average cost, rounded
(spread over 50 years) \$ 300,000

Total: \$ 15,000,000

8 Predator Management

Annual cost \$ 63,214

Occurs in 1/3rd of years - reduce: \$ (42,143)

Study years: 50

Annual average cost, rounded
(spread over 50 years) \$ 21,000

Total: \$ 1,050,000

9 Human Restriction Measures

Signage material \$ 1,092

August 2018

Study years:	50	Signage labor	\$ 3,226
		Average cost per year:	\$ 4,318
		Add contingency (20%)	\$ 864
		Annual average cost, rounded (spread over 50 years)	\$ 5,200

Total: **\$ 260,000**

10 Monitoring

Study years:	50	Monitoring cost	\$ 1,267,837
		Average cost per year:	\$ 1,267,837
		(spread over 50 years)	

Total: **\$ 63,391,832**

11 Focused Research

Study years:	50	Research cost	\$ 528,265
		Average cost per year:	\$ 528,265
		(spread over 50 years)	

Total: **\$ 26,413,263**

Alternative Summary		Alternative 3 - Pallid Habitat Construction & ESH Mechanical TOTAL	Assumptions for estimates
Management Actions			
Spawning Habitat OMRRR	1,252,696	Cost of OMRRR for 6.6 acres (3 sites at 2.2 acres each), at 20% of construction cost; annually for 50 years	
<u>Early Life Stage Habitat O&M:</u>			
Existing SWH operations & maintenance	392,653,049	O&M cost of \$4,903/acre (escalated to 1st Q 2018) for existing 1,509 acres (744 acres of chutes and 366 acres of backwaters for Omaha; 399 acres of chutes for Kansas City) - assumes same cost as top width O&M. Costs are escalated to 1st Q 2018.	
Channel Widening - total O&M	52,301,698	Total for Omaha & Kansas City	
- Omaha reaches O&M costs	52,301,698	O&M - cost for O&M spread over 50 years (at \$4,893/acre); for the 10 structure modifications projects in KC reaches, \$114,500 is included per year. Costs are escalated to 1st Q 2018.	
- Kansas City reaches O&M costs	151,180,967		
Total Habitat O&M Cost	444,954,747		
Construction General (CG) Costs			
Program Management, Integration & Coordination	300,582,937	\$5,690,000 annually (per USACE), for 50 years, escalated to 1st Q, 2018.	
MRRIC	94,850,000	\$1,897,000 annually (per USACE), for 50 years.	
Lower River Pallid Sturgeon			
Propagation and Augmentation Program	23,977,588	Annual budget of \$455,167 for 50 years, escalated to 1st Q, 2018.	
Spawning Habitat Construction	1,127,426	Cost of creation of 6.6 acres (3 sites at 2.2 acres each), starting in year 3 and spread over 9 years, using the Omaha cost/acre for channel widening of \$115,800 (escalated to 1st Q 2018).	
SWH Refurbishment - total	48,406,594		
- Omaha	24,203,297	Construction of 22 chute projects yielding 60 acres each, split evenly between Omaha & Kansas City. Cost is based on average of the estimated first cost of Baltimore and Searcy Bends, escalated to 1st Q 2018.	
- Kansas City	24,203,297		
<u>Early Life Stage Habitat Construction:</u>			
- Omaha reaches construction	34,335,260	Construction - cost of 201 acres at \$115,800 for Omaha acreage; 559 acres at \$243,614 for Kansas City acreage plus applicable mark-ups, assuming 100% material removal, spread over 15 years. Costs/acre include PED. Note 1,300 acres in KC reaches is for 10 structure modification projects, constructed in years 3 - 7. Costs included for that acreage are \$1,970,235 for construction, plus escalation to 1st Q 2018.	
- Kansas City reaches construction	222,888,693		
- Backwater - construction	Not required		
Total Habitat Construction Cost	257,223,953		
Real Estate Acquisition	10,541,078	Cost of acquisition of 230 acres x 7.7 = 1,772 acres. Acquisition cost based on a weighted average of costs of agricultural land and recreational land. For KC Reach ag. land at \$5,050 and rec. land at \$3,261, with an 80/20 split, resulting in an average cost of \$4,692/acre. Assumed to be purchased over a 10-year period, with a 20% contingency applied (all costs escalated to 1st Q, 2018).	
Habitat Development	2,199,725	1,417 acres of agricultural land developed over 15 years at a cost of \$1,500 per acre, escalated to 1st Q 2018.	
Land Management	1,942,758	1,541 acres managed over a 50-year period at an annual cost of \$29/acre, escalated to 1st Q, 2018.	
Spawning Cue Flow	N/A		
Low Summer Flow	N/A		
Floodplain Connectivity	N/A		
Monitoring, Evaluation and Research:			
PSPAP	129,383,439	\$2,500,000 annually for 50 years, escalated to 1st Q 2018.	
HAMP	28,883,554	\$1,860,333 annually for 15 years, escalated to 1st Q 2018.	
Focused Research	N/A		
Level 1 and 2 studies	28,468,865	Annual cost of \$1,422,171 for 19 years - based on total cost of \$27,021,250 for years 2014 - 2032, converted to an average annual cost (escalated to 1st Q 2018).	
Upper River Pallid Sturgeon			
Propagation and Augmentation Program	Included above		
Monitoring, Evaluation and Research:			
PSPAP	Included above		
HAMP	N/A		
Focused Research	N/A		
Level 1 and 2 studies	14,745,184	Annual cost of \$933,027 for 15 years - based on total cost of \$13,995,400 for years 2014 - 2028, converted to an average annual cost (escalated to 1st Q 2018).	
Piping Plover and Least Tern			
Mechanical ESH Creation	215,113,314	Cost of 81.67 acres being constructed annually at a cost of \$50,000 per acre, for 50 years (cost escalated to 1st Q 2018).	
Vegetation Management	15,000,000	\$300,000 annually, for 50 years.	
Predator Management	1,050,000	\$60,000 annually (incurred on average once every 3 years), for 50 years (cost escalated to 1st Q 2018).	
Human Restrictions Measures	260,000	Annual signage costs of \$5,000 (rounded), for 50 years (cost escalated to 1st Q 2018).	
Spring Reservoir Release for ESH Creation	N/A		
Fall Reservoir Release for ESH Creation	N/A		
Monitoring, Evaluation and Research:			

Monitoring	63,391,832	\$1,200,000 annually for monitoring, for 50 years (cost escalated to 1st Q 2018).
Focused Research	0	Included below
Level 1 and 2 Studies	28,774,877	Engineered log jams and multiple stabilization methods, plus focused research cost of \$25,000,000, spread over 15 years (cost escalated to 1st Q 2018).
ESTIMATED COST	\$1,863,311,533	

Lower River Pallid SturgeonSpawning Habitat OMRRR

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

OMRRR: Average cost per year: \$ 25,054
20% (spread over 50 years)

Study years: 50 Total: **\$ 1,252,696**

Operations & Maintenance of Existing SWH

Total area included: 1,509 acres

Average cost per year: \$ 7,853,061 at \$4,893/acre
(spread over 50 years)

Study years: 50 Total: **\$ 392,653,049**

Program Management, Integration & CoordinationCosts provided by USACE:

		Update to 1/18
Program management, integration & coordination	\$ 1,500,000	\$ 1,584,796
ISP Labor	\$ 1,590,000	\$ 1,679,884
AM Costs	\$ 1,700,000	\$ 1,796,102
Strategic annual process review	\$ 40,000	\$ 42,261
Communication support	\$ 80,000	\$ 84,522
Information management	\$ 600,000	\$ 633,918
FWCA	\$ 100,000	\$ 105,653
Tribal business	\$ 80,000	\$ 84,522
Average cost per year:	\$ 5,690,000	\$ 6,011,659

Study years: 50 Total: **\$ 300,582,937**

MRRIC

Costs provided by USACE:
MRRIC

In 1/18 \$
\$ 1,897,000
\$ 1,897,000

Average cost per year:

Study years: 50

Total: **\$ 94,850,000****1 Propagation & Augmentation Program**

Average cost per year: \$ 479,552
(spread over 50 years)

Study years: 50

Total: **\$ 23,977,588****2 Spawning Habitat Construction**

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

Construction:

Average cost per year: \$ 125,270
(spread over 9 years)

Study years: 9

Total: **\$ 1,127,426****3 SWH Refurbishment**

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297
KC	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297

Omaha

KC

Total: **\$ 24,203,297 \$ 24,203,297****4 Channel widening**

August 2018

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	201	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 28,612,717	20%	\$ 34,335,260
KC	559	\$ 258,165	5%	0%	6%	0%	0%	5%	\$ 167,404,746	20%	\$ 200,885,695
KC	1,300	\$ 16,119	0%	0%	0%	0%	0%	5%	\$ 22,002,997	0%	\$ 22,002,997

(structure mod projects)

	Omaha	KC
Total:	\$ 34,335,260	\$ 222,888,693

<u>OMRRR (KC structure mods):</u>	<u>O&M:</u>	Average cost per year:	Omaha	KC
Cost/project: \$ 11,450	Cost/acre: \$ 5,204	(spread over 50 years)	\$ 1,046,034	\$ 3,023,619

Study years: 50	Total:	\$ 52,301,698	\$ 151,180,967
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5 Real Estate Acquisition

	Lands reqd	Acres purchased (x 7.7)	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
KC	230	1,772	\$ 4,957	0%	0%	0%	0%	0%	0%	\$ 8,784,232	20%	\$ 10,541,078

6 Monitoring, Evaluation & ResearchPSPAP:

Average cost per year: \$ 2,587,669
(spread over 50 years)

Study years: 50	Total:	\$ 129,383,439
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HAMP:

Average cost per year: \$ 1,925,570
(spread over 15 years)

August 2018

Study years: 15

Total: \$ 28,883,554

Level 1 & 2 studies - lower river:Average cost per year:
(spread over 19 years) \$ 1,498,361

Study years: 19

Total: \$ 28,468,865

Level 1 & 2 studies - upper river:Average cost per year:
(spread over 15 years) \$ 983,012

Study years: 15

Total: \$ 14,745,184

7 Mechanical ESH Construction

Acres/year	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
81.67	\$ 52,679	0%	0%	0%	0%	0%	0%	\$ 4,302,266	0%	\$ 4,302,266

Construction:Average cost per year:
(spread over 50 years) \$ 4,302,266

Study years: 50

Total: \$ 215,113,314

8 Vegetation Management

Annual cost \$ 300,000

Study years: 50

Annual average cost, rounded
(spread over 50 years) \$ 300,000

Total: \$ 15,000,000

9 Predator Management

Annual cost \$ 63,214

Occurs in 1/3rd of years - reduce: \$ (42,143)

August 2018

Study years:	50	Annual average cost, rounded (spread over 50 years)	\$ 21,000
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Total:	\$ 1,050,000
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10 Human Restriction Measures

Study years:	50	Signage material	\$ 1,092
		Signage labor	\$ 3,226
		Average cost per year:	\$ 4,318
		Add contingency (20%)	\$ 864
		Annual average cost, rounded (spread over 50 years)	\$ 5,200

Total:	\$ 260,000
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11 Monitoring

Study years:	50	Monitoring cost	\$ 1,267,837
		Average cost per year:	\$ 1,267,837
		(spread over 50 years)	

Total:	\$ 63,391,832
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12 Focused Research

Study years:	50	Research cost	incl. below
		Average cost per year:	\$ -
		(spread over 50 years)	

Total:	\$ -
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13 Level 1 and 2 Studies

			Update to 1/18
Focused research	\$ 25,000,000	\$	25,876,688
Engineered log jams	\$ 1,500,000	\$	1,552,601

Missouri River Recovery Management Plan

EIS Alternatives - Cost Estimates

Alternative 3 - Pallid Habitat Construction & ESH Mechanical



August 2018

Stabilization using biopolymers	\$ 500,000	\$ 517,534
Stabilization using biotechnical methods:		\$ -
Construction	\$ 500,000	\$ 517,534
Monitoring	\$ 100,000	\$ 103,507
Stabilization using sub-optimal sediments	\$ 200,000	\$ 207,014
Total cost:	\$ 27,800,000	\$ 28,774,877
(spread over 15 years)		

Study years: 15

Total: \$ 28,774,877

Alternative Summary		Alternative 4 - Pallid Habitat Construction and ESH Spring Release TOTAL	Assumptions for estimates
Management Actions			
Operations & Maintenance (O&M) Costs			
Spawning Habitat OMRRR	1,252,696	Cost of OMRRR for 6.6 acres (3 sites at 2.2 acres each), at 20% of construction cost; annually for 50 years	
Early Life Stage Habitat O&M:			
Existing SWH operations & maintenance	392,653,049	O&M cost of \$4,903/acre (escalated to 1st Q 2018) for existing 1,509 acres (744 acres of chutes and 366 acres of backwaters for Omaha; 399 acres of chutes for Kansas City) - assumes same cost as top width O&M. Costs are escalated to 1st Q 2018.	
Channel Widening - total O&M	203,482,665	Total for Omaha & Kansas City	
- Omaha reaches O&M costs	52,301,698	O&M - cost for O&M spread over 50 years (at \$4,893/acre); for the 10 structure modifications projects in KC reaches, \$114,500 is included per year. Costs are escalated to 1st Q 2018.	
- Kansas City reaches O&M costs	151,180,967		
Total Habitat O&M Cost	596,135,714		
Construction General (CG) Costs			
Program Management, Integration & Coordination	300,582,937	\$5,690,000 annually (per USACE), for 50 years, escalated to 1st Q, 2018.	
MRRIC	94,850,000	\$1,897,000 annually (per USACE), for 50 years.	
Lower River Pallid Sturgeon			
Propagation and Augmentation Program	23,977,588	Annual budget of \$455,167 for 50 years, escalated to 1st Q, 2018.	
Spawning Habitat Construction	1,127,426	Cost of creation of 6.6 acres (3 sites at 2.2 acres each), starting in year 3 and spread over 9 years, using the Omaha cost/acre for channel widening of \$115,800 (escalated to 1st Q 2018).	
SWH Refurbishment - total	48,406,594		
- Omaha	24,203,297	Construction of 22 chute projects yielding 60 acres each, split evenly between Omaha & Kansas City. Cost is based on average of the estimated first cost of Baltimore and Searcy Bends, escalated to 1st Q 2018.	
- Kansas City	24,203,297		
Early Life Stage Habitat Construction:			
- Omaha reaches construction	34,335,260	Construction - cost of 201 acres at \$115,800 for Omaha acreage; 559 acres at \$243,614 for Kansas City acreage plus applicable mark-ups, assuming 100% material removal, spread over 15 years. Costs/acre include PED. Note 1,300 acres in KC reaches is for 10 structure modification projects, constructed in years 3 - 7. Costs included for that acreage are \$1,970,235 for construction, plus escalation to 1st Q 2018.	
- Kansas City reaches construction	222,888,693		
- Backwater - construction	Not required		
Total Habitat Construction Cost	257,223,953		
Real Estate Acquisition	10,541,078	Cost of acquisition of 230 acres x 7.7 = 1,772 acres. Acquisition cost based on a weighted average of costs of agricultural land and recreational land. For KC Reach ag. land at \$5,050 and rec. land at \$3,261, with an 80/20 split, resulting in an average cost of \$4,692/acre. Assumed to be purchased over a 10-year period, with a 20% contingency applied (all costs escalated to 1st Q, 2018).	
Habitat Development	2,199,725	1,417 acres of agricultural land developed over 15 years at a cost of \$1,500 per acre, escalated to 1st Q 2018.	
Land Management	1,942,758	1,541 acres managed over a 50-year period at an annual cost of \$29/acre, escalated to 1st Q, 2018.	
Spawning Cue Flow	N/A		
Low Summer Flow	N/A		
Floodplain Connectivity	N/A		
Monitoring, Evaluation and Research:			
PSPAP	129,383,439	\$2,500,000 annually for 50 years, escalated to 1st Q 2018.	
HAMP	28,883,554	\$1,860,333 annually for 15 years, escalated to 1st Q 2018.	
Focused Research	N/A		
Level 1 and 2 studies	28,468,865	Annual cost of \$1,422,171 for 19 years - based on total cost of \$27,021,250 for years 2014 - 2032, converted to an average annual cost (escalated to 1st Q 2018).	
Upper River Pallid Sturgeon			
Propagation and Augmentation Program	Included above		
Monitoring, Evaluation and Research:			
PSPAP	Included above		
HAMP	N/A		
Focused Research	N/A		
Level 1 and 2 studies	14,745,184	Annual cost of \$933,027 for 15 years - based on total cost of \$13,995,400 for years 2014 - 2028, converted to an average annual cost (escalated to 1st Q 2018).	
Piping Plover and Least Tern			
Mechanical ESH Creation	15,856,277	Cost of 6.02 acres being constructed annually at a cost of \$50,000 per acre, for 50 years	
Vegetation Management	15,000,000	\$300,000 annually, for 50 years.	
Predator Management	1,050,000	\$60,000 annually (incurred on average once every 3 years), for 50 years (cost escalated to 1st Q 2018).	
Human Restrictions Measures	260,000	Annual signage costs of \$5,000 (rounded), for 50 years (cost escalated to 1st Q 2018).	
Spring Reservoir Release for ESH Creation	N/A		
Fall Reservoir Release for ESH Creation	No implementation cost		
Monitoring, Evaluation and Research:			
Monitoring	63,391,832	\$1,200,000 annually for monitoring, for 50 years (cost escalated to 1st Q 2018).	
Focused Research	0	Included below	
Level 1 and 2 Studies	28,774,877	Engineered log jams and multiple stabilization methods, plus focused research cost of \$25,000,000, spread over 15 years (cost escalated to 1st Q 2018).	
ESTIMATED COST	\$1,664,054,496		

Lower River Pallid SturgeonSpawning Habitat OMRRR

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

OMRRR:
20%

Average cost per year:
(spread over 50 years)

\$ 25,053.92

Study years: 50

Total: **\$ 1,252,696**

Operations & Maintenance of Existing SWH

Total area included: 1,509 acres

Average cost per year:
(spread over 50 years) \$ 7,853,061 at \$4,893/acre

Study years: 50

Total: **\$ 392,653,049**

Program Management, Integration & CoordinationCosts provided by USACE:

Program management, integration & coordination
ISP Labor
AM Costs
Strategic annual process review
Communication support
Information management
FWCA
Tribal business

Update to 1/18

\$ 1,584,796
\$ 1,679,884
\$ 1,796,102
\$ 42,261
\$ 84,522
\$ 633,918
\$ 105,653
\$ 84,522

Average cost per year:

\$ 6,011,659

Study years: 50

Total: **\$ 300,582,937**

MRRIC

Costs provided by USACE:

MRRIC

In 1/18 \$

\$ 1,897,000

\$ 1,897,000

Average cost per year:

Study years: 50

Total: \$ 94,850,000

1 Propagation & Augmentation ProgramAverage cost per year: \$ 479,552
(spread over 50 years)

Study years: 50

Total: \$ 23,977,588

2 Spawning Habitat Construction

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

Construction:Average cost per year: \$ 125,270
(spread over 9 years)

Study years: 9

Total: \$ 1,127,426

3 SWH Refurbishment

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297
KC	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297

Omaha

KC

Total: \$ 24,203,297 \$ 24,203,297

August 2018

4 Channel widening

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	201	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 28,612,717	20%	\$ 34,335,260
KC	559	\$ 258,165	5%	0%	6%	0%	0%	5%	\$ 167,404,746	20%	\$ 200,885,695
KC (structure mod projects)	1,300	\$ 16,119	0%	0%	0%	0%	0%	5%	\$ 22,002,997	0%	\$ 22,002,997

	Omaha	KC
Total:	\$ 34,335,260	\$ 222,888,693

OMRRR (KC structure mods):
Cost/project: \$ 11,450

O&M:
Cost/acre:
\$ 5,204

Average cost per year:
(spread over 50 years)

	Omaha	KC
	\$ 1,046,034	\$ 3,023,619

Study years: 50

Total:	\$ 52,301,698	\$ 151,180,967
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5 Real Estate Acquisition

	Lands reqd	Acres purchased (x 7.7)	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
KC	230	1,772	\$ 4,957	0%	0%	0%	0%	0%	0%	\$ 8,784,232	20%	\$ 10,541,078

6 Monitoring, Evaluation & ResearchPSPAP:

Average cost per year:
(spread over 50 years) \$ 2,587,669

Study years: 50

Total:	\$ 129,383,439
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HAMP:

Average cost per year:
(spread over 15 years) \$ 1,925,570

August 2018

Study years: 15

Total: \$ 28,883,554

Level 1 & 2 studies - lower river:Average cost per year: \$ 1,498,361
(spread over 19 years)

Study years: 19

Total: \$ 28,468,865

Level 1 & 2 studies - upper river:Average cost per year: \$ 983,012
(spread over 15 years)

Study years: 15

Total: \$ 14,745,184

7 Mechanical ESH Construction

Acres/year	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.02	\$ 52,679	0%	0%	0%	0%	0%	0%	\$ 317,126	0%	\$ 317,126

Construction:Average cost per year: \$ 317,126
(spread over 50 years)

Study years: 50

Total: \$ 15,856,277

8 Vegetation Management

Annual cost \$ 300,000

Study years: 50

Annual average cost, rounded \$ 300,000
(spread over 50 years)

Total: \$ 15,000,000

9 Predator Management

Annual cost \$ 63,214

Occurs in 1/3rd of years - reduce: \$ (42,143)

August 2018

Study years:	50	Annual average cost, rounded (spread over 50 years)	\$ 21,000
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Total:	\$ 1,050,000
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10 Human Restriction Measures

		Signage material	\$ 1,092
		Signage labor	\$ 3,226
		Average cost per year:	\$ 4,318
		Add contingency (20%)	\$ 864
Study years:	50	Annual average cost, rounded (spread over 50 years)	\$ 5,200

Total:	\$ 260,000
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11 Monitoring

		Monitoring cost	\$ 1,267,837
		Average cost per year:	\$ 1,267,837
		(spread over 50 years)	

Study years:	50
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Total:	\$ 63,391,832
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12 Focused Research

		Research cost	incl. below
		Average cost per year:	\$ -
		(spread over 50 years)	

Study years:	50
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Total:	\$ -
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13 Level 1 and 2 Studies

		Update to 1/18
	Focused research	\$ 25,876,688

August 2018

		Engineered log jams	\$	1,552,601
		Stabilization using biopolymers	\$	517,534
		Stabilization using biotechnical methods:	\$	-
		Construction	\$	517,534
		Monitoring	\$	103,507
		Stabilization using sub-optimal sediments	\$	207,014
		Total cost:	\$	28,774,877
		(spread over 15 years)		
Study years:	15	Total:	\$	28,774,877

Alternative 3 - Pallid Habitat Construction and ESH Fall Release TOTAL		Assumptions for estimates
Alternative Summary Management Actions		
Operations & Maintenance (O&M) Costs		
Spawning Habitat OMRRR	1,252,696	Cost of OMRRR for 6.6 acres (3 sites at 2.2 acres each), at 20% of construction cost; annually for 50 years
Early Life Stage Habitat O&M:		
Existing SWH operations & maintenance	392,653,049	O&M cost of \$4,903/acre (escalated to 1st Q 2018) for existing 1,509 acres (744 acres of chutes and 366 acres of backwaters for Omaha; 399 acres of chutes for Kansas City) - assumes same cost as top width O&M. Costs are escalated to 1st Q 2018.
Channel Widening - total O&M	203,482,665	Total for Omaha & Kansas City
- Omaha reaches O&M costs	52,301,698	O&M - cost for O&M spread over 50 years (at \$4,893/acre); for the 10 structure modifications projects in KC reaches, \$114,500 is included per year. Costs are escalated to 1st Q 2018.
- Kansas City reaches O&M costs	151,180,967	
Total Habitat O&M Cost	596,135,714	
Construction General (CG) Costs		
Program Management, Integration & Coordination	300,582,937	\$5,690,000 annually (per USACE), for 50 years, escalated to 1st Q, 2018.
MRRIC	94,850,000	\$1,897,000 annually (per USACE), for 50 years.
Lower River Pallid Sturgeon		
Propagation and Augmentation Program	23,977,588	Annual budget of \$455,167 for 50 years, escalated to 1st Q, 2018.
Spawning Habitat Construction	1,127,426	Cost of creation of 6.6 acres (3 sites at 2.2 acres each), starting in year 3 and spread over 9 years, using the Omaha cost/acre for channel widening of \$115,800 (escalated to 1st Q 2018).
SWH Refurbishment - total	48,406,594	
- Omaha	24,203,297	Construction of 22 chute projects yielding 60 acres each, split evenly between Omaha & Kansas City. Cost is based on average of the estimated first cost of Baltimore and Searcy Bends, escalated to 1st Q 2018.
- Kansas City	24,203,297	
Early Life Stage Habitat Construction:		
- Omaha reaches construction	34,335,260	Construction - cost of 201 acres at \$115,800 for Omaha acreage; 559 acres at \$243,614 for Kansas City acreage plus applicable mark-ups, assuming 100% material removal, spread over 15 years. Costs/acre include PED. Note 1,300 acres in KC reaches is for 10 structure modification projects, constructed in years 3 - 7. Costs included for that acreage are \$1,970,235 for construction, plus escalation to 1st Q 2018.
- Kansas City reaches construction	222,888,693	
- Backwater - construction	Not required	
Total Habitat Construction Cost	257,223,953	
Real Estate Acquisition	10,541,078	Cost of acquisition of 230 acres x 7.7 = 1,772 acres. Acquisition cost based on a weighted average of costs of agricultural land and recreational land. For KC Reach ag. land at \$5,050 and rec. land at \$3,261, with an 80/20 split, resulting in an average cost of \$4,692/acre. Assumed to be purchased over a 10-year period, with a 20% contingency applied (all costs escalated to 1st Q, 2018).
Habitat Development	2,199,725	1,417 acres of agricultural land developed over 15 years at a cost of \$1,500 per acre, escalated to 1st Q 2018.
Land Management	1,942,758	1,541 acres managed over a 50-year period at an annual cost of \$29/acre, escalated to 1st Q, 2018.
Spawning Cue Flow	N/A	
Low Summer Flow	N/A	
Floodplain Connectivity	N/A	
Monitoring, Evaluation and Research:		
PSPAP	129,383,439	\$2,500,000 annually for 50 years, escalated to 1st Q 2018.
HAMP	28,883,554	\$1,860,333 annually for 15 years, escalated to 1st Q 2018.
Focused Research	N/A	
Level 1 and 2 studies	28,468,865	Annual cost of \$1,422,171 for 19 years - based on total cost of \$27,021,250 for years 2014 - 2032, converted to an average annual cost (escalated to 1st Q 2018).
Upper River Pallid Sturgeon		
Propagation and Augmentation Program	Included above	
Monitoring, Evaluation and Research:		
PSPAP	Included above	
HAMP	N/A	
Focused Research	N/A	
Level 1 and 2 studies	14,745,184	Annual cost of \$933,027 for 15 years - based on total cost of \$13,995,400 for years 2014 - 2028, converted to an average annual cost (escalated to 1st Q 2018).
Piping Plover and Least Tern		
Mechanical ESH Creation	66,006,363	Cost of 25.06 acres being constructed annually at a cost of \$50,000 per acre, for 50 years, with costs escalated to 1st Q 2018.
Vegetation Management	15,000,000	\$300,000 annually, for 50 years.
Predator Management	1,050,000	\$60,000 annually (incurred on average once every 3 years), for 50 years (cost escalated to 1st Q 2018).
Human Restrictions Measures	260,000	Annual signage costs of \$5,000 (rounded), for 50 years (cost escalated to 1st Q 2018).
Spring Reservoir Release for ESH Creation	No implementation cost	
Fall Reservoir Release for ESH Creation	N/A	
Monitoring, Evaluation and Research:		
Monitoring	63,391,832	\$1,200,000 annually for monitoring, for 50 years (cost escalated to 1st Q 2018).
Focused Research	0	Included below
Level 1 and 2 Studies	28,774,877	Engineered log jams and multiple stabilization methods, plus focused research cost of \$25,000,000, spread over 15 years (cost escalated to 1st Q 2018).
ESTIMATED COST	\$1,714,204,582	

Lower River Pallid SturgeonSpawning Habitat OMRRR

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

OMRRR: Average cost per year: \$ 25,053.92
20% (spread over 50 years)

Study years: 50 Total: **\$ 1,252,696**

Operations & Maintenance of Existing SWH

Total area included: 1,509 acres

Average cost per year: \$ 7,853,061 at \$4,893/acre
(spread over 50 years)

Study years: 50 Total: **\$ 392,653,049**

Program Management, Integration & CoordinationCosts provided by USACE:

	Update to 1/18
Program management, integration & coordination	\$ 1,584,796
ISP Labor	\$ 1,679,884
AM Costs	\$ 1,796,102
Strategic annual process review	\$ 42,261
Communication support	\$ 84,522
Information management	\$ 633,918
FWCA	\$ 105,653
Tribal business	\$ 84,522
Average cost per year:	\$ 6,011,659

Study years: 50 Total: **\$ 300,582,937**

MRRIC

Costs provided by USACE:

MRRIC

In 1/18 \$

\$ 1,897,000

Average cost per year:

\$ 1,897,000

Study years: 50

Total: \$ 94,850,000

1 Propagation & Augmentation ProgramAverage cost per year:
(spread over 50 years) \$ 479,552

Study years: 50

Total: \$ 23,977,588

2 Spawning Habitat Construction

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

Construction:Average cost per year:
(spread over 9 years) \$ 125,270

Study years: 9

Total: \$ 1,127,426

3 SWH Refurbishment

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297
KC	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297

Omaha

KC

Total: \$ 24,203,297 \$ 24,203,297

4 Channel widening

August 2018

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	201	122,717	5%	0%	6%	0%	0%	5%	\$ 28,612,717	20%	\$ 34,335,260
KC	559	258,165	5%	0%	6%	0%	0%	5%	\$ 167,404,746	20%	\$ 200,885,695
KC (structure mod projects)	1,300	16,119	0%	0%	0%	0%	0%	5%	\$ 22,002,997	0%	\$ 22,002,997

Omaha

KC

Total: **\$ 34,335,260** **\$ 222,888,693**

Omaha

KC

OMRRR (KC structure mods):

Cost/project: \$ 11,450

O&M:

Cost/acre:

\$ 5,204

Average cost per year:

(spread over 50 years)

\$ 1,046,034

\$ 3,023,619

Study years: 50

Total: **\$ 52,301,698** **\$ 151,180,967**

5 Real Estate Acquisition

	Lands reqd	Acres purchased (x 7.7)	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
KC	230	1,772	\$ 4,957	0%	0%	0%	0%	0%	0%	\$ 8,784,232	20%	\$ 10,541,078

6 Monitoring, Evaluation & Research

PSPAP:

Average cost per year: \$ 2,587,669
(spread over 50 years)

Study years: 50

Total: **\$ 129,383,439**

HAMP:

Average cost per year: \$ 1,925,570
(spread over 15 years)

Study years: 15

Total: **\$ 28,883,554**

August 2018

Level 1 & 2 studies - lower river:

Average cost per year: \$ 1,498,361
(spread over 19 years)

Study years: 19

Total: \$ 28,468,865

Level 1 & 2 studies - upper river:

Average cost per year: \$ 983,012
(spread over 15 years)

Study years: 15

Total: \$ 14,745,184

7 Mechanical ESH Construction

Acres/year	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
25.06	\$ 52,679	0%	0%	0%	0%	0%	0%	\$ 1,320,127	0%	\$ 1,320,127

Construction:

Average cost per year: \$ 1,320,127
(spread over 50 years)

Study years: 50

Total: \$ 66,006,363

8 Vegetation Management

Annual cost \$ 300,000

Study years: 50

Annual average cost, rounded \$ 300,000
(spread over 50 years)

Total: \$ 15,000,000

9 Predator Management

Annual cost \$ 63,214

Occurs in 1/3rd of years - reduce: \$ (42,143)

Study years: 50

Annual average cost, rounded \$ 21,000

(spread over 50 years)

Total: **\$ 1,050,000**
10 Human Restriction Measures

		Signage material	\$ 1,092
		Signage labor	\$ 3,226
		Average cost per year:	\$ 4,318
		Add contingency (20%)	\$ 864
Study years:	50	Annual average cost, rounded (spread over 50 years)	\$ 5,200

Total: **\$ 260,000**
11 Monitoring

		Monitoring cost	\$ 1,267,837
		Average cost per year:	\$ 1,267,837
		(spread over 50 years)	

Study years: 50

Total: **\$ 63,391,832**
12 Focused Research

		Research cost	incl. below
		Average cost per year:	\$ -
		(spread over 50 years)	

Study years: 50

Total: **\$ -**
13 Level 1 and 2 Studies

			Update to 1/18
		Focused research	\$ 25,876,688
		Engineered log jams	\$ 1,552,601
		Stabilization using biopolymers	\$ 517,534

		Stabilization using biotechnical methods:	\$	-
		Construction	\$	517,534
		Monitoring	\$	103,507
		Stabilization using sub-optimal sediments	\$	207,014
		Total cost:	\$	28,774,877
		(spread over 15 years)		
Study years:	15	Total:	\$	28,774,877

Alternative Summary		Alternative 6 - Pallid Habitat Construction and ESH Mechanical TOTAL	Assumptions for estimates
Management Actions			
Operations & Maintenance (O&M) Costs			
Spawning Habitat OMRRR	1,252,696	Cost of OMRRR for 6.6 acres (3 sites at 2.2 acres each), at 20% of construction cost; annually for 50 years	
Early Life Stage Habitat O&M:			
Existing SWH operations & maintenance	392,653,049	O&M cost of \$4,903/acre (escalated to 1st Q 2018) for existing 1,509 acres (744 acres of chutes and 366 acres of backwaters for Omaha; 399 acres of chutes for Kansas City) - assumes same cost as top width O&M. Costs are escalated to 1st Q 2018.	
Channel Widening - total O&M	203,482,665	Total for Omaha & Kansas City	
- Omaha reaches O&M costs	52,301,698	O&M - cost for O&M spread over 50 years (at \$4,893/acre); for the 10 structure modifications projects in KC reaches, \$114,500 is included per year. Costs are escalated to 1st Q 2018.	
- Kansas City reaches O&M costs	151,180,967		
Total Habitat O&M Cost	596,135,714		
Construction General (CG) Costs			
Program Management, Integration & Coordination	300,582,937	\$5,690,000 annually (per USACE), for 50 years, escalated to 1st Q, 2018.	
MRRIC	94,850,000	\$1,897,000 annually (per USACE), for 50 years.	
Lower River Pallid Sturgeon			
Propagation and Augmentation Program	23,977,588	Annual budget of \$455,167 for 50 years, escalated to 1st Q, 2018.	
Spawning Habitat Construction	1,127,426	Cost of creation of 6.6 acres (3 sites at 2.2 acres each), starting in year 3 and spread over 9 years, using the Omaha cost/acre for channel widening of \$115,800 (escalated to 1st Q 2018).	
SWH Refurbishment - total	48,406,594		
- Omaha	24,203,297	Construction of 22 chute projects yielding 60 acres each, split evenly between Omaha & Kansas City. Cost is based on average of the estimated first cost of Baltimore and Searcy Bends, escalated to 1st Q 2018.	
- Kansas City	24,203,297		
Early Life Stage Habitat Construction:			
- Omaha reaches construction	34,335,260	Construction - cost of 201 acres at \$115,800 for Omaha acreage; 559 acres at \$243,614 for Kansas City acreage plus applicable mark-ups, assuming 100% material removal, spread over 15 years. Costs/acre include PED. Note 1,300 acres in KC reaches is for 10 structure modification projects, constructed in years 3 - 7. Costs included for that acreage are \$1,970,235 for construction, plus escalation to 1st Q 2018.	
- Kansas City reaches construction	222,888,693		
- Backwater - construction	Not required		
Total Habitat Construction Cost	257,223,953		
Real Estate Acquisition	10,541,078	Cost of acquisition of 230 acres x 7.7 = 1,772 acres. Acquisition cost based on a weighted average of costs of agricultural land and recreational land. For KC Reach ag. land at \$5,050 and rec. land at \$3,261, with an 80/20 split, resulting in an average cost of \$4,692/acre. Assumed to be purchased over a 10-year period, with a 20% contingency applied (all costs escalated to 1st Q, 2018).	
Habitat Development	2,199,725	1,417 acres of agricultural land developed over 15 years at a cost of \$1,500 per acre, escalated to 1st Q 2018.	
Land Management	1,942,758	1,541 acres managed over a 50-year period at an annual cost of \$29/acre, escalated to 1st Q, 2018.	
Spawning Cue Flow	N/A		
Low Summer Flow	N/A		
Floodplain Connectivity	N/A		
Monitoring, Evaluation and Research:			
PSPAP	129,383,439	\$2,500,000 annually for 50 years, escalated to 1st Q 2018.	
HAMP	28,883,554	\$1,860,333 annually for 15 years, escalated to 1st Q 2018.	
Focused Research	N/A		
Level 1 and 2 studies	28,468,865	Annual cost of \$1,422,171 for 19 years - based on total cost of \$27,021,250 for years 2014 - 2032, converted to an average annual cost (escalated to 1st Q 2018).	
Upper River Pallid Sturgeon			
Propagation and Augmentation Program	Included above		
Monitoring, Evaluation and Research:			
PSPAP	Included above		
HAMP	N/A		
Focused Research	N/A		
Level 1 and 2 studies	14,745,184	Annual cost of \$933,027 for 15 years - based on total cost of \$13,995,400 for years 2014 - 2028, converted to an average annual cost (escalated to 1st Q 2018).	
Piping Plover and Least Tern			
Mechanical ESH Creation	63,319,751	Cost of 24.04 acres being constructed annually at a cost of \$50,000 per acre, for 50 years, with costs escalated to 1st Q 2018.	
Vegetation Management	15,000,000	\$300,000 annually, for 50 years.	
Predator Management	1,050,000	\$60,000 annually (incurred on average once every 3 years), for 50 years (cost escalated to 1st Q 2018).	
Human Restrictions Measures	260,000	Annual signage costs of \$5,000 (rounded), for 50 years (cost escalated to 1st Q 2018).	
Spring Reservoir Release for ESH Creation	N/A		
Fall Reservoir Release for ESH Creation	N/A		
Monitoring, Evaluation and Research:			
Monitoring	63,391,832	\$1,200,000 annually for monitoring, for 50 years (cost escalated to 1st Q 2018).	
Focused Research	0	Included below	
Level 1 and 2 Studies	28,774,877	Engineered log jams and multiple stabilization methods, plus focused research cost of \$25,000,000, spread over 15 years (cost escalated to 1st Q 2018).	
ESTIMATED COST		\$1,711,517,970	

Lower River Pallid SturgeonSpawning Habitat OMRRR

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

OMRRR: Average cost per year: \$ 25,054
20% (spread over 50 years)

Study years: 50 Total: **\$ 1,252,696**

Operations & Maintenance of Existing SWH

Total area included: 1,509 acres

Average cost per year: \$ 7,853,061 at \$4,893/acre
(spread over 50 years)

Study years: 50 Total: **\$ 392,653,049**

Program Management, Integration & CoordinationCosts provided by USACE:

	Update to 1/18
Program management, integration & coordination	\$ 1,584,796
ISP Labor	\$ 1,679,884
AM Costs	\$ 1,796,102
Strategic annual process review	\$ 42,261
Communication support	\$ 84,522
Information management	\$ 633,918
FWCA	\$ 105,653
Tribal business	\$ 84,522
Average cost per year:	\$ 6,011,659

Study years: 50 Total: **\$ 300,582,937**

MRRIC

Costs provided by USACE:

MRRIC

In 1/18 \$

\$ 1,897,000

\$ 1,897,000

Average cost per year:

Study years: 50

Total: \$ 94,850,000

1 Propagation & Augmentation ProgramAverage cost per year:
(spread over 50 years) \$ 479,552

Study years: 50

Total: \$ 23,977,588

2 Spawning Habitat Construction

Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
6.6	\$ 122,717	5%	0%	6%	0%	0%	5%	\$ 939,522	20%	\$ 1,127,426

Construction:Average cost per year:
(spread over 9 years) \$ 125,270

Study years: 9

Total: \$ 1,127,426

3 SWH Refurbishment

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297
KC	660	\$ 34,925	0%	0%	0%	0%	0%	5%	\$ 24,203,297	0%	\$ 24,203,297

Omaha

KC

Total: \$ 24,203,297 \$ 24,203,297

4 Channel widening

August 2018

	Acres included	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
Omaha	201	122,717	5%	0%	6%	0%	0%	5%	\$ 28,612,717	20%	\$ 34,335,260
KC	559	258,165	5%	0%	6%	0%	0%	5%	\$ 167,404,746	20%	\$ 200,885,695
KC (structure mod projects)	1,300	16,119	0%	0%	0%	0%	0%	5%	\$ 22,002,997	0%	\$ 22,002,997

	Omaha	KC
Total:	\$ 34,335,260	\$ 222,888,693

<u>OMRRR (KC structure mods):</u>	<u>O&M:</u>	Average cost per year:	Omaha	KC
Cost/project: \$ 11,450	Cost/acre:	(spread over 50 years)	\$ 1,046,034	\$ 3,023,619
	\$ 5,204			
Study years: 50		Total:	\$ 52,301,698	\$ 151,180,967

5 Real Estate Acquisition

	Lands reqd	Acres purchased (x 7.7)	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
KC	230	1,772	\$ 4,957	0%	0%	0%	0%	0%	0%	\$ 8,784,232	20%	\$ 10,541,078

6 Monitoring, Evaluation & ResearchPSPAP:

Average cost per year: \$ 2,587,669
(spread over 50 years)

Study years: 50 **Total: \$ 129,383,439**

HAMP:

Average cost per year: \$ 1,925,570
(spread over 15 years)

Study years: 15 **Total: \$ 28,883,554**

Level 1 & 2 studies - lower river:

Average cost per year: \$ 1,498,361
(spread over 19 years)

Study years: 19

Total: \$ 28,468,865

Level 1 & 2 studies - upper river:

Average cost per year: \$ 983,012
(spread over 15 years)

Study years: 15

Total: \$ 14,745,184

7 Mechanical ESH Construction

Acres/year	Cost/acre	PM	PED	S&A	OMRRR	O&M	EDC	Sub-total	Contingency	Total
24.04	\$ 52,679	0%	0%	0%	0%	0%	0%	\$ 1,266,395	0%	\$ 1,266,395

Construction:

Average cost per year: \$ 1,266,395
(spread over 50 years)

Study years: 50

Total: \$ 63,319,751

8 Vegetation Management

Annual cost \$ 300,000

Study years: 50

Annual average cost, rounded \$ 300,000
(spread over 50 years)

Total: \$ 15,000,000

9 Predator Management

Annual cost \$ 63,214

Occurs in 1/3rd of years - reduce: \$ (42,143)

Study years: 50

Annual average cost, rounded \$ 21,000

(spread over 50 years)

Total: **\$ 1,050,000**
10 Human Restriction Measures

		Signage material	\$ 1,092
		Signage labor	\$ 3,226
		Average cost per year:	\$ 4,318
		Add contingency (20%)	\$ 864
Study years:	50	Annual average cost, rounded (spread over 50 years)	\$ 5,200

Total: **\$ 260,000**
11 Monitoring

		Monitoring cost	\$ 1,267,837
		Average cost per year:	\$ 1,267,837
		(spread over 50 years)	

Study years: 50

Total: **\$ 63,391,832**
12 Focused Research

		Research cost	incl. below
		Average cost per year:	\$ -
		(spread over 50 years)	

Study years: 50

Total: **\$ -**
13 Level 1 and 2 Studies

			Update to 1/18
		Focused research	\$ 25,876,688
		Engineered log jams	\$ 1,552,601
		Stabilization using biopolymers	\$ 517,534

August 2018

		Stabilization using biotechnical methods:	\$	-
		Construction	\$	517,534
		Monitoring	\$	103,507
		Stabilization using sub-optimal sediments	\$	207,014
		Total cost:	\$	28,774,877
		(spread over 15 years)		
Study years:	15	Total:	\$	28,774,877

Missouri River Recovery Management Plan - Sources of Cost Data
August 2018

Management Action	Source	Cost base date	Base cost used	Unit	Escalation factor (to 1/18)	Escalated cost used in estimates
Program Management, Integration & Coordination	Randy Sellers	1/1/16	\$ 5,690,000	LS	1.057	\$ 6,011,659
	Craig Fleming	9/20/16	Included above			
MRRIC	Aaron Quinn	1/1/18	\$ 1,897,000	LS	1.000	\$ 1,897,000
Lower River Pallid Sturgeon						
Propagation and Augmentation Program	Mike Snyder	10/1/15	\$ 455,167	LS	1.054	\$ 479,552
Spawning Habitat Construction	Dan Pridal	7/1/14	\$ 115,380	Acre	1.064	\$ 122,717
SWH Refurbishment	Mike Snyder	7/1/14	\$ 1,970,235	Project	1.064	\$ 2,095,524
Early Life Stage Habitat Construction:						
Existing SWH operations & maintenance	Dan Pridal	10/1/14	\$ 4,893	Acre	1.064	\$ 5,204
Backwater	Dan Pridal	10/1/14	\$ 86,670	Acre	1.064	\$ 92,181
Channel Widening:						\$ -
- Omaha reaches construction	Dan Pridal	7/1/14	\$ 115,380	Acre	1.064	\$ 122,717
- Omaha reaches O&M costs	Dan Pridal	10/1/14	\$ 4,893	Acre	1.064	\$ 5,204
- Kansas City reaches construction	Mike Gossenauer	7/1/14	\$ 242,730	Acre	1.064	\$ 258,165
- Kansas City reaches O&M costs	Dan Pridal	10/1/14	\$ 4,893	Acre	1.064	\$ 5,204
- Structure modification projects	Robb Jacobson	7/1/14	\$ 1,970,235	Project	1.064	\$ 2,095,524
Real Estate Acquisition:						
Omaha	Sean Keating	1/1/16	\$ 4,400	Acre	1.06	\$ 4,649
Kansas City	Kevin Bishop	1/1/16	\$ 4,692	Acre	1.06	\$ 4,957
Habitat Development	Elizabeth Samson	8/1/16	\$ 1,500	Acre	1.04	\$ 1,553
Land Management	Elizabeth Samson	8/1/16	\$ 29	Acre	1.04	\$ 30
Monitoring, Evaluation and Research:						
PSPAP	Tim Welker	9/2/16	\$ 2,500,000	Annual	1.04	\$ 2,587,669
HAMP	Todd Gemeinhardt	7/19/16	\$ 1,860,333	Annual	1.04	\$ 1,925,570
Focused Research	Mike Snyder	10/1/15	\$ 3,200,000	Annual	1.05	\$ 3,371,434
Level 1 and 2 studies (data rec'd 6-21-16)	Robb Jacobson	10/1/15	\$ 1,422,171	Annual	1.05	\$ 1,498,361
Upper River Pallid Sturgeon						
Propagation and Augmentation Program			Included above			
Monitoring, Evaluation and Research:						
PSPAP	Tim Welker	9/2/16	Included above			
HAMP	Todd Gemeinhardt	7/19/16	Included above			
Focused Research	Mike Snyder	10/1/15	Included above			
Level 1 and 2 studies (data rec'd 6-21-16)	Robb Jacobson	10/1/15	\$ 933,027	Annual	1.05	\$ 983,012
Piping Plover and Least Tern						
Mechanical ESH Creation	Kate Buneau	10/1/15	\$ 50,000	Acre	1.05	\$ 52,679
Vegetation Management	Aaron Quinn	1/1/18	\$ 300,000	Annual	1.00	\$ 300,000
Predator Management	Mike Snyder	10/1/15	\$ 20,000	Tri-annual	1.05	\$ 21,071
Human Restrictions Measures	Chantel Cook	11/1/15	\$ 5,000	Annual	1.05	\$ 5,268
Monitoring, Evaluation and Research:						
Monitoring	Mike Snyder	1/1/16	\$ 1,200,000	Annual	1.06	\$ 1,267,837
Focused Research	Mike Snyder	1/1/16	\$ 500,000	Annual	1.06	\$ 528,265
Level 1 and 2 studies	Craig Fischenich	9/5/16	\$ 27,800,000	Total	1.04	\$ 28,774,877

Habitat development costs



August 2018

Alt.	Reach	Acreage acquired	Agricultural land portion		Cost/acre, escalated to Q1 2018	Total cost	Annual cost
			Omaha (60%)	Kansas City (80%)			
1	Omaha	1,848	1,109		\$ 1,553	\$ 1,721,524	\$ 114,768
	Kansas City	5,198		4,158	\$ 1,553	\$ 6,456,337	\$ 430,422
2	Omaha	15,554	9,332		\$ 1,553	\$ 14,489,496	\$ 965,966
	Kansas City	30,161		24,129	\$ 1,553	\$ 37,462,405	\$ 2,497,494
3	Omaha	-	-		\$ 1,553	\$ -	\$ -
	Kansas City	1,771		1,417	\$ 1,553	\$ 2,199,725	\$ 146,648
4	Omaha	-	-		\$ 1,553	\$ -	\$ -
	Kansas City	1,771		1,417	\$ 1,553	\$ 2,199,725	\$ 146,648
5	Omaha	-	-		\$ 1,553	\$ -	\$ -
	Kansas City	1,771		1,417	\$ 1,553	\$ 2,199,725	\$ 146,648
6	Omaha	-	-		\$ 1,553	\$ -	\$ -
	Kansas City	1,771		1,417	\$ 1,553	\$ 2,199,725	\$ 146,648

Land management costs

August 2018



Annual cost/acre (escalated to Q1 2018): \$ 30.02

Alt.	Reach	Acreage acquired	Deduct SWH acreage	Total acreage	Year 2 acreage	Cost year 2	Years 3 - 16 acreage	Cost years 3 - 16	Years 17 - 50 acreage	Cost years 17 - 50	Total cost	Average annual cost
1	Omaha	1,848	240	1,608	107	\$ 3,218	1,501	\$ 382,920	1,608	\$ 1,641,087	\$ 2,027,225	\$ 41,372
	Kansas City	5,198	675	4,523	302	\$ 9,051	4,221	\$ 1,077,082	4,523	\$ 4,616,068	\$ 5,702,201	\$ 116,371
2	Omaha	15,554	2,020	13,534	902	\$ 27,083	12,632	\$ 3,222,913	13,534	\$ 13,812,483	\$ 17,062,479	\$ 348,214
	Kansas City	30,161	3,917	26,244	1,750	\$ 52,518	24,494	\$ 6,249,603	26,244	\$ 26,784,011	\$ 33,086,132	\$ 675,227
3	Omaha	-	0	0	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -
	Kansas City	1,771	230	1,541	103	\$ 3,084	1,438	\$ 366,965	1,541	\$ 1,572,708	\$ 1,942,758	\$ 39,648
4	Omaha	-	-	0	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -
	Kansas City	1,771	230	1,541	103	\$ 3,084	1,438	\$ 366,965	1,541	\$ 1,572,708	\$ 1,942,758	\$ 39,648
5	Omaha	-	-	0	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -
	Kansas City	1,771	230	1,541	103	\$ 3,084	1,438	\$ 366,965	1,541	\$ 1,572,708	\$ 1,942,758	\$ 39,648
6	Omaha	-	-	0	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -
	Kansas City	1,771	230	1,541	103	\$ 3,084	1,438	\$ 366,965	1,541	\$ 1,572,708	\$ 1,942,758	\$ 39,648

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APPENDIX G: MRRIC RECOMMENDATIONS

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Approved February 7, 2012
Transmitted February 21, 2012

Mr. David Ponganis
Acting Director of Programs
US Army Corps of Engineers
Northwestern Division
P.O. Box 2870
Portland, OR 97208-2870

Mr. Stephen Guertin
Regional Director
U.S. Fish and Wildlife Service, Region 6
P.O. Box 25486 – DFC
Denver, CO 80225-0486

Dear Mr. Ponganis & Director Guertin

I am writing you on behalf of the Missouri River Recovery Implementation Committee (MRRIC or the Committee). The MRRIC has nearly 70 members comprised of States, Tribes, Federal Agencies, and Stakeholders associated with Missouri River resources. It was authorized by Congress in Section 5018 of the Water Resources Development Act of 2007 and established in 2008 by the Assistant Secretary of the Army for Civil Works (Secretary). The duties of this committee include providing guidance to the Secretary regarding the existing Missouri River recovery and mitigation plans, including recommendations on the annual work plan and budget.

I am pleased to provide you with MRRIC's initial recommendation on the Final Report provided by the Independent Science Advisory Panel (ISAP) on Spring Pulses and Adaptive Management reached by consensus of MRRIC members present during our meeting in Kansas City, MO, on February 7-9, 2012. The recommendation is as follows:

Following a collaborative effort, between the SAM Work Group and the lead agencies, to review the ISAP Final Report #1 and consider next steps – the Lead Agencies will provide a written response(s) to MRRIC regarding the findings/recommendations in the ISAP Final Report on Topic #1. The SAM Work Group will review the agency response(s) and ISAP Final Report on Topic #1, and assess whether to develop additional recommendations for MRRIC consideration.

Thank you for your consideration of this recommendation. Please contact me if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Michael J. Mac". The signature is fluid and cursive, with the first name "Michael" and last name "Mac" clearly legible.

Michael J. Mac
Chair, MRRIC
(573) 808-0288
mikejmac11@gmail.com



Mr. David Ponganis
Director of Programs
Northwestern Division
US Army Corps of Engineers

Subject: MRRIC Recommendations for Proposed Actions to Move Forward Fulfillment of the
ISAP Final Report on Spring Pulses and Adaptive Management

Dear Mr. Ponganis:

I am writing you on behalf of the Missouri River Recovery Implementation Committee (MRRIC or the Committee). The MRRIC has nearly 70 members comprised of States, Tribes, Federal Agencies, and Stakeholders associated with Missouri River. It was authorized by Congress in Section 5018 of the Water Resources Development Act of 2007 and established in 2008 by the Assistant Secretary of the Army for Civil Works (Secretary).

MRRIC recommends the USACE, in concert with the USFWS, proceed with a series of seven proposed actions (see below) for moving forward on fulfillment of the ISAP Final Report recommendations. These proposed actions are consistent with the ISAP recommendations; however they include some additional clarifications, based on MRRIC exchanges with the ISAP, which the Committee believes will be beneficial.

The Committee is providing these proposed actions based on: 1) review of the ISAP report;¹ 2) the clarifications from the ISAP in response to questions raised;² and 3) building on MRRIC's understanding of the conceptual process for moving forward as laid out by the agencies to the SAM Work Group in mid-April.³

As you consider the Committee's recommendations, please consider the following quote from the ISAP's Final Report, which provides useful context for MRRIC's role as efforts to move forward with the ISAP's recommendations are undertaken.

"The ISAP views our role as providing interpretations of available science and preparing scientific findings to inform the decision-making process of the MRRIC. Further, we identify

¹ ISAP Final Report on Spring Pulses and Adaptive Management, November 30, 2011

² See clarification communications from the ISAP (December 12, 2011; summary of January 26, 2012 SPA Task Group call with ISAP and follow-on clarification; April 9, 2012)

³ This conceptual framework will be shared with the full MRRIC in preparation for the May meeting and presented prior to MRRIC reaching closure on this recommendation.

gaps in information that, if filled, could enhance the knowledge upon which river management decisions can be made. We expect MRRIC to use the ISAP findings and interpretations to assess what actions are actually feasible, possible, and/or practicable given other constraints, including social constraints and existing Authorized Purposes, on the system.”

The Committee further supports the ISAP’s further definition of the term “social constraints” as intended to refer to non-scientific factors including social, cultural, economic, legal, or other considerations.⁴

Proposed Actions

1. An effects analysis should be developed that incorporates new knowledge that has accrued since the 2003 Amended Biological Opinion. As part of this analysis:
 - The effects of the Missouri and Kansas River Operations on the listed species should be reviewed and analyzed in the context of other stressors on the listed species;
 - The quantitative effects of potential management actions on the listed species should be documented to the extent possible; and
 - These potential management actions should be incorporated into the CEMs.
2. Conceptual ecological models should be developed for each of the three listed species and these models should articulate the effects of stressors and mitigative actions (including but not limited to flow management, habitat restoration actions, and artificial propagation) on species performance.
3. Other managed flow programs and adaptive management plans should be evaluated as guidance in development of the CEMs and AM strategy for the Missouri River Recovery Program.
4. An overarching adaptive management strategy should be developed that anticipates implementation of combined flow management actions and mechanical habitat construction, and this strategy should be used to guide future management actions, monitoring, research, and assessment activities within the context of regulatory and legal constraints.
5. Monitoring programs along the Missouri River should be designed so as to determine if hypothesized outcomes are occurring and the extent to which they are attributable to specific management actions.
6. The agencies should identify decision criteria (trigger points) that will lead to continuing a management action or selecting a different management action. A formal⁵ process should be designed and implemented to regularly compare incoming monitoring results with the decision criteria.

⁴ See April 9, 2012 ISAP Response to 3/22/12 SPA TG Clarification Questions

⁵ See April 9, 2012 ISAP Response to 3/22/12 SPA TG Clarification Questions

7. Aspects of how the entire hydrograph influences the three listed species should be evaluated when assessing the range of potential management actions.

We look forward to working with you on efforts to implement the proposed actions as defined in the SAM Work Group charge. The Committee thanks you for the opportunity to provide input on the efforts to implement the recommendations included in the ISAP's Final Report and hopes you thoughtfully consider our recommendations.

Respectfully,

A handwritten signature in black ink, appearing to read "Michael Mac". The signature is fluid and cursive, with the first name "Michael" written in a larger, more prominent script than the last name "Mac".

Dr. Michael Mac

Chair

Missouri River Recovery Implementation Committee

Cc: Steve Guertin, Regional Director, Mountain Prairie Region, US Fish and Wildlife Service



August 28, 2014

Mr. David Ponganis
Director of Programs
U.S. Army Corps of Engineers

Subject: Transmittal of MRRIC Human Considerations Objectives and Metrics and accompanying Prologue

The attached file contains the MRRIC recommended set of Human Considerations objectives and metrics agreed upon by the Committee at the August 2014 plenary meeting. This document represents significant effort by MRRIC members and Agency staff which began in January 2013 and evolved into this consensus recommendation.

Although divided into two sections, the Prologue and the Objectives and Metrics, it is critical to point out that the recommendation package is the combination of the two. The Prologue sets out specific caveats by which the human considerations objectives and metrics can be used and interpreted.

Among the limitations set forward in the Prologue is that these objectives are only valid for alternatives that are within the sideboards articulated in the January 10, 2014 memorandum (attached to the Prologue). It is also important to understand that while each member does not endorse every objective and performance metric included, as a group MRRIC agrees that this set of objectives and metrics will assist efforts to evaluate Management Plan alternatives and future consideration of these alternatives.

Please feel free to contact me with any questions.

A handwritten signature in black ink that reads "Michael J Mac". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

Michael J Mac, Ph.D.
Chair
Missouri River Recovery Implementation Committee

Cc: Michael Thabault, Assistant Regional Director-Ecological Services, Mountain Prairie Region, U.S. Fish and Wildlife Service.



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

December 6, 2017

Gail Bingham
Chair, Missouri River Recovery Implementation Committee
c/o U.S. Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106-2896

Dear Ms. Bingham:

Thank you for your email dated November 7, 2017 transmitting the Missouri River Recovery Implementation Committee's (MRRIC) consensus recommendation on the Common Ground Recommendations for USACE listed as follows:

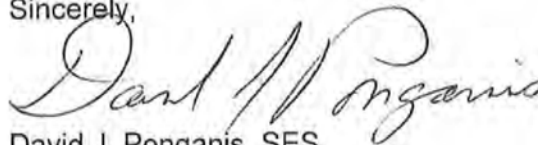
1. When using the word "channel" in the Final Environmental Impact Statement/Adaptive Management Plan, there should be clarification of its definition in the context that it was used.
2. MRRIC affirms and supports USACE's commitment to conduct the supplemental flood risk modeling recommended by the IEPR in Panel Comment 39.
3. USACE should develop criteria for use in the discussion of the Missouri River Recovery Program (MRRP) 5-year Strategic Plan to help inform discussion on how to prioritize the MRRP budget. These criteria should be shared at a MRRIC meeting.

The U.S. Army Corps of Engineers (Corps) appreciates the time and effort put forth by the Committee's members to develop these recommendations. This letter constitutes the Corps' response to MRRIC's recommendation, in accordance with the Committee's Charter.

1. We concur with the recommendation to define the word "channel" in more detail depending on the context in which it is used in the FEIS.
2. We appreciate affirmation from MRRIC, consistent with the Independent Social Economic technical Review Panel (ISETR) comment 39 on the Draft EIS, that if a spawning cue is determined to be necessary, conducting supplemental flood risk modeling would be conducted.
3. We concur with the recommendation and will develop and share criteria that assists us in prioritizing the MRRP budgets in light of the 5-year Strategic Plan.

We look forward to continuing to work with MRRIC and receive recommendations that allow us to collectively be strategic in the implementation of the Missouri River Recovery Program. If you have additional questions, please contact Mark Harberg at 402-995-2554 or Lisa Rabbe at 816-389-3837.

Sincerely,

A handwritten signature in cursive script, reading "David J. Ponganis".

David J. Ponganis, SES
Programs Director
Northwestern Division
U.S. Army Corps of Engineers



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

December 6, 2017

Gail Bingham
Chair, Missouri River Recovery Implementation Committee
c/o U.S. Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106-2896

Dear Ms. Bingham:

Thank you for your email dated November 7, 2017 transmitting the Missouri River Recovery Implementation Committee's (MRRIC) consensus recommendation on the Missouri River Recovery Program (MRRP) draft Science and Adaptive Management Plan (AM Plan). The U.S. Army Corps of Engineers (Corps) appreciates the time and effort put forth by the Committee's members to thoughtfully consider MRRIC's interaction with the MRRP when implementing under Adaptive Management (AM). This letter constitutes a joint response from the Corps' and USFWS to MRRIC's recommendation in accordance with the Committee's Charter.

The Corps and Service concur and will conduct ongoing discussions with MRRIC explaining rationales for funding research, monitoring and evaluation to appropriately support the Integrated Science Program and will further describe or elaborate this interaction in the AM Plan.

The Corps and Service concur and will endeavor to provide additional clarification in the Adaptive Management Plan about the information and criteria to be used in deciding either to:

1. Continue with, but modify, a hypothesis or management strategy, or
2. Put aside a hypothesis and focus on a different hypothesis or management strategy.

We look forward to continuing to mutually work together as we develop the 5-year Strategic Plan. If you have additional questions, please contact Mark Harberg at 402-995-2554 or Lisa Rabbe at 816-389-3837.

Sincerely,

David J. Ponganis, SES
Programs Director
Northwestern Division
U.S. Army Corps of Engineers



Michael Thabault
Assistant Regional Director
Ecological Services
Mountain Prairie Region
U.S. Fish & Wildlife Service

APPENDIX H: TRIBAL ENGAGEMENT

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APPENDIX H

Missouri River Recovery Management Plan-EIS (MRRMP-EIS) Tribal Correspondence

Table of Contents:

- **List of the 29 Missouri River Tribes:** List of the 29 federally recognized Tribes in the Missouri River Basin.
- **Example Tribal Scoping Letter for the MRRMP-EIS:** Scoping letters were sent to the identified 29 Tribes in July, 2013 informing Tribes of the MRRMP-EIS and requesting input. Additionally, the letter offered formal Government-to-Government Consultation at any time it is requested by Tribal leaders.
- **Example MRRMP-EIS Tribal Input Meeting Invite Letters:** Meetings were conducted during the summer of 2015 to share information and gather Tribal input on the in-progress MRRMP-EIS. These meetings were requested by MRRIC Tribal representatives for further explanation of the MRRMP-EIS and to gather additional information.
- **Example Draft EIS release letter:** In October 2016, a letter from Major General Spellmon was sent to the 29 identified Tribes, informing leaders of the release of the Draft EIS in December 2016 and plans for Consultation upon its release.
- **Example Final EIS and Biological Opinion Consultation Letter:** In December of 2017, a letter from Major General Spellmon was sent to the 29 identified Tribes, informing leaders of the release of the Draft Biological Opinion and efforts to finalize the MRRMP-EIS. The letter offered consultation on the Biological Opinion and on the EIS prior to their finalization.
- **National Historic Preservation Act Section 106 Programmatic Agreement Letters:** In December of 2016, the USACE sent a letter to the 29 identified Tribes announcing the availability of the Draft EIS and an invitation to participate in Section 106 consultation for the MRRMP-EIS. In October of 2017 a Draft Lower Missouri River NHPA Section 106 Programmatic Agreement was circulated to Tribes in the lower Missouri River Basin for review and comment.
- **Final Tribal Consultation Plan:** This plan outlines the consultation process for the MRRMP-EIS including process, guidelines, and communications and includes a summary table of Tribal engagement that occurred during the MRRMP-EIS process.

Missouri River Basin Tribes

Apsaalooke (Crow) Nation	Omaha Tribe of Nebraska
Assiniboine and Sioux Tribe of Fort Peck	Osage Nation
Blackfeet Tribe	Ponca Tribe of Nebraska
Cheyenne River Sioux Tribe	Prairie Band Potawatomi Nation
Chippewa Cree Tribe of Rocky Boy's	Rosebud Sioux Tribe
Crow Creek Sioux Tribe	Sac and Fox Nation of Missouri in Kansas
Eastern Shoshone Tribe	Santee Sioux Tribe of Nebraska
Flandreau Santee Sioux Tribe	Sisseton-Wahpeton Oyate
Gros Ventre and Assiniboine Tribes of Fort Belknap	Spirit Lake Sioux Tribe
Iowa Tribe of Kansas and Nebraska	Standing Rock Sioux Tribe
Kickapoo Tribe of Kansas	Three Affiliated Tribes
Lower Brule Sioux Tribe	Turtle Mountain Band of Chippewa Indians
Northern Arapaho Tribe	Winnebago Tribe of Nebraska
Northern Cheyenne Tribe	Yankton Sioux Tribe
Oglala Sioux Tribe	



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

April 7, 2015

Planning, Environmental Resources,
Fish Policy and Support Division

The U.S. Army Corps of Engineers (Corps) is committed to working closely with sovereign tribal nations, along with other governmental and non-governmental stakeholders in the Missouri River Basin (Basin), to develop a Missouri River Recovery Management Plan and Environmental Impact Statement (Management Plan/EIS). The Management Plan/EIS will identify a set of actions for the Corps to implement to ensure that our operation of the Missouri River mainstem reservoirs and the Bank Stabilization and Navigation Project does not jeopardize the continued existence of three Federally-listed species: the pallid sturgeon, the interior least tern, and the piping plover.

The Management Plan/EIS is being developed collaboratively with the Missouri River Recovery Implementation Committee (MRRIC). I strongly encourage you and your tribe to participate in MRRIC to improve your understanding of the effort and to take advantage of every opportunity to ensure your voice is heard as the plan comes together. All Basin tribes are members of MRRIC and my staff will be happy to provide more information to you about MRRIC.

The Corps understands and respects the unique relationship the tribes have with the Missouri River and wants to ensure that you have the opportunity outside of MRRIC to communicate directly with the Corps and provide input to the Management Plan. The Corps will hold a special, day-long meeting for the Basin tribes on May 6, 2015, 0800-1600, at the Oglala Sioux Rural Water Supply System (OSRWSS) Mni Wiconi - Water Treatment Plant at 28542 Trails End Road, Ft. Pierre, SD (Conference Room). All tribes within or connected to the Basin are invited to attend and participate. A draft agenda for the meeting is enclosed to this letter and we welcome your feedback on that, as well.

The Corps recognizes its responsibilities and reiterates its commitment to conduct formal government-to-government consultation with the tribes in the Basin as outlined in Executive Order 13084. Participation in MRRIC and at the tribes-only meeting is not

meant to replace this government-to-government consultation. Government-to-government consultation can be requested at any time.

Again, we want to ensure that Basin tribes are knowledgeable about the Management Plan and are aware of the various ways they can participate. Ms. Cathi Warren, Native American Consultation Specialist, will be contacting you in the next two weeks to follow up on this letter. You may also contact Ms. Warren directly at 402-995-2684 or by email at catherine.j.warren@usace.army.mil for questions or clarifications. Your input and participation are important and we look forward to working with you.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Kem', is positioned above the printed name.

John S. Kem
Brigadier General, US Army
Division Commander

Enclosure

Missouri River Management Plan Tribal Meeting

May 6th Pierre, SD 8:00-4:00

8:00-8:30	Prayer and Introductions - Cathi Warren
8:30-9:00	Overview of Management Plan and Proact. Probably want to briefly cover MRRIC here and the connection with the Management Plan and why the Management Plan is "going" through MRRIC - Mark Harberg
9:00-10:00	Overview of Effects Analysis and results, i.e. management hypotheses and actions - Joe Bonneau
10:00-10:45	Status of "Alternative plans" - Mark Harberg
10:45-12:00	Overview of Hydrologic and Hydraulic Modeling, explain what this is- Use visualization tool to show "Existing Operation" and example of a Round 1 alternative - Jeff Tripe
12:00-1:00	LUNCH
1:00-2:30	Human Considerations and Human Consideration Proxy Measures, what are they and how they work - Use visualization tool to show HC proxy results for "Existing Operation" and example Round 1 alternative - Thomas Topi
2:30-3:00	Adaptive Management, how does/will this work - Joe Bonneau
3:00-3:30	What is happening next? At what point will we engage the tribes outside of MRRIC again - Mark Harberg
3:30-4:00	Wrap up and additional questions -- Cathi Warren



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

Planning, Programs, and Project Management Division

«Prefix» «FirstMiddle_Name» «Last_Name», «Suffix» «Title»
«Organization»
«Address1»
«Address2»
«City», «State» «Zip»

Dear «Salutation» «Last_Name»:

The U.S. Army Corps of Engineers (Corps) is committed to working closely with sovereign tribal nations, along with other governmental and non-governmental stakeholders in the Missouri River Basin (Basin), to develop a Missouri River Recovery Management Plan (Management Plan). The Management Plan will identify a set of actions for the Corps to implement to ensure that our operation of the Missouri River mainstem reservoirs and the Bank Stabilization and Navigation Project does not jeopardize the continued existence of three Federally-listed species: the pallid sturgeon, the interior least tern, and the piping plover.

The Corps understands and respects the unique relationship the tribes have with the Missouri River and is holding a second meeting the first of which was held on May 6th, to provide input to the Management Plan. The Corps will hold a day-long meeting for the Basin tribes on July 14th, 2015, 8:00 a.m. to 4:00 p.m., at the Royal River Casino and Hotel, 607 Veterans St, Flandreau, SD. All tribes within or connected to the Basin are invited to attend and participate. A draft agenda for the meeting is attached to this letter and we welcome your feedback on it, as well. A block of rooms are being held under the name Great Plains Tribal Water Alliance, please call (877) 912-5825 for reservations.

The Management Plan is being developed collaboratively with the Missouri River Recovery Implementation Committee (MRRIC). I strongly encourage you and your tribe to participate in MRRIC to improve your understanding of the effort and to take advantage of every opportunity to ensure your voice is heard as the plan comes together. All Basin tribes are members of MRRIC and my staff will be happy to provide you with more information about MRRIC.

The Corps recognizes its responsibilities and reiterates its commitment to conduct formal government-to-government consultation with the tribes in the Basin as outlined in Executive Order 13084. Participation in MRRIC and the tribes-only meeting is not meant to replace this government-to-government consultation. Government-to-government consultation can be requested at any time.

Again, we want to ensure that Basin tribes are knowledgeable about the Management Plan and are aware of the various ways they can participate. Ms. Cathi Warren, Native American Consultation Specialist, will be contacting you in the next two weeks to follow up on this letter. You may also contact Ms. Warren directly at (402) 995-2684 or by email at catherine.j.warren@usace.army.mil for questions or clarifications. Your input and participation are important and we look forward to working with you.

Sincerely,

April Fitzner, PMP
Senior Program Manager
Missouri River Recovery Program
US Army Corps of Engineers

Enclosure

Copy Furnished: (Electronic Distribution)

CENWD-PDR (Jodi Farhat)
CENWD-PDD (G. Paul Cloutier)
CECC-NWD (Jennifer Richman)
CENWO-DD (LTC Martinez)
CENWO-OC (Richard Totten)
CENWO-SA-NA (Joel Ames)
CENWO-OD-T (Larry Janis)
CENWO-OD-T (Harold M. Key)
CENWO-OD-T (Chris Wiehl)
CENWO-OD-TN (Jeremy Szynskie)
CENWO-OD-GP (Jeff Cook)
CENWO-OD-GP (Gary Ledbetter)
CENWO-OD-FR (Cody Wilson)
CENWO-OD-FR (Thomas Curran)
CENWO-OD-BB (Keith Fink)
CENWO-OD-BB (Jackie Bultsma)
CENWO-OD-BB (Jennifer Winter)
CENWO-OD-OA (Rick Harnois)
CENWO-OD-OA (Megan Maier)
CENWO-OD-OA (Phil Sheffield)
CENWO-OD-OA (Eric Stasch)
CENWO-OD-GA (Todd Lindquist)
CENWO-OD-GA (Ryan Newman)
CENWO-OD-GA (Casey Buechler)
CENWO-OD-GA (Dave Cain)
CENWO-OD-LP (John Daggett)
CENWO-OD-LP (Darin McMurry)
CENWO-PM-AE (Julie Price)
CENWO-PM-AE (Sandra Barnum)
CENWO-PM-AE (Amy McClean)
State of SD - Dan.Shaffer@state.sd.us



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

OCT 20 2016

Chairman Dave Archambault, II
Standing Rock Sioux Tribe
P.O. Box D
Fort Yates, ND 58538

Dear Chairman Archambault:

The Missouri River Recovery Management Plan, Draft Environmental Impact Statement (MRRMP-DEIS) is an effort that will evaluate the effectiveness of current Missouri River Recovery Program management activities and recommend any needed modifications to more effectively create habitat and avoid jeopardy to the following threatened and endangered species: the least tern, piping plover and pallid sturgeon.

This effort is led by the U.S. Army Corps of Engineers' (USACE) Kansas City (NWK) and Omaha (NWO) Districts in partnership with the U.S. Fish and Wildlife Service (USFWS). The geographic scope of the federal action includes the Missouri River within its meander belt from the headwaters of Fort Peck Lake in Montana to its confluence with the Mississippi River near St. Louis, Missouri.

At this time, we would like to offer you the opportunity to meet and discuss the DEIS development and review process and share your thoughts and concerns with regard to the project. The MRRMP-DEIS will be released in December 2016 and a copy of the document will be sent for your review. At that time we will invite you to meet or consult on the DEIS and the preferred alternative.

We appreciate your attention regarding this matter and we look forward to working with you on this important effort. In closing, Ms. Cathi Warren, Missouri River Programs Tribal Consultation Specialist, will be contacting you to identify appropriate tribal points of contact, and schedule meetings as requested. In the interim, should you have any questions, please feel free to contact Mr. Mark Harberg, Program Manager, at (402-995-2554), or Ms. Warren at (402-995-2684).

Sincerely,

Scott A. Spellmon
Brigadier General, US Army
Division Commander

Noreen Walsh
Regional Director
Mountain Prairie Region
U.S. Fish and Wildlife Service



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

December 18, 2017

Chairman Floyd Azure
Assiniboine and Sioux Tribes of Fort Peck
P.O. Box 1027
510 Medicine Bear Road
Poplar, Montana 59255

Dear Chairman Azure:

The Missouri River Recovery Management Plan, Environmental Impact Statement (MRRMP-EIS) is an effort that evaluates the effectiveness of current Missouri River Recovery Program (MRRP) management activities and alternatives to more effectively create habitat and avoid jeopardy to the following threatened and endangered species: the least tern, piping plover and pallid sturgeon.

This effort is led by the U.S. Army Corps of Engineers' (USACE) Kansas City and Omaha Districts in partnership with the U.S. Fish and Wildlife Service (USFWS). The geographic scope of the federal action includes the Missouri River within its meander belt from the headwaters of Fort Peck Lake in Montana to its confluence with the Mississippi River near St. Louis, Missouri.

On December 15, 2016 USACE and USFWS made the Draft MRRMP-EIS (DEIS) available for review and offered consultation to Tribes in the basin and with historic ties to the Missouri River. USACE is in the process of revising the DEIS to address comments received and a Final EIS is expected to be released in the fall of 2018. USACE re-initiated formal Endangered Species Act (ESA) consultation with USFWS on October 30, 2017 with submittal of a Biological Assessment (BA). A link to the BA and its Appendices can be found on the MRRP website at <http://morriverecovery.usace.army.mil/mrrp/f?p=136:70:0::NO>. The USFWS will provide a draft Biological Opinion (BO) in early February 2018 and we will provide a link for your review at that time.

At the present time we would like to offer you the opportunity to begin planning and scheduling meetings for continued consultation following release of the draft BO. At these meetings we will be able to share with you any potential changes to the preferred alternative identified in the DEIS. To ensure that we have adequate time to properly consider the results of our consultation meetings as we prepare the Final EIS, we would like to complete consultation by early July 2018.

As we move forward with this engagement, please reference previous letters on this topic, sent October 20, 2016 and December 16, 2016 on behalf of myself and Ms.

Noreen Walsh, USFWS Mountain-Prairie Regional Director. We appreciate your attention regarding this matter and we look forward to working with you on this important effort. In closing, Ms. Cathi Warren, Missouri River Programs Tribal Consultation Specialist, will be contacting you to identify appropriate tribal points of contact, and schedule meetings as requested. In the interim, should you have any questions, please feel free to contact Ms. Tiffany Vanosdall, MRRMP-EIS Project Manager, at (402)995-2695, or Ms. Warren at (402)995-2684.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott A. Spellmon". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Scott A. Spellmon
Major General, US Army
Division Commander



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

December 16, 2016

District Commander

Mr. Floyd Azure, Chairman
Assiniboine and Sioux Tribes of Fort Peck
P.O. Box 1027
510 Medicine Bear Road
Poplar, Montana 59255

Dear Chairman Azure:

The Kansas City and Omaha Districts of the U.S. Army Corps of Engineers (USACE), in cooperation with the U.S. Fish and Wildlife Service (USFWS) have developed a draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS). This document is a programmatic assessment of (1) major federal actions necessary to avoid a finding of jeopardy to the pallid sturgeon, interior least tern, and the Northern Great Plains piping plover caused by operation of the Missouri River Mainstem and Kansas River Reservoir System and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP) in accordance with the Endangered Species Act (ESA) of 1973, as amended; and (2) the Missouri River BSNP fish and wildlife mitigation plan described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Acts (WRDA) of 1986, 1999, and 2007. The geographic scope of the federal action includes the Missouri River within its meander belt from the headwaters of Fort Peck Lake in Montana to its confluence with the Mississippi River near St. Louis, Missouri. The draft MRRMP-EIS will be available in December 2016 for public review and comment.

Section 106 of the National Historic Preservation Act (NHPA) requires USACE to consult with interested parties on its undertakings, including the MRRMP-EIS. The scope and programmatic nature of the MRRMP-EIS, make it unreasonable to determine the effects of site-specific projects, or undertakings, at this time. USACE will consult with interested parties prior to implementation of each site specific action in addition to this consultation on the draft MRRMP-EIS.

In compliance with Section 110 of NHPA, USACE plans to use programmatic agreements (PA) to fulfil its NHPA responsibilities for consultation on the MRRMP-EIS. The Omaha District will follow the 2004 Programmatic Agreement on the Operation and Management of the Missouri River Main Stem System for compliance with the NHPA. Non-signatories to this PA can request an alternative process at any time throughout the consultation process. In addition, the Kansas City District is planning to develop a new PA for NHPA compliance for use in the lower basin of the Missouri River from Rulo, Nebraska to the mouth of the Missouri River near St. Louis, Missouri. If your party does

not wish to participate in either PA, consultation will still occur for the MRRMP-EIS and after for site specific projects, as required by Section 106.


I invite interested parties to participate in Section 106 consultation for the MRRMP-EIS. We also ask you to identify a representative to serve as an NHPA point of contact for this effort.

My staff will be contacting you in the near future regarding the MRRMP-EIS. If you have any questions please contact:

- MRRP Tribal Consultation Specialist - Ms. Cathi Warren at (402) 995-2684 or catherine.j.warren@usace.army.mil.
- Omaha District - Ms. Julie Price at 402-995-2706 or julie.a.price@usace.army.mil
- Kansas City District - Mr. Timothy Meade at (816) 389-3138 or timothy.m.meade@usace.army.mil,

We appreciate your consideration regarding the matter and look forward to working with you on this important matter.

Sincerely,


John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

Copy Furnished

Mr. Curley Youpee, Director, Cultural Resources Department
Assiniboine and Sioux Tribes of Fort Peck
P.O. Box 1027
Poplar, Montana 59255



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
635 FEDERAL BUILDING
601 E. 12TH STREET
KANSAS CITY, MISSOURI 64106-2824

Planning Branch

Chairwoman Jacque Secondine Hensley
Kaw Nation
P.O. Box 50
Kaw City, OK 74641

Dear Chairwoman Hensley:

This letter is a follow up to a December 16, 2016, letter informing your tribe of the U.S. Army Corps of Engineers (Corps) development of a draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) being undertaken in cooperation with the U.S. Fish and Wildlife Service. That letter also informed you of the Corps' plans to comply with Section 106 of the National Historic Preservation Act (NHPA) through the use of cultural resource programmatic agreements (PA) for the upper and lower Missouri River basin. The Corps' Omaha District will follow the 2004 Programmatic Agreement on the Operation and Management of the Missouri River Main Stem System for compliance with the NHPA. The Kansas City District is now in the process of developing a PA for the MRRMP-EIS for the lower basin of the Missouri River from Rulo, Nebraska to the mouth of the Missouri River near St. Louis, Missouri. Attached for your review and comment is a draft copy of the Kansas City District PA for the lower Missouri River basin. The draft PA includes comments and edits provided by the Osage Nation. You are being provided two copies including a clean copy and a copy showing the Osage Nation's edits.

The Corps is using PAs to comply with Section 106 as the scope and programmatic nature of the MRRMP-EIS make it unreasonable to determine the effects of site-specific projects or undertakings prior to completion of the MRRMP-EIS. At this time we invite the Kaw Nation to participate in development of the PA and to be an invited signatory or concurring party to the PA. If your Tribe does not wish to participate in the PA, consultation will still occur for the MRRMP-EIS and after for site specific projects, as required by Section 106.

As you review the draft PA, I encourage you to contact me with any questions or concerns you may have regarding the document at (816) 389-3138 or by e-mail at timothy.m.meade@usace.army.mil. A copy of this letter is also being provided to Ms. Crystal Douglas of your staff. We appreciate your consideration regarding participation in the PA and look forward to working with you on this important matter.

Sincerely,

Timothy Meade
Senior District Archeologist and
Tribal Liaison

Enclosure

TRIBAL CONSULTATION PROCESS FRAMEWORK FOR THE
Missouri River Recovery Management Plan Environmental Impact Statement

I. Identification of Parties for Consultation

All Federally Recognized Tribes geographically located within the Missouri River Basin or that have historical ties within the basin have been identified as potential consulting parties. For this process, the term “Tribe(s)” refers to Federally Recognized Tribes. These Tribes are acknowledged to have all the immunities and privileges available to all Federally Recognized Tribes, as well as, the responsibilities, powers, limitations and obligations by virtue of their Government-to-Government relationship with the United States. The Department of Interior, Bureau of Indian Affairs (BIA), maintains a list of all Federally Recognized Tribes. Updates to this list are posted in the Federal Register (81 FR 26826).

Tribal points of contact will be asked to identify other potentially interested Tribes, Tribal affiliates and Tribal grassroots organizations that may have an interest in the Missouri River Recovery Management Plan (MRRMP) via letter, phone, and/or in person. If additional interested parties are identified during Consultation with Federally Recognized Tribes, they will be brought into the Consultation Process.

The U.S. Fish and Wildlife Service (Service) Native American Liaison will assist as the interface for logistics, communication, scheduling, tracking actions items relevant to the and attendance decisions for Service Region 6 leadership. The Service will jointly offer Consultation in conjunction with the USACE. This strategy will help to efficiently engage Tribal and agency leaderships’ time and reduce confusion that could be created with multiple agencies engaging separately.

Regional Director, Noreen Walsh will delegate Consultation authority for the MRRP EIS to Michael Thabault, Assistant Regional Director for Ecological Services and Missouri River Coordinator Casey Kruse. The letters offering consultation should be signed jointly by agency Regional Directors. The Service will be responsible for Endangered Species Act Section 7 during the Consultations.

II. Communications

Coordination and communication with the Tribes will occur and continue throughout the Consultation Process. Open and honest communication is the foundation of Government-to-Government Consultation. Consulting parties are encouraged to take advantage of opportunities to exchange information and discuss issues during both informal forums and the formal Consultation Process. Forms of communication to be used during the Consultation Process include face-to-face meetings when possible, letters, email and telephone. It is important to remember that informal meetings/forums are not considered “Government-to-Government Consultation” and should be made clear to all that attend. A list of formal and informal Tribal engagement that occurred leading up to the Final MRRMP-EIS is included in Appendix A.

III. Consultation Process

Any time a Tribal leader and/or their designee requests formal Consultation, the Missouri River Recovery Programs Tribal Consultation Specialist (MRRP Consultation Specialist) will be the lead. The Consultation will take place with the appropriate District, NWK or NWO, based upon the Tribe's location and/or area of interest. The appropriate District Tribal Liaison and Program and Project Managers will support the MRRP Consultation Specialist with planning and executing the Consultation to ensure compliance with the requirements of all applicable statutes, executive orders, or other applicable laws.

The Corps' MRRP Consultation Specialist will ensure that the Service Regional Native American Liaison is aware of all meeting times, locations, agendas, correspondence, and other pertinent information. It is the responsibility of the Service Region Leadership to participate according to their requirements. The Service Native American Liaison will ensure their agency is aware of those requirements and pertinent Consultation meeting information.

The guidelines below are not intended to replace specifically mandated Consultation requirements, such as those identified in the National Historic Preservation Act (NHPA) or the Native American Graves Protection and Repatriation Act (NAGPRA) implementing regulations. Rather, they would provide a framework for implementation of these and any other requirements.

IV. Consultation Guidelines

The steps in the Government-to-Government Consultation Process for the MRRMP-EIS are:

- Initiation of Government-to-Government Consultation is the responsibility of the both the Corps and Service as required by statute. By written correspondence, the appropriate District Commander will offer to engage in Government-to-Government Consultation with all Federally Recognized Tribes, geographically located within the Missouri River Basin or that have historical ties within the basin, on the MRRMP EIS. This letter will be sent as early in the Process as is reasonable. The purpose of this letter will be to define the MRRMP-EIS and to indicate that this letter is the first step in the formal Government-to-Government Consultation Process.
- After the initial letter is mailed the MRRP Consultation Specialist will follow up by telephone. Information from these telephone calls will be documented and follow-up actions requested by the Tribe will be noted, incorporated as appropriate, and reported to appropriate Corps staff for any necessary follow up. If a Tribe elects not to respond to the initial Consultation letter or the subsequent telephone call, the MRRP Consultation Specialist will periodically, throughout the Consultation Process, attempt to initiate Consultation with the Tribes in the manner described above.
- Tribes may accept the Corps' offer of Government-to-Government Consultation by any form of communication. It is incumbent on the MRRP Consultation Specialist to verify that the decision to consult reflects the wishes of the Tribal Leader or their designee. Though written confirmation is not required, it is preferred.

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- In cooperation with the Tribal Leader or their designee, arrangements for an initial Consultation meeting will be made as soon as possible after the Tribe accepts the Corps' offer of Consultation. Consultation meetings will take place at mutually agreed upon intervals and locations. Agendas for the Consultation meetings will be mutually developed by the Consulting Parties and should reflect Consultation issues that are of primary importance to all parties. Some Consultation discussions may also focus on Tribal participation during official National Environmental Policy Act (NEPA) efforts.
- In addition to the Consultation meetings described above, to ensure that there is meaningful Government-to-Government Consultation occurring at critical points during the Study process, the Corps will offer face-to-face meetings with both Consulting and non-Consulting Tribal Leaders or their designees and the appropriate District Commander or his designee. These meetings will be offered at a minimum during the following points in the process:
 - Following the release of the Draft EIS (December 2016)
 - Following the identification of a Preferred Alternative/Proposed Action for initiation of Section 7, ESA consultation, if one is not included in the DEIS
 - Prior to a Record of Decision (ROD)

V. Resolution of Issues

The intent of Government-to-Government Consultation is to provide for identification and resolution of issues related to the management actions being evaluated by the Corps' for ESA compliance regarding the Corps' operation of the Missouri River Mainstem Reservoir System, operation and maintenance of the Bank Stabilization and Navigation Project, and operation of the Kansas River Reservoir System with the respective Corps District; however, resolutions of some issues may be beyond the scope and authority of the District Commanders. Unresolved issues identified in formal Government-to-Government Consultation may be elevated to higher levels within the Corps beginning with the Northwestern Division, Headquarters USACE, and then to the Office of the Assistant Secretary of the Army for Civil Works. Consulting parties will develop joint procedures for elevation and ultimate disposition of unresolved issues. This may include annual meetings to maintain relationships and provide relevant information. Tribal resolutions or other Tribal procedures may also serve as tools for unresolved Tribal issues.

The Service will work with Tribes to elevate an ultimate disposition of unresolved issues using Consultation options such as: putting an emphasis on co-management and collaborative management of natural and cultural resources, in which the Service and tribes share decision-making to the extent permitted by law. These actions can include placing an added emphasis on implementation and accountability, engage tribal knowledge in the Service's decision-making, and provide a consistent national framework flexible enough to accommodate regional and local variations in culture and perspectives.

VI. References:

- a. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 06 Nov 2000.
- b. White House Memorandum, Government-to-Government Relations, 29 April 1994.

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Missouri River Recovery Management Plan Environmental Impact Statement

- c. U.S. Army Corps of Engineers (USACE) Tribal Policy Principles, 18 Feb 1998 and 10 May 2010.
- d. DOD American Indian and Alaska Native Policy, 20 Oct 1998.
- e. Presidential Memorandum, Tribal Consultation, 05 Nov 2009.
- f. Department of the Army American Indian and Alaskan Native Policy, 24 Oct 2012.
- g. USACE Memorandum for Commanders, Directors and Chiefs of Separate Offices, U.S. Army Corps of Engineers, Subject: Tribal Consultation Policy, 01 Nov 2012.
- h. Planning, Environmental Resources, Fish Policy and Support Division: Native American Policy CENWD-PDD Policy Memorandum, No. NWDOM 2.
- i. Secretarial Order 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act.
- j. Department of the Interior Policy on Consultation with Indian Tribes.
- k. U.S. Fish and Wildlife Service Native American Policy.

TRIBAL CONSULTATION PROCESS FRAMEWORK FOR THE
Missouri River Recovery Management Plan Environmental Impact Statement

APPENDIX A: Summary of Tribal Engagements

Meeting Date	Meeting Location	Tribe(s)	Type of Meeting / Event
4/11/2018	Red Rock, OK	Otoe-Missouria, Pawnee Nation, Southern Ponca, Northern Ponca, Winnebago	Upper and Lower Basin Programmatic Agreement Discussion
4/4/2018	White Cloud, KS	Iowa Tribe of Kansas and Nebraska, Sac and Fox, Pottawatomie	MRRMP-EIS and BiOp consultation
3/26/2018	Omaha, NE	Winnebago Tribe of Nebraska, Ponca Tribe of Nebraska, Flandreau Santee Sioux Tribe, Omaha Tribe, Iowa Tribe of Kansas and Nebraska, Osage Nation	USACE offered training in using the hydrology visualization tool (hydro-viz) for use in understanding potential impacts of alternatives
3/21/2018	Pawhuska, OK	Osage Nation, Pawnee Nation, Northern Ponca, Iowa Tribe, Ho-Chunk, Otoe-Missouria	Lower Basin MRRMP Draft Programmatic Agreement Discussion
3/19/2018	Pawhuska, OK	Osage Nation	IRC Discussion
3/15/2018	Gavins Point Dam, SD	Omaha Tribe, Winnebago Tribe	ESH Tribal discussion
2/28/2018	Fort Yates, ND	Standing Rock Sioux Tribe	MRRMP-EIS and BiOp consultation
1/15/2018	Bismarck, ND	Standing Rock Sioux Tribe, MHA Nation	ESH Tribal Scoping meeting
12/6/2017	Bismarck, ND	Standing Rock Sioux Tribe, MHA Nation	Status update on MRRIC, ESH, and MRRMP-EIS
11/15/2017	Bismarck, ND	Standing Rock Sioux Tribe	Annual ESH Tribal and Interagency meeting
8/30/2017	De Soto Bend, NE	Omaha Tribe of Nebraska and Winnebago Tribe of NE	Discussion of NHPA Section 106 Programmatic Agreement and status update on MRRMP-EIS and MRRIC
7/17/2017	White Cloud, KS	Iowa Tribe, Kickapoo, Prairie Band Potawatomie,	Draft EIS Consultation meeting

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7/14/2017	New Town, ND	MHA Nations	Draft EIS Consultation meeting
6/29/2017	Winnebago, NE	Winnebago Tribe of Nebraska	Status update on MRRIC, MRRMP-EIS efforts
6/6/2017	Fort Thompson, SD	Crow Creek Sioux Tribe	Draft EIS Consultation meeting
6/6/2017	Lower Brule, SD	Lower Brule Sioux Tribe	Draft EIS Consultation meeting
4/27/2017	Pawhuska, OK	Osage Nation	Discussion on the MRRMP Programmatic Agreement
4/4/2017	Fort Yates, ND	Standing Rock Sioux Tribe	Draft EIS consultation meeting
3/31/2017	Pawhuska, OK	Osage Nation	Draft EIS consultation meeting
2/9/2017	Pierre, SD	Oglala Sioux Tribe	Draft EIS consultation meeting
2/8/2017	Bismarck ND	Standing Rock	Draft EIS consultation meeting
2/7/2017	Fort Peck, MT	Fort Peck Tribes	Draft EIS consultation meeting
11/1/2016	Crow Agency, MT	Crow Tribe	Discussion on MRRMP-EIS progress and NHPA Section 106 Programmatic Agreement
10/18/2016	White Cloud, KS	Iowa Tribe of Kansas and Nebraska	Discussion of MRRMP-EIS and cultural resources
15-Sep-16	Pawhuska, OK	Osage Nation	Discussion of NHPA Section 106 programmatic agreement
7/11/2016	Pine Ridge, SD	Oglala Sioux Tribe	Status update on MRRMP-EIS efforts and discussion of how potential water quality impacts are addressed in the Draft EIS
4/13/2016	Red Lodge Montana	Multiple Great Plains Tribes	Native American Fish and Wildlife Society Conference, presentation from USACE on the MRRMP-EIS and other efforts related to the pallid sturgeon, least tern, and piping plover
3/9/2016	Virtual Meeting	Osage Nation	Status of alternatives and potential impacts to cultural resources

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2/17/2016	Fort Yates, ND	Standing Rock Sioux Tribe	Discussion regarding ESH and potential impacts to cultural resources
1/27/2016	Niobrara, NE	Ponca Tribe of Nebraska	Management Plan and MRRIC introduction for new THPO
1/21/2016	Bismarck, ND	Standing Rock Sioux Tribe	Annual Interagency and Tribal ESH meeting. Discussion in regards to ESH construction, vegetation management, and potential impacts to cultural resources.
1/20/2016	Bismarck ND	Standing Rock Sioux Tribe	MRRMP-EIS introduction for new THPO office, discussion about ESH and cultural resources
10/21/2015	Bismarck ND	Standing Rock/Three Affiliated	Management Plan discussion about draft alternatives and potential impacts on water intakes, cultural sites, and recreation
9/15/2015	Pawhuska, OK	Osage Nation	Discussion of cultural sites inventory for use in MRRMP-EIS modeling.
9/2/2015	Crow Agency, MT Little Big Horn College	Apsaalooke (Crow) Nation, Northern Cheyenne, Rocky Boy Chippewa Cree	MRRIC and MRRMP-EIS introduction and discussion of alternatives and cultural resources
8/11/2015	Virtual Meeting	Osage Nation	Discussion regarding cultural resources analysis for EIS
7/14/2015	Flandreau, SD	Flandreau Santee Sioux Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe, Standing Rock Sioux Tribe, Omaha Tribe of Nebraska, Winnebago Tribe of Nebraska	Discussion of concerns regarding Missouri River Tributaries, cultural resources, Hydrology and Hydraulic modeling, and draft alternatives.
6/30/2015	Pawhuska, OK	Osage Nation	Discussion of cultural resources modeling for the MRRMP-EIS
6/23/2015	Fort Thompson, SD	Crow Creek Sioux Tribe	MRRMP-EIS and MRRIC Introduction for new Chairwoman and new THPO
5/6/2015	Pierre, Oglala Sioux Rural Water, Mni Wisconi	Apsaalooke (Crow) Nation, Osage Nation, Iowa Tribe of Kansas and Nebraska, Fort Peck Tribes, Flandreau Santee Sioux Tribe, Standing Rock Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe	MRRMP-EIS Tribal Meeting covering MRRIC and the EIS. Provided explanation of the alternatives, hydrology and hydraulics modeling and human considerations.
3/10/2015	Crow Agency, MT	Apsaalooke (Crow) Nation	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
10/20/2014	Pawhuska, OK	Osage Nation	MRRIC discussion

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10/1/2014	Rosebud SD	Rosebud Sioux Tribe and Oglala Sioux Tribe	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
7/14/2014	Omaha, NE	Ponca Tribe	Management Plan and National Historic Preservation Act Section 106 Discussion
6/11/2014	Fort Yates, ND	Standing Rock Sioux Tribe	Sandbar Vegetation Spraying, MRRMP-EIS human considerations
5/29/2014	Winnebago, NE	Winnebago Tribe	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
5/15/2014	Fort Thompson	Crow Creek	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
5/14/2014	Lower Brule	Lower Brule Sioux Tribe	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
4/22/2014	Sioux City	Ponca Tribe	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
4/15/2014	United Tribes Technical College	Various Basin Tribes	USACE presentation on MRRP, MRRIC, and Management Plan
4/9/2014	Eagle Butte	Cheyenne River Sioux Tribe	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
4/8/2014	Fort Berthold	Three Affiliated Tribes	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
4/7/2014	Fort Yates	Standing Rock Sioux Tribe	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
3/26/2014	Pawhuska	Osage Nation	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
3/10/2014	Crow Agency, MT	Apsaalooke (Crow) Nation	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
2/26/2014	Horton, KS	Kickapoo, Pottawatomie	Discuss Missouri River Tribal Resources document and MRRMP-EIS human considerations
2/25/2014	White Cloud, KS	Iowa Tribe	MR Basin Tribal Meeting
9/11/2013	Crow Agency, MT	Apsaalooke (Crow) Nation	Introduction of MRRP to the Crow Cultural Committee
8/29/2013	Lawrence, KS	Kickapoo Tribe	MRRMP-EIS Tribal Scoping Meeting

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8/27/2013	Pawhuska, OK	Osage Nation	MRRMP-EIS Tribal Scoping Meeting
8/20/2013	Bismarck, ND	Three Affiliated Tribes	MRRMP-EIS Tribal Scoping Meeting
8/8/2013	Billings, MT	Apsaalooke (Crow Nation), Gros Ventre and Assiniboine Tribes of Fort Belknap	MRR Management Plan Tribal Scoping
January 2013 – August 2018	Various Locations throughout Missouri River Basin	MRRIC Tribal representatives	Quarterly MRRIC Plenary meetings and in-person MRRIC Tribal workgroup meetings

APPENDIX I: ENDANGERED SPECIES ACT CORRESPONDENCE

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United States Department of the Interior

FISH AND WILDLIFE SERVICE Mountain-Prairie Region



IN REPLY REFER TO:
FWS/R6/ES/MORC

MAILING ADDRESS:
P.O. Box 25486, DFC
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Boulevard
Lakewood, Colorado 80228-1807

OCT 10 2012

David Ponganis, Director of Programs
U.S. Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, Oregon 97209

Dear Mr. Ponganis:

The U.S. Fish and Wildlife Service (USFWS) has received and reviewed the Missouri River Recovery Program Independent Science Advisory Panel's (ISAP) *Final Report on Spring Pulses and Adaptive Management*, dated November 30, 2011. This report, commissioned by the Missouri River Recovery Implementation Committee (MRRIC), evaluated the pulses that have been implemented to date and how they have achieved the biological outcomes the USFWS sought in the 2003 Amendment to the 2000 Biological Opinion (2003 Amended BiOp), dated December 23, 2003. The ISAP confirmed that spring pulses, as currently implemented, are not accomplishing their intended outcomes and provided recommendations towards achieving a new management paradigm for the Missouri River.


Based on the final report, we have determined that aggressive pursuit of completing the recommendations laid out by the ISAP is the best path forward to ensure we are using the available scientific data to achieve the intent of the 2003 Amended BiOp and species recovery. Accordingly, while completion of the ISAP recommendations is being pursued, the USFWS believes it is appropriate to forego a spring pulse, under the currently established criteria, during the 2013 Missouri River operating season and that not providing a spring pulse is not likely to have an adverse effect on the listed species addressed in the 2003 Amended BiOp.

To ensure timely implementation of the ISAP recommendations, it will be imperative that the U.S. Army Corps of Engineers (USACE) continue its collaboration with the USFWS to quickly develop a schedule, process, and check in points, to ensure the agencies are on track to fully evaluate the needs of Missouri River endangered species and the role hydrology may play in their recovery and long-term sustainability. This process needs to evaluate the complete hydrograph, consider a full range of alternatives to meet species requirements, and result in a sustainable and adaptable management strategy for the Missouri River.

We should all turn our efforts to quickly and efficiently implementing the ISAP recommendations. We also hope that our two agencies will continue working together with Missouri River stakeholders to fully implement all these recommendations. It is possible, even likely, that as the ISAP recommendations are implemented, a new management strategy for flows and habitat restoration will develop, leading to more effective species recovery actions on the Missouri River. We envision that a new management strategy coming off the ISAP effort could be implemented by spring 2014, or during 2015 at the latest, thus replacing the current spring pulse operation with a more comprehensive management plan. We look forward to our first two planned USFWS – USACE check-in points (November 2012 and February 2013) on the progress of implementing the ISAP recommendations.

My staff stands ready to assist in any way they can. If you have any questions, please feel free to contact Casey Kruse, Missouri River Coordinator at (605) 760-7471.

Sincerely,



Regional Director

Cc: Jody Farhat
U.S. Army Corps of Engineers
1616 Capitol Avenue
Omaha, NE 68102-4909

Cc: Steve Fischer, USACE, Kansas City, MO
Casey Kruse, USFWS, Yankton, SD

Draft Pallid Sturgeon Objectives (Upper and Lower Basin) for the Missouri River Recovery Program

As part of the effort to develop a comprehensive adaptive management plan for implementation of the U.S. Army Corps of Engineers (USACE) Missouri River Recovery Program (MRRP), the U.S. Fish and Wildlife Service (USFWS) provides the following species objective for the endangered pallid sturgeon.

While this objective is consistent with USFWS established recovery goals for the pallid sturgeon, it is prepared specifically as a fundamental objective to avoid and prevent jeopardy to the species from the USACE action of operating and maintaining the Missouri River System. This fundamental objective and subsequent sub-objectives describe the desired outcomes from the USACE actions as part of the MRRP.

These objectives are prepared with the following tenants. They should:

- Be consistent with Endangered Species Act required Pallid Sturgeon Recovery Plan recovery goals and strategies,
- Reflect the latest knowledge of the species life history needs and their current status relative to the form and function of the contemporary Missouri River System,
- Have a direct relationship with the USACE's effect on the species from their operations of the Missouri River System, and
- Be sensitive to actionable threat remediation.

Fundamental Objective: Avoid jeopardizing the continued existence of the pallid sturgeon from the US Army Corps of Engineers actions on the Missouri River.

Sub-objective 1: Increase pallid sturgeon recruitment to age 1.

Sub-objective 2: Maintain or increase numbers of pallid sturgeon as an interim measure until sufficient and sustained natural recruitment occurs.

Sub-objectives track progress towards achieving the fundamental objective. They can also help determine which factors contribute most to achieving the fundamental objective. Note that the fundamental and sub-objectives are not independent of each other, and should be considered **together** rather than separately when assessing the state of the system and choosing management actions.

The following sub-objectives are those objectives which must be attained to ultimately allow us to achieve the stated “fundamental objective”. The intent of the sub-objectives is to provide direction in the short term, provide objectives meaningful for adaptive management, and focus efforts on the desired short term outcomes while keeping the fundamental objective in mind. Although attaining a self sustaining population is ultimately the desired outcome, we are likely decades away from such an objective being very meaningful. Even if we achieved natural recruitment in the next 10 years, it would be another 20 to 30 years before we could assess progress toward the self-sustaining population objective.

Sub-objective 1: Increase pallid sturgeon recruitment to age 1.

Metric: catch rates of naturally-produced age 2 and 3 pallid sturgeon

This metric is used because pallid sturgeons are susceptible to sampling gears at these ages AND are still young enough to be accurately aged. If older fish can be accurately aged, their catch rates should be used as well. Close coordination will need to occur with scientists on the Mississippi River to determine if Missouri River fish are recruiting in the Mississippi and eventually returning to Missouri River to spawn. This will require cooperative microchemistry work on young fish.

Target: TBD. Short-term measurable recruitment, long-term informed by the effects analysis and population models. Target values for recruitment (i.e. necessary levels and frequency of recruitment over time) will be informed by population models as part of the effects analysis. Defining this target is not critical right now given that we are not currently concerned with levels or frequency of recruitment given we first need to see measurable recruitment.

Sub-objective 2: Maintain or increase numbers of pallid sturgeon as an interim measure until sufficient and sustained natural recruitment occurs.

This sub-objective really focuses on artificial propagation since it is the only means to achieve this intermediate objective. Monitoring and assessment will be directed at refining the artificial propagation approach and maximizing the utility of the artificial propagation program.

Metric: catch rates of all pallid sturgeon by size class. This metric is in accordance with the recovery guidance provided in the Pallid Sturgeon Recovery Plan and Genetics Plans for the Upper Basin and Lower Basin.

Target: TBD. The target values, by reach, will be informed by the effect analysis.

Means Objectives specify the way and degree to which the fundamental and sub-objectives can be achieved. The MRRP Means Objectives will be defined at a later date after the Effect Analysis is completed.

Note: Following are explanations regarding the above objectives:

These refinements to the objectives are consistent with the discussions at the workshops and incorporate many of the points made at the workshops.

- It is suggested that refining the strategic objective wording to focus on jeopardy avoidance (while including the ‘contributing to recovery’) will avoid ambiguity and confusion. The role of the USACE is to address the impacts of the USACE actions on the species (i.e., jeopardy avoidance). This is the manner in which the USACE contributes to the broader recovery efforts.
- The “Sub-objectives” as previously drafted contained redundancy (e.g., Increase self-sustaining population with a metric of length frequency and Improve population size structure with a metric of length frequency) and are basically synonymous with the stated fundamental objective. Some rewording of these objectives was done to help distinguish between sub-objectives and the fundamental objective.
- The sub-objectives should be viewed in terms of timeframes or immediate relevancy. The sub-objectives in sum ultimately allow us to achieve the fundamental objective in the long-term.
- The objectives as previously stated weren’t particularly responsive to management actions or of utility for adaptive management (i.e., it would take many years to decades to link success back to a management action if our objectives and metrics relate to overall population size or desired population size structure). Adaptive management will require the opportunity to observe responses to management actions in a shorter time frame and an ability to link the response to an action or suite of actions.
- It is clear from the Conceptual Ecological Models (CEMs) and current understanding that without attaining some level of natural recruitment to age 1, it will not be possible to meet other objectives. Lack of recruitment is currently limiting pallid population growth. This is where attention must focus. Doing so shows that we have broken down and understand the problem and will provide some meaning to plan formulation exercises. It may be decades before anything else matters to us (or the pallid population).
- **There are several hypotheses regarding the lack of recruitment to age 1 (especially in the lower basin). These are partially identified in the CEMs, will be further evaluated in the Effects Analysis, and can be addressed in the formulation of alternatives and active adaptive management to come. For example, it could be that we have too few adults to successfully spawn, it could be that there is high egg mortality, it could be that drifting embryos suffer high mortality, it could be that habitat and food availability are limiting, etc., so the problem may actually be occurring prior to recruitment of larval sturgeon to age 1. Although there are multiple hypotheses, the bottom line is that we know fish survive well once they reach age 1 and an objective of getting fish to that point (i.e., recruitment to age 1) is the objective we need to achieve regardless of the early life history problem which is most limiting. In addition,**

the performance metric which can actually be measured is catch of fish once they get to age 2, 3, and 4.

- The CEMs make the link between USACE operation of the river and the loss of recruitment and place high importance on that linkage in both the Upper and Lower Basins. It is important to make that connection between the CEMs and our objectives. We need to show how our objectives are linked to addressing the effects of USACE operations on the species.
- It is important for future reviewers and contributors to understand the origin of and our needs for these objectives, for example:
 - o The objectives stem from the effect of USACE actions and operations on the species and the legal mandate to avoid jeopardizing continued existence of the species;
 - o The objectives will be used in an Effects Analysis;
 - o Assessments of progress toward achieving objectives will be the basis for Adaptive Management efforts moving forward; and
 - o For Adaptive Management purposes, objectives must be responsive within a reasonable time frame (i.e., we can't use monitoring results to affect management change if we must wait 30 to 40 year to interpret the results).

Draft Piping Plover Objective for the Missouri River Recovery Program

As part of the effort to develop a comprehensive adaptive management plan for implementation of the U.S. Army Corps of Engineers (USACE) Missouri River Recovery Program (MRRP), the U.S. Fish and Wildlife Service (USFWS) provides the following species objective for the threatened piping plover.

While this objective is consistent with USFWS established recovery goals for the piping plover, it is prepared specifically as a fundamental objective to avoid and prevent jeopardy to the species from the USACE action of operating and maintaining the Missouri River System. This fundamental objective and subsequent sub-objectives describe the desired outcomes from the USACE actions as part of the MRRP.

These objectives are prepared with the following tenants. They should:

- Be consistent with Endangered Species Act required Piping Plover Recovery Plan recovery goals and strategies,
- Reflect the latest knowledge of the plover's life history needs and their current status relative to the form and function of the contemporary Missouri River System,
- Have a direct relationship with the USACE's effect on the species from their operations of the Missouri River System, and
- Be sensitive to actionable threat remediation.

Fundamental Objective: Avoid jeopardizing the continued existence of the piping plover from the US Army Corps of Engineers actions on the Missouri River.

Sub-objective 1: Maintain a total population number of Missouri River birds that keep the population resilient on the Missouri River in the long term.

Sub-objective 2: Maintain a long-term trend in population growth that is at least stable.

Sub-objective 3: Increase and maintain the success of breeding pairs on Missouri River.

Sub-objective 4: Maintain a geographic distribution of plovers in the river and reservoirs in which they currently occur.

Sub-objectives track progress towards achieving the fundamental objective. They can also help determine which factors are contributing to an inability to reach the fundamental objective. Note that the fundamental and sub-objectives are not independent of each other, and should be considered **together** rather than separately when assessing the state of the system and choosing management actions.

The following sub-objectives are those objectives which must be attained to ultimately allow us to achieve the stated “fundamental objective”. The intent of the sub-objectives is to provide direction in the short term, provide objectives meaningful for adaptive management, and focus efforts on the desired short term outcomes while keeping the fundamental objective in mind.

Sub-objective 1: Maintain a total population number of Missouri River birds that keep the population resilient on the Missouri River in the long term.

Metric: Total Missouri River population size, frequency of years that population size is above target.

Target: TBD and informed by Effects Analysis.

Resilient can be defined by a population size that is large enough to withstand and recover from system shocks. Resiliency of the Missouri River population is interdependent of the population range-wide considering that the birds are known to sometimes use habitat elsewhere. Targets can be estimated with population viability analysis (PVA) models once an acceptable level of risk is specified, e.g. a 5% risk of extirpation over the next 50 years.

Population targets may also be specified as frequencies (e.g. populations should be above target 2 years out of 3; a 3-year running average of the population should be above target) to reflect the natural variability of plover habitat and population sizes. While this does not support the resiliency of the population, it can be used as part of adaptive management to determine when actions should be triggered in response to population sizes falling below the target.

Sub-objective 2: Maintain a long-term trend in population growth that is at least stable.

Metric: population growth rate (λ).

Target: $\lambda \geq 1$.

Population growth rate is nothing more than the change in population size over time. In other words, it is the trend in the fundamental objective. Growth rates (λ) larger than one lead to an increase in population size, while growth rates less than one lead to a decrease in population size. This metric is used to determine whether population sizes below target are on track to reach the target, and whether population sizes above target are likely to remain there.

This metric is also important because there are biological constraints on population growth, and thus time lags before small populations can respond to improved conditions and reach the target. This metric allows for determination of whether management is successful in the short term.

Sub-objective 3: Increase and maintain the success of breeding pairs on Missouri River.

Metric: number of fledglings/breeding pair, or survival to fledge.

Target: TBD, informed by Effects Analysis.

An assessment of productivity is critical to determining the extent to which plover population trends are dependent upon conditions on the Missouri River rather than to conditions at wintering habitat outside of the basin, and therefore whether they can be affected by the MRRP. A decrease in population growth rate and size may be due to reduced productivity or decreased overwinter survival. Conversely, decreases in productivity may be masked in the short term if overwinter survival improves. Rates of fledgling production alone do not determine the health of the population (a very small population may have high fledge ratios), but instead must be considered together with population size and growth rate. Reduced productivity can be tolerated and, for plovers, expected when population sizes are large; however, small populations with low productivity will not recover in the absence of sufficient immigration from other populations. One downside of using fledglings/breeding pair is that the calculation amplifies the error inherent in survey data. Another issue with fledge ratio is the ability to accurately count fledglings without marking them, fledglings fly and can therefore easily be counted multiple times if they are not uniquely marked. Survival to fledge will require bird banding but will provide more accurate tracking of fledglings.

Sub-objective 4: Maintain a geographic distribution of plovers in the river and reservoirs in which they currently occur.

Metric: population size by reach, or proportion of population within each reach.

Target: TBD, informed by Effects Analysis

This sub-objective could be considered separately rather than as part of the fundamental objective, depending on emphasis desired. The geographic distribution of birds throughout the river supports population resilience by reducing the likelihood of local disturbances having catastrophic effects on the population. It will also likely support a larger population of plovers, as there is potential for more habitat when larger parts of the river are considered, and increased habitat supports increases in population sizes.

Means Objectives specify the way and degree to which the fundamental and sub-objectives can be achieved. The MRRP Means Objectives will be defined at a later date after the Effect Analysis is completed.

Note: Following are explanations regarding the above objectives:

These objectives are consistent with the discussions at the workshops and incorporate many of the points made at the workshops.

- It is suggested that refining the strategic objective wording to focus on jeopardy avoidance (while including the ‘contributing to recovery’) will avoid ambiguity and confusion. The role of the USACE is to address the impacts of the USACE’s actions on the species (i.e., jeopardy avoidance). This is the manner in which the USACE contributes to the broader recovery efforts, but that point is regularly confused or lost as this debate has consumed many hours over the past two years. The wording should be as concise and unambiguous as possible.
- The “Sub-objectives” as previously drafted contained redundancy and were basically synonymous with the stated fundamental objective. Some rewording of these objectives was done to help distinguish between sub-objectives and the fundamental objective.
- The sub-objectives should be viewed in terms of timeframes or immediate relevancy. The sub-objectives in sum ultimately allow us to achieve the fundamental objective in the long-term.
- The objectives as previously stated weren’t particularly responsive to management actions or of utility for adaptive management (i.e., it would take many years to decades to link success back to a management action if our objectives and metrics relate to overall population size or desired population size structure). Adaptive management will require the opportunity to observe responses to management actions in a shorter time frame and an ability to link the response to an action.
- The Conceptual Ecological Models (CEM) makes the link between USACE operations of the river and meeting the Fundamental Piping Plover Objectives. We need to show how our objectives are linked to addressing the effects of USACE operations on the species.
- It is important for future reviewers and contributors to understand the origin of and our needs for these objectives, for example:
 - o The objectives stem from the effect of USACE actions and operations on the species and the legal mandate to avoid jeopardizing continued existence of the species;
 - o The objectives will be used in an Effects Analysis;
 - o Assessments of progress toward achieving objectives will be the basis for Adaptive Management efforts moving forward; and
 - o For Adaptive Management purposes, objectives must be responsive within a reasonable time frame (i.e., we can’t use monitoring results to affect management change if we must wait 30 to 40 year to interpret the results).

Draft Least Tern Objective for the Missouri River Recovery Program

As part of the effort to develop a comprehensive adaptive management plan for implementation of the U.S. Army Corps of Engineers (USACE) Missouri River Recovery Program (MRRP), the U.S. Fish and Wildlife Service (USFWS) provides the following species objective for the endangered least tern.

While this objective is consistent with USFWS established recovery goals for the least tern, it is prepared specifically as a fundamental objective to avoid and prevent jeopardy to the species from the USACE action of operating and maintaining the Missouri River System. This fundamental objective and subsequent sub-objectives describe the desired outcomes from the USACE actions as part of the MRRP.

These objectives are prepared with the following tenants. They should:

- Be consistent with Endangered Species Act required Least Tern Recovery Plan recovery goals and strategies,
- Reflect the latest knowledge of the species life history needs and their current status relative to the form and function of the contemporary Missouri River System,
- Have a direct relationship with the USACE's effect on the tern from their operations of the Missouri River System, and
- Be sensitive to actionable threat remediation.

Fundamental Objective: Avoid jeopardizing the continued existence of the least tern from the US Army Corps of Engineers actions on the Missouri River.

Sub-objective 1: Maintain a total population number of Missouri River birds that keep the population resilient on the Missouri River in the long term.

Sub-objective 2: Maintain a long-term trend in population growth that is at least stable.

Sub-objective 3: Increase and maintain the success of breeding pairs on Missouri River.

Sub-objective 4: Maintain a geographic distribution of terns in the river and reservoirs in which they currently occur.

Sub-objectives track progress towards achieving the fundamental objective. They can also help determine which factors are contributing to an inability to reach the fundamental objective. Note that the fundamental and sub-objectives are not independent of each other, and should be considered **together** rather than separately when assessing the state of the system and choosing management actions.

The following sub-objectives are those objectives which must be attained to ultimately allow us to achieve the stated “fundamental objective”. The intent of the sub-objectives is to provide direction in the short term, provide objectives meaningful for adaptive management, and focus efforts on the desired short term outcomes while keeping the fundamental objective in mind.

Sub-objective 1: Maintain a total population number of Missouri River birds that keep the population resilient on the Missouri River in the long term.

Metric: Total Missouri River population size, frequency of years that population size is above target.

Target: TBD and informed by Effects Analysis.

Resilient can be defined by a population size that is large enough to withstand and recover from system shocks. Resiliency of the Missouri River population is interdependent of the population range-wide considering that the birds are known to sometimes use habitat elsewhere. Targets can be estimated with population viability analysis (PVA) models once an acceptable level of risk is specified, e.g. a 5% risk of extirpation over the next 50 years.

Population targets may also be specified as frequencies (e.g. populations should be above target 2 years out of 3; a 3-year running average of the population should be above target) to reflect the natural variability of tern habitat and population sizes. While this does not support the resiliency of the population, it can be used as part of adaptive management to determine when actions should be triggered in response to population sizes falling below the target.

Sub-objective 2: Maintain a long-term trend in population growth that is at least stable.

Metric: population growth rate (λ).

Target: $\lambda \geq 1$.

Population growth rate is nothing more than the change in population size over time. In other words, it is the trend in the fundamental objective. Growth rates (λ) larger than one lead to an increase in population size, while growth rates less than one lead to a decrease in population size. This metric is used to determine whether population sizes below target are on track to reach the target, and whether population sizes above target are likely to remain there.

This metric is also important because there are biological constraints on population growth, and thus time lags before small populations can respond to improved conditions and reach the target. This metric allows for determination of whether management is successful in the short term.

Sub-objective 3: Increase and maintain the success of breeding pairs on Missouri River.

Metric: number of fledglings/breeding pair, or survival to fledge.

Target: TBD, informed by Effects Analysis.

An assessment of productivity is critical to determining the extent to which tern population trends are dependent upon conditions on the Missouri River rather than to conditions at wintering habitat outside of the basin, and therefore whether they can be affected by the MRRP. A decrease in population growth rate and size may be due to reduced productivity or decreased overwinter survival. Conversely, decreases in productivity may be masked in the short term if overwinter survival improves. Rates of fledgling production alone do not determine the health of the population (a very small population may have high fledge ratios), but instead must be considered together with population size and growth rate. Reduced productivity can be tolerated and, for terns, expected when population sizes are large; however, small populations with low productivity will not recover in the absence of sufficient immigration from other populations. One downside of using fledglings/breeding pair is that the calculation amplifies the error inherent in survey data. Another issue with fledge ratio is the ability to accurately count fledglings without marking them, fledglings fly and can therefore easily be counted multiple times if they are not uniquely marked. Survival to fledge will require bird banding but will provide more accurate tracking of fledglings.

Sub-objective 4: Maintain a geographic distribution of terns in the river and reservoirs in which they currently occur.

Metric: population size by reach, or proportion of population within each reach.

Target: TBD, informed by Effects Analysis

This sub-objective could be considered separately rather than as part of the fundamental objective, depending on emphasis desired. The geographic distribution of birds throughout the river supports population resilience by reducing the likelihood of local disturbances having catastrophic effects on the population. It will also likely support a larger population of terns, as there is potential for more habitat when larger parts of the river are considered, and increased habitat supports increases in population sizes.

Means Objectives specify the way and degree to which the fundamental and sub-objectives can be achieved. The MRRP Means Objectives will be defined at a later date after the Effect Analysis is completed.

Note: Following are explanations regarding the above objectives:

These objectives are consistent with the discussions at the workshops and incorporate many of the points made at the workshops.

- It is suggested that refining the strategic objective wording to focus on jeopardy avoidance (while including the ‘contributing to recovery’) will avoid ambiguity and confusion. The role of the USACE is to address the impacts of the USACE actions on the species (i.e., jeopardy avoidance). This is the manner in which the USACE contributes to the broader recovery efforts, but that point is regularly confused or lost as this debate has consumed many hours over the past two years. The wording should be as concise and unambiguous as possible.
- The “Sub-objectives” as previously drafted contained redundancy and were basically synonymous with the stated fundamental objective. Some rewording of these objectives was done to help distinguish between sub-objectives and the fundamental objective.
- The sub-objectives should be viewed in terms of timeframes or immediate relevancy. The sub-objectives in sum ultimately allow us to achieve the fundamental objective in the long-term.
- The objectives as previously stated weren’t particularly responsive to management actions or of utility for adaptive management (i.e., it would take many years to decades to link success back to a management action if our objectives and metrics relate to overall population size or desired population size structure). Adaptive management will require the opportunity to observe responses to management actions in a shorter time frame and an ability to link the response to an action.
- The CEMs makes the link between USACE’s operation of the river and meeting the Fundamental Least tern Objectives. We need to show how our objectives are linked to addressing the effects of USACE operations on the species.
- It is important for future reviewers and contributors to understand the origin of and our needs for these objectives, for example:
 - o The objectives stem from the effect of USACE actions and operations on the species and the legal mandate to avoid jeopardizing continued existence of the species;
 - o The objectives will be used in an Effects Analysis;
 - o Assessments of progress toward achieving objectives will be the basis for Adaptive Management efforts moving forward; and
 - o For Adaptive Management purposes, objectives must be responsive within a reasonable time frame (i.e., we can’t use monitoring results to affect management change if we must wait 30 to 40 year to interpret the results).



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
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REPLY TO
ATTENTION OF

Programs Directorate

31 JUL 2015

Noreen Walsh
U.S. Fish and Wildlife Services
134 Union Blvd
Lakewood, CO 80228

Dear Noreen:

As we have discussed, this letter confirms our mutual understanding that the U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service (Service) are engaged in consultation on the 2003 Amended Biological Opinion on the Operation and Maintenance of the Mainstem Missouri River Reservoir System, the Missouri River Bank Stabilization and Navigation Project, and the Kansas Reservoir System (2003 Amended BiOp). The Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP/EIS), which is currently being developed jointly by our agencies in collaboration with the Missouri River Recovery Implementation Committee (MRRIC), serves as the on-going medium for this consultation. Following release of the draft MRRMP/EIS for public review and comment in 2016, this document will provide the foundation for a revised Biological Assessment (BA) and proposed action for our operation of the Missouri River System. Subject to the conclusions of the revised BA, we anticipate the Service may amend the current BiOp or issue a new BiOp pursuant to regulations governing section 7 of the Endangered Species Act (ESA). Based on this process and public input, the Corps will then be poised to make any appropriate revisions to the draft MRRMP/EIS, issue a final decision, and begin implementation.

The Missouri River Recovery Program's Independent Science Advisory Panel (ISAP), tasked by MRRIC, released a report (Final Report on Spring Pulses and Adaptive Management) on November 30, 2011 that analyzed the efficacy of the managed spring pulse releases from Gavins Point Dam as implemented by the Corps in response to the 2003 Amended BiOp. The ISAP's report identified the need to review the current management actions being taken to benefit the listed species in light of the current state of the science, concluding that there was "substantial new knowledge regarding pallid sturgeon, least tern, and piping plover, their habitats, and management opportunities on the lower Missouri River" since the 2003 Amended BiOp was published (pg 57). The ISAP recommended a "new management agenda using hydrological manipulations and habitat construction activities, implemented in an adaptive management framework" to replace the current action plan (pg 4). To achieve that goal, the panel provided a set of specific guidance and suggestions for the agencies to pursue (pg 4-5). The report also provided recommendations for developing an overarching Adaptive Management (AM) program to systematically address uncertainties involved with implementation of the management actions. As you know, development of an AM plan is also a component of the 2003 Amended BiOp.

On February 21, 2012, the MRRIC supported that guidance and provided our agencies with a formal consensus recommendation, in accordance with their Charter, proposing seven specific actions for the agencies to implement to fulfill the ISAP recommendations. On May 8, 2012, the Corps and Service provided a joint response to the MRRIC's recommendation, endorsing the ISAP's report and expressing our agencies' joint commitment to working closely with the MRRIC to implement the recommended actions.

To implement the ISAP report's recommendations, and in coordination with and building on the corresponding set of recommendations from the MRRIC, our two agencies have been applying a structured scientific process, employing teams of nationally recognized experts, to:

- Complete an Effects Analysis (EA) that includes review and compilation of the best available scientific information,
- Develop Conceptual Ecological Models (CEMs) for the three listed species to articulate the stressors and mitigative actions on species performance ,
- Identify the factors that might be limiting species' success,
- Evaluate a suite of management actions with the potential to remove those limiting factors, including any impacts that may accrue to human considerations,
- Design an overarching AM plan with clear decision criteria and robust and integrated research, monitoring and assessment activities,
- Assess and make appropriate changes to management actions through a management plan for continued compliance with ESA requirements, and
- Demonstrate commitment to implementing that management plan by completing all necessary components to its development, including National Environmental Policy Act (NEPA), Corps' Independent External Peer Review (IEPR), and Fish and Wildlife Coordination Act (FWCA).

Over the past three years, our agencies have invested significant time and resources toward implementing the recommendations and have made tremendous progress.

- The Notice of Intent for the MRRMP/EIS was published in January 2013 following extensive collaboration between our agencies on the study's Purpose and Need.
- The Request for Proposals for the Effects Analyses work was developed jointly by our agencies, reviewed by the ISAP and the MRRIC, and issued in March 2013. Nationally respected experts from the U.S. Geological Survey (pallid sturgeon), Pacific Northwest National Laboratories (least tern and piping plover), and the Corps' Engineer Research

and Development Center (river geomorphology) were selected to lead the EA teams and began work immediately.

- At the suggestion of the Service, a group of key team members, including the Corps, Service, and the Chair of the MRRIC, attended a Structured Decision Making Workshop at the National Conservation Training Center in June 2013 to strengthen our ability to conduct such a complex undertaking as the MRRMP/EIS with such a large and diverse group as the MRRIC.
- Evolving through a series of interim products that were guided by ISAP reviews and feedback, the CEMs for the three species were completed in February 2014.
- At the MRRIC's request, and with our agencies' concurrence, an independent socio-economic panel of experts was selected in April 2014 to provide review and feedback on the economic evaluation of potential MRRMP/EIS alternatives. The three-member Independent Social Economic Technical Review (ISETR) panel supplements the scientific expertise of the ISAP.
- Draft EAs for the species were completed in October 2014; the documents are currently undergoing pre-publication quality reviews.

Key elements that have been developed as part of the EA process include predictive species models, comprehensive hypotheses sets, evidence-based assessments of those hypotheses, and identification of potential management actions. It is safe to say that the breathtaking amount of state-of-the-science information that has been produced as part of this effort is unprecedented.

We appreciate the Service's continued efforts to utilize the EA results to identify objectives and metrics for the species. As you are aware, the species objectives and metrics are critical to development of appropriate management actions. The clear connection of species objectives and metrics to the rigorous scientific processes being followed by the EA teams (and reviewed by the ISAP and the MRRIC) will ensure success in reaching the goals described above.

Our agencies have been working with stakeholders to evaluate potential management action alternatives that achieve species objectives. This includes analyzing the potential impacts of those management actions on a suite of socioeconomic and other human considerations. We are also working with the EA team leads to draft the AM strategies that will systematically address uncertainties involved with implementation of management actions. And all of this has been accomplished with and improved by continuous review and feedback from the ISAP, ISETR, and the MRRIC.

While there is no doubt that our two agencies, working with the MRRIC, EA teams, and review panels, have accomplished much, there is still work to be done. As our agencies continue to refine management actions, assemble and evaluate alternative plans and potential

impacts, develop AM strategies, and select a new management plan, we are committed to maintaining continuous engagement with the Service.

As we jointly work to complete the MRRMP/EIS, the Corps continues to implement the Reasonable and Prudent Alternative (RPA) provisions in the 2003 Amended BiOp, working closely with the Service to adaptively manage the RPA elements as appropriate, and as envisioned by the 2003 Amended BiOp. For example, over the past several years, based on new information or changing environmental conditions, our agencies have convened a plenary process with basin stakeholders to develop technical criteria for the spring pulse, worked collaboratively to modify the definition and parameters of Shallow Water Habitat (SWH), and explored modifications to criteria for unbalancing the upper three reservoirs that will benefit the species without adversely affecting the flood control purpose. All of these adjustments to management actions are based on evaluation of habitat, flow, climate, species response and other information as it becomes available, as contemplated in the 2003 Amended BiOp (pg 221).

Our agencies continue to meet regularly through the established Agency Coordination Team (now known as the CORE team) which allows us to evaluate implementation of management actions alongside the status of the species to ensure sufficient progress is always being made toward avoiding jeopardy and that course corrections are made as needed (pg 223). This is nowhere more evident than in the continuous improvements being made in the design, location, and construction of SWH to benefit the pallid sturgeon. The Corps' implementation teams are incorporating the best available pallid sturgeon science into engineering designs to address the factors thought to be limiting sturgeon success. We will also continue to make use of the quarterly MRRMP/EIS In-Progress Review meetings to jointly resolve management decisions as needed.

As we have agreed, and shared publicly on many occasions, the Corps fully recognizes the need to expeditiously complete the path to a new management plan as agreed to above in order to continue fulfilling our obligations under the ESA.

We look forward to our continued collaboration over the next year to achieve that goal.

A handwritten signature in blue ink, reading "David J. Ponganis".

David J. Ponganis, SES
Director, Programs



United States Department of the Interior

FISH AND WILDLIFE SERVICE Mountain-Prairie Region



IN REPLY REFER TO
FWS/R6/ES

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Denver, Colorado 80225-0486

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134 Union Boulevard
Lakewood, Colorado 80228-1807

SEP 29 2015

David J. Ponganis, Director
Department of the Army
Corps of Engineers, Northwest Division
P.O. Box 2870
Portland, Oregon 97208-2870

Dear Mr. Ponganis:


Thank you for your July 31, 2015 letter concerning the status of consultation regarding the U.S. Army Corps of Engineers (Corps) operation and maintenance of the mainstem Missouri River reservoir system, the Missouri River Bank Stabilization and Navigation Project, and the Kansas Reservoir System. As you point out, our two agencies have been working very closely on a path forward. That path includes the development of a Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP/EIS). This is being conducted in a highly transparent and public forum through the Missouri River Recovery Implementation Committee (MRRIC). Your letter goes into great detail about the level of scientific and policy involvement that has been ongoing between our agencies and the MRRIC for the last several years. I will not reiterate those efforts here.

It is reasonable to expect that a logical outcome of all of our work will be a Biological Assessment and a new, revised, or amended biological opinion based on the Service's current 2003 Amended Biological Opinion. I concur in your understanding of the status of consultation described in your letter. We will continue to assist the Corps in implementing the current biological opinion, and will continue to support the current process on the MRRMP/EIS. Your letter accurately reflects our understanding about the sequencing or scheduling of these steps. It is imperative that we coordinate the MRRMP/EIS and section 7 consultation obligations, as this coordination is critical to the success of our respective obligations under NEPA and the ESA.

Lastly, I agree with you that time is of the essence. Both from a conservation perspective for the species, as well as administratively, it is in our collective best interest to have a scientifically sound and legally defensible strategy to meet our agency challenges. The work at hand is extensive, requiring both human capital and financial resources from both of our agencies. You have my commitment to assist the Corps in finding efficiencies that do not sacrifice quality as we move forward.

I appreciate all the excellent working relationship that the U.S. Fish and Wildlife Service has with the Corps on the Missouri River. If you have additional questions, please feel free to contact Michael Thabault, Assistant Regional Director at (303) 236-4210.

Sincerely,



Regional Director

cc: USFWS Regional Directors, Reg. 6 & 3
USFWS ARDs, Reg. 6 & 3
State F&W Directors: MT, ND, SD, NE, IA, MO, KS
Missouri River Coordinator – Casey Kruse
April Fitzner, USACE
Mark Harberg, USACE



DEPARTMENT OF THE ARMY
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REPLY TO
ATTENTION OF

Programs Directorate

October 30, 2017

Michael Thabault
Assistant Regional Director, Ecological Services
U.S. Fish and Wildlife Service
Mountain-Prairie Region
134 Union Blvd.
Lakewood, Colorado 80228

Dear Mr. Thabault:

In accordance with the ongoing Section 7 consultation efforts between our agencies pursuant to the Endangered Species Act (ESA), I am submitting our 2017 Biological Assessment (BA) for the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan. This BA provides the information pursuant to 50 CFR §402.14, documents and incorporates new and additional information not previously provided by the U.S. Army Corps of Engineers (USACE), and describes all of the current and proposed actions of USACE to comply with the ESA.

The 2003 Amended Missouri River Biological Opinion (BiOp) provided a Reasonable and Prudent Alternative (RPA) with management actions to avoid jeopardy to the pallid sturgeon, interior least tern, and piping plover. USACE has diligently dedicated resources to implementing most aspects of the RPA since 2003 and established the Missouri River Recovery Program (MRRP) to enable USACE to meet its congressionally authorized purposes and ESA requirements. The Missouri River Recovery Implementation Committee (MRRIC) was also convened pursuant to Section 5018 of the Water Resources Development Act of 2007 to provide recommendations to USACE and the U.S. Fish and Wildlife Service (USFWS) on these efforts.

Since the issuance of the 2003 Amended BiOp, significant uncertainty remains regarding the science and effectiveness of certain actions, and additional information has become available that supports preparation of this BA.

In accordance with ESA regulations, USACE is reinitiating consultation based on the following new information concerning effects of the proposed action on the aforementioned three species.

- Since the 2000 BiOp and 2003 Amended BiOp were published, a substantial amount of research has generated new knowledge regarding pallid sturgeon lifecycle needs.
- In 2011, the Independent Science Advisory Panel (ISAP), established collaboratively with MRRIC, USACE, and USFWS, published a report concluding that managed spring pulses, as currently designed and implemented, appear to be unnecessary to serve as a spawning cue for pallid sturgeon, do not result in floodplain-channel connectivity, and have not been

successful in scouring emergent sandbar habitat to provide suitable nest sites for least terns and piping plovers.

- The ISAP report also called for an analysis of the effects of USACE management actions on pallid sturgeon including further examination of various flow management actions and their relationship to habitat creation. Based on this report, MRRIC recommended seven actions to USACE and USFWS in August 2012, which are included in the BA.
- An Effects Analysis was initiated in 2013 to synthesize new scientific information specific to these three species and concluded that considerable uncertainty remains regarding the type and extent of management actions ultimately needed to lead to population growth for each of the three species.
- As of 2014, USACE had implemented multiple construction actions for the purposes of providing Shallow Water Habitat (SWH). Including construction of 39 side-channel chutes and 14 backwaters, approximately 11,325 acres of SWH were available from Ponca, Nebraska, to the mouth.
- Development of the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) was undertaken. The Draft MRRMP-EIS evaluates a range of management actions and alternatives to achieve the purpose of fulfilling USACE responsibilities under ESA. A Final MRRMP-EIS will be published following completion of Section 7 consultation that this BA initiates.
- Development of a Draft Adaptive Management (AM) Plan was initiated. Uncertainty of the science and the effectiveness of the proposed management actions, especially those targeting pallid sturgeon, necessitates they be undertaken within an AM framework that allows flexibility and modifications as new information becomes available. The AM Plan also includes a mechanism for collaboration with states, Tribes, and other stakeholders via MRRIC (this engagement is supplemental to and does not replace existing statutory requirements).
- A Section 7(a)(1) Conservation Plan has been developed that identifies discretionary actions that may be implemented complementary to the other identified by USACE as part of the BA Proposed Action. The Section (a)(1) plan is included as Appendix D to the BA.

The proposed action includes implementation of management actions for the benefit of the pallid sturgeon, least tern, and piping plover within an AM framework, that USACE is committed to follow, and is consistent with all applicable Federal and state laws, Tribal trust responsibilities, and interstate compacts and decrees.

In summary, there is significant new information that USACE has obtained since the issuance of the 2003 Amended BiOp. The proposed action in this BA is the result of careful consideration and evaluation of this new information by USACE, in partnership with the USFWS Mountain-Prairie Region and the MRRIC.

I look forward to engaging in formal consultation with your agency and the timely completion of the consultation process.



David J. Ponganis
Director of Programs Directorate
Northwestern Division
U.S. Army Corps of Engineers



United States Department of the Interior



FISH AND WILDLIFE SERVICE Mountain-Prairie Region

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APR 13 2018

Mr. David J. Ponganis
Director of Programs Directorate
U.S. Army Corps of Engineers, Northwest Division
P.O. Box 2870
Portland, Oregon 97208-2870


Dear Mr. Ponganis:

Please find enclosed the Final Biological Opinion concerning the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan. The U.S. Fish and Wildlife Service (Service) transmitted the draft to the USACE on February 8, 2018 and the USACE subsequently transmitted the draft BiOp to the Independent Science Advisory Panel (ISAP) of the Missouri River Recovery Implementation Committee (MRRIC). The ISAP presented the results of their review to the MRRIC plenary session March 27, 2018 and the USACE formally transmitted the ISAP response along with USACE supporting information to the Service on April 3, 2018. The Service wants to thank the USACE for their continued collaborative approach to what is a ground breaking process of evaluating a highly complex adaptive management process through section 7 of the Endangered Species Act.

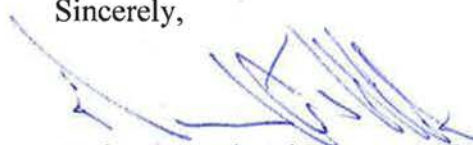
The Service has taken the ISAP and USACE comments under advisement and have made numerous improvements to the document as a result. As you are aware the draft BiOp did not have a fully developed Incidental Take Statement (ITS). The Service provided concept papers to the USACE and MRRIC at the MRRIC plenary session mentioned above. While there was not an explicit charge to the ISAP to review and comment on the ITS both the USACE and the Service received review comments on the ITS on April 4, 2018. In summary the ISAP expressed concern over using survival of pallid sturgeon as the metric for the ITS, particularly in the lower river. Service and USACE staff have been working very closely on addressing ISAP concerns. The Service also continued to engage our fisheries professionals on how to address the ISAP concerns. At the end of the day the Service has concluded to continue to utilize survival estimates of pallid sturgeon as a metric in both the upper and lower Missouri River. However, in light of the ISAP comments the Service has developed a second metric in the lower Missouri river that relies on catch per unit effort as was suggested by the ISAP. Further explanation of the rationale can be found in the Final BiOp. The Service anticipates that as a result of monitoring and evaluation through the adaptive management process refinements to one or both of those metrics is likely.

There remains two process documents that will need to be completed prior to completion of the Record of Decision. The first is a process and procedures document that will describe how subsequent step down consultations will be addressed in the future. The second is a process mechanism for the Service to provide to the USACE a periodic progress review regarding overall implementation of the Final BiOp. Both our staffs are aware of these and will be turning to develop those shortly.

In closing, I would like to thank you and USACE staff for working so closely with the Service on developing a very complex and cutting edge program to further conservation of threatened and endangered species within the Missouri River Basin. The Service firmly believes that this approach will improve conditions for protected species through time while ensuring the USACE's ability to meet the authorized purposes on the Missouri River and allowing better opportunities to address human considerations throughout the basin.

If you have any questions please feel free to contact me at 303-236-4210 or Ms. Kimberly Smith at 303-236-4347.

Sincerely,



Assistant Regional Director – Ecological Services

Enclosure: Final Biological Opinion concerning the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan

Cc: U.S. Fish and Wildlife Service, Regional Director – Region 6
U.S. Fish and Wildlife Service, Regional Director – Region 3
Rocky Mountain Regional Office, Office of the Solicitor – Attn: Lori Caramanian

APPENDIX J: PROGRAMMATIC AGREEMENT FOR NHPA SECTION 106 (UPPER BASIN)

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FINAL

**PROGRAMMATIC AGREEMENT
FOR THE
OPERATION AND MANAGEMENT OF THE
MISSOURI RIVER MAIN STEM SYSTEM
FOR COMPLIANCE WITH THE NATIONAL
HISTORIC PRESERVATION ACT, as amended**

MARCH 19, 2004

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**PROGRAMMATIC AGREEMENT
FOR THE OPERATION AND MANAGEMENT OF
THE MISSOURI RIVER MAIN STEM SYSTEM
FOR COMPLIANCE WITH
THE NATIONAL HISTORIC PRESERVATION ACT, as amended**

PREAMBLE¹

BACKGROUND

The Missouri River corridor is approximately 2,315 miles long. Over the course of thousands of years of occupation, Indigenous Peoples have established and maintained cultures and traditions that revolve around the natural resources of, and wildlife attracted by, the Missouri River ecosystem. This ecosystem and its well being continue to be crucial to the worship practices and life ways of contemporary Indigenous Peoples. There is a direct relationship between the environment, traditional worship practices, and the continued survival of diverse indigenous groups. Animals such as the buffalo, eagle, wolf, turtle, migratory and non-migratory birds, a variety of fish and aquatic plants and animals, as well as several species of trees, shrubs, and plants are central to traditional worship beliefs and practices. Within the Missouri River corridor, important natural springs exist which are sacred to Indigenous Peoples and have been considered so for thousands of years.

For Indigenous Tribal Peoples, the Missouri River is characterized as “The Water of Life” and the very water that created the corridor is considered sacred. When the Army Corps of Engineers built six main-stem dams on the Missouri River, life for the Indigenous Peoples who called the River home changed immediately and dramatically. Gone are many of our ancient, river-bottom homes, our medicines, our sacred places, the earthlodge and tipi village and hunting camp sites created by our beloved ancestors. Gone also are many places intrinsic to our origin stories and to events in our oral histories that are alive in our Peoples’ minds and hearts and in stories which are still related today. The loss of our river homes affected every aspect of the quality of our lives: spiritual, mental, physical, emotional, and socio-economic lifeways, all of which make up our very identity as Native Peoples. Altering the flow of the River altered the face of our Mother Earth, and we are still reeling from and dealing with the consequences of these man-made changes.

As a result of the creation of the Missouri River main stem and attendant dams, there are severe threats to many of the remaining sacred places and important resources that traditional Indigenous Cultures require for continuance. These threats include but are not limited to:

- Impacts caused by increasing development expanding out from urban areas (both on and off the water), which has historically been fueled by inadequate planning and management, as well as poor enforcement of applicable laws and regulations.
- The cultural resources, including traditional and sacred places, within the corridor are routinely raided and looted by pot hunters, at night and often from boats, and by ‘vacation archaeologists’ and pothunters who don’t acquire federally required permits.

¹ This Preamble was authored by the Tribes that consulted on this PA. It is not intended to and does not reflect the views of the U.S. Army, Corps of Engineers and may not reflect the views of the consulting parties.

- The waters of the lakes created by the Missouri River dams are constantly eroding the shoreline by ice in winter and wind generated waves in summer, or the raising and lowering of lake levels, in places removing shoreline by up to 30 or more feet per year. This erosion is not only an environmental problem, it also erodes indigenous tribal burial sites, ceremonial sites, and occupation sites. The eroding shoreline is causing the disappearance of many wild gathering and harvesting areas crucial to the continuance of traditional ways of life.
- An increasingly serious siltation problem is forming deltas at the mouths of all drainages flowing into the corridor caused by the lack of free flowing water in the corridor itself.
- The dams have adversely impacted the fish populations, as well as nesting birds, river otters, migratory birds, and many other animal species that relied on the natural rhythms of the river, which directly result in several species being identified as listed, threatened, or endangered. Studies have yet to be completed which identify plant (medicines) species that have been impacted by the dams.
- Investments of cooperative initiatives (Tribal, State and Federal) in the reintroduction of habitat along the riverbanks are seriously impacted by rapid erosion, even those plantings designed to slow or halt erosion.
- Increasing concentrations of chemicals and other pollutants are having an adverse impact on the use of water in all areas of life, including ceremonial activities.

For Indigenous Nations, Cultural Resources include animals, plants, and natural resources, as well as burial, occupation, prayer/worship, gathering, and gardening sites. Cultural Resources from the perspective of land-based worshippers also include important viewsheds, buttes, mountains, high ridges, and other natural formations that do not fit any Federal concepts or definitions. This has been problematic for Tribes and Tribal Peoples who see these resources holistically. In contrast, Federal and State law often segment these resources and assign their well being and management to diverse and, at times, competing Federal or State agencies. Under the National Historic Preservation Act (NHPA), an area that is inhabited by a unique community of plants or animals can be recognized as eligible for the National Register of Historic Places because of its ongoing importance for the culture of a living human community as a traditional cultural property (TCP), but in the implementation of the NHPA, much more attention has been given to sites that contain archaeologically important components. In addition, the importance of these relationships is subject to the interpretation of people and agencies that have no connection to either the archaeological/historic component or the plant/animal component and little understanding of their perceived sacredness by Indigenous Peoples.

This Programmatic Agreement is an attempt to address all problems associated with cultural and historic resource impacts involved with the ongoing operation and maintenance of the Missouri River system of main stem dams. It is by design an initiative that will facilitate the development of processes and strategies to minimize, avoid, or mitigate the ongoing adverse impacts the system causes. It is an attempt to overcome barriers keeping worshippers from areas and resources that are essential to their continuing ability to carry out traditional worship pursuits. Furthermore, through the collective establishment and implementation of principles of Consultation, and Collaboration, and Shared Stewardship, this document will lay the groundwork for Tribes to achieve parity with the Corps of Engineers on issues directly affecting important historic, cultural, and natural resources. Though this document is limited in its scope to the application and enforcement of historic preservation and protection laws, it provides

the opportunity to develop a dialogue and forum for the various Indigenous Nations and Federal agencies to begin addressing all resources considered sacred or important by Indigenous Peoples.

PARADIGM SHIFT

Historically, the Army Corps and the Tribes have experienced difficulties in addressing these issues in a manner that produces positive change and benefits for Tribes. It is time now to affect a shift in the paradigm that has driven the “management” of tribal sacred and cultural places; a substantial change is, in fact, long overdue. Since the 1970s, according to an Army Corps document issued during the Master Manual comment period, a total of \$1.9 million has been spent by the Omaha District Army Corps to stabilize shoreline for a total of 19 archaeological sites on the Missouri River. Recently, the Northwestern Division announced that \$3 million would be available annually to support the Cultural Resources Office of the Omaha District, all of which should be spent to stabilize the shoreline of the most endangered sacred and cultural places. Recently, the Army Corps staff issued a comprehensive list of the most endangered sites on the Missouri River, which comes with a price tag of \$77 million for shoreline stabilization. There is a tremendous disparity between available funds and what is still needed to preserve and protect our remaining cultural resources, and this disparity can only be addressed by an immediate and drastic change in the way our sacred places are cared for and maintained.

The Tribes expect the Corps to manage lands under its jurisdiction in a manner consistent with the Federal trust responsibility to Indian Tribes. The Corps acknowledges that the trust responsibility includes legal responsibilities and obligations to provide the highest standards of fiduciary care with respect to Federal and other activities that may affect the lands, other trust resources, and the exercise of the powers and rights of Indian nations.

All Corps actions, in the Missouri River Basin, directly or indirectly affect trust land, and some of the lands managed by the Corps are within reservation boundaries established by treaties where the Tribes and their members continue to have treaty-based rights even though lands have been taken out of trust status. Federal lands managed by the Corps (both within and outside reservation boundaries) include places that hold religious and cultural importance of the Tribes, and some of these places are crucial for the cultural identities of the Tribes and, as such, for the survival of the Tribes as distinct Peoples. Some of these places contain the graves of ancestors and funerary objects, in which Federal law recognizes the right of lineal descendants and culturally affiliated Tribes to take custody in the event that they are removed from the Earth. The Tribes expect the Corps to treat these sacred and cultural significant places as subject to the Federal trust responsibility.

This means that the Tribes must be engaged in consultation before decisions are made and that the Tribes expect to be equal participants in making decisions and in carrying out decisions. Consultation shall be both specific to individual Tribes and with as many comprehensive consultations attended by all affected Tribes as are necessary, with real efforts to reach consensus. Consultations shall be conducted in a positive manner, on a government-to-government basis, honoring all treaties and the trust doctrine which entail a fiduciary and fiscal responsibility of the Corps. Decisions will be made on a government-to-government basis. Finally, the Corps shall include, as consulting parties, affected Tribes in any review or update of the Master Manual.

The Tribes expect the Corps to exercise genuine stewardship with respect to places that hold religious and cultural importance for the Tribes and to share the stewardship of these special places with the Tribes. Whether this is called “shared stewardship” or “cooperative management” or some other term, the Tribes expect the relationship that develops between the Corps and the Tribes to be respectful and cooperative, with the ultimate objective of protecting these sacred and culturally importance places and assuring access for religious and cultural activities.

Finally, the Tribes anticipate that this shared stewardship document will ensure that our sacred and cultural places are regarded and understood from a native viewpoint with our values and customs applied to their protection, and not necessarily those of archaeology. For decades, the perceived archaeological value of our sacred places has been the only viewpoint considered, and that method of assigning value to our holy places has contributed to a recipe for their destruction: mix equal parts erosion, neglect and development; let this mixture ‘rest’ for fifty years, add a measure of ‘salvage archaeology,’ destroying the sites to extract data; let the rest fall into the water. And you have a meal that is unfit to eat for Native peoples, a meal which we have been force-fed since the 1930’s, when construction of the first dam near the Ft. Peck Reservation was begun.

The Tribes expect that in the new paradigm, the fundamental value will be respect: respect for the River and for our sacred and cultural places; respect for our values, our culture, our beliefs; respect for Native Peoples and our contributions to the upper Missouri River environment; as well as respect for the tremendous sacrifices we made so that newcomers to our homelands could have flood control and electricity. We want to be taken seriously when we talk about our cultures, our needs, and our issues—and we want to be taken as seriously as archeologists are when they talk about our ancestors, our cultures, and our interests. And that is the second half of the paradigm shift our Nations are all working toward: to bring our interests and issues, articulated from our value system and from our point of view, to a ‘key issue’ priority level with the Omaha District of the Army Corps so that they receive the same attention and resources as other issues for which the Corps has responsibility. We know that what we want is not unreasonable. We also know that the Programmatic Agreement holds great potential to improve relations between the Missouri River Tribes and the Army Corps, and can be the tool we use to create a success story of which we can all be proud.

**PROGRAMMATIC AGREEMENT
FOR THE
OPERATION AND MANAGEMENT OF THE MISSOURI RIVER
MAIN STEM SYSTEM
FOR
COMPLIANCE WITH THE NATIONAL HISTORIC PRESERVATION ACT**

WHEREAS, the Omaha District and the Northwestern Division of the U.S. Army Corps of Engineers, (hereinafter the Corps) operate and manage the integrated system of multi-purpose reservoir projects and associated structures and lands on the Main Stem of the Missouri River for flood control, navigation, irrigation, municipal and industrial use, recreation, fish and wildlife protection, and other purposes as authorized by the Flood Control Act of 1944 (P.L. 78-543, as amended) and other relevant authorities; and

WHEREAS, the Corps' authorized operation and management of impounded waters of the Main Stem System results in adverse effects to properties included in or eligible for the National Register of Historic Places (hereinafter, historic properties) through inundation, erosion, exposure, and other factors; and

WHEREAS, the Corps' authorized management of project lands that are not routinely inundated or periodically inundated, including land-based support facilities for water control, facilities and measures for recreation, general public use, access, and the enhancement of the environment, fish and wildlife, and other authorized purposes may result in direct and indirect effects to historic properties such as damage or destruction from construction, burning, erosion, sedimentation, theft, looting, vandalism, and other factors; and

WHEREAS, the Corps is responsible for complying with the National Historic Preservation Act, as amended (hereinafter, NHPA) (P.L. 89-665, as amended; 16 U.S.C. 470f), including Section 110 that requires federal agencies 1) to establish a program to preserve, protect, identify, evaluate, and nominate historic properties under their jurisdiction or control (including traditional cultural properties (TCPs) and historic properties to which Tribes attach religious and cultural significance) in consultation with others and 2) to give full consideration to the preservation of historic properties not under their jurisdiction or control but affected by federal agency undertakings; and

WHEREAS, the Corps' Main Stem System operations and management actions meet the definition of undertakings for the purposes of Section 106 of the NHPA (16 U.S.C. 470f) (hereinafter Section 106) and, therefore, the Corps is responsible for complying with Section 106 for these actions; and

WHEREAS, in compliance with Section 106, the Corps, Indian Tribes (hereinafter Affected Tribes), Tribal Historic Preservation Officers (hereinafter, THPOs) and State Historic Preservation Officers (hereinafter, SHPOs), the Advisory Council on Historic Preservation (hereinafter, ACHP) and other consulting parties have developed and the Corps will implement this Programmatic Agreement (PA) in accordance with 36 CFR Section 800.14(b) for certain of the Corps' operation and management actions as outlined in this PA; and

STIPULATIONS

Final Programmatic Agreement
March 19, 2004

WHEREAS, the Corps is required by Section 101(d)(6) of the NHPA to consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by a proposed federal undertaking subject to Section 106; and

WHEREAS, the United States Department of Defense recognizes its trust responsibilities to federally recognized Indian Tribes and has established an American Indian and Native Alaskan Trust policy that directs Department of Defense agencies, including the U.S Army Corps of Engineers, to work with Tribes in a manner that incorporates tribal needs, traditional resources, stewardship practices, and the development of viable working relationships; and

WHEREAS, the ACHP recognizes its trust responsibility to federally recognized Tribes and has described this trust responsibility in its, "ACHP Policy Statement Regarding ACHPs Relationship with Indian Tribes", issued November 17, 2000 and updated on April 4, 2003; and

WHEREAS, the Corps recognizes that sacred and cultural resources, many of which are historic properties, are critically important to the Affected Tribes for the continuity and revitalization of cultural and spiritual life-ways, making avoidance of adverse effects to these resources and the preservation of remaining sacred and cultural places a matter of the highest priority regardless of their eligibility to the National Register of Historic Places; and

WHEREAS, in addition to the NHPA, the Corps is responsible for compliance with other applicable legal authorities outlined in Attachment 1 to this PA that may overlap with or be supportive of the goals and purview of the NHPA and,

WHEREAS, the Corps has provided the opportunity to consult on the development of and to become a signatory to this PA to the ACHP; SHPOs of Montana, North Dakota, South Dakota, and Nebraska; Standing Rock Sioux Tribe and its Tribal Historic Preservation Officer (THPO); Cheyenne River Sioux Tribe and its THPO; Santee Sioux Tribe; Yankton Sioux Tribe; Crow Creek Sioux Tribe; Lower Brule Sioux Indian Tribe; Three Affiliated Tribes; the Assiniboine and Sioux Tribe of Fort Peck; Turtle Mountain Band of the Chippewa Tribe and its THPO; Blackfeet Tribe; Chippewa Cree Tribe; Crow Nation; Flandreau Santee Sioux Tribe; Gros Ventre and Assiniboine Tribe; Northern Arapaho Tribe; Northern Cheyenne Tribe; Oglala Sioux Tribe; Omaha Tribe of Nebraska; Ponca Tribe of Nebraska; Rosebud Sioux Tribe; Sisseton-Wahpeton Sioux Tribe; Spirit Lake Sioux Tribe; Sac and Fox of Missouri in Kansas and Nebraska; South Dakota Department of Game Fish and Parks (SDGFP); Bureau of Indian Affairs (BIA); and the National Trust for Historic Preservation (NTHP) (hereinafter consulting parties).

NOW, THEREFORE, the above parties agree that the Missouri River Main Stem System shall be administered in accordance with the following stipulations to avoid, minimize, or mitigate adverse effects and satisfy the Corps' Section 106 responsibilities for those actions outlined within this PA.

STIPULATIONS

The Corps shall ensure the following measures are implemented:

1. Definitions.

The list of definitions used in this Programmatic Agreement is provided in Attachment 2.

2. 1993 Programmatic Agreement

The Programmatic Agreement for the Missouri River Main Stem System previously executed by the ACHP, Corps and SHPOs from Nebraska, South Dakota, North Dakota and Montana on October 18, 1993 is null and void.

3. Scope of this Programmatic Agreement

A) The geographical scope of this PA, based on the Corps' concept of the Area of Potential Effects, is as follows:

- i) federal lands, owned by the Corps, beginning at the headwaters of Fort Peck Lake, approximately 3 miles northwest of the Fred Robinson Bridge, Phillips County, Montana to Gavins Point Dam, Yankton County, South Dakota, including but not limited to Fort Peck Lake and Fort Peck Dam; Lake Sakakawea and Garrison Dam; Lake Oahe and Oahe Dam; Lake Sharpe and Big Bend Dam; Lake Francis Case and Fort Randall Dam; and Lewis and Clark Lake and Gavins Point Dam with project lands and related structures, generally known as the Missouri River Main Stem System; and
- ii) areas downstream of and adjacent to the six Main Stem dams (which are affected by the operation of the system) are within the geographical scope of this PA, even though these areas are not under the authority or ownership of the Corps and may not be in federal ownership. It is recognized that the Corps has restrictions on its use of Main Stem operations monies and other authorities on non-Corps lands.

B) The Corps shall comply with Section 106 in accordance with 36 CFR part 800 for the following activities:

- i) Projects, activities, policies by or authorized by the state of South Dakota and/or the Corps on so-called Title VI lands, e.g., lands transferred to the SDGFP pursuant to Title VI of the Water Resources Development Act of 1999, as amended (Title VI hereinafter), as the Corps will begin consultation on the development and implementation of a separate PA for these actions in accordance with 36 CFR Section 800.14(b) by December 2004.
- ii) Corps lands or exchanges, including those pursuant to Title VI;
- iii) Corps regulatory actions pursuant to Section 404 of the Clean Water Act.

4. Relationship to Treaties, Statutes, Regulations, Executive Orders, Court Orders, and Other Authorities

A) In general, nothing in this PA diminishes or affects any treaty right of an Indian tribe, any water right of an Indian tribe, or any other right of an Indian Tribe, any external boundary of an Indian reservation of an Indian Tribe; any authority of the States that are a party to this PA; any authority of the Corps or the head of any other federal agency under a law in effect on the date of signing of this PA; any treaty or water right, or any other right of an entity that is not a party to the PA.

B) No provision of this section or of the PA shall limit any right of an Affected Tribe or other consulting party to bring an action against the Corps or any other party once final agency action is complete; shall alter existing law regarding the sovereign immunity of the Tribes, the other consulting parties, or the Corps, or any other entity that is not a part of this PA; or shall be construed to alter existing law regarding the trust duty of the United States or the Corps to the Tribes (either to limit or expand that trust duty).

C) All court orders, including settlement agreements (present and future), shall be implemented and their terms be incorporated into documents and measures or revisions to them called for in this PA. In any case of difference or ambiguity, a court order shall take precedence over the terms of this PA.

5. Programmatic Agreement Coordination.

A) Designated PA Representative(s). Within 60 days of signing this PA, each Affected Tribe and THPO, ACHP, SHPO, and other consulting party shall designate a point of contact for carrying out this PA (hereinafter, PA representative). If more than one person is designated as PA representatives, the party also shall indicate the responsibilities of each such person for carrying out this PA.

B) Government/Personnel Changes. Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall provide timely written notification to the Corps and the other parties to this PA of changes in their tribal or agency leadership (tribal Chairman or President; head of agency, etc.), persons holding cultural and historic preservation positions, and PA representatives.

6. Consultation.

All consultation and coordination required under this PA shall be conducted in accordance with the following:

A) General. The Corps shall plan consultations to coordinate with the requirements of all applicable statutes and executive orders. Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties shall be provided the opportunity to participate in the development and implementation of agreements, management plans, and activities developed or required under this PA. The Corps, Affected Tribes and THPOs, SHPOs, and other consulting parties shall facilitate and cooperate in the consultation process toward the mutual goal of information sharing and promotion of respect.

B) Review and Response Requirements. Unless otherwise provided for in this PA, the Corps shall afford the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties no less than 30 calendar days from receipt of a complete consultation request to respond to a Corps communication required under this PA. A complete consultation request shall include information that the party determines is needed to make an informed decision on the matter. Should any Affected Tribe or THPO, SHPO, or other consulting party not respond within this time limit or other limit specified elsewhere in the PA, the Corps will document in its records when consultation was requested and the non-response. Unless an Affected Tribe or THPO, SHPO, or other consulting party responds in writing that it does not wish to consult at all on the proposed undertaking or matter, the Corps shall assume that the party wishes to continue consulting on subsequent requests related to that initial undertaking or matter. Failure to respond will not be construed as either concurrence or non-concurrence.

C) Pre-Consultation Actions. To promote effective and meaningful consultation, the Corps shall notify the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties of the need to consult on the various matters called for in this PA as soon as possible and pre-decisionally as follows:

- i) provide a notification letter with information about the proposed undertaking or matter to each PA representative, with a copy to the head of the agency or tribal government, as early as possible and prior to making any decisions about the proposed undertaking or matter;
- ii) follow-up via telephone with the PA representative after distributing the notification letter to establish a person-to-person contact;
- iii) provide further information as the PA representative may need for informed input and judgment;
- iv) provide draft agendas, request input from the PA representative, and finalize the agenda based on this input;
- v) coordinate consultation for this PA with consultation requirements for other legal bases to the extent possible and inform the PA representative of all pertinent legal bases for consultation.

D) Consultation Guidelines. For meaningful and effective consultation with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, the Corps shall

- i) Listen carefully before any decisions are made so as to understand the needs and perspectives of the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties;
- ii) Work as equal partners with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties to consider and devise means to identify and preserve cultural resource sites and avoid effects to them, consistent with tribal viewpoints and values. If avoidance is not possible, the Corps shall work with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties as equal partners to minimize effects to such sites to the greatest extent possible;
- iii) Provide all pertinent documents and other information, consistent with Federal law, to the Affected Tribes and THPOs, SHPOs, ACHP,

and other consulting parties to enable fully informed decisions and meaningful consultation;

- iv) Plan consultations jointly with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, including meetings (when and where), conference calls, agendas based on requested input from all involved.
- v) Engage in consultation to discuss, dialogue, and make agreements, and do so through face-to-face consultation meetings to the greatest extent possible;
- vi) Make and provide written accurate records of all consultations and make copies available to Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties within 30 days of the consultation. Written verbatim records will be made utilizing a court reporter, on a case-by-case basis when requested by a signatory for a face-to-face consultation. When requested by a signatory, verbatim records of telephone conference calls may be made by using a tape recorder, and copies of the tape provided to the requesting signatory. Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties shall have the opportunity to review, offer corrections, and add alternative views to the record;
- vii) the federal agencies, affected tribes, THPOs, SHPOs, and other consulting parties shall facilitate and cooperate in the consultation process toward the mutual goal of information sharing, promotion, and respect for the unique relationship of each party and the trust doctrine and trust responsibility of the federal parties.

E) Input from Tribal Elders. An Affected Tribe or THPO, SHPO, or other consulting party may respond to a request by informing the Corps that special efforts should be made to seek input from tribal elders and other persons with traditional and cultural knowledge. If the Corps is so notified or if persons with traditional or cultural knowledge notify the Corps that they wish to be consulted regarding a matter, the Corps shall consult with the Tribe and/or THPO regarding appropriate ways to seek input from such persons, and the Corps shall seek such input. Efforts may include (but need not be limited to) conducting special meetings, scheduling meetings at locations to reduce the need for such persons to travel, ensuring that translation services are available, and adjusting the schedule to accommodate input from such persons.

F) Protocol Agreements. The Corps recognizes that an Affected Tribe, THPO, SHPO, or other consulting party may have particular issues of concern, ways of conducting business, or protocols that should be considered during consultations. When requested by an officially designated representative or PA representative, the Corps and that party shall cooperatively develop a Protocol Agreement (PRAG) to document that agreed-upon protocol. A PRAG shall be supplemental to the general procedure(s) in this PA and not modify the roles of other parties to this PA without their prior written consent.

G) Efficient Consultations. The Corps and the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall work together to develop ways to communicate and transmit information in an effective yet efficient manner. Possible means include (but are not limited to) development of a secure website to which the Affected Tribes and THPOs, SHPOs, ACHP and other consulting

parties have access, electronic transmission of documents, and/or an email broadcast system.

7. Non-National Historic Preservation Act Commitments.

In consultation with the Affected Tribes and THPOs, the Corps agrees to carry out the actions outlined in Attachment 3 of this PA, all of which are beyond the requirements of the NHPA and the authority of the ACHP and are under the authority of the laws and legal requirements cited therein.

8. Undertakings Review Provisions; Tribal or SHPO Non-Signature, Withdrawal, or Termination; and Exempt Undertakings.

A) Undertakings Review. For Corps undertakings that are planned or anticipated (for example, but not limited to, recreational and other development, silt or sediment removal, habitat creation or restoration, etc.), the Corps shall consult on and address effects to historic properties through the Five-Year Plan, CRMPs, and attendant Treatment Plans as outlined in stipulations 6, 8, 9, and 11 and the other provisions of this PA. However, for those planned or anticipated undertakings not addressed through the Five-Year Plan, CRMPs, and Treatment Plans, the Corps shall comply with section 106, NHPA in accordance with 36 CFR part 800, subpart B. For Main Stem System operations and their indirect adverse effects (including, but not limited to, erosion, exposure, susceptibility to looting or vandalism, etc.), the Corps shall consult regarding and address such effects to historic properties through the terms of this PA.

B) Tribal or SHPO Non-Signature, Withdrawal, or Termination. The Corps shall comply with Section 106 in accordance with 36 CFR part 800, subpart B for Corps undertakings that may affect lands, or historic properties, many of which are cultural resources sacred to Tribes, located within the exterior boundaries of an Indian reservation, including Corps lands, if that tribe is not a signatory to this PA or if that tribe has withdrawn from this PA or terminated this PA on its tribal lands (refer to Stipulation 4). Similarly, the Corps shall comply with 36 CFR part 800, subpart B for actions or undertakings within a SHPO's area of jurisdiction, if that SHPO has withdrawn from this PA or terminated this PA within its area of jurisdiction.

C) Exempt Undertakings. The Corps, Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall consult to determine if there are certain types of undertakings and actions that should be exempted from review and consultation under this PA because they have little or no potential to affect historic properties. In consulting on this list of exempt undertakings and actions, the Corps shall follow the consultation provisions of stipulation 6 of this PA. The exempt actions and undertakings in such a list shall not go into effect until agreed to, in writing, by the Corps, tribal signatories, SHPOs, and ACHP. The resulting list of exempt undertakings shall be provided to all Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties as an amendment to this PA.

9. Main Stem Reservoir Cultural Resource Management Plans.

A) Status. The Corps has completed the Lewis and Clark Lake, Lake Sharpe and Lake Francis Case Cultural Resources Management Plans (CRMP), and is in the process of completing the Lake Oahe, Fort Peck Lake and Lake Sakakawea CRMPs. The Corps shall ensure that CRMPs for all Main Stem reservoirs are completed by May 2005 and are developed in consultation with the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties to this PA.

B) Requirements. The CRMPs will partially fulfill the requirements of the NHPA, this PA, and the requirements of Engineer Regulation 1130-2-540. The CRMPs will provide baseline information about cultural resource sites (including historic properties) at each reservoir and a list of actions to address the goals, objective, and program areas set forth in the Five-Year Plan. The CRMPs will utilize the Lake Sharpe CRMP as a template or any revision to that template developed in consultation with the Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties. Recommended actions (i.e., TCP surveys, archeological surveys, testing and evaluations, etc.) from CRMP shall be completed in accordance with applicable federal laws governing such actions.

C) Review. The Corps and the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties shall work together to develop and implement a process by which the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties will be involved in the development and review of draft and final CRMPs and updates to them. Until completion of this process, drafts of the CRMPs and updates of them shall be provided for review and consultation according to the procedures outlined in stipulation 6, except that parties shall have no less than 60 days for review and comment. To facilitate review, the Corps shall provide Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties with related historic property and management information, such as future management actions, needs, and policies; project maps and information showing historic properties, management/use areas, cultural resources survey coverage, leased areas, recreation areas, boundaries of Corps lands, Title VI lands, and so forth. The Corps shall incorporate comments from the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties in finalizing the draft or final CRMPs. After review and comment by the appropriate Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties, the Corps shall ensure that the CRMPs are finalized and implemented.

D) Revision. The Corps agrees to update the completed CRMPs every two years. The intent is to monitor progress, incorporate new information, correct information, and allow for additional input into the implementation of the cultural resources program at the reservoir for which the CRMP is written. The review process outlined in stipulation 9.C., above will be used for revising CRMPs.

10. Five-Year Cultural Resources Implementation Plan.

The Corps, working cooperatively and in consultation with the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties, shall develop and carry out a plan that outlines how the Corps will conduct its Main Stem System Cultural Resources Program and its various program components individually called for in this PA for the coming five years (hereinafter, Five-Year Plan) and following five year periods

thereafter. The intent of the Corps is to incorporate the final Five-Year Plan into the Corps' Strategic Plan.

A) The Five-Year Plan shall describe the following:

- i) actions to identify Mainstem System cultural resource sites (including historic properties) and evaluate them for the National Register of Historic Places that may be affected by Corps undertakings and operations of the Main Stem System and to comply with Section 110, NHPA. Acreage estimates and locations, prioritization of these locations, and tasks (e.g., oral histories, documentary research, etc.) should be described. (See also stipulation 11);
- ii) Corps management and operational actions that may adversely affect historic properties (for example, operations, recreational development, habitat restoration/creation, susceptibility to erosion, looting and vandalism, etc.) and their locations; and
- iii) actions to avoid, minimize, or mitigate adverse effects on historic properties, including identification of specific sites and proposed treatment (subject to consultation with Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties). (See also stipulation 11);
- iv) actions to address potential effects of Corps operations to historic properties located off Corps lands in compliance with Section 110(a)(2)(c), NHPA, recognizing that the Corps may need to seek alternative funding approaches, special authorizations, appropriations, and/or resolution of property permission issues. (See also stipulation 11);
- v) actions to address unexpected discoveries of historic properties or unexpected effects to known historic properties. (See also stipulation 11);
- vi) actions for the management, analysis, and sharing of cultural resource data, including development of protocol to protect sensitive information (See also stipulations 10 and 17);
- vii) actions to support the cultural resources law enforcement program. (See also stipulation 14);
- viii) actions to monitor cultural resources sites, how site-monitoring information will be used for management purposes, and sites selected to be monitored. (See also stipulation 13);
- ix) actions to develop and update CRMPs, Five-Year Plans, and Annual Reports. (See also stipulations 9, 10, 22);
- x) actions to promote public education and interpretive initiatives and the use of historic properties. (See also stipulation 15); and

xi) other actions and program needs that the Affected Tribes or THPOs, SHPOs, ACHP, or other consulting parties have requested in the Five-Year Plan.

B) Development, Review, and Revision of Five-Year Plan. Within 180 days of the execution of this PA, the Corps shall provide a preliminary draft version of the Five-Year Plan to the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties. Then, the Corps and these parties shall work together as outlined in stipulation 6 to develop a draft version of the Five-Year Plan for review. The Corps, in consultation with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, shall develop a final Five-Year Plan within 120 days of submission of comments on the draft Five-Year Plan. The Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall be given a 60-day review and comment period for each version. The Corps shall incorporate comments received in developing, finalizing, and implementing the Five-Year Plan. Every five years, the Corps shall revise and update the Five-Year Plan using this same development, review, and consultation procedure.

11. Identification of Historic Properties.

A) Identification Activities. The Corps shall identify historic properties (including historic properties to which an Affected Tribe attaches religious and cultural significance, traditional cultural properties (TCPs), and other types of cultural resources), in compliance with Section 110 of the NHPA and the Corps' ER and EP 1130-2-540. Additionally, the Corps shall ensure that historic properties are identified prior to making decisions about undertakings, following the review process outlined in stipulation 8.A. Identification methods to be used include (but are not limited to) pedestrian surveys and other field investigations; background and documentary research; oral histories; tribal consultation and consultation with tribal elders; and other means. The Corps shall evaluate whether properties are eligible for the National Register of Historic Places using the eligibility criteria and National Park Service guidance (including Bulletin 38), in consultation with the SHPO and/or THPO with jurisdiction and Affected Tribes that may attach religious and cultural significance.

B) Location and Recordation of Sites. The Corps shall locate sites by global positioning system (GPS), complete site visit forms, and add site information to the Corps cultural resources site GIS system. Additionally, the condition and threats to sites will be recorded through the site-monitoring program and added to the GIS system. All site identification and monitoring information shall be included in next update of the applicable CRMP.

C) Sharing of Data. Within 120 days of the execution this PA and regularly thereafter, the Corps shall provide existing and updated cultural resource site information in accepted formats or access to the Corps' cultural resources site GIS system to federal, state, and tribal offices charged with maintaining such information.

D) Traditional Cultural Property (TCP) Surveys. The Corps shall ensure that surveys and related efforts (e.g., oral history, etc.) for TCPs and other historic properties to which Affected Tribes may attach religious and cultural or

other significance are carried out for project areas identified in the CRMPs and Five-Year Plan. The results of the surveys and other efforts shall be documented using National Park Service Bulletin 38, as well as other pertinent tribal and state requirements, with sensitive information protected pursuant to stipulation 17.

12. Measures to Avoid, Minimize, or Mitigate Adverse Effects to Historic Properties.

Prior to carrying out measures to avoid, minimize, or mitigate adverse effects to a historic property as set forth in the Five-Year Plan and CRMPs, the Corps shall provide a draft Treatment Plan to the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties for review and consultation as outlined in stipulation 6. Alternatively, a draft Treatment Plan may be included in a draft CRMP or draft Five-Year Plan and be reviewed as part of those draft documents. The draft Treatment Plans shall describe the historic property and the adverse effects to it, alternatives measures considered, treatment proposed and why it was chosen, details of how treatment will be implemented, schedule and cost of proposed treatment, and how the treatment meets the pertinent standards and guidelines of the *Secretary of the Interior's Standards and Guidelines for Historic Preservation Projects*, and applicable state and tribal requirements.

13. Site Monitoring Program

A) Site Monitoring. The Corps shall develop and implement a monitoring program to provide continued oversight of historic properties located on federal land managed by the Corps and to collect information on site conditions and effects or threats to them (including but not limited to, erosion, recreational, agricultural and other encroachment, and looting and vandalism). The Corps shall use this information to plan and implement law enforcement and other preventive or corrective management actions.

B) Site Monitoring Plan. The Corps shall develop a Monitoring Plan to describe the conduct of the monitoring program. The Plan shall discuss the types and location of sites to be monitored, field methodology of monitoring and conditions recordation (including forms, data dictionary); data storage, retrieval and analysis; schedule; staffing and qualifications; and other details. The Corps shall produce a preliminary draft and then the Corps, Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall work together to develop a draft version of the Monitoring Plan, in accordance with stipulation 6. The Corps, in consultation with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall develop a final monitoring plan within 180 days of submission of comments on the draft Monitoring Plan. The Corps shall implement the final monitoring plan according to the schedule in the monitoring plan, CRMPs, and in response to recent information about potential threats to sites.

14. Enforcement Program.

A) Enforcement Memorandum of Agreement(s) (MOA(s)).

The Corps, in cooperation with the local, state, tribal and federal law enforcement officials, shall develop an Enforcement MOA(s) that provides for a cultural resources enforcement program to address looting, vandalism, and other

illegal activity involving cultural resource sites, including TCPs, archeological resources, graves, and human remains. Specifically, the Enforcement MOA(s) shall address laws, authorities, potential cross-authorities, delegations and deputization of authorities, fine distribution, field deployment, access, sharing of equipment, public education, information reporting, gathering and exchange, and other issues. The Corps shall provide a draft Enforcement MOA for review to all interested parties, including law enforcement officials and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties, within 60 days of the signing of this PA. The Corps shall work with the interested parties to revise the draft Enforcement MOA to address their comments. The Enforcement MOA shall be finalized only after the consultation process has been completed as stated in stipulation 6.

B) Hotline. Within 120 days of the signing of this PA, the Corps shall establish and promote a hotline for reporting of looting, vandalism, and other illegal activities and a specific protocol for documentation, verification, and tracking of information, for the purpose of prosecution of offenders.

C) ARPA Training. Every three years the Corps shall host an ARPA training class for law enforcement, cultural preservation personnel (tribal, state and federal), and others who may be involved in enforcement activities.

15. Cultural Resource Education Program.

A) Educational Program. Engineer Regulation No. 1130-2-540 authorizes the preparation of brochures, slide shows, or other media documentation for public presentation relative to historic preservation activities that may be of particular interest to the Affected Tribes and general public.

i) The Corps shall create educational displays, media shows, interpretive programs, pamphlets, and brochures to enhance public education concerning cultural resources. The parties to this PA will be involved in the development and finalization of these items. The Five-Year Plan and CRMPs will describe how the Corps will carry out this educational and interpretive program.

ii) The Corps, in consultation with the Affected Tribes and THPOs, SHPOs, and as outlined in the CRMPs and Five-Year Plan, will develop an educational program concerning the need to avoid cultural areas and to leave archaeological sites and their material remains undisturbed. The public is generally uninformed about the significance of cultural resources and unaware of the significance of these cultural areas or sites for Affected Tribes whose ancestors lived in these areas and created what are often referred to as archaeological sites.

B) Signage. The public must be made aware that cultural sites are being monitored for unauthorized activities and severe criminal penalties could result from illegal activity of looting, artifact collecting, and vandalism. The Corps, in consultation with Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, shall develop and place signs at agreed upon points of public access to the Missouri River.

C) Press Release. In consultation with Affected Tribes and THPOs and SHPOs, the Corps shall issue press releases and conduct press conferences bi-annually (Spring and Fall) to remind the public about the penalties associated with looting, artifact collecting, and vandalizing. A list of local, regional, and multi-state media will be developed in consultation with Affected Tribes and THPOs, and SHPOs.

16. Curation of Artifact Collections, Material, Records, and Data.

The Corps shall ensure that artifacts are collected on a minimal basis only in those situations that require the collection to support a requirement of the NHPA.

The Corps shall curate artifact collections, material, records, and data according to 36 CFR Part 79.1-Curation of Federally-owned and Administered Archeological Collections and Corps Engineer Regulation 1130-2-433, except that resources meeting NAGPRA definitions will be handled according to the requirements and procedures in the NAGPRA regulations or other memoranda of agreement entered into between the Corps and tribal governments. The Corps shall curate paleontology resources as addressed in Attachment 3. The Corps will continue to carry out its current practice of reburying artifacts on or near the area where they were found during monitoring or other field actions, and their discovery and subsequent reburial will be reported to the Affected Tribes

17. Protection of Sensitive Information.

A) Legal Background. Section 9 of ARPA provides for information concerning the nature and location of archaeological resources on federal land and Indian land to be protected from disclosure under the Freedom of Information Act (FOIA), unless excepted under ARPA. Section 304, NHPA provides that information about the location, character, or ownership of a historic property shall be withheld from disclosure under FOIA if the Corps, in consultation with the National Park Service, determines that disclosure may 1) cause a significant invasion of privacy; 2) risk harm to the historic resource; or 3) impede the use of a traditional religious site by practitioners. The Corps, to the maximum degree possible, shall respect section 9 of ARPA and section 304 of the NHPA in determining *the* release or disclosure of information under FOIA. For the purposes of protection of sensitive information, the Corps shall consider properties or locations that have not been evaluated for their National Register eligibility, including TCPs and properties of religious and cultural significance, as eligible for the National Register in making this determination.

B) Confidentiality Protocol. The Corps and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties recognize the need to treat certain kinds of sensitive or proprietary information with confidentiality, including but not limited to information about the location of places that hold sacred significance for Affected Tribes and THPOs. The Corps and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties shall, working in close consultation as outlined in stipulation 6, and assuring compliance with Federal and other applicable law, develop a protocol for the confidentiality of such sensitive information within one-year of signing of this document.

C) Interim Confidentiality Provisions. Until such a protocol is adopted, the Corps and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties shall protect information concerning the nature, character, ownership, or location of archaeological resources or historic properties and withhold such information from disclosure to the public as outlined in subsection A) above of this stipulation. Also, the Corps shall ensure that each document that includes information about any historic property, archaeological resource, or unevaluated location shall be accompanied with a prominent notice that the document and information are to be treated for official use only.

18. Corps Main Stem System Operations Decision Documents.

The Corps shall consult with Affected Tribes and THPOs, SHPOs, ACHP, and the other consulting parties on draft Annual Operating Plans and other decision documents to determine whether operational changes are likely to cause changes to the nature, location, or severity of adverse effects to historic properties or to the types of historic properties affected and whether amendments to the Corps' CRMP(s) and Five-Year Plan are warranted in order to better address such effects to historic properties.

19. Tribal Partnerships.

The Corps and the Affected Tribes, THPOs, SHPOs, ACHP shall work together to develop and implement partnerships so that Affected Tribes, THPOs, SHPOs, ACHP are involved in the development and implementation of the Main Stem System cultural resources program and this PA and that promote tribal historic preservation goals. Training, access to cultural resource site information (subject to provisions for protection of such information), historic preservation services, sharing of and/of access to equipment, etc. may be the basis of such partnerships. It is acknowledged that some or all these partnerships may need to be supported by cooperative agreements or other instruments to be negotiated independent of this PA. Additionally, if requested by an Affected Tribe, the Corps shall consult regarding the possibility of tribal access to historic properties that are sacred to the Affected Tribe and THPOs on Corps lands, in fulfillment of Executive Order 13007 and the Corps' EP 1165-2-1, section 3-2. Further, the Corps shall consult with Affected Tribes, THPOs, SHPOs, ACHP regarding the Corps' Tribal Partnership Program established pursuant to Section 203, Water Resources Development Act of 2000.

20. National Historic Preservation Act/Native American Graves Protection and Repatriation Act Overlap.

The Corps shall comply with Sections 106 and Section 101(d)(6) of the NHPA and the Native American Graves Protection and Repatriation Act (NAGPRA) in circumstances in which both authorities apply, such as the discovery of human remains that may be associated with a historic property. In addition to complying with NAGPRA, the Corps shall take steps to identify if human remains and other types of items meeting the definitions outlined in NAGPRA are associated with a property that may meet the National Register criteria and for which Section 106 and Section 101(d)(6) also apply. In such case, the Corps shall comply with the provisions of this PA and 36 CFR part 800, in addition to NAGPRA and any applicable NAGPRA Memoranda of Agreement (see Attachment 3).

21. Performance Standards and Qualifications.

A) Standards. The Corps shall ensure that all work required under this PA is carried out in accordance with the professional standards and guidelines outlined in the *Secretary of the Interior's Standards and Guidelines for Historic Preservation Projects* and applicable state and tribal authorities.

B) Qualifications. The Corps shall ensure that all work conducted pursuant to this PA is carried out by or under the supervision of persons meeting qualifications set forth in the *Secretary of the Interior's Professional Qualifications Standards*, as amended, for the pertinent discipline (see 48 F.R. 44739). The Corps acknowledges that Affected Tribes possess special knowledge and expertise regarding their tribal values, history, and culture, and properties that may possess traditional religious and cultural significance to them.

22. Annual Report.

The Corps shall prepare a report and distribute it to the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties not less than 60 days prior to the date of the annual review. At a minimum, the report shall discuss the topics outlined in Attachment 4 for the past year and the coming year.

23. Semi-Annual Consultation Meetings and PA Annual Review.

A) Semi-Annual Consultation Meetings. The Corps shall host, at a minimum, semi-annual consultation meetings among the affected Tribes, THPOs, SHPOs, ACHP and other consulting parties to discuss the cultural resource program, Annual report, CRMPs and Action Plan status, activity prioritization, budget planning and other budget matters as necessary, PA implementation and the Corps' Section 106 responsibilities, and other topics of concern to the affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties. The Corps, Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties together shall set the agenda for each meeting by the Corps distributing a call for agenda items at least 30 days prior to the meeting. It is anticipated that one meeting will be during the month of November and the other meeting will be held during the month of April. In order to address new budget issues, a review and planning for the budgetary process shall have priority at the April meeting. The Corps and these parties working together shall develop a schedule for the involvement of the Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties in the cultural resources activities for the coming year.

B) PA Annual Review. Annually, the Corps, Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall review this PA and progress in carrying out its provisions to determine whether the PA should be amended or terminated. Review of the PA shall occur at one of the semi-annual consultation meetings and be based, in part, on the annual report prepared by the Corps and submitted to parties not less than 60 days prior to the date of the review. Interim review of this PA may occur due to unsatisfactory performance, based on exercise of the dispute resolution clause, by the Corps or signatory party.

24. Funding and Budget Planning.

A) General. The Anti-Deficiency Act, 31 U.S.C. 1341, et seq., applies to this PA and must be followed by the Corps as it accomplishes the tasks that it has agreed to perform in this PA. This means that no action, plan, study, task, or the like shall be construed to require the Corps to obligate or expend funds in excess or in advance of an appropriation authorized by law. In addition, the Federal Acquisition Regulations (FAR) apply to the acquisition of goods and services by the Corps as a result of tasks or actions that must be performed pursuant to this PA.

B) Additional Funding. The Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties are encouraged to look for other potential funding sources to assist in the implementation of this program. Where applicable, they are encouraged to consider participating in the funding of cultural site preservation through the use of Corps cost sharing programs or other authorities. The Corps agrees that its intent is that all appropriated funds designated for carrying out this PA and attachment 3 will be spent for these purposes. Similarly, the Corps agrees that its intent is that the availability of non-Corps funds for cultural resource purposes will not result in a reduction of Corps appropriated funds for those same purposes.

C) Budget Planning. Annually, the Corps shall provide the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties with a 60-day period to review and consult on the Corps' draft list of proposed projects for budget consideration to ensure that they are consistent with the Five-Year Plan and CRMPs and other considerations. Signatory parties may elect to enact a prioritization system.

25. Dispute Resolution.

A) Should a dispute or objection arise regarding any aspect of this agreement or an undertaking subject to review under this agreement, the Corps shall consult with the disputing or objecting party as soon as possible to try to resolve the objection. The disputing or objecting party and the Corps are encouraged to pursue alternative dispute resolution processes including traditional tribal approaches and to consult with the other affected Tribes, THPOs, SHPOs, ACHP and consulting parties.

B) If the disputing or objecting party believes that the consultation has failed to resolve the objection or dispute and wishes to pursue the issue, the party shall notify the Corps in writing within 60 days of the initial notification of the dispute. The Corps shall, within 30 days of the receipt of the disputing party notification, submit all relevant documentation pertaining to the dispute or objection with the Corps written proposal for its resolution to the ACHP with a copy to the disputing party.

C) Within 30 calendar days of receipt of such written submittal, the ACHP shall either:

- i) Notify the Corps that it shall consider the dispute pertinent to the applicable provisions of 36 CFR 800.7 (b) and respond in accordance with that subsection; or
- ii) Provide the Corps with recommendations, which the Corps shall take into account in reaching a final decision; or
- iii) Respond to the Corps that it will not consider the dispute or provide recommendations, in which case the Corps may proceed with the proposed resolution.

D) In the case of a ACHP response of (C)(ii) or (C)(iii), the Corps shall provide a decision to the objecting or disputing party that takes into account the ACHP's response

26. Additional Signatories.

The Corps will consult with the parties to this PA pursuant to stipulation 6 regarding parties who wish to be additional signatories. If the Corps approves the request to become an additional signatory, the party must be a state or Federal governmental agency or an affected tribe or THPO, must sign the Additional Signatory Form in Attachment 5 and submit it to the Omaha District, Army Corps of Engineers. In the annual report or sooner, the Corps shall inform the Affected Tribes, THPOs, SHPOs, ACHP and other consulting parties of additional parties who have signed the PA.

27. Amendments.

The Corps, Affected Tribe, THPO, ACHP, SHPO, or other consulting party to this PA may request that the PA be amended whereupon the parties will consult in accordance with stipulation 6 to consider such amendment(s). Any proposed amendment must be provided to the consulting parties as part of the agenda materials prior to the semi-annual meeting and must be discussed at that meeting. To implement an amendment, consensus among the signatories is required. The amendment must be executed by the signatories and in the same manner as this PA.

28. Withdrawal.

A) Any party to this PA may withdraw from the PA after first providing the other parties written notice that explains the reasons for withdrawal and providing them an opportunity to consult regarding amendment of the PA to prevent withdrawal.

B) In the case of withdrawal from this PA by an Affected Tribe with tribal lands (see definition for tribal lands in Attachment 2) within the scope of this PA or affected by the Corps' undertakings, the Corps shall comply with 36 CFR part 800, subpart B, for all undertakings on or affecting lands within the withdrawing tribe's tribal lands, in lieu of this PA. With respect to historic properties outside of the withdrawing tribe's tribal lands to which that tribe attaches religious and cultural significance, the Corps shall consult with the withdrawing tribe pursuant to 36 CFR part 800, subpart B, in lieu of this PA.

C) Withdrawal from this PA by a SHPO shall require the Corps to comply with 36 CFR part 800 with respect to all undertakings on or affecting lands within that SHPO's area of jurisdiction, in lieu of this PA.

29. Termination.

The Corps, Affected Tribe, THPO, ACHP, and SHPO, or other consulting party who believes that the PA should be terminated shall provide written notification with the reasons for termination to the Corps and other consulting parties at least 60 days prior to a semi-annual consultation meeting. The Corps shall provide this notification in the meeting materials provided to the parties. The parties shall consult to consider an amendment to the PA that would prevent termination. Termination of the PA shall be executed by the consensus of the signatories; or by the ACHP individually; or by a signatory SHPO for its area of jurisdiction; or a signatory Affected Tribe or THPO for its tribal lands within the scope of this PA. In such case, the Corps shall comply with 36 CFR part 800, subpart B, for all undertakings on or affecting lands within the terminating SHPO's area of jurisdiction or the terminating tribe's tribal lands. Termination of this PA in part or entirety will require the Corps to comply with 36 CFR part 800, subpart B with respect to each individual undertaking that would be reviewed under this PA.

30. Duration.

Unless this PA is terminated or amended in accordance with this PA, its duration is 40 years from date of the execution of this PA when it will become null and void.

Execution and implementation of this Programmatic Agreement evidences that the Corps has afforded the ACHP a reasonable opportunity to comment on the effects on historic properties related to the Corps undertakings within the scope of this PA.

SIGNATORIES

Final Programmatic Agreement
March 19, 2004

U.S. Army Corps of Engineers, Omaha District

By Kurt H. Blalock Date 13 April 2004
Title Commander Omaha District

U.S. Army Corps of Engineers, Northwest Division

By Ed H. [Signature] Date 13 MAR '04
Title _____

U.S. Army Corps of Engineers, Headquarters, Washington DC

By [Signature] Date 4-13-2004
Title _____

Advisory Council for Historic Preservation

By John L. [Signature] Date 4-13-2004
Title CHAIRMAN

Nebraska State Historical Society

By Lanier Summer Date 4/16/04
State Historic Preservation Officer

South Dakota State Preservation Office

By Gay D. Vogt Date 04-13-2004
State Historic Preservation Officer

Montana State Historic Preservation Office

By Stacy C. Wierth Date 5-12-04
State Historic Preservation Officer

North Dakota State Historic Preservation Office

By Marla E. [Signature] Date 5-12-04
State Historic Preservation Officer

Cheyenne River Sioux Tribe Historic Preservation Office

By [Signature] Date 4-13-04
Tribal Historic Preservation Officer

Standing Rock Sioux Tribe Historic Preservation Office

By _____ Date _____
Tribal Historic Preservation Officer

SIGNATORIES

Final Programmatic Agreement
March 19, 2004

Turtle Mountain Band of Chippewa

By [Signature] Date 4-13-04
Tribal Historic Preservation Officer

Assiniboine & Sioux Tribes of Fort Peck

By [Signature] Date 4-13-04
Title _____

Blackfeet Tribe

By _____ Date _____
Title _____

Cheyenne River Sioux Tribe

By [Signature] Date 4-13-04
Title _____

Chippewa Cree Tribe

By _____ Date _____
Title _____

Crow Nation

By _____ Date _____
Title _____

Crow Creek Sioux Tribe

By [Signature] Date 5-3-04
Title _____

Flandreau Santee Sioux Tribe

By [Signature] Date 4-21-04
Title _____

Gros Ventre & Assiniboine Tribes

By _____ Date _____
Title _____

Lower Brule Sioux Tribe

By [Signature] Date 4-13-04
Title _____

SIGNATORIES

Final Programmatic Agreement
March 19, 2004

National Trust for Historic Preservation

By Barbara Pale Date 4-13-04
Title Regional Director

Northern Arapaho Tribe

By Burt Wether Date 5/12/04
Title _____

Northern Cheyenne Tribe

By Shirley Wooden Egg Date 4-13-04
Title _____

Oglala Sioux Tribe

By _____ Date _____
Title _____

Omaha Tribe of Nebraska

By Arnold F. Hie Date 4-13-04
Title Chairman

Ponca Tribe of Nebraska

By David P. Papp Date 4-6-04
Title Vice Chair

Rosebud Sioux Tribe

By _____ Date _____
Title _____

Sac and Fox of Missouri in Kansas and Nebraska

By Dr. Rocky Helm Date 4-13-04
Title _____

Santee Sioux Tribe of Nebraska

By Raymond Date 4-13-04
Title _____

Sisseton-Wahpeton Sioux Tribe

By Jim Date 4-21-04
Title Chairman

SIGNATORIES

Final Programmatic Agreement
March 19, 2004

Spirit Lake Sioux Tribe

By _____ Date _____
Title _____

South Dakota Department of Game, Fish and Parks

By Douglas Hofer Date 4/13/04
Title _____

Standing Rock Sioux Tribe

By _____ Date _____
Title _____

Three Affiliated Tribes

By Austin Dillette - Tribal Delegate Date 4/13/04
Title Tribe Council MBR. H. Berthold.

Turtle Mountain Band of Chippewa

By Lynn Moni Date 4-18-04
Title _____

Winnebago Tribe of Nebraska

By James E. Snow Date 5-14-04
Title _____

Yankton Sioux Tribe

By _____ Date _____
Title _____

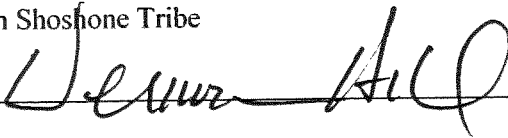
SIGNATORIES

Final Programmatic Agreement
March 19, 2004

Bureau of Indian Affairs, Great Plains Region

By _____ Date _____
Title

Eastern Shoshone Tribe

By  Date 5/12/04
Title

AUTHORITY AND TRUST RESPONSIBILITY**AUTHORITY**

The primary purpose and legal authority for this PA are found in the National Historic Preservation Act (16 U.S.C. §470f et seq) (NHPA), particularly section 106 (16 U.S.C. 470f), section 110 (16 U.S.C. 470h-2), and section 101 (16 U.S.C. 470a) of that Act. Federal agency compliance with NHPA section 106 is governed by regulations issued by the Advisory Council on Historic Preservation, 36 C.F.R. part 800, and this PA has been negotiated pursuant to those regulations. The signatories agree that the Missouri River Main Stem System shall be administered in accordance with the stipulations in this PA to take into account and attempt to mitigate adverse effects to historic properties and satisfy the responsibilities of the Corps pursuant to section 106.

In addition to section 106 and the Advisory Council's regulations, numerous other provisions of the NHPA, some of which are cited in the PA, are applicable to activities of the Corps in fulfilling its commitments under this PA. Additionally, the Corps is responsible for complying with other legal authorities, including federal statutes, regulations, executive orders, and guidance documents, as well as any applicable tribal and state laws. Citations to some of these other sources of law are provided here for reference purposes only. In the final section of this attachment, a discussion of the Federal trust responsibilities to Indian Tribes is provided.

1. Federal Laws

American Indian Religious Freedom Act (AIRFA), Pub. L. No. 95-341 (codified in part at 42 U.S.C. §1996).

Native American Graves Protection and Repatriation Act (NAGPRA), 18 U.S.C. §1170, 25 U.S.C. §3001 – 3013, implemented through regulations codified at 43 C.F.R. part 10.

Archeological Resources Protection Act, 16 U.S.C.470aa – 470mm, implemented through uniform regulations (identical except for numerical designations) codified at 18 C.F.R. part 1312 (Tennessee Valley Authority), 32 C.F.R. part 229 (Defense), 36 C.F.R. part 296 (Agriculture), 43 C.F.R. part 7 (Interior); with respect to Indian lands, see also Interior supplemental regulations, 43 C.F.R. part 7, subpart B, and Bureau of Indian Affairs supplemental regulations, 25 C.F.R. part 262.

National Environmental Policy Act (NEPA), 42 U.S.C. 4321 – 4347, implemented through regulations issued by the Council on Environmental Quality codified at 40 C.F.R. parts 1500 – 1508.

Indian Self-Determination Act, 25 U.S.C. §§450 – 450n, 455 – 458e.

2. Tribal Laws

Applicable Tribal Laws and Permits

3. State Laws

Applicable State Laws and Permits

4. Executive Orders

- EO 11593 Protection and Enhancement of the Cultural Environment
- EO 12898 Federal Actions to Address Environmental Justice in Minority Populations And Low-Income Populations
- EO 13006 Locating Federal Facilities on Historic Properties
- EO 13007 Protection of Indian Sacred Sites
- EO 13175 Consultation and Coordination with Indian Tribal Governments
- EO 13287 Preserve America

5. Policy

Concerning Distribution of Eagle Feathers for Native American Religious Purposes

Department of Defense, American Indian and Alaska Native Policy, 1998

Northwest Division, US ACE, Native American Desk Guide, September. 30, 2002

Guidance Letter #57, Indian Sovereignty and Government-to-Government Relations with Indian Tribes

Guide on Consultation and Collaboration with Indian Tribal Governments and the Public Participation of Indigenous Groups and Tribal Members in Environmental Decision Making, prepared by the National Environmental Justice Advisory Council, Indigenous Peoples Subcommittee, a Federal Advisory Group of the EPA

6. Federal Guidelines

Relationship Between Executive Order 13007 Regarding Indian Sacred Sites and Section 106. Advisory Council on Historic Preservation Memo, updated April 4, 2003

Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation Projects.

Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Register Bulletin 38. U.S. Department of Interior, National Park Service, Interagency Resources Division.

How to Evaluate and Nominate Designed Historic Landscapes. National Register Bulletin 18. U.S. Department of Interior, National Park Service, Interagency Resources Division.

7. Department of Defense and/or USACE Regulations and Guidelines

- ER 405-1-12 Real Estate Handbook
- ER 1105-2-1 Environmental Compliance Program at Corps Projects and Activities

ER 1130-2-433 and Historical	Collections Management and Curation of Archeological Data
ER 1130-2-438 Preservation Program	Project Construction and Operation Historic
ER and EP 1130-2-540	Cultural Resource Management – Project Operations: Environmental Stewardship Operations and Maintenance Guidance and Procedures
EP 1165-2-1	Digest of Water Policies and Authorities, section 3-12 on E.O. 13007

7. Memoranda Of Agreement

Between the Lower Brule Sioux Tribe, Bureau of Indian Affairs Agency; the Crow Creek Sioux Tribe Bureau of Indian Affairs Agency; and the Omaha District, U.S. Army Corps of Engineers concerning enforcement of federal preservation laws at Big Bend Dam, dated 4 June 2003;

Between the Turtle Mountain Band of Chippewa, the Standing Rock Sioux Tribe, the Spirit Lake Sioux Tribe and the Three Affiliated Tribes, concerning treatment and disposition of unmarked burials associated with these Tribes on Omaha District Corps lands, dated 13 December 1993.

9. Cultural Resources Memorandum

November 2002 Message from the Commander, General David Fastabend, Commander of the Northwest Division, in which he discusses Corps responsibilities to Cultural Resources.

10. Trust Responsibility to Indian Tribes

The ACHP recognizes their trust responsibilities to federally recognized Tribes with regard to this PA. The ACHP's trust relationship with Indian Tribes is described in its ACHP Policy Statement Regarding ACHP's Relationship with Indian Tribes, issued November 17, 2000 and updated on April 4, 2003.

** This background information about the federal trust responsibility to Indian Tribes was prepared by tribal attorneys for the educational benefit and convenience of any reader. It was not intended to reflect the views of the U.S. Army, Corps of Engineers and possibly, the consulting parties.*

The Army Corps of Engineers recognizes their trust responsibilities to federally recognized Tribes with regard to this PA.

The trust responsibility is a federal common law and other legal doctrine, the subject of numerous decisions by Federal courts interpreting treaties, statutes, regulation, and executive orders. As described in a 1977 report commission by Congress:

“The purpose of the trust doctrine is and always has been to ensure the survival and welfare of Indian Tribes and people. This includes an obligation to provide for those services required to protect and enhance Indian lands, resources, and self-government, and also includes those economic and social programs which are necessary to raise the

standard of living and social well-being of the Indian people to a level comparable to the non-Indian society.”²

The Federal trust responsibility to Indian Tribes has its roots in land cessions made by Tribes in treaties, in the promises made by the United States to protect the rights of the Tribes to govern themselves in the lands that they had reserved, and in the practice of the federal government holding legal title to most Indian land, subject to Indian rights of occupancy and beneficial use.³ In the present day sense, the trust responsibility can be described as “the federal government’s duty to protect this separatism [of the Tribes] by protecting tribal lands, resources, and the native way of life.”⁴ Congress has explicitly acknowledged that “the United States has a trust responsibility to each tribal government that includes the protection of the sovereignty of each tribal government.”⁵ The trust doctrine includes fiduciary obligations comparable to those of a trustee for the management of trust land and natural resources and funds derived from trust land, including the duty to act “with good faith and utter loyalty to the best interests” of the Indians.⁶ The Federal government has been held liable for mismanagement in some cases.⁷ The Supreme Court has acknowledged “the undisputed existence of a general trust relationship between the United States and the Indian people,”⁸ although for the Federal government to be liable in damages for breach of trust, the Court has held that fiduciary duties must be based on a relevant statute or regulation, or a network of statutes and regulations.

In several lower Federal court decisions, the trust doctrine has been said to extend to Federal agencies other than the agency charged with management of trust land, resources, and funds (i.e., generally the Bureau of Indian Affairs carrying out the authority of the Secretary of the Interior),⁹ Regardless of whether the trust doctrine might

² AMERICAN INDIAN POLICY REVIEW COMMISSION, FINAL REPORT, at 130 (1977) (herein “AIPRC Final Report”), quoted in STEVEN PEVAR, THE RIGHTS OF INDIANS AND TRIBES at 27 (2d ed., 1992).

³ See generally Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471 (1994) [hereinafter “Wood, Trust I”]; Mary Christina Wood, *Protecting the Attributes of Native Sovereignty: A New Trust Paradigm for Federal Actions Affecting Tribal Lands and Resources*, 1995 UTAH L. REV. 109 (1995) [hereinafter “Wood, Trust II”]. See also FELIX S. COHEN, HANDBOOK OF FEDERAL INDIAN LAW 220-28 (1982 ed.).

⁴ Wood, Trust I, at 1496.

⁵ 25 U.S.C. §3601.

⁶ AIPRC Final Report, *supra* note 1, at 128, quoted in Pevar, *supra* note 1, at 27.

⁷ E.g., *United States v. Mitchell*, 463 U.S. 206 (1983) (liability in money damages for mismanagement of timber resources by the Department of Interior) (often referred to as “Mitchell II” to distinguish this decision from *United States v. Mitchell*, 445 U.S. 535 (1980) (“Mitchell I”), in which the Federal government was not held liable); See also *United States v. White Mountain Apache Tribe*, 537 U.S. 465 (2003) (holding that the Court of Federal Claims has jurisdiction over a breach of trust claim arising out of mismanagement of land and buildings held in trust for tribe but occupied by federal government); *contra* *United States v. Navajo Nation*, 537 U.S. 488 (2003) (holding federal government not liable in damages for alleged breach of trust in leasing of land for mineral extraction).

⁸ *Mitchell II*, 463 U.S. at 225.

⁹ E.g., *Nance v. Environmental Protection Agency*, 645 F.2d 701, 710 (9th Cir. 1981) (EPA held to have a fiduciary duty to consider impacts of Northern Cheyenne Tribe’s designation of its reservation as Class I for air quality purposes on Crow Tribe’s ability to mine coal on its reservation, and finding duty fulfilled); *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep’t of the Navy*, 898 F.2d 1410, 1420 (9th Cir. 1990) (trust obligation to consider impacts on tribal water rights recognized but held to be satisfied through conservation measures); *Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 573-74 (9th Cir. 1998) (discussing distinction between general and specific trust responsibility and hold that general responsibility “is discharged through the agency’s compliance with general regulations and statutes not specifically aimed at protecting Indian tribes”); *contra* (*North Slope Borough v. Andrus*, 642 F.2d 589, 611 (1980) (a post-*Mitchell I* and pre-*Mitchell II* decision finding no trust

give rise to judicially enforceable claims, the Tribes expect the Corps to act in accordance with the Federal trust responsibility. This includes government-to-government consultation whenever the Corps' "plans or actions affect trust resources, trust assets, or tribal health and safety."¹⁰

Some Corps actions directly or indirectly affect trust land, and some of the lands managed by the Corps are within reservation boundaries established by treaties where the Tribes and their members continue to have treaty-based rights even though lands have been taken out of trust status. Federal lands managed by the Corps (both within and outside reservation boundaries) include places that hold religious and cultural importance of the Tribes, and some of these places are crucial for the cultural identities of the Tribes and, as such, for the survival of the Tribes as distinct peoples. Some of these places contain the graves of ancestors and funerary objects, in which Federal law recognizes the right of lineal descendants and culturally affiliated Tribes to take custody in the event that they are removed from the Earth. The Tribes expect the Corps to treat these sacred and cultural significant places as subject to the Federal trust responsibility.

This means that they must be engaged in consultation before decisions are made and that the Tribes expect to participate in making decisions and in carrying out decisions. Consultation will be both specific to individual Tribes and with as many comprehensive consultations attended by all affected Tribes, THPOs, SHPOs, ACHP as are necessary with real efforts to reach consensus. Consultations will be conducted in a positive manner, on a government-to-government basis, honoring all treaties and the trust doctrine and other law, which entails a fiduciary and fiscal responsibility of the Corps. Decisions will be made on a government-to-government basis. Finally, the Corps will continue to include, as consulting parties, affected Tribes, THPOs, SHPOs, ACHP in any review or update of the Master Manual.

responsibility in the absence of specific statutory provisions). See Wood, Trust I, *supra* note 2, at 1527-1535, Wood, Trust II at 117-21, *supra* note 2.

¹⁰ The quoted language is from the Department of the Interior's Departmental Manual (DM) and applies to all bureaus and offices within DOI. 516 DM 2.2. While the DM does not apply to the Corps, the Tribes believe that the basic principle does apply to the Corps.

ACRONYMS AND DEFINITIONS

ACRONYMS

ACHP – Advisory Council on Historic Preservation
APE – Area of Potential Effects
ARPA – Archaeological Resources Protection Act
CRMP – Cultural Resources Management Plan
NAGPRA – Native American Graves Protection and Repatriation Act
NHPA- National Historic Preservation Act
SDGFP-South Dakota Department of Game, Fish, and Parks
SHPO – State Historic Preservation Officer
THPO – Tribal Historic Preservation Officer

DEFINITIONS

Adverse Effect – “an effect of an undertaking that may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” 36 C.F.R. §800.5(a). This section of the ACHP regulations provides additional guidance on how to determine whether an effect is adverse and examples of adverse effects.

Advisory Council on Historic Preservation (ACHP) – an independent agency created by the Title II of the National Historic Preservation Act (NHPA), 16 U.S.C. §§470i through 470v. The ACHP issued regulations, 36 C.F.R. part 800, governing the section 106 review process and oversees the conduct of the Section 106 process (see section 106, 16 U.S.C. §470f, and section 211, 16 U.S.C. §470s.)

Affected Tribe – Any Indian Tribe, as defined in this Attachment, that attaches religious and cultural significance to cultural resources, including historic properties, as provided in the scope of this PA, regardless of the location or nature of the undertaking, or regardless of whether the Tribe has been or will be developing any other agreements. Any Tribe that is included in the signatory portion of this PA, whether or not such tribe has signed this PA, and any other Tribe that becomes an “additional signatory” pursuant to Stipulation 26.

Archaeological Resource – “any material remains of past human life or activities which are of archaeological interest,” and that are at least 100 years of age, including graves and human remains if found in an archaeological context, as defined in the Archaeological Resources Protection Act (ARPA), 16 U.S.C. §470bb. The uniform regulations provide extensive elaboration on the definition, including the key phrase “of archaeological interest.” 43 C.F.R. §7.3(a); 32 C.F.R. §229.3(a). The phrase “of archaeological interest” is defined in regulations as “capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observations, contextual measurement, controlled collection, analysis, interpretation and explanation.” The statutory definition explicitly includes graves and human remains, which are also the subject matter of the Native American Graves Protection and Repatriation Act (NAGPRA); funerary objects, sacred objects, and objects of cultural patrimony covered

by NAGPRA may be archaeological resources if at least 100 years of age and found in an archaeological context. An archaeological resource may be a historic property, or located within a historic property, as that term is used in the National Historic Preservation Act (NHPA) and this PA. A site at which archaeological resources are located may also be an Indian sacred site as defined in Executive Order 13007.

Area of Potential Effects – “the geographic area or areas within which an undertaking may directly or indirectly cause alternations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.” 36 C.F.R. §800.16(d).

ARPA Permitting Process – permit process for the excavation or removal of archaeological resources from federal public lands and Indian lands, established pursuant to ARPA and conducted pursuant to uniform regulations codified at 43 C.F.R. part 7; 32 C.F.R. part 229. For “Indian lands” see also supplemental regulations issued by Department of Interior 43 C.F.R part 7, subpart B (§§7.31 – 37) and supplemental regulations issued by Bureau of Indian Affairs, 25 C.F.R. part 262.

Consensus – For purposes of this PA, consensus means either that all of the signatories agree or that none of the signatories objects.

Consultation – “the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process. The Secretary’s ‘Standards and Guidelines for Federal Agency Preservation Programs pursuant to the National Historic Preservation Act’ provide further guidance on consultation.” 36 C.F.R. §800.16(f). The stipulations in this PA provide detail on how consultation will be conducted for purposes of compliance with this PA. Consultation in other contexts may be conducted somewhat differently than as provided for in this PA, and may be subject to the requirements of other statutes, regulations and other sources of law, including those listed in Attachment 2.

Consulting Parties – with the exception of the Corps, all officials and entities named in the “Signatures” section of this PA whether or not they have signed the PA and all additional signatories pursuant to Stipulation 26. Those consulting parties whom are signatories to this agreement shall be consulted and treated as outlined in this PA. Those consulting parties that have not signed will be consulted following the Secretary’s “Standards and Guidelines for Federal Agency Preservation Programs Pursuant to the National Historic Preservation Act” 36 C.F.R. §800.16(f).

Cultural Resource(s) – a general “term of art” without a specific legal definition used to refer to “all elements of the physical and social environment that are thought to have cultural value.” Thomas F. King, *Places That Count: Traditional Cultural Properties in Cultural Resources Management* (Alta Mira Press, 2003), p. 11. For purposes of this PA, cultural resources include historic properties, archaeological resources, sacred sites, religious sites, burial sites, properties of traditional religious and cultural importance, and Native American cultural items (including human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony). A cultural resource site is the location of a cultural resource.

Cultural Resource Management – activities and tasks involved in the stewardship of cultural resources, including to identify, evaluate, maintain, protect, and otherwise treat

cultural resources, and to comply with historic preservation and environmental law (including the NHPA, ARPA, AIRFA, NEPA, EO 13007, EO 13287). These activities and tasks are described in detail in many sources, including federal laws, regulations, and guidance and the “Secretary of the Interior’s Standards and Guidelines for Historic Preservation Projects,” (48 Fed. Reg. 44716) and the many publications of the National Park Service. U.S. Army Corps Engineering Regulation and Pamphlet 1130-2-540 discuss cultural resources stewardship and cultural resources management.

CRMP – cultural resources management plan. See stipulation 9 of the PA.

Effect – “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.” 36 C.F.R. §800.16(i).

Eligible for Inclusion in the National Register – “includes both properties formally determined to be as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.” 36 C.F.R. §800.16(l)(2). Criteria of eligibility are codified at 36 C.F.R. §60.6. Regulations of the Secretary of the Interior for determinations of eligibility are codified at 36 C.F.R. part 63. Determinations of eligibility may also be made during the section 106 process. 36 C.F.R. §800.4.

Federal Acquisition Regulations – the regulations governing procurement by federal agencies, codified at 48 C.F.R. Part 1.

Federal Lands – In NAGPRA, the term “Federal lands” is defined as any “lands other than tribal lands which are controlled or owned by the United States, including lands selected by but not yet conveyed to Alaska Native corporations and groups organized pursuant to the Alaska Native Claims Settlement Act.” 25 U.S.C. §3001(5). The substance of this definition closely corresponds to the definition of the term “public lands” as used in ARPA. “Federal lands” that are within the boundaries of an Indian reservation are also “tribal lands” for purposes of NHPA and NAGPRA. [Note: Individual Indian allotments that are outside the boundaries of an Indian reservation and not otherwise within a “dependent Indian community” are considered “federal lands” for purposes of NAGPRA. 60 Fed. Reg. 62140 (1995).]

Final Agency Action – an agency action that is not subject to review within the agency and, as such, may be subject to judicial review in federal court pursuant to the Administrative Procedure Act. 5 U.S.C. §§551, 701 – 706, or other federal statute.

Historic Property – “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.” 36 C.F.R. §800.16(l)(1), providing elaboration on the statutory definition codified at 16 U.S.C. §470(w)(5). See also definitions of “eligible for inclusion in the National Register” and “National Register Criteria” in this Attachment.

Historic Resource – is a statutory synonym of “historic property.” 16 U.S.C. §470w(5).

Impacts - any change to a cultural resource site, including a historic property

Indian Land – as defined in the Archaeological Resources Protection Act (ARPA), “lands of Indian Tribes, or Indian individuals, which are either held in trust by the United States or subject to a restriction on alienation imposed by the United States, except for any subsurface interests in lands not owned or controlled by an Indian tribe or an Indian individual.” 16 U.S.C. §470bb(4). This term is not synonymous with “tribal lands” as defined in NHPA and NAGPRA.

Indian Sacred Sites – as used in Executive Order 13007, “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or an Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion, provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.” Executive Order 13007 (May 24, 1996) (published in notes following 42 U.S.C. §1996). [Note: The definition in EO 13007 is considerably more narrow than the way in which this term is commonly used by Tribes and individual Indians.]

Indian Tribe or Tribe – “an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional corporation or Village Corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.” 16 U.S.C. §470w(4).

Main Stem – the series of dams and reservoirs along the upper Missouri River. For the purposes of this PA those dams and reservoirs are Gavins Point Dam/Lewis and Clark Lake, Fort Randall Dam/Lake Francis Case, Big Bend Dam/Lake Sharpe, Oahe Dam/Lake Oahe, Garrison Dam/Lake Sakakawea, and Fort Peck Dam/Fort Peck Lake.

National Register – the National Register of Historic Places maintained by the National Park Service through the authority of the Secretary of the Interior.

National Register Criteria – the criteria of eligibility for the National Register established in regulations issued by the Secretary of the Interior. 36 C.F.R. §60.6.

Project Lands – land owned by the U.S. Army Corps of Engineers, Omaha District that are associated with the dams and reservoirs on the upper Missouri River. For the purposes of this PA those dams and reservoirs are Gavins Point Dam/Lewis and Clark Lake, Fort Randall Dam/Lake Francis Case, Big Bend Dam/Lake Sharpe, Oahe Dam/Lake Oahe, Garrison Dam/Lake Sakakawea, and Fort Peck Dam/Fort Peck Lake.

Section 106 – section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. §470f, as implemented through regulations issued by the ACHP, 36 C.F.R. part 800.

Shared Stewardship – pre-decisional consultation with Affected Tribes, THPOs, SHPOs, ACHP and other consulting parties, especially with any Affected Tribe concerning an undertaking that may affect any sacred or cultural resources associated with such a tribe. Any Affected Tribe that attaches religious or cultural importance to a historic resource that is the subject of consultation will have an equal role with the Corps in determining the appropriate treatment and management of the resource.

Signatories – all the parties that have signed this PA, including any that may be added as additional signatories pursuant to stipulation 26.

State Historic Preservation Officer (SHPO) – “the official appointed or designated pursuant to section 101(b)(1) of the [NHPA] to administer the State historic preservation program or a representative designated to act for the State historic preservation officer.” 36 C.F.R. §800.16(v).

Traditional Cultural Property -- a property that is “eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community.” National Park Service, National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties (1990), available at www.cr.nps.gov/nr/publications/bulletins/nrb38/htm.

Treatment Plan – Information describing a historic property and how it is proposed to be treated. Rehabilitation, stabilization (including rripping, revegetation, recontouring of areas surrounding the property, etc.), maintenance, and archaeological excavation are possible treatments.

Tribal Historic Preservation Officer (THPO) – “the tribal official appointed by the tribe’s chief governing authority or designated by a tribal ordinance or preservation program who has assumed the responsibilities of the SHPO [State Historic Preservation Officer] for purposes of section 106 compliance in tribal lands in accordance with section 101(d)(2) of the act.” 36 C.F.R. §800.16(w). [Note: See section 101(d)(2), National Historic Preservation Act, 16 U.S.C. §470a(d)(2).]

Tribal Lands – as defined in the National Historic Preservation Act, “(A) all lands within the exterior boundaries of any Indian reservation; and (B) all dependent Indian communities. 16 U.S.C. §470w(14). Within the scope of this PA, the NHPA definition is identical to the Native American Graves Protection and Repatriation Act (NAGPRA) definition, 25 U.S.C. §3001(15). [Note: “Tribal lands” for purposes of NHPA and NAGPRA is not synonymous with “Indian lands” for purposes of ARPA. Federal lands, including lands administered by the Corps, as well as lands owned by state and local governments and private persons, within reservation boundaries of Indian Tribes are “tribal lands” for purposes of NHPA and NAGPRA. For the purposes of this PA, the service area of the Santee Sioux Tribe of Nebraska shall be considered “tribal lands”.]

Undertaking – “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out with Federal financial assistance; those requiring a Federal permit, license or approval...” 36 C.F.R. §800.16(y). [Note: The regulatory definition includes one more clause: “and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.” This clause was the subject of a federal court decision in 2003, and the ACHP has issued a proposed revision to that clause of the regulatory definition. 68 Fed. Reg. 55354 (Sept. 25, 2003).]

The Corps agrees to complete the following with all Affected Tribes: Memoranda of Agreement among the Omaha District, Army Corps of Engineers and Affected Tribes Regarding NAGPRA, ARPA, Paleontological Resources, and Other Items that are Commitments Outside of the Missouri River Main Stem System Programmatic Agreement utilizing but not limited to the following outline:

Should a disagreement occur between the parties that have entered into these requirements the processes under each of these laws shall be used to resolve those disagreements.

Outline:

1. Native American Graves Protection and Repatriation Act (NAGPRA)

a) Inadvertent discoveries of human remains, artifacts, and funerary objects. The Corps will follow the terms of the Native American Graves Protection and Repatriation Act regulations (NAGPRA), 43 CFR 10 et seq and applicable Memoranda of Agreement (MOA) with Tribes.

b) Memorandum of Agreement, North Dakota Intertribal Reinterment Committee. The Corps will follow the provisions as detailed in the North Dakota Intertribal Reinterment Committee (NDIRC) Memorandum of Agreement. This would apply for all those Tribes that have signed the NDIRC MOA. There is a clause in the NDIRC MOA that allows for other Tribes to join the agreement.

c) Memorandum of Agreement, Non-NDIRC Tribes. The Corps will develop a MOA to implement the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) with those Tribes that have not signed the NDIRC MOA. A draft NAGPRA MOA shall be developed collaboratively with the affected Tribes, THPOs, SHPOs, ACHP, within 2 years of signing of this programmatic agreement. A final NAGPRA MOA shall be completed within 180 days from receipt of comments on the Draft NAGPRA MOA.

d) The Corps will ensure that resources meeting NAGPRA definitions are handled according to the requirements and procedures listed in the NAGPRA regulations or other memoranda of agreement entered into by the Corps and tribal governments. Continued progress will be made on the repatriation of artifacts under the Corps control and protection and located in a museum or curation facility in which the Corps has an active agreement or contractual obligation.

2. Archeological Resources Protection Act.

a) ARPA Permits. Prior to a decision about issuance of an ARPA permit, the Corps will provide copies of the ARPA permit application to affected Tribes, THPOs, SHPOs, ACHP and other consulting parties for review and comment. The Corps will take these comments into account in making a decision about issuance of the permit.

3. Paleontology Resources

a) The Corps will curate paleontology resources in the same manner as archeological collections. Agreements with curation facilities will be formatted according to the example given in 36 CFR Part 79.1.

4. Federal Undertakings and actions on lands outside the scope of this PA

a) In consultation with the Affected Tribes, the Corps, will review its protocols and procedures regarding Corps actions, past and present, beyond the scope of this PA to ensure tribal consultation consistent with Federal laws, Executive Orders, and other legal authorities.

ANNUAL REPORTS

Annually, the Corps shall prepare a report that includes discussion of the following topics both for the past year and as anticipated or planned for the coming year:

- 1) List of all undertakings within the project area;
- 2) Description of all surveys and activities undertaken to identify and evaluate historic properties and results of such efforts;
- 3) Description of all historic properties affected or potentially affected by Corps undertakings;
- 4) Description of measures to avoid, minimize, or mitigate effects to historic properties, including Treatment Plans;
- 5) Status of Five-Year Plan, assessment of progress in meeting its goals, and suggestions for revision;
- 6) Status of CRMPs and assessment of progress in fulfilling recommendations;
- 7) Status of the enforcement program and assessment of its effectiveness;
- 8) Status of site monitoring program and assessment of progress in meeting its goals;
- 9) Status of public education and interpretive activities;
- 10) Status of cultural resources program budget, including funding problems;
- 11) Additional signatories to the PA; notifications to amend, withdraw from, or terminate the PA;
- 12) General assessment of how well the PA is working; and
- 13) Any other facts the Corps considers pertinent to evaluation of the activities covered by the PA and any available information that the affected Tribes, THPOs, SHPOs, ACHP and other consulting parties may have requested that the Corps incorporate into the report.

Additional Signatory Form

Missouri River Main Stem System Programmatic Agreement

Tribe/Agency/Entity

By _____ Date _____

APPENDIX K: TRIBAL, PUBLIC, AND OTHER AGENCY COMMENTS AND RESPONSES ON THE DRAFT EIS

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EC200 and EC300	Environmental Consequences: Piping Plover and Least Tern ...	K-140
AE400	Affected Environment: Fish and Wildlife Habitat	K-144
EC400	Environmental Consequences: Fish and Wildlife Habitat	K-145
AE500	Affected Environment: Other Special Status Species	K-150
EC500	Environmental Consequences: Other Special Status Species	K-150
AE600	Affected Environment: Water Quality	K-151
EC600	Environmental Consequences: Water Quality	K-151
AE900	Affected Environment: Cultural Resources	K-155
EC900	Environmental Consequences: Cultural Resources	K-156
EC1000	Environmental Consequences: Land Use and Ownership	K-159
AE1100	Affected Environment: Commercial Sand and Gravel Dredging	K-167
EC1100	Environmental Consequences: Commercial Sand and Gravel Dredging	K-167
AE1200	Affected Environment: Flood Risk Management and Interior Drainage	K-171
EC1200	Environmental Consequences: Flood Risk Management and Interior Drainage	K-172
AE1300	Affected Environment: Hydropower	K-183
EC1300	Environmental Consequences: Hydropower	K-183
AE1400	Affected Environment: Irrigation	K-187
EC1400	Environmental Consequences: Irrigation	K-189
AE1500	Affected Environment: Navigation	K-190
EC1500	Environmental Consequences: Navigation	K-192
AE1600	Affected Environment: Recreation	K-204
EC1600	Environmental Consequences: Recreation	K-204
AE1700	Affected Environment: Thermal Power	K-211
EC1700	Environmental Consequences: Thermal Power	K-212
AE700	Affected Environment: Water Supply	K-223
EC700	Environmental Consequences: Water Supply	K-224
EC1800	Environmental Consequences: Wastewater Facilities	K-231
EC1900	Environmental Consequences: Tribal Interests (Other)	K-233
AE2100	Affected Environment: Environmental Justice	K-235
AE2200	Affected Environment: Ecosystem Services	K-236
EC2200	Environmental Consequences: Ecosystem Services	K-236
AE2300	Affected Environment: Mississippi River	K-239
EC2300	Environmental Consequences: Mississippi River Impacts	K-240
EC2500	Environmental Consequences: Climate Change	K-245
TC1000	Resources of Concern - Tribal	K-248
OT1000	Other AE/EC Resource Topics	K-254
EC2400	Environmental Consequences: Other Socioeconomic Impacts	K-254
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AM1000	Adaptive Management.....	K-261
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TC3500	Guiding Regulations, Policies, Laws - Tribal	K-273
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AMP1100	Decision Needs to Adaptively Manage the MRRP	K-287
AMP1200	Adaptive Management Decision Process, Critical Engagement and Workflow.....	K-291
AMP1300	Protocols and Procedures for Adaptive Management Program Implementation	K-295
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AMP5000	Data Acquisition, Management, Reporting and Communication Related to AM.....	K-312
AMP6000	Effects Analysis in Relation to AM.....	K-313
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RTT100	Recreation Technical Report: General Comments.....	K-315
WSTR100	Water Supply Technical Report: General Comments.....	K-316
HTR100	Hydropower Technical Report: General Comments.....	K-316
HHTR200	Hydrology and Hydraulics Technical Report - Period of Record Development	K-317
HEC100	HEC-ResSim Modeling Report: General Comments.....	K-317
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Acronyms

AE	affected environment
AM	adaptive management
ANS	aquatic nuisance species
BA	biological assessment
BiOp	Biological Opinion
BSNP	Missouri River Bank Stabilization and Navigation Project
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CLMU	Central Lowlands Management Unit
CMEPC	Central Montana Electric Power Cooperative Inc.
CWA	Clean Water Act
EA	effects analysis
EC	environmental consequences
EIA	Energy Information Administration
EIS	environmental impact statement
EQ	environmental quality
EO	executive order
ER	Engineering Regulation
ERDC	Engineering Research and Development Center
ESA	Endangered Species Act
ESH	emergent sandbar habitat
FR	Federal Register
FWCA	Fish and Wildlife Coordination Act
FY	fiscal year
GPMU	Great Plains Management Unit
H&H	hydrologic and hydraulic
HC	human considerations
HEC	Hydrologic Engineering Center
HEC-GeoRAS	Hydrologic Engineering Center – Geographical River Analysis System
HEC-RAS	Hydrologic Engineering Center – River Analysis System
HEC-ResSim	Hydrologic Engineering Center – Reservoir Simulation
HUC	Hydrologic Unit Code
IEPR	Independent External Peer Review
IHMU	Interior Highlands Management Unit
IRC	interception and rearing complex
ISAP	Independent Science Advisory Panel
ISETR	Independent Socio-Economic Technical Review
ISTEA	Intermodal Surface Transportation Efficiency Act
kcfs	thousands of cubic feet per second
km	kilometers
MAF	million acre-feet
Master Manual	Missouri River Basin Mainstem Reservoir System Master Water Control Manual
MGD	million gallons per day

MISO	Midcontinent Independent System Operator
MRLS	Missouri River Levee System
MRERP	Missouri River Ecosystem Restoration Plan
MRRIC	Missouri River Recovery Implementation Committee
MRRMP-EIS	Missouri River Recovery Management Plan and Environmental Impact Statement
MRRP	Missouri River Recovery Program
msl	mean sea level
MW	megawatt
NED	National Economic Development
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NSM	Nutrient Simulation Modules
OSE	other social effects
P.L.	Public Law
PAR	population at risk
PCB	polychlorinated biphenyl
PDT	project delivery team
PEIS	Programmatic Environmental Impact Statement
PEPC	Planning, Environment, and Public Comment
PILT	payments in lieu of taxes
POR	period of record
ProACT	Problem Definition, Objectives, Alternatives, Consequences, and Tradeoffs
PSPAP	Pallid Sturgeon Population Assessment Project
QPF	quantitative precipitation forecast
RECONS	Regional Economic System
RED	Regional Economic Development
ResSim	Reservoir System Simulation
RM	river mile
ROD	record of decision
RPA	reasonable and prudent alternative
RPMA	Recovery Priority Management Areas
SAM	Science and Adaptive Management
SAMP	Science and Adaptive Management Plan
SCC	social cost of carbon
SHPO	State Historic Preservation Officer
SPP	Southwest Power Pool
SWH	shallow water habitat
System	Missouri River Mainstem Reservoir System
TCM	travel cost method
TMDL	Total Maximum Daily Load
UDV	unit day value
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAPA	Western Area Power Administration
WRDA	Water Resources Development Act

Introduction and Guide

Introduction

On December 16, 2016, The U.S. Army Corps of Engineers (USACE), Kansas City and Omaha Districts, released the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) for public review and comment. A Notice of Availability (NOA) of the Draft MRRMP-EIS was published in the *Federal Register* on December 23, 2016. Members of the public also received notice of the availability of the Draft MRRMP-EIS through a news release published following the publication of the NOA in the *Federal Register*.

The release of the Draft MRRMP-EIS initiated a 130-day public comment period that ended on April 24, 2017. This public comment period was announced on the USACE website (<http://moriverrecovery.usace.army.mil/>), posted at 10 libraries located in towns along the Missouri River, and announced through press releases. The Draft MRRMP-EIS was made available through several outlets, including the USACE website, the National Park Service (NPS) Planning, Environment, and Public Comment (PEPC) website at <http://parkplanning.nps.gov/MRRMP>, and on the U.S. Environmental Protection Agency EIS database website. During the comment period, six public meetings, which contained a formal hearing portion, were held in February 2017 throughout the region. These meetings provided the public and opportunity to ask questions, make statements (with a court reporter on hand to record their comments for the official record), and encourage public involvement and community feedback on the Draft MRRMP-EIS. All six of the public meetings were held during the public comment period as follows:

- February 7, 2017: Fort Peck Interpretive Center, Fort Peck, Montana
- February 8, 2017: Bismarck State College-National Energy Center of Excellence, Bismarck, North Dakota
- February 9, 2017: Ramkota Hotel and Conference Center, Pierre, South Dakota
- February 14, 2017: Thompson Alumni Center-Bootstrapper Hall, Omaha, Nebraska
- February 15, 2017: Hilton-Kansas City Airport, Kansas City, Missouri
- February 16, 2017: Double Tree by Hilton Hotel, Chesterfield, Missouri

The public was encouraged to submit comments regarding the Draft MRRMP-EIS online at <http://parkplanning.nps.gov/MRRMP>. The public was also able to submit comments by mailing letters and comment forms to the USACE Omaha District, 1616 Capitol Avenue, Omaha, Nebraska 68102. Public comments from the public meetings were recorded and collected by court reporters. All of the comments received were entered into PEPC in order to organize and analyze each comment.

A total of 244 people signed in at the six public meetings, and a total of 42 people spoke at the public meetings.

During the comment period, 489 pieces of correspondence were received on the Draft MRRMP-EIS and associated background documents (Attachment 2). These background documents included the Draft Science and Adaptive Management Plan (SAMP), 12 human considerations technical reports, and 8 hydrology and hydraulics technical reports. Once all pieces of correspondence were entered into PEPC, each was read, and specific comments within each

piece of correspondence were identified. A total of 1,960 comments were derived from the correspondences received (Attachment 3).

The Comment Analysis Process

Comment analysis is a process used to compile and correlate similar public comments into a format that can be used by decision makers and the Draft MRRMP-EIS planning team. Comment analysis assists the team in organizing, clarifying, and addressing technical information pursuant to National Environmental Policy Act (NEPA) regulations. It also aids in identifying the topics and issues to be evaluated and considered throughout the planning process.

The process includes seven main components:

- Developing a coding structure
- Employing a comment database for comment management (PEPC)
- Migrating all comments in the PEPC website
- Reading and coding of public comments
- Interpreting and analyzing the comments to identify issues and themes
- Drafting concern statements
- Preparing a comment summary

A coding structure was developed to help sort comments into logical groups by topics and issues. The coding structure was derived from an analysis of the range of topics discussed during public scoping, and the comments themselves. The coding structure was designed to capture all comment content and not restrict or exclude any ideas.

The PEPC database was used for management of the comments. The database stores the full text of all correspondence and allows each comment to be coded by topic and issue. Some outputs from the database include tallies of the total number of correspondences and comments received, and sorting and reporting of comments by a particular topic or issue, and demographic information regarding the sources of the comments.

Analysis of the public comments involved assigning codes to statements made by the public in their correspondences. All comments were read and analyzed, including those of a technical nature; opinions, feelings, and preferences of one element or one potential alternative over another; and comments of a personal or philosophical nature.

Although the analysis process attempts to capture the full range of public concerns, this content analysis report should be used with caution. Comments from people who chose to respond do not necessarily represent the sentiments of the entire public. Furthermore, this was not a vote-counting process, and the emphasis was on the content of the comment rather than the number of times a comment was received.

Definition of Terms

Primary terms used in this document are defined below.

Correspondence — A correspondence is the entire document received from a commenter. It can be in the form of a letter, written comment form, transcript, or a comment submitted online using the NPS PEPC website.

Comment — A comment is a portion of the text within a correspondence that addresses a single subject. It could include such information as an expression of support or opposition to the use of a potential management measure, additional data regarding the existing condition, or an opinion debating the adequacy of analysis.

Code — A code is a grouping based on a common subject. The codes were developed during the scoping process and are used to track major subjects throughout the planning process.

Concern Statement — A concern statement summarizes the issues identified in each code. For each code, concern statements were developed to better categorize the content of the comments received. Some codes required multiple concern statements because the comments within them represented different ideas. Other codes had only one concern statement because the comments within them presented similar ideas.

Non-Substantive Comment — Non-substantive comments are those that:

- are in favor of or against the proposed action or alternatives without reasoning that meet the criteria for a substantive comment;
- only agree or disagree with policy or resource decisions without justification or supporting data that meet the criteria for a substantive comment;
- do not pertain to the project area or the project; or
- are vague, open-ended questions.

Substantive Comment — Substantive comments are those that:

- question, with reasonable basis, the accuracy of the information in the NEPA document;
- question, with reasonable basis, the adequacy of the environmental analysis;
- present reasonable alternatives other than those presented in the NEPA document; or
- cause changes or revisions in the proposal.

Guide to this Document

This document is organized as follows.

Content Analysis Report — This section provides information on the numbers and types of comments received, organized by code and by various demographics. The first section is a summary of the number of comments in each code or topic, and the percentage of comments in each code.

Data show the amount of correspondence by type (numbers of park forms, letters, etc.); amount received by organization type (conservation organizations, city governments, individuals, etc.); and amount received by state.

Concern Response Report — This section summarizes the substantive comments received during the public review comment process. These comments are organized by codes and further consolidated into concern statements. USACE provides a response for each concern statement. Correspondence ID and Comment ID numbers are included for each concern statement so the reader can track concern statements and responses back to the related correspondence and comments.

Attachment 1: Index by Organization — This is an index of organizations that provided comments during the comment period. The index includes a list of the correspondence numbers associated with each organization, followed by the codes that were used to categorize comments within the correspondence. Commenters not associated with an organization are shown in the category “Unaffiliated Individual.”

Attachment 2: Correspondence Received on the Draft EIS — This includes the original correspondence received during the comment period.

Attachment 3: Substantive Issues Report — This includes specific comments identified within each piece of correspondence that summarizes the substantive comments received during the comment period. These comments are organized by codes based on a common subject.

Content Analysis Report

Correspondence Distribution by Code – Substantive Comments

Note: Each correspondence has multiple comments and multiple codes. As a result, the total number of correspondence in this table is higher than the actual correspondence totals. Comments made related to an effects analysis for a specific resource were coded under the EIS environmental consequences codes. If the comment was submitted on the EIS and applies to similar information included in the effects analysis and the corresponding technical report for a resource the correspondence was coded under the appropriate EIS code only. If a comment was submitted under a technical report that comment was coded under the appropriate technical report code.

Code	Description	Total Number of Correspondences
BG100	Background: General Background	3
PN8000	Purpose and Need: Objectives in Taking Action	11
PN3000	Purpose and Need: Scope of the Analysis	38
ON1000	Other NEPA Issues: General Comments	29
PN10000	Purpose and Need: Compliance with Other Laws, Policies, and Regulations	66
HH1000	Hydrology and Hydraulics Modeling	14
AL700	Alternatives: Actions Common to All Alternatives	56
AL100	Alternatives: Alternative 1, No Action	14
AL200	Alternatives: Alternative 2	50
AL300	Alternatives: Alternative 3 (Preferred Alternative)	51
AL400	Alternatives: Alternative 4	12
AL500	Alternatives: Alternative 5	12
AL600	Alternatives: Alternative 6	13

Code	Description	Total Number of Correspondences
AL4000	Alternatives: New Alternatives or Elements	38
AL5000	Alternatives: Alternatives Considered but Eliminated from the Analysis	250
AL800	Alternatives: General Costs	8
EC2700	Environmental Consequences: General Methodology for Establishing Impacts/Effects	30
AE0100	Affected Environment: River Infrastructure and Hydrologic Processes	4
EC0100	Environmental Consequences: River Infrastructure and Hydrologic Processes	12
AE100	Affected Environment: Pallid Sturgeon	6
EC100	Environmental Consequences: Pallid Sturgeon	17
AE200	Affected Environment: Piping Plover	1
AE300	Affected Environment: Least Tern	2
EC200	Environmental Consequences: Piping Plover	8
EC300	Environmental Consequences: Least Tern	5
AE400	Affected Environment: Fish and Wildlife Habitat	2
EC400	Environmental Consequences: Fish and Wildlife Habitat	15
AE500	Affected Environment: Other Special Status Species	4
EC500	Environmental Consequences: Other Special Status Species	2
AE600	Affected Environment: Water Quality	3
EC600	Environmental Consequences: Water Quality	13
AE900	Affected Environment: Cultural Resources	1
EC900	Environmental Consequences: Cultural Resources	3
EC1000	Environmental Consequences: Land Use and Ownership	11
AE1100	Affected Environment: Commercial Sand and Gravel Dredging	1
EC1100	Environmental Consequences: Commercial Sand and Gravel Dredging	5
AE1200	Affected Environment: Flood Risk Management and Interior Drainage	8
EC1200	Environmental Consequences: Flood Risk Management and Interior Drainage	54
AE1300	Affected Environment: Hydropower	1
EC1300	Environmental Consequences: Hydropower	28
AE1400	Affected Environment: Irrigation	2
EC1400	Environmental Consequences: Irrigation	2
AE1500	Affected Environment: Navigation	4
EC1500	Environmental Consequences: Navigation	30

Code	Description	Total Number of Correspondences
AE1600	Affected Environment: Recreation	1
EC1600	Environmental Consequences: Recreation	7
AE1700	Affected Environment: Thermal Power	1
EC1700	Environmental Consequences: Thermal Power	11
AE700	Affected Environment: Water Supply	4
EC700	Environmental Consequences: Water Supply	18
EC1800	Environmental Consequences: Wastewater Facilities	5
EC1900	Environmental Consequences: Tribal Interests (Other)	230
AE2100	Affected Environment: Environmental Justice	1
AE2200	Affected Environment: Ecosystem Services	1
EC2200	Environmental Consequences: Ecosystem Services	6
AE2300	Affected Environment: Mississippi River	5
EC2300	Environmental Consequences: Mississippi River Impacts	13
EC2500	Environmental Consequences: Climate Change	7
TC1000	Resources of Concern - Tribal	236
OT1000	Other AE/EC Resource Topics	1
EC2400	Environmental Consequences: Other Socioeconomic Impacts	3
EC2600	Environmental Consequences: Other Impacts	2
EC2800	Environmental Consequences: Cumulative Impacts	18
AM1000	Adaptive Management	18
TC4500	Tribal Consultation and Coordination	4
TC3500	Guiding Regulations, Policies, Laws - Tribal	4
CC1000	Consultation and Coordination: General Comments	19
RF1000	References: General Comments	5
AMP1000	Governance of the Adaptive Management Program	12
AMP1100	Decision Needs to Adaptively Manage the MRRP	10
AMP1200	Adaptive Management Decision Process, Critical Engagement and Workflow	14
AMP1300	Protocols and Procedures for Adaptive Management Program Implementation	8
AMP2000	Plover and Tern Monitoring	2
AMP2100	Plover and Tern Evaluation	3
AMP2200	Plover and Tern Decisions and Planning Contingencies	3
AMP3000	Pallid Sturgeon Monitoring	4
AMP3100	Pallid Sturgeon Evaluation	14

Code	Description	Total Number of Correspondences
AMP3200	Pallid Sturgeon Decisions and Planning Contingencies	6
AMP4000	Human Considerations Adaptive Management	3
AMP5000	Data Acquisition, Management, Reporting and Communication related to AM	2
AMP6000	Effects Analysis in Relation to AM	4
HHTR300	Hydrology and Hydraulics Technical Report - HEC-ResSim Alternatives	1
RTT100	Recreation Technical Report: General Comments	1
WSTR100	Water Supply Technical Report: General Comments	3
HTR100	Hydropower Technical Report: General Comments	1
HHTR200	Hydrology and Hydraulics Technical Report - Period of Record Development	1
HEC100	HEC-ResSim Modeling Report: General Comments	1
Total		1,402

Correspondence Distribution by Type

Type	Number of Correspondences
Web Form	116
Letter	310
Transcript	52
Other Form	10
E-mail	1
Total	489

Correspondence by Organization Type

Organization Type	Number of Correspondences
Unaffiliated Individual	154
Non-Governmental	21
Conservation/Preservation	20
State Government	19
County Government	9
Business	8
Town or City Government	8
Federal Government	7
Tribal Government	235

Organization Type	Number of Correspondences
Civic Groups	6
University/Professional Society	2
Total	489

Correspondence Distribution by State

State/District	Number of Correspondences
Missouri	114
Nebraska	36
Iowa	27
South Dakota	20
North Dakota	14
Montana	12
Unspecified	237
Kansas	8
Colorado	3
Oregon	3
Minnesota	3
Wyoming	3
Virginia	2
Arkansas	2
Illinois	2
New York	1
Washington, D.C.	1
Louisiana	1
Total	489

Concern Response Report

BG100 **Background: General Background**

Concern Statement: The Draft MRRMP-EIS should include a statement of the benefits of the dams/reservoirs including to produce hydroelectric power (renewable); mitigate flooding; provide recreation, navigation, and water for multiple human uses (drinking water, cooling water, wastewater treatment, etc.).

Response: Concur, a description of benefits of the Reservoir System and Bank Stabilization and Navigation Project has been added to Section 1.7.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643786

Concern Statement: The Draft MRRMP-EIS presents land acquisition as an Endangered Species Act priority position. USACE's primary obligation on land acquisition is to provide mitigation for the impacts of the Bank Stabilization and Navigation Project.

Response: The primary obligation for land acquisition is to provide mitigation for the impacts of the BSNP; however, the land acquisition authority can be used to support endangered species act focused projects if it is determined the acquisition also supports the purposes of the BSNP mitigation authority. Since the 2003 Biological Opinion, the focus of land acquisition has been to support shallow water habitat (SWH) construction projects which meet the purposes of the BSNP Mitigation Authority and fulfill responsibilities under the ESA. USACE anticipates that land acquisitions within the approximate 15-year timeframe of this plan would continue to prioritize areas that can support the mitigation objectives and ESA objectives.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644792

Concern Statement: The use of "collaboration" or "PrOACT process" or "PrOACT discussions" is not accurate in describing alternative development involving the Missouri River Recovery Implementation Committee (MRRIC).

Response: The acronym PrOACT stands for (1) **P**roblem definition, (2) **O**bjectives, (3) **A**lternatives, (4) **C**onsequences, and (5) **T**radeoffs. MRRIC was engaged in each step of the process. The problem statement was shared with MRRIC and MRRIC's input was included in the final version of the problem statement and included in the EIS. Species objectives were shared with MRRIC and were evaluated by ISAP. ISAP comments and MRRIC feedback were considered and incorporated where appropriate into the final versions of the objectives. Individual MRRIC members or MRRIC as a whole did not design elements of the alternatives such as specific types of habitats, or flow management actions, however, the alternatives were developed by USACE using the results of the effects analysis which was reviewed extensively by ISAP and MRRIC. MRRIC was involved in evaluation of test alternatives and in two rounds of proxy analyses of consequences and tradeoffs. Individual MRRIC members and MRRIC as a committee have had opportunity to provide comment or recommendation regarding the process and its outcome from 2012 to the present. There also will be opportunity for MRRIC to participate in tradeoffs analysis of specific management actions through participation in the adaptive management process as described in Chapters 2 and 5 of the SAMP.

Representative Quotes (Correspondence ID): 229
Comments (Comment ID): 644904

PN8000 *Purpose and Need: Objectives in Taking Action*

Concern Statement: The purpose and need of the MRRMP-EIS only supports three endangered species (piping plover, least tern, and pallid sturgeon) and fails to support or prioritize human needs.

Response: The need for this plan stems from alteration of the Missouri River ecosystem and new knowledge that has been developed about the three endangered species since the 2003 Biological Opinion. The purpose of this plan is to meet ESA responsibilities for the piping plover, least tern, and the pallid sturgeon. USACE developed alternative means of meeting species needs and analyzed the impact of those alternatives on human needs and factored this into identification of a preferred alternative as summarized in Section 2.9 of the Final EIS.

Representative Quotes (Correspondence ID): 89, 222
Comments (Comment ID): 644819, 636795

Concern Statement: The purpose of the plan is to avoid jeopardy, but the plan objectives are recovery-oriented. Recovery is a higher bar than jeopardy avoidance.

Response: Recovery goals are developed by USFWS and provided in Recovery Plans. The Management Plan is designed to support recovery of the species by meeting jeopardy avoidance objectives on the Missouri River. Jeopardy occurs when an action is reasonably expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of the species. Recovery would be an improvement in the status of listed species to the point at which listing is no longer appropriate under the ESA. USFWS believes that if USACE meets the species objectives then USACE will not appreciably reduce the likelihood of both the survival and recovery of pallid sturgeon, least terns and piping plovers in the wild by reducing the reproduction, numbers, or distribution of the species. The objectives are provided in Section 1.4 of the EIS.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640177

Concern Statement: USACE should broaden the ecological focus of this plan similar to that developed for the Missouri River Ecosystem Restoration process.

Response: USACE has been charged by Congress to meet the authorized purposes of the Missouri River and to meet responsibilities under the Endangered Species Act. USACE has identified a preferred alternative that attempts to identify and correct limiting factors in the ecosystem that are causing jeopardy and that allows USACE to meet the authorized purposes. USACE acknowledges the uncertainties related to pallid sturgeon, least terns, and piping plovers and has developed a comprehensive SAMP designed to incorporate new information about ecosystem limiting factors into future management. Congress has withheld funding for the Missouri River Ecosystem Restoration Plan (MRERP) since 2012 indicating it is not the intent of Congress for the MRERP to move forward at this time.

Representative Quotes (Correspondence ID): 181
Comments (Comment ID): 641461

Concern Statement: The MRRMP-EIS needs to clearly explain how the plover metapopulation influences the two separate populations and how modeling limitations affect persistence probability outputs from the model. Also, USACE should provide the historical relationship of plover populations with acres of emergent sandbar habitat (ESH) if ESH is to operate as a surrogate.

Response: The historical relationship between plover and tern populations and acres of ESH are provided in Section 3.4.1.1 of the Final EIS. The population model assumes that dispersal to and from the Missouri River Mainstem is balanced and thus has no net effect on Missouri River Mainstem plover population dynamics. Little information was available during model development to model dispersal more specifically. As new information from ongoing studies becomes available about dispersal between the southern reaches and the Nebraska tributaries and between the northern reaches and the alkali lakes, the model could be improved to better handle these metapopulation dynamics. At this time, however, the effects of those other populations on Missouri River Mainstem population extinction risks are unknown. This explanation and other known model uncertainties are summarized in the SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643807

Concern Statement: In order to better meet stated objectives, USACE should implement sufficient management interventions to increase the rate of learning and the pathways to ultimate actions needed, rather than relying on research being complete prior to taking action.

Response: Absent Level 1 or 2 supporting science, there is minimal to no information upon which to design and implement management actions. However, USACE understands that adaptive management must operate under the constraints of the ESA which is why the current SAMP calls for timely Level 3 implementation of plausible management actions, regardless of supporting Level 1 or 2 research and in-river testing in some cases. The framework in the SAMP seeks to optimize tradeoffs between development of knowledge in the near-term to inform implementation decisions and the requirements in the ESA to implement actions based on the best available science. The intent is that the investment in the research activities will result in improved long-term management and improved prospects for meeting objectives. USACE believes that implementation of timely level 3 actions preceded by Level 1 and Level 2 research has a higher likelihood of meeting species objectives than an approach that relies more heavily on trial and error.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643917

Concern Statement: The Purpose and Need statement is too vague and does not provide the public with an honest description of the project goals. Given the importance USACE places on human considerations in its identification of its preferred alternative, it should include a reference to minimizing impacts to human considerations in its purpose and need statement. USACE should also revise its summary of impacts table to clearly show the priority it places on the species compared to human considerations.

Response: USACE believes the purpose and need is an accurate description of the Management Plan objectives. The alternatives are designed to meet the objectives of the plan while taking into account impacts to other resources including “human

considerations.” The reason for analyzing environmental consequences in a NEPA context is so these impacts can be considered in the decision-making process.

USACE used the Purpose, Need, and Objectives to design a reasonable range of alternatives. The purpose of meeting ESA responsibilities does not free USACE from other responsibilities or from considering the impacts of ESA related actions in the decision-making process. USACE has identified a preferred alternative that attempts to identify and correct limiting factors in the ecosystem that are causing jeopardy. USACE selected the alternative that met the species objectives and had the least detrimental impacts across a range of interests. This decision is fully explained in Section 2.9 of the Final EIS along with a full listing of all the interest categories that were considered in the decision-making process.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644941, 645773, 646377

Concern Statement: USACE should prioritize river restoration and modifications to reservoirs to support the recovery of the pallid sturgeon.

Response: As described in Chapter 3 of the EIS, as a whole, the population of pallid sturgeon appears to be stable because of the supplemental stocking by the PSCAP but is not self-sustaining because natural recruitment is apparently not occurring. Stocked pallid sturgeon feed and grow successfully in all Recovery Priority Management Areas (RPMAs) where they have been stocked and have begun to reach sexual maturity in the past few years and spawning is occurring and has been documented. USACE has outlined a scaled approach that ultimately could lead to reservoir and/or flow modification if it is determined these actions would address ecosystem factors limiting pallid sturgeon recruitment. The Effects Analysis and the SAMP present the key uncertainties that challenge implementation decisions for the MRRP. They also detail the rationale and approach to developing the necessary supporting science so that management actions can be implemented and evaluated against expected outcomes with a reasonable expectation that the knowledge gained will contribute to improved understanding, better implementation decisions, and increased likelihood of achieving the program objectives over time. The AM framework provides a measured approach to implementation, recognizing that causal understanding and the development of management-response functions will be necessary to ensure that management actions taken will be effective. This strategy acknowledges the tradeoffs between knowledge and action, emphasizing the need for early investment in understanding so that long-term management prospects are improved.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645321

Concern Statement: The described actions are insufficient to meet the purpose of avoiding jeopardy, especially to the pallid sturgeon (e.g., management of water temperature). Additionally, the Draft EIS failed to use the current state of science on the species.

Response: USFWS has determined the actions are sufficient to avoid jeopardy. USACE and USFWS recognize the results of the Effects Analysis as the best available science on pallid sturgeon. The alternatives development process and subsequent evaluation of impacts to pallid sturgeon was based on the Effects Analysis results. The Draft EIS recognizes the substantial uncertainty that remains relative to cause and effect relationships between management action and pallid sturgeon populations. Adaptive

management was included as a component of all alternatives evaluated in the Draft EIS due to the need to implement actions for pallid sturgeon in a manner that reduces uncertainty regarding pallid sturgeon limiting factors.

Representative Quotes (Correspondence ID): 238, 232
Comments (Comment ID): 645348, 645480

Concern Statement: The problem statement should include language associated with the Flood Control Act of 1944 and the authorized purposes.

Response: The “problem definition” provided in the Draft EIS was a product of the ProACT process with MRRIC and reflected stakeholder concerns about “human considerations” which include continued service to Missouri River authorized purposes. The problem definition is not meant to replace or be a re-wording of the purpose and need statement. The purpose and need statement does not need to make reference to the Flood Control Act of 1944 or other USACE responsibilities for these to be considered in the decision-making process. As documented in Section 2.9, USACE considered impacts to other mission areas and other resources in reaching its decision on a preferred alternative.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645358

Concern Statement: Define the parameters “until sufficient and sustained natural recruitment occurs” in the Final EIS and how those parameters will be measured.

Response: The pallid sturgeon objectives for the MRRMP were developed by USFWS. Pallid Sub-Objective 2 is to: Maintain or increase numbers of pallid sturgeon of age 2 and older until sufficient and sustained natural recruitment occurs. The metric for measuring this sub-objective would be the population estimate for pallid sturgeon for all age classes, particularly for ages 2 to 3 to assess recent trends in recruitment, catch rates of all pallid sturgeon by size class. The target values, by reach, will eventually be informed by the population models being refined as part of the AM process. Possible targets could include: 1) positive population growth rates of pallid sturgeon age 2 and older; 2) estimated survival rates of all size/age classes sufficient to provide a stable population of pallid sturgeon age 2 and older; and 3) acceptable probabilities of persistence and recovery over a 50 to 100-year time frame. At this time, a cause and effect relationship is not known, hence the comprehensive science and adaptive management process designed as part of the Management Plan. The SAMP is designed to increase pallid sturgeon knowledge to the point that a population model can be used to define necessary targets for ultimately meeting the objective.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645526

PN3000 *Purpose and Need: Scope of the Analysis*

Concern Statement: An ecosystem approach for restoration is preferred. The MRRMP-EIS should take a more holistic approach to prevent additional species listing and not focus only on endangered species. Ideally this assessment would fulfill the directive of Section 5018 and evaluate how different levels of restoration of the ecological structure (e.g., riverine/floodplain ecosystem, flow regimes, sediment regimes) can also address and modernize dated aspects of infrastructure and operations associated with the authorized purposes.

Response: Overall ecosystem restoration is outside the scope the Draft EIS. Such a plan would be reflective of the Missouri River Ecosystem Restoration Plan and EIS (MRERP). Congress has withheld funding for MRERP since 2012 indicating it is not the intent of Congress for MRERP to move forward at this time. However, USACE has an obligation under the Endangered Species Act and the MRRP-EIS provides the direction on how USACE will meet those requirements within its need to manage for the authorized purposes.

Representative Quotes (Correspondence ID): 23, 42, 50, 147, 148, 166, 183, 224, 229, 238, 241

Comments (Comment ID): 628476, 640497, 640685, 640711, 642660, 626673, 644870, 644896, 645336, 645340, 645743, 645744

Concern Statement: The MRRMP-EIS should be linked to the Bank Stabilization and Navigation Project (BSNP) Mitigation Project requirements.

Response: As described in Section 1.8.2, the scope of the EIS include actions necessary to comply with the BSNP mitigation plan during the implementation timeframe for this EIS. The need for the Management Plan is based in part on the loss of aquatic and terrestrial habitats due to the BSNP and its contribution to the ESA-listing of the pallid sturgeon, piping plover, and interior least tern.

Representative Quotes (Correspondence ID): 31, 42, 48, 50, 73, 183, 207, 224

Comments (Comment ID): 628477, 628596, 643937

Concern Statement: The purpose and need statement of the Draft MRRMP-EIS does not make its goals sufficiently clear and, as a consequence, does not provide the public with a concise and focused set of objectives for the evaluation of the project alternatives. Human considerations, which are not identified within the purpose and need statement, become controlling factors in the ultimate selection of the preferred alternative that are subordinate to the Endangered Species Act.

Response: USACE considered a full range of reasonable alternatives designed to meet the endangered species objectives and compared the impacts of these different alternatives in terms of resources described in the Affected Environment and Environmental Consequences. Section 2.9 of the Final EIS provides a clear comparison of alternatives in terms of the species objectives, Affected Environment and Environmental Consequences and provides a description of how those factors were weighed in the decision. Sections 3.3 and 3.4 of the EIS provide a more-detailed comparison of the alternatives in terms of species objectives. The environmental consequences section forms the scientific and analytic basis for comparisons of alternatives including the proposed action (CFR 1502.16). NEPA regulations intend decision-makers to use information from the environmental consequences analysis in the decision-making process. That is the purpose of analyzing the environmental impacts of alternatives. Environmental impact resource topics do not need to be designated as objectives or explained as part of the purpose and need in order for them to be considered in decision-making. USACE believes it is appropriate to define the purpose and need statement in terms of the species and to base its decision on a comparison of alternative ways to meet species needs and taking into account the associated environmental consequences.

Representative Quotes (Correspondence ID): 62, 179, 190, 223

Comments (Comment ID): 631174, 645202, 641580, 644941, 645203

Concern Statement: The geographic scope of the MRRMP-EIS should be expanded to include the reach of the Missouri River above Fort Peck Reservoir and the Yellowstone River upstream of Intake Dam. The Draft MRRMP-EIS abandons the three threatened and endangered species populations above Fort Peck and on the Yellowstone River and the Great Plains Management Unit. Under their respective obligations to avoid jeopardy to the species and to ensure instances of "take" are accounted for under the restrictive management and protections of the Endangered Species Act, USACE and USFWS need to evaluate these effects.

Response: Endangered Species Act consultation regulations define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area defined in the 2017 Biological Assessment was defined as the Missouri River Mainstem and portions of major tributaries including the Kansas and Yellowstone Rivers where listed species could be influenced by USACE operations. USACE Missouri River Mainstem Reservoir operations primarily affect the area of the Missouri River and its reservoir system from the headwaters of Fort Peck Lake in Montana downstream to the mouth of the river near St. Louis MO River Mile 0 at the confluence with the Mississippi River. The action area ends at the confluence of the Missouri and Mississippi River because it was determined that impacts from the proposed action beyond the confluence are not discernable. USFWS found that the BA's described action area is appropriate and found no need to modify it for the 2018 BiOP.

The scope of management actions considered in the MRRMP-EIS was consistent with the scope of the effects analysis. While it is true the full distribution of pallid sturgeon historically included the entire Missouri River and its connection with the Mississippi River, the geographic scope of the effects analysis, including management hypotheses, was constrained in part by the lack of available USACE actions that could influence pallid sturgeon populations upstream of Fort Peck Dam and in part by the present understanding of the geographic distribution of pallid sturgeon. The effects analysis was limited to the Upper Missouri River Mainstem from Fort Peck Dam to the headwaters of Lake Sakakawea, the Yellowstone River upstream from the confluence with the Upper Missouri River for an unspecified distance, the lower Missouri River Mainstem from Gavins Point Dam to the confluence with the Mississippi River at St. Louis, an unspecified distance downstream in the Mississippi River, and various tributaries to these river segments that might be occupied by pallid sturgeon. This scope was developed in coordination with USFWS.

As occurred during the effects analysis (EA), literature and ongoing research from outside the geographic area defined for the effects analysis and MRRP-EIS (e.g., upstream of Fort Peck Dam) may be used where it helps to inform the evaluation of new hypotheses and potential management actions.

Representative Quotes (Correspondence ID): 73, 191, 236, 238

Comments (Comment ID): 635353, 643305, 644064, 643304, 644110, 645335, 645337, 645338, 645341, 645343, 645779, 645815

Concern Statement: The geographic scope of the MRRMP-EIS should include the Middle Mississippi River. Potential contributions of larval pallid sturgeon to the Middle Mississippi River suggests that the importance of conservation efforts on the lower Missouri River may be realized in sustaining pallid sturgeon in a greater geographic context. Additionally, to better facilitate the recovery of the listed species, any adaptive management program that includes actions on the lower Missouri River should be

integrated with conservation efforts elsewhere in the system, and supported by a synthetic program of data acquisition and analyses that takes advantage of information derived from studies undertaken beyond the focal area considered in this report.

Response: As occurred during the effects analysis (EA), literature and ongoing research from outside the geographic area defined for the MRRMP-EIS (e.g., upstream of Fort Peck Dam) may be utilized where it helps to inform the evaluation of hypotheses and potential management actions.” This would include information from the Mississippi River. The MRRP Integrated Science Program has already been supporting the microchemistry and genetics studies that are the basis for understanding relations with the Mississippi. Under Big Question 4 on Drift Dynamics, there is a Level 1 field study (component 5) to assess free embryo transport to the Mississippi River. This field study (described in Section C.3.4.5.5 of Appendix C) will estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River, relative to the number and survival of those that remain in the Missouri River. Additionally, the prospect of extending the Missouri River Pallid Sturgeon Population Assessment Project to include sampling in the Mississippi River (and Platte) is being discussed with partners.

Representative Quotes (Correspondence ID): 107, 139, 168, 222

Comments (Comment ID): 637279, 644833, 645164, 645776

Concern Statement: The MRRMP-EIS should adopt a one-population concept for piping plovers and discontinue jeopardy avoidance operations on the lower Missouri River. In addition, the delisting process should be completed for piping plover.

Response: The approach of evaluating long-term persistence probabilities is conducted in recognition that there are many potential outcomes for dynamic habitat and populations. These outcomes depend on factors that are highly variable and difficult to predict, such as annual weather patterns and long-term climate trends. The historical dynamics of piping plovers depended on many factors including the frequency, timing, and magnitude of ESH-forming flows and drought periods. Future persistence depends, in part, on these factors which may or may not repeat past patterns. The objective of USFWS is to identify an acceptable level of risk. In this case, they have determined that an undesirable outcome of extirpation of plovers on the Missouri River should occur in no more than 1 of 20 potential futures. In some potential futures, plovers may persist without additional management, but USFWS requires that probability to be 95 percent. In addition, changes to the morphology and sediment dynamics of the river may reduce the likelihood that future habitat and population dynamics will reflect the past, particularly the time shortly after dam closure.

Recently collected information about metapopulation processes was not available during the development of alternatives for the Draft EIS. This information will be incorporated to the extent possible in ongoing modeling and evaluation as part of the SAMP.

Representative Quotes (Correspondence ID): 80

Comments (Comment ID): 640103

Concern Statement: Shallow water habitat (SWH), interception and rearing complexes (IRCs), and spawning habitat should all be included under the preferred alternative. Additionally, success for species recovery needs to include designation of critical habitat for the pallid sturgeon and consideration of any tributaries to the Missouri River.

Response: USACE acknowledges the uncertainty related to the IRC, spawning habitat and SWH actions and has defined Channel Reconfiguration to potentially involve several different methods to accommodate habitat creation needs in the future. Some areas that meet velocity and depth criteria for IRCs already exist along the river in non-restored reaches, in reaches that were widened previously to provide SWH, and in side-channel chutes. Some areas along the river that already have sufficient food and foraging habitat may be converted to IRCs by modest changes to a constriction such as a wing-dike structure to create interception hydraulics. Other areas may require construction to provide space to accommodate food and foraging habitats. Alternative 3-6 include the management action of Channel Reconfiguration (Section 2.5.3.1) which consists of the physical manipulation of the river bed or bank to create or improve areas for provision of specific pallid sturgeon habitats thought to be limiting. The suite of actions to create functional habitats under this management action include: Bank notches, Dike notches, Revetment notches and lowering, placement of new structures, off-channel habitat such as chutes and backwaters, and channel widening or top-width widening. It should be noted that the present definitions of food-producing and foraging habitats overlap in part with SWH; however, food producing habitat can be substantially deeper, and foraging habitat can be both deeper and faster. In addition, the IRC concept acknowledges that habitat areas and conditions change substantially with the amount of flow in the river and therefore change over time.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640175

Concern Statement: The MRRMP-EIS should include a significant habitat restoration and management plan targeted at the specific habitat needs of all life stages of the pallid sturgeon (spawning, drift, interception, and rearing). It should also include habitat restoration and management to support the native fish community necessary to support a healthy, reproducing population.

Response: The SAMP includes the creation of IRC habitats and spawning habitat, as well as much associated research to address the habitat needs of life stages of the pallid sturgeon (spawning, drift, interception, and rearing). It will be very important to learn as much as possible during the 9-year period after the ROD. As described in Sections 1.1 and 1.5, the scope of the EIS includes actions consistent with the BSNP mitigation plan during the implementation timeframe for this EIS which could include restoration and management to support the native fish community.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 642897

Concern Statement: The MRRMP-EIS should focus efforts and available budget resources on habitat restoration for any chance of success under the highly modified system of the Missouri River.

Response: The alternatives presented in the EIS include habitat restoration components for the three listed species. However, the creation of habitat alone will not reduce other disturbances, limiting factors, or stressors as identified in the effect analysis. The effects analysis process resulting the development of conceptual ecological models that served to help identify management hypotheses and ultimately alternatives. Management alternatives were designed to improve species conditions and mitigate or eliminate the effects of stressors that may limit species reproduction and survival. Focusing on habitat alone would not address other stressors like increased predation that could impact

species survival. Therefore, the alternatives considered other actions beyond habitat restoration.

Representative Quotes (Correspondence ID): 207
Comments (Comment ID): 643521, 643522

Concern Statement: USACE should increase the level of implementation (magnitude and scope) of management actions to improve and expedite the adaptive management process and to help ensure the purpose and objectives of the Draft MRRMP-EIS are achieved.

Response: USACE believes that it has established management actions at a sufficient magnitude to see resource response. The SAMP is designed to incorporate information from monitoring species response including increasing the level of implementation if necessary.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643917

Concern Statement: Additional habitat for piping plover and least terns (alkaline lakes, sand mines, ash pits, out of channel sand deposits, islands in oxbows, large point bars) should be included as management actions in the preferred alternative.

Response: USACE considered "Off-Channel" habitat creation and purchase on Missouri River segments as part of alternatives development. This management action was eliminated from further consideration because it is not currently demonstrated to be as effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH. Although this action was eliminated from consideration in the EIS, USFWS has expressed a willingness to pursue funding for a pilot project. This funding would not be through the USACE MRRP; however, the results of any pilot project could be evaluated under the SAMP. As stated in the SAMP, long-term changes off-river affecting Missouri River populations may require adjustments to target criteria or objectives. The AM process would incorporate the results of future metapopulation modeling as it becomes available in order to improve management decisions.

Representative Quotes (Correspondence ID): 107, 239
Comments (Comment ID): 643918, 645360

Concern Statement: The MRRMP-EIS should consider actions in the reach below Fort Peck Dam for flow and temperature modifications; addressing hydropeaking from Fort Peck and Fort Randall Dams to increase recruitment of pallid sturgeon; increase floodplain connectivity to allow for nutrient and sediment inputs; and implement top-width widening. "Take" of pallid sturgeon will continue in the Missouri River between Fort Peck Dam and Lake Sakakawea due to the effects of unnatural flows and temperatures on pallid sturgeon and their habitats caused by the hypolimnetic discharge from Fort Peck Dam.

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology

improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 183, 191

Comments (Comment ID): 643933, 644088, 644100

Concern Statement: The MRRMP-EIS and its associated adaptive management plan should include the reach between Gavins Point Dam and Fort Randall Dam within the geographic scope. Despite effects of the operations of the Mainstem dams, portions of this reach still provide the type of natural habitat complexity that are highly altered or absent elsewhere in the basin.

Response: The reservoirs and inter-reservoir reaches (from Lake Sakakawea to Lewis and Clark Lake) are excluded from the effects analysis based on the assumption that these habitats are unlikely to support reproductive populations of pallid sturgeon. These assumptions may be revisited if conflicting information arise through the science and adaptive management process.

Representative Quotes (Correspondence ID): 183

Comments (Comment ID): 643941

Concern Statement: The full geographic range of jeopardizing conditions for all three species should be included and studied as part of a comprehensive, scientific evaluation; not just the downstream effects. The geographic scope should also include the full range of the endemic species. The purpose and need statements do not reflect the full geographic range where USACE has both authority and current management actions.

Response: Endangered Species Act consultation regulations define the “action area” as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area defined in the 2017 Biological Assessment was defined as the Missouri River Mainstem and portions of major tributaries including the Kansas and Yellowstone Rivers where listed species could be influenced by USACE operations. USACE Missouri River Mainstem Reservoir operations primarily affect the area of the Missouri River and its reservoir system from the headwaters of Fort Peck Lake in Montana downstream to the mouth of the river near St. Louis MO River Mile 0 at the confluence with the Mississippi River. The action area ends at the confluence of the Missouri and Mississippi River because it was determined that impacts from the proposed action beyond the confluence are not discernable. USFWS found that the BA’s described action area is appropriate and found no need to modify it for the 2018 BiOP.

The scope of management actions considered in the MRRMP-EIS was consistent with the scope of the effects analysis. While it is true the full distribution of pallid sturgeon historically included the entire Missouri River and its connection with the Mississippi River, the geographic scope of the effects analysis, including management hypotheses, was constrained in part by the lack of available USACE actions that could influence pallid sturgeon populations upstream of Fort Peck Dam and in part by the present understanding of the geographic distribution of pallid sturgeon. The effects analysis was limited to the Upper Missouri River Mainstem from Fort Peck Dam to the headwaters of Lake Sakakawea, the Yellowstone River upstream from the confluence with the Upper Missouri River for an unspecified distance, the lower Missouri River Mainstem from Gavins Point Dam to the confluence with the Mississippi River at St. Louis, an

unspecified distance downstream in the Mississippi River, and various tributaries to these river segments that might be occupied by pallid sturgeon. This scope was developed in coordination with USFWS.

USACE recognizes that some species life-cycles, especially least tern and piping plover occur outside of the study area. However, the aspect of the life-cycle affected by USACE river operations is breeding and nesting and the focus of this planning effort. However, understanding the actions that USACE will be taking to improve species survival and reproduction, USFWS can consider these benefits when consulting with entities in other portions of the species range.

As occurred during the effects analysis (EA), literature and ongoing research from outside the geographic area defined for the MRRP-EIS (e.g., upstream of Fort Peck Dam) may be used where it helps to inform the evaluation of hypotheses and potential management actions.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644834, 644835

Concern Statement: If any of the reserve hypothesis turn out to be the critical, scientific issues that might have been considered during a time-critical window could create new and different kinds of jeopardy for the three species.

Response: Through the effects analysis and the development of the SAMP, USACE identified a number of reserve hypotheses. These include hypotheses that are not deemed important to investigate at this time, have high uncertainty and require further investigation, or are outside of USACE authority. If new information arises or additional authorities are granted that suggested re-evaluation of a reserve hypotheses, USACE will determine whether to move forward with the hypotheses and conduct the appropriate level of NEPA review prior to implementation.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644839

Concern Statement: The purpose and need statements should reflect whether budgetary appropriations and expenditures are influencing factors in the MRRMP-EIS. Additional alternative financing sections could be added to the MRRMP-EIS.

Response: Cost was not considered in development of the alternatives. Additionally, no alternative was rejected solely because of cost reasons although costs of the various alternatives were developed for comparison between alternatives. The alternatives were designed to meet species objectives and the impacts of the different alternatives were estimated and compared.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644888

Concern Statement: The Purpose and Need Statement fails to provide guiding criteria for USACE to meet its obligations under the Endangered Species Act. Due to the vagueness of the purpose and need statement, the MRRMP-EIS uses criteria for the selection of an alternative that have little to do with accomplishing species objectives, and much to do with ensuring that the selected alternative maximizes human consideration interests. To remedy this inadequacy, the MRRMP-EIS should reformulate its purpose and need statement to efficiently identify the agency's responsibilities and produce an EIS which properly focuses on species objectives and goals.

Response: USACE considered a full range of reasonable alternatives designed to meet the endangered species objectives and compared the impacts of these different alternatives in terms of resources described in the Affected Environment and Environmental Consequences. Section 2.9 of the Final EIS provides a clear comparison of alternatives in terms of the species objectives, Affected Environment and Environmental Consequences and provides a description of how those factors were weighed in the decision. More-detailed comparisons of the alternatives in terms of species objectives are provided in Sections 3.3 and 3.4. The environmental consequences section forms the scientific and analytic basis for comparisons of alternatives including the proposed action (CFR 1502.16). NEPA regulations intend decision-makers to use information from the environmental consequences analysis in the decision-making process. That is the purpose of analyzing the environmental impacts of alternatives. Environmental impact resource topics do not need to be designated as objectives or explained as part of the purpose and need in order for them to be considered in decision-making. It is appropriate to define the purpose and need statement in terms of the species and to base its decision on a comparison of alternative ways to meet species needs and the associated environmental consequences.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644936, 644939

Concern Statement: The MRRMP-EIS should include modifications to increase the emphasis on development of pallid sturgeon science, include sediment management as a component of the management plan, and actively address flow constraints from Fort Randall Dam to Lewis and Clark Lake.

Response: The SAMP outlines a comprehensive and structured approach for conducting pallid sturgeon science and incorporating the results into future management. As described in Section 2.10, USACE will continue to analyze how the flow release under the preferred alternative may impact private landowners and if these impacts are covered by any existing easements. Where an easement does not already exist, USACE will continue to effectively strategize how to minimize the impacts over the next nine years. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at <https://linkprotect.cudasvc.com/url?a=https://www.moriverrecovery.org&c=E,1,5GkqO45bb8CllqKfL5i0v5MQomxeCPRVnp1QCyd5hnVMi0jZaB5nyt4rgB7UYvbtVGpCjFQJISjn7uyKCSJq8q6snvffFm65fDdlvRsCRGRWjzbhxm&typo=1>). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645153

Concern Statement: The MRRMP-EIS should develop a more specific Purpose and Need Statement and reduce prioritizing the human consideration impacts.

Response: The purpose and need along with the species objectives provide enough specificity to allow comparison of alternatives, and ultimately, to determine if the selected alternative is successful. USACE has examined the impacts on human considerations and other resources in the Affected Environment and Environmental Consequences, but has not prioritized them. USACE has identified an alternative that meets the purpose and need and species objectives that has the least amount of impact to the range of interests identified in the Affected Environment and Environmental Consequences

sections. The reasoning behind the decision has been provided in Section 2.9 of the Final EIS.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645200

Concern Statement: Land acquisition programs should include sale-leaseback to enable portions of prime farmland kept productive while conservation plans are devised and implemented.

Response: Current practice is to allow a portion of lands purchased for BSNP Mitigation to be available for farming leases. It is anticipated that this practice would continue under the plan.

Representative Quotes (Correspondence ID): 221
Comments (Comment ID): 645299

Concern Statement: Key tributaries, like the Platte River, should be included within the geographic scope of the MRRMP-EIS.

Response: The effects analysis included various tributaries to the Upper Missouri River Mainstem from Fort Peck Dam to the headwaters of Lake Sakakawea, the Yellowstone River upstream from the confluence with the Upper Missouri River for an unspecified distance, the lower Missouri River Mainstem from Gavins Point Dam to the confluence with the Mississippi River at St. Louis, and unspecified distance downstream in the Mississippi River that might be occupied by the pallid sturgeon. USACE considered the Platte River Flow Management hypothesis and given the high degree of uncertainty and availability of other management actions did not consider this a reasonable hypothesis to include in developing alternatives under the Management Plan. However, the geographic scope of the MRRP, as defined in Chapter 4 of the SAMP does not preclude efforts by USACE to coordinate with other entities involved in developing actions on tributaries. Additionally, the effects from the Platte River Recovery Implementation Program were considered as part of the cumulative impacts, including the three listed species, as the program is seeking to enhance, restore, and protect habitat for those species.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645540

Concern Statement: The MRRMP-EIS should describe within the SAMP what actions would be taken and when and what actions would not be implemented within the timeframe identified.

Response: Chapter 4 of the MRRP-EIS describes the implementation of the preferred alternative under adaptive management. This chapter summarizes how USACE would implement the preferred alternative under the SAMP recognizing the remaining uncertainty associated with many of the proposed management actions and with the ecology of the listed species (particularly for the pallid sturgeon). A proposed schedule for implementation can be found in Figures 4-4 and 4-5.

Representative Quotes (Correspondence ID): 184, 238
Comments (Comment ID): 645789, 645835

Concern Statement: The Final MRRMP should include additional mitigation lands, particularly in Missouri, and this should be described/documented in the Final EIS.

Response: As described in Sections 1.1 and 1.5, the scope of the EIS include actions necessary to comply with the BSNP mitigation plan during the implementation timeframe for this EIS. The BSNP mitigation program will continue during the implementation of the MRRMP. In fact, the need for the EIS is based in part on the loss of aquatic and terrestrial habitats due to the BSNP and its contribution to the ESA-listing of the pallid sturgeon, piping plover, and interior least tern.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644597

ON1000 Other NEPA Issues: General Comments

Concern Statement: The Draft EIS document should be subject to independent science review.

Response: There is no requirement under NEPA to subject draft environmental impact statements to independent scientific reviews. However, as part of the USACE process, the EIS has been through an agency technical review and an independent external peer review. These reviews exceed the required 45-day public review of a draft EIS.

Representative Quotes (Correspondence ID): 9, 23, 77
Comments (Comment ID): 626671, 636785

Concern Statement: USACE needs to visit reservations to discuss the Draft EIS because the Tribes do not have money to travel.

Response: USACE has had a number of meetings with potentially impacted Tribes and travelled to meet with Tribal leaders on Tribal reservations multiple times during preparation of the EIS. See Chapter 5 for a discussion of Tribal coordination and consultation.

Representative Quotes (Correspondence ID): 9
Comments (Comment ID): 627490

Concern Statement: The lower Missouri River basin acreage requirement is deficient and the Draft EIS should discuss this issue.

Response: The 2003 Supplemental EIS for the BSNP Mitigation Program does not specify an end date at which all mitigation acreage needs to be acquired and clearly states that the BSNP mitigation program implementation would be subject to funding constraints.

Representative Quotes (Correspondence ID): 42
Comments (Comment ID): 628482

Concern Statement: The public should have been allowed to ask questions in front of all who attended the hearing at the Draft EIS public meeting.

Response: The purpose of the public meetings was to allow the agency to collect comments on the Draft EIS in order to understand the concerns of the public and make any appropriate changes to the EIS. There are a variety of formats that can be used from open house formats to public hearing formats. Each has benefits allowing the public to engage with agency staff in different ways. Oftentimes during more formal hearing portions of meetings, the agency must limit the amount of time to each speaker to

ensure that anyone who wants to speak is able to within the time allotted for the meeting. However, speakers are and were encouraged to submit their entire comment if they were unable to convey it all verbally within the allotted time.

Representative Quotes (Correspondence ID): 90
Comments (Comment ID): 636828

Concern Statement: Any decision made outside the Record of Decision (ROD) must go through full NEPA review and a separate environmental impact statement. Rigorous review should also apply to any adaptive management decision that goes beyond the scope of the Master Manual.

Response: As described in Section 4.9, decisions or actions not contemplated in the EIS could require additional NEPA analyses. This could come in the form of an environmental assessment or environmental impact statement. However, USACE could also streamline the analysis using a tiered NEPA document or issuing a supplemental Final EIS depending on the type of action and relationship to the existing EIS.

Representative Quotes (Correspondence ID): 27, 64, 98, 145, 173, 176, 228, 229
Comments (Comment ID): 637641, 641391, 633688, 633523, 644765, 644897, 645468, 645625, 645910

Concern Statement: USACE should include information on the number and character of acres of land offered for sale under the BSNP mitigation or other programs in the Missouri River basin.

Response: Landowners place land on the market and remove land from the market on a regular basis so there is not a set number of land available for purchase. Landowners sometimes approach USACE willing to sell and USACE sometimes asks specific landowners if they would be willing to sell if a property is needed for a project. Providing the number and character of acres offered for sale at a snap-shot in time does not appear to be a pertinent metric for the MRRMP-EIS.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640155

Concern Statement: Adequate time was not allocated to the process of selecting alternatives, thus limiting the number of alternatives in the Draft EIS.

Response: The Notice of Intent to prepare the Draft EIS was issued on August 9, 2013. USACE then developed the Draft EIS over a three-year period and released it in December 2016. The agency feels that is was an adequate amount of time to develop a range of alternatives to be analyzed in the EIS. No alternatives were selected at the time of the Draft EIS for implementation, but rather USACE identified their preferred alternative. USACE will not select an alternative until a Record of Decision is issued.

Representative Quotes (Correspondence ID): 192, 205
Comments (Comment ID): 642125

Concern Statement: The SAMP is an integral component of the MRRMP and should be recognized and its acceptance documented by the ROD. The ROD should also acknowledge the living nature of the SAMP.

Response: USACE agrees with the commenter and plans to include adoption of the SAMP as an integrated part of the Record of Decision.

Representative Quotes (Correspondence ID): 148, 229
Comments (Comment ID): 642690, 644898

Concern Statement: There should be an opportunity to review any future changes to the proposed Missouri River system operations that would result from implementation of the new system of adaptive management process.

Response: Any changes to the operations of the Missouri River system will likely require a separate NEPA process and associate opportunity for the public to review and comment on any proposed changes.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643878

Concern Statement: USACE should establish a process within the SAMP for identifying new management actions and their status with regard to existing NEPA coverage early in the study process (e.g., Level 1). Early NEPA compliance documentation would allow rapid implementation of new approaches at Levels 2 and 3.

Response: Section 4.9 describes how USACE will determine the additional need for future NEPA analyses based on the development of adaptive management actions considered for implementation.

Representative Quotes (Correspondence ID): 184
Comments (Comment ID): 643965

Concern Statement: More design options are needed for habitat discussion within MRRIC regarding fish and wildlife habitat and human interests.

Response: Specific design options are examined on a site-specific basis. The MRRMP-EIS is a programmatic document that describes the general types of construction actions that could occur as part of the preferred alternative. Continuing engagement with MRRIC and site-specific NEPA processes will allow input on detailed site-specific designs.

Representative Quotes (Correspondence ID): 225
Comments (Comment ID): 644421

Concern Statement: MRRIC members were not appropriately treated in making meeting materials available for MRRIC meetings; and insufficient time was provided for review of the Draft EIS.

Response: In response to concerns about insufficient time to review the Draft EIS and associated documents, USACE extended the original 60-day comment period. The revised comment period extended from Dec. 26, 2016, through April 24, 2017 or roughly 120 days.

Representative Quotes (Correspondence ID): 225
Comments (Comment ID): 644423

Concern Statement: The review team that conducts the comprehensive Independent Peer Review of a USACE Draft EIS must include individuals who have a comprehensive understanding of the navigation economic model.

Response: USACE believes ISAP and ISETR have the necessary expertise as evidenced by extensive comments on the navigation analysis provided in their IEPR review of the Draft EIS and Draft SAMP.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644759

Concern Statement: To assume at this stage in the NEPA process that flood pulse alternatives would not be selected is an error that preordains the outcome and shorts the NEPA process.

Response: In the Draft EIS, USACE did not select an alternative as alternatives are only selected in a Record of Decision, and the selection of an alternative in a Draft EIS would be pre-decisional. Rather, USACE identified a preferred alternative to allow the public to understand which alternative USACE would prefer to implement at that time.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644877

Concern Statement: USACE is encouraged to incorporate into the purpose and need statement the primary goals for species restoration and a brief description of the various measures that can accomplish those goals.

Response: As defined by 40 CFR § 1502.13, the purpose and need section of a NEPA document is a discussion of the underlying purpose and need to which the agency is responding in proposing the alternatives. However, the Draft EIS exceeds this requirement by providing a discussion of plan objectives, which are how USACE will measure whether alternatives would meet the purpose and fulfill the need of the plan.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644935

Concern Statement: Any of the Draft EIS alternatives that would require a change in the Master Manual cannot be considered without a separate NEPA process.

Response: Any changes to the operations of the Missouri River system will likely require a separate NEPA process and associated opportunity for the public to review and comment on any proposed changes

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645126

Concern Statement: USACE does not have organic or independent authority to proceed on flow changes without Congressional authorization and utilization of the NEPA process.

Response: Any changes to the operations of the Missouri River system will likely require a separate NEPA process and associated opportunity for the public to review and comment on any proposed changes. However, the EIS considers actions currently outside of the Master Manual to ensure all reasonable alternatives were considered.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645184

Concern Statement: The Draft EIS admits "a supplemental NEPA process may be necessary prior to the end of the 15-year period." Yet, it fails to clarify the kind of action which would trigger this requirement, such as going beyond the dictates of the Master Manual.

Response: NEPA regulations provide clear guidance on when to prepare a supplemental EIS. 40 CFR § 1502.9 states that Agencies "shall prepare supplements to either draft or Final environmental impact statements if: (i) The agency makes substantial changes in the

proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.” USACE intends to follow these regulations in determining whether supplemental NEPA processes are necessary.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645186

Concern Statement: The Draft EIS is presently a perfect example of permitting substantial changes without fully satisfying NEPA requirements.

Response: Although it is somewhat unclear as to the commenter’s assertion, it is assumed for purposes of response that they are referring to the consideration of alternatives that would require changes to the Master Manual. However, USACE did not select an alternative for implementation at the time the Draft EIS was released. Rather, USACE merely identified a preferred alternative. If USACE were to ultimately seek to implement an alternative outside of the Final EIS and Record of Decision, USACE would initiate a new NEPA process.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645187

Concern Statement: The Fischenich et al. (2014) report is a crucial document underpinning the geomorphic analysis of the Draft EIS. This report was not made available to the public along with the other Effects Analysis reports that were released with the MRRMP-EIS. It was only disclosed (in an incomplete version) after February 16, which was halfway through the 120-day comment period. This compromised our ability to conduct a full and rigorous review of the material.

Response: NEPA does not require that an agency publish all references used to develop the NEPA document. Instead the EIS included a reference chapter to allow reviewers to better understand the documents upon which the agency relied. USACE exceeded the publication requirements by making the effects analysis reports available for reference during the public comment period.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645363

Concern Statement: When will the referenced SAMP text (page 105) under development be available for public review?

Response: The SAMP was released as a companion document with the Draft EIS and was available for review during the same period.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645598

Concern Statement: How can the public comment on material contained in Section 2.6.3, Data and Information Management, when the referenced dates have already passed at the time the comment period on the Draft MRRMP-EIS had ended?

Response: Comment Noted. Chapter 4 of the EIS and Chapter 6 of the SAMP provide a thorough description of the Data and Information Management structure. These descriptions were in the Draft EIS and are in the Final EIS.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645606

Concern Statement: The lack of oversight for administrative decisions in the SAMP permits USACE to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional NEPA requirements.

Response: USACE will assess the environmental review requirements of any new actions proposed as part of the SAMP as described in Section 4.9 of the Draft EIS.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645626

Concern Statement: The Draft EIS and the SAMP open the door to actions that go beyond the established ROD without automatically triggering a full NEPA process to produce a supplemental EIS, as is required by law. The Draft EIS fails to clarify what constitutes warranted and feasible options.

Response: USACE will assess the environmental review requirements of any new actions proposed as part of the SAMP as described in Section 4.9 of the Draft EIS.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645627

Concern Statement: The Draft EIS should specify a robust process for ongoing analysis of economic impacts of SAMP actions to be able to inform the process and decisions regarding changes to management plan actions, while ensuring compliance with the Master Manual.

Response: Comment Noted. Chapter 5 of the EIS provides a thorough description of the approach that will be followed related to ongoing analysis of economic impacts.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645640

Concern Statement: In the Final EIS, USACE should consider major droughts for post-event investigations.

Response: Comment noted. Post-drought investigations related to species response would be covered by the ongoing monitoring programs for pallid sturgeon and terns and plovers which occur every year.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645801

Concern Statement: USACE, in concert with the State, must develop guidance on how mitigation in the connected Missouri River Yellowstone River ecosystem will avoid jeopardy to pallid sturgeon as well as mitigate for impacts to other native fish and wildlife species. This should be included in the alternative analysis prior to its finalization of the EIS.

Response: Mitigating for impacts to fish and wildlife species beyond the three ESA listed species is beyond the scope of this Plan although it is likely that actions taken for endangered species would have incidental benefits to other native fish and wildlife species as described in Chapter 3 of the EIS.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 646302

Concern Statement: What is the weight given to the filtering for human considerations as depicted in Figure 4 on page 11? How much negative impact causes a management action to be eliminated? How is the negative impact quantified? How large a part does the socioeconomic have in evaluating the actions – what percent among the other criteria? Nothing is said in Figure 4 of the level of filtering that occurs. Human Considerations was barely mentioned in the Executive Summary, yet considerable weight was given to them in the alternative analyses. This should be clearly laid out for the public to know if any particular human consideration / interest group received greater weight than others.

Response: A quantified weighting of different resource categories was not conducted nor is this required by NEPA. The EIS clearly describes the reasons for selection of the preferred alternative in Section 2.9 of the EIS. The environmental consequences section forms the scientific and analytic basis for comparisons of alternatives including the proposed action (CFR 1502.16). NEPA regulations intend for decision-makers to use information from the environmental consequences analysis in the decision-making process.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645238

PN10000 Purpose and Need: Compliance with Other Laws, Policies, and Regulations

Concern Statement: The SAMP lacks any assurances that the laws of North Dakota will be supported or that the state will be part of the decision-making process. The lack of a clearly defined collaborative process requiring state agreement prior to implementing a level 2, 3, or 4 action raises concern/suspicion that state laws will not be respected. The SAMP lacks identified limits of hydraulic modification that could occur and the lack of a clear process to consult the state being affected by the decision-making process in implementing the SAMP. In order to be acceptable, the SAMP needs a science supported menu of actions with or without a limited amount of substitutions to ensure maintenance of existing beneficial uses and protection of aquatic life. North Dakota cannot support Alternative 3 without inclusion of specific boundaries in the SAMP that would protect existing beneficial uses and support state water quality standards. Also necessary is a clearly defined process that would require state consultation prior to Level 2 testing, or implementation (Level 3 and 4) of the SAMP.

Response: The preferred alternative describes the management actions that are intended to be implemented. The only flow action associated with the preferred alternative is the one-time flow test from Gavins Point Dam that may be implemented after 9 years if determined to be necessary. The process for adjusting actions in the future is clearly laid out in the SAMP including a description of State involvement in the process.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645651

Concern Statement: If an alternative other than Alternative 3 is selected as the preferred alternative in the MRRMP-EIS the process for creating flow changes needs to be clear to stakeholders and comply with the Master Manual. Additionally, any alternative that would require revisions to the Master Manual cannot be considered without a separate NEPA process. The Final MRRMP-EIS should contain procedural protections that will govern

future consideration of any proposed flow modifications or deviations outside the bounds of the Master Manual that will provide for direct consultation with states.

Response: Future USACE implementation of management action under the MRRP will comply with NEPA. Sections 1.5.3 and 4.9 of the EIS describe considerations for future NEPA compliance associated with the scope of the MRRMP-EIS.

Representative Quotes (Correspondence ID): 27, 29, 44, 46, 64, 65, 96, 122, 126, 167, 168, 173, 176, 192, 197, 219, 221, 222, 228

Comments (Comment ID): 626710, 645805, 645755, 645629, 645449, 645291, 645244, 645126, 644793, 644782, 644780, 644745, 643483, 641630, 631574, 627015, 643878, 641385, 640208, 638303, 633771, 633523, 631575, 628523, 626732

Concern Statement: An alternative must be consistent with the eight authorized purposes. USACE has an obligation to meet targets proposed in each Annual Operating Plan. The authorized purposes and the priority purposes of navigation and flood control are under emphasized in the document. Science-based planning can promote these authorized purposes.

Response: The current range of alternatives represents a reasonable range that could be taken in relation to the 2003 BiOp and in relation to the recent effects analysis. The alternatives selected for analysis were developed to meet the objectives and the purpose and need of the MRRMP-EIS. The impacts of the alternatives on resources, including the authorized purposes, were forecasted and compared in the EIS. USACE believes it has identified the plan that achieves species objectives while causing the least amount of impacts to the range of river uses.

Representative Quotes (Correspondence ID): 29, 34, 37, 46, 60, 69, 101, 130, 132, 136, 140, 144, 161, 173, 175, 176, 177, 187, 189, 205, 211, 216, 221, 222, 233

Comments (Comment ID): 646271, 645298, 644779, 644775, 644540, 643420, 643415, 642829, 642140, 642117, 641548, 641400, 641384, 641383, 636861, 634896, 633924, 633867, 633851, 633837, 633825, 631137, 628519, 628518, 628455, 628334, 626715, 641575

Concern Statement: USACE should “frontload” the biological assessment to meet the purpose and objectives of the Draft MRRMP-EIS and include these in the Final MRRMP-EIS.

Response: The best available science remains inadequate to quantify the effects of physical (abiotic) changes to the Missouri River on pallid sturgeon population dynamics, in spite of the availability of the new information since the 2003 Amended BiOp was issued. Efforts to push beyond a basic understanding of the species’ ecology to facilitate predictions of environmental causes and effects on pallid sturgeon are still compromised by fundamental information gaps. Lines of evidence for many of the pallid sturgeon management hypotheses are limited to theoretical deduction, inference from sparse empirical datasets, or expert opinion. The independently-led Effects Analysis came to these conclusions. Given the high level of uncertainty regarding the necessary actions to address the listed species’ needs, USACE and USFWS agreed that proceeding under a rigorous and progressive SAMP, based on the results of the Effects Analysis, would provide the most effective, efficient, and accountable way to manage risks to the species, address key uncertainties, and identify the scope and scale of actions ultimately required to achieve the MRRP objectives without expending resources on actions which prove ineffective.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 645991

Concern Statement: USACE should initiate consultation with USFWS. The MRRMP-EIS would benefit from an updated Biological Assessment and subsequent Biological Opinion containing new Reasonable and Prudent Alternatives before any decision is rendered.

Response: Comment noted. This recommendation is consistent with the process that was followed.

Representative Quotes (Correspondence ID): 131, 183, 240
Comments (Comment ID): 645874, 645784, 643962

Concern Statement: Any action which results or is likely to result in dredge or fill in the Missouri River or any tributary to the Missouri River will require a Section 401 permit and possibly a general storm water construction permit. A sovereign land permit application and review by the Office of the State Engineer would be required for ESH construction on the Missouri River and for any requests to restrict human access on Missouri River sandbars in North Dakota.

Response: USACE would comply with CWA Section 401 prior to construction of projects, including ESH construction. This environmental compliance would occur during site-specific project planning.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645788, 645787

Concern Statement: Sand and gravel dredging is discussed in the Draft MRRMP-EIS as an authorized purpose and is not. This should be corrected.

Response: USACE has recognized this error and adjusted the MRRMP-EIS to correct it.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645556

Concern Statement: The Final EIS should state that according to the Master Manual, the Missouri River cannot be managed to benefit the Mississippi River.

Response: This clarification has been added to the Mississippi River section in Chapter 3 of the Final EIS.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645498

Concern Statement: Decisions made through adaptive management must only be made after full NEPA analysis and independent peer review as well as a separate Environmental Impact Statement that contains complete hydrologic and economic modeling. These concerns also relate to the SAMP.

Response: USACE agrees with the commenter in part. As described in Sections 1.5.3 and 4.9, USACE contemplates the need for additional NEPA analyses for actions not contemplated or evaluated in the current MRRMP-EIS. This could include the need for site-specific analyses once locations have been identified for implementation. However, some actions fully analyzed in the MRRMP-EIS could be implemented immediately upon selection of a preferred alternative. For new actions, the level or amount of modelling

and need for independent peer review would be commensurate with the actions being proposed in order to allow for an informed decision under NEPA.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645468

Concern Statement: USACE should be aware of the North Dakota Aquatic Nuisance Species (ANS) policy that is in place when working on waters within our state, and ensure that it is being followed in the implementation of the MRRMP-EIS.

Response: USACE will comply with applicable state and local laws and policies when implementing actions under the MRRMP-EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645403

Concern Statement: Guidance has not been developed for Section 3176 of the Water Resources and Development Act (WRDA) of 2007 which may prove vital in expanding the geographic scope of the MRRMP-EIS. Guidance should be developed for Section 3176 of the WRDA of 2007 that allows USACE to implement actions which, based on science, will avoid jeopardy and contribute to recovery of the listed species - regardless of whether the action is on the Missouri River Mainstem.

Response: Comment noted.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645372

Concern Statement: The MRRMP-EIS should add references to the states and their authorities and recognize state governments as sovereign entities.

Response: States and their authorities and laws are recognized and described in the governance section of the SAMP.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645361

Concern Statement: USACE has failed to fully implement any flow related Reasonable and Prudent Alternative as legally required for the pallid sturgeon in the 2000 and 2003 Biological Opinions from their sister agency, the U.S. Fish and Wildlife Service.

Response: This comment pertains to the 2003 Biological Opinion. Comment noted.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645323

Concern Statement: USACE needs to review the most recent executive order concerning federal actions for projects in flood plains (Executive Order 13960) to determine whether the various environmental flow alternatives comply with current federal requirements.

Response: The policy established in Executive Order 13960 is to improve the Nation's preparedness and resiliency against flooding. The order focuses on occupancy and development of the floodplain. Upon review of Executive Order 13960, USACE will evaluate compliance for any site-specific action and flow adjustment.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645259

Concern Statement: As USACE considers which actions it will ultimately implement, Missouri asserts the agency must ensure that such actions are consistent with existing Congressional authority and established priorities including flood control and navigation. Even though NEPA requires USACE to analyze a broad range of alternatives, most of the alternatives presented in the Draft MRRMP-EIS are inconsistent with USACE's authority given the impacts they would have to flood control and navigation.

Response: USACE intends to continue to serve the authorized purposes of the Missouri River Mainstem Reservoir System. CEQ's NEPA regulations require consideration of reasonable alternatives not within the jurisdiction of the lead agency (40 CFR 1502.14). The EIS includes analysis of impacts for all authorized purposes and a variety of other Human Considerations.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645246

Concern Statement: A deviation from the Master Manual for a one-time flow event is not consistent with USACE's Congressional authority and it should not be pursued.

Response: Comment noted. The process for modifying the Master Manual in the future is dependent upon what specific management action is being contemplated.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645245

Concern Statement: There is a lack of mitigation in the preferred alternative. USACE must include mitigation habitat planning in the MRRMP-EIS.

Response: The need to acquire and develop riparian and aquatic habitat on 166,750 acres of land as authorized by Section 601a of WRDA 1986 and Section 334 of WRDA 1999 and recommended and described in the 2003 ROD for the BSNP Mitigation Project Supplemental EIS is still considered relevant and remains unchanged. Implementation of the Mitigation Project was anticipated to take more than 30 years but an annual rate of implementation was not specified due to budget uncertainty. Due to current and anticipated future administration budget priorities, it is assumed that land acquisition over the 15-year implementation timeframe for the Management Plan would continue to be focused on lands that can be used to meet endangered species objectives while also contributing to BSNP mitigation. Habitat development would be implemented on any acquired lands which would be credited toward the BSNP mitigation requirements. The Draft EIS described the Mitigation Project in Section 1.1.5, discussed its continued relevance in Section 1.4, and described its relationship to the scope of the MRRMP-EIS in Section 1.6. The Final EIS retains this language and USACE has also added BSNP mitigation as part of the Biological Assessment 7(a)(1) Plan.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645228

Concern Statement: USACE is only proposing to avoid jeopardy of the three threatened and endangered species – a much more narrow effort which fails to carry-out the intent of WRDA 2007. The ecosystem nor any of the other native species are no longer a part of the Recovery Program. The legality of this change is questioned.

Response: Section 120 of the Consolidated Appropriations Act of 2012 included language that prohibited USACE from funding MRERP during Fiscal Year (FY) 2012. That Congressional direction has not changed in any subsequent appropriations bill passed

by Congress. USACE acknowledges the scope of the MRRMP-EIS is narrower than the scope of MRERP. However, the need for the MRRMP as described in the Draft EIS remained, and as such, USACE initiated a new EIS process, separate from that which was conducted for MRERP.

Representative Quotes (Correspondence ID): 148, 179, 229
Comments (Comment ID): 645201, 644895, 642648

Concern Statement: If proposed management actions involve actions outside of the scope of the Master Manual, USACE should consult with each basin state.

Response: Comment noted. The governance section of the SAMP describes the process that will be followed during AM implementation including basin state involvement.

Representative Quotes (Correspondence ID): 206, 213, 236
Comments (Comment ID): 645152, 643311, 641735

Concern Statement: USACE should pursue a better understanding with the U.S. Environmental Protection Agency and state natural resource agencies that sediment augmentation is not a pollutant or a violation of the Clean Water Act.

Response: Sediment redistribution as a management action was considered and discussed in Section 2.5.1.14 of the Draft EIS. Based on the results of Phase I of the Lewis and Clark Sediment Management Study, and current prioritization of management hypotheses, this action was eliminated from consideration in the Draft EIS because its effectiveness at contributing towards the species objectives and implementation feasibility has not been demonstrated. Phase II of the Sediment Study is ongoing and the results of that study would be evaluated through the process established in the SAMP. Coordination with the U.S. Environmental Protection Agency would occur in association with any future planning efforts related to implementation of sediment augmentation management actions.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 6645135

Concern Statement: Mitigation is only given a role in recovery under Alternative 2. However, this does not include mitigation schedules and requirements which harms the legal meaning of mitigation that would require clarification in other forums.

Response: The need to acquire and develop riparian and aquatic habitat on 166,750 acres of land as authorized by Section 601a of WRDA 1986 and Section 334 of WRDA 1999 and recommended and described in the 2003 ROD for the BSNP Mitigation Project Supplemental EIS is still considered relevant and remains unchanged. Implementation of the Mitigation Project was anticipated to take more than 30 years but an annual rate of implementation was not specified due to budget uncertainty. Due to current and anticipated future administration budget priorities, it is assumed that land acquisition over the 15-year implementation timeframe for the Management Plan would continue to be focused on lands that can be used to meet endangered species objectives while also contributing to BSNP mitigation. Habitat development would be implemented on any acquired lands which would be credited toward the BSNP mitigation requirements. The Draft EIS describes the Mitigation Project in Section 1.1.5, discussed its continued relevance in Section 1.4, and describes its relationship to the scope of the MRRMP-EIS in Section 1.6. The Final EIS retains this language and USACE has also added BSNP mitigation as part of the Biological Assessment 7(a)(1) Plan.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644930

Concern Statement: There is concern with the lack of specific actions related to acquiring and developing lands associated with the Bank Stabilization and Navigation Project (BSNP) Mitigation Project authorities in the Draft MRRMP-EIS and the current preferred alternative. The MRRMP-EIS should reflect USACE duty to fulfill its obligations under the Mitigation Project and provide details describing how this part of the mission will be accomplished. To date the obligations of the BSNP Mitigation Project have not been completed but are still relevant and remain unchanged. Further efforts should be made to complete the authorized mitigation for this habitat loss pursuant to Section 5018 of the Water Resources Development Act.

Response: The need to acquire and develop riparian and aquatic habitat on 166,750 acres of land as authorized by Section 601a of WRDA 1986 and Section 334 of WRDA 1999 and recommended and described in the 2003 ROD for the BSNP Mitigation Project Supplemental EIS is still considered relevant and remains unchanged. Implementation of the Mitigation Project was anticipated to take more than 30 years but an annual rate of implementation was not specified due to budget uncertainty. Due to current and anticipated future administration budget priorities, it is assumed that land acquisition over the 15-year implementation timeframe for the Management Plan would continue to be focused on lands that can be used to meet endangered species objectives while also contributing to BSNP mitigation. Habitat development would be implemented on any acquired lands which would be credited toward the BSNP mitigation requirements. The Draft EIS described the Mitigation Project in Section 1.1.5, discussed its continued relevance in Section 1.4, and described its relationship to the scope of the MRRMP-EIS in Section 1.6. The Final EIS retains this language and USACE has also added BSNP mitigation as part of the Biological Assessment 7(a)(1) Plan.

Representative Quotes (Correspondence ID): 31, 50, 55, 131, 147, 148, 177, 181, 183, 184, 207, 229, 237

Comments (Comment ID): 644901, 644657, 643966, 643956, 643940, 643939, 643514, 643104, 642698, 641469, 640696, 640141, 640084, 628642, 626928

Concern Statement: The integrity of the channel remains the primary responsibility until obviated by Congress.

Response: Site-specific planning and design of IRC projects would take into account the need to maintain the authorized navigation channel.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644815

Concern Statement: The States have sovereign right to their real estate and actions that compromise that real estate, and the decisions relating to real estate resources, represent a federal takings related to States' real estate and resource assets.

Response: Comment noted.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644781

Concern Statement: Elimination or significant modification of BSNP Mitigation Project activities from the MRRP would seem to constitute a major program change. Without a

component of the BSNP Mitigation Project dedicated to sport and other native, non-endangered species, it is unclear how such program changes might continue to meet USACE's responsibility for compensatory mitigation from the BSNP project.

Response: The need to acquire and develop riparian and aquatic habitat on 166,750 acres of land as authorized by Section 601a of WRDA 1986 and Section 334 of WRDA 1999 and recommended and described in the 2003 ROD for the BSNP Mitigation Project Supplemental EIS is still considered relevant and remains unchanged. Implementation of the Mitigation Project was anticipated to take more than 30 years but an annual rate of implementation was not specified due to budget uncertainty. Due to current and anticipated future administration budget priorities, it is assumed that land acquisition over the 15-year implementation timeframe for the Management Plan would continue to be focused on lands that can be used to meet endangered species objectives while also contributing to BSNP mitigation. Habitat development would be implemented on any acquired lands which would be credited toward the BSNP mitigation requirements. The Draft EIS described the Mitigation Project in Section 1.1.5, discussed its continued relevance in Section 1.4, and described its relationship to the scope of the MRRMP-EIS in Section 1.6. The Final EIS retains this language and USACE has also added BSNP mitigation as part of the Biological Assessment 7(a)(1) Plan.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644635

Concern Statement: In Section 2.3, Table 10 needs to include a reference regarding Wild and Scenic Rivers Act Section 7 consultation with NPS for actions within the Missouri National Recreation River.

Response: Although Table 10 in Section 2.3 of the SAMP does not specifically call out Wild and Scenic River Act consultation with NPS, it does include a row on page 73 for agencies outside of the MRRIC collaborative process. Although NPS is a member of MRRIC, the participation on MRRIC does not obviate the need for USACE to consult with NPS on potential impacts to the Missouri National Recreational River under the Wild and Scenic Rivers Act. See Section 2.3.8.2 for the specific reference to consultation with NPS under Section 7 under the Act.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643961

Concern Statement: USACE must ensure continued consideration be given to the Emergent Sandbar Management Planning Approach and Management Plan for management actions within the Missouri National Recreation River.

Response: As described in Sections 6.11 of the MRRMP-EIS, USACE understands its requirements under Section 7 of the Wild and Scenic Rivers Act and is committed to complying with the law related to actions contemplated within the Missouri National Recreational River.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643954

Concern Statement: Outstandingly Remarkable Values must be protected under Section 10(a) of the Wild and Scenic Rivers Act. NPS manages the Missouri National Recreation River to protect and enhance for present and future generations Outstandingly Remarkable

Values which are reviewed for consistency with the anti-degradation policy in Section 10(a) of the Wild and Scenic Rivers Act.

Response: USACE will comply with Section 10 of the Wild and Scenic River Act.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643949

Concern Statement: Activities proposed in the MRRMP-EIS that meet the criteria for a federally assisted water resources project and are located within the Missouri National Recreational River will require a Section 7(a) determination prior to implementation.

Response: USACE understands its obligation under Section 7 of the Wild and Scenic Rivers Act and will coordinate with NPS on projects that could impact the Missouri National Recreational River.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643948

Concern Statement: The Final MRRMP-EIS must fully disclose how USACE will meet their Fish and Wildlife Coordination Act mitigation responsibilities for all native fish and wildlife species habitat on the river during implementation of the MRRP, and consider the adverse impacts to non-federally listed species by focusing habitat mitigation to only listed species for the next 15 years.

Response: The need to acquire and develop riparian and aquatic habitat on 166,750 acres of land as authorized by Section 601a of WRDA 1986 and Section 334 of WRDA 1999 and recommended and described in the 2003 ROD for the BSNP Mitigation Project Supplemental EIS is still considered relevant and remains unchanged. Implementation of the Mitigation Project was anticipated to take more than 30 years but an annual rate of implementation was not specified due to budget uncertainty. Due to current and anticipated future administration budget priorities, it is assumed that land acquisition over the 15-year implementation timeframe for the Management Plan would continue to be focused on lands that can be used to meet endangered species objectives while also contributing to BSNP mitigation. Habitat development would be implemented on any acquired lands which would be credited toward the BSNP mitigation requirements. The Draft EIS described the Mitigation Project in Section 1.1.5, discussed its continued relevance in Section 1.4, and described its relationship to the scope of the MRRMP-EIS in Section 1.6. The Final EIS retains this language and USACE has also added BSNP mitigation as part of the Biological Assessment 7(a)(1) Plan.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643938

Concern Statement: The "Water Rights" section does not mention state water rights.

Response: Section 6.5 of the EIS has been revised to describe state water rights in addition to the current discussion of Tribal water rights.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 643033

Concern Statement: The Department of Agriculture rule under the Farmland Protection Policy Act requires USACE to examine the potential impacts of the proposed actions, and if there are adverse effects on farmland preservation, to consider alternatives to lessen the

adverse effects. Additionally, the agencies should evaluate the conversion of prime farmland to fallow land or habitat mitigation through land acquisitions for projects.

Response: As described in Section 6.7 of the MRRMP-EIS, USACE will work with USDA before implementation of site-specific projects where Management Plan actions have the potential to convert farmland to non-agricultural uses. Additional information on the conversion of farmland from land acquisition is described in Section 3.10.

Representative Quotes (Correspondence ID): 220
Comments (Comment ID): 642149, 642148

Concern Statement: Pursuant to 7 CFR 1468.6, USACE must obtain prior authorization from the Natural Resources Conservation Service (NRCS) for any activities that will impact NRCS easement lands.

Response: USACE is working with the NRCS and willing seller land owners to ensure lands under NRCS easements are co-managed in a way that can accomplish the missions of both agencies.

Representative Quotes (Correspondence ID): 186
Comments (Comment ID): 641527

Concern Statement: USACE has sources of authority to increase significantly its habitat restoration projects and to provide efficacy and effectiveness to the restoration process for ecological and hydrological function activities that will also provide more room for the river and thereby reduce flood risk.

Response: The MRRMP-EIS and Draft SAMP include the creation of IRC habitat, spawning habitat, emergent sandbar habitat and associated research to address the habitat needs of the pallid sturgeon and terns and plovers. The SAMP outlines a process that could lead to increased habitat creation if deemed necessary.

Representative Quotes (Correspondence ID): 163
Comments (Comment ID): 641285

Concern Statement: The State of North Dakota tentatively supports the preferred alternative under specific conditions including: reconvening consultation, preparation of a new EIS for any changes to the Master Manual, and a commitment to complying with all state laws and regulatory requirements.

Response: Comment noted.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640189

Concern Statement: Dike notching is unlawfully taking private land without compensation which is violating the 5th amendment.

Response: The 5th Amendment of the US Constitution states that private property will not be taken for public use without just compensation. The US Supreme Court has ruled on more than 50 cases and has set out criteria to be used when determining if an unlawful taking of property has occurred. If takings claims were to occur, each claim would be analyzed based on site-specific and factual findings.

Representative Quotes (Correspondence ID): 90
Comments (Comment ID): 636824

Concern Statement: A degree of uncertainty in the science associated with the three threatened and endangered species should not be used to obfuscate the intent of Section 7 of the Endangered Species Act.

Response: The purpose of the Endangered Species Act as defined in Section 2(b) is to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the [specific] treaties and conventions.” In meeting its Section 7 obligations to “insure that its actions are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat,” USACE has proposed actions thought to be necessary to reduce the effects of the operations of the Missouri River system on listed species. USACE recognizes the complexity of the system and that additional information may be needed to provide more certainty that if program funding is expended, measurable improvements will occur. In order to be transparent and lay out a structured approach to improving conditions for affected listed species, USACE has developed the SAMP in order to set priorities for gaining more information and reducing uncertainty while implementing actions to meet listed species objectives as defined by USFWS.

Representative Quotes (Correspondence ID): 62
Comments (Comment ID): 631182

HH1000 *Hydrology and Hydraulics*

Concern Statement: The flood control and interior drainage modeling was completed for only four levee sites in the entire floodplain. The Draft EIS stated economic impacts are a fraction of total economic impacts because the flow management actions on interior drainage are missing from the analysis. This omission makes the Draft EIS incomplete and renders any claim of accurately predicted impacts of all six alternatives invalid. USACE should complete hydrologic modeling peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is completed.

Response: The analysis conducted for interior drainage is adequate for determining the impacts of the alternatives. The assumptions and limitations of the analysis are clearly presented in the Final EIS.

Representative Quotes (Correspondence ID): 98, 154, 173, 211, 228
Comments (Comment ID): 633687, 645630, 645523, 642137, 640943

Concern Statement: Under Alternative 4, the flow model may need calibration. The 126,000 cfs proposed results in flooding immediately downstream from Kansas City and substantially increases flood risks during the timeframe required for the pulse to clear the mouth of the river.

Response: The flood constraints were established so the ESH releases have an opportunity to run during the period of record. The Human Considerations analyses evaluate the impacts of those flows on Flood Risk throughout the basin.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645558

Concern Statement: Hydrologic modeling and peer reviewed comprehensive economic impact studies must be completed before any flow management action is implemented. The possible implementation of a one-time spawning cue release 9-10 years in the future allows adequate time to complete a full analysis of the impacts to stakeholders.

Response: The following text has been inserted within the EIS, Section 3.12.2.1, Impacts Assessment Methodology:

The Missouri River system as currently operated provides substantial flood damage reduction and benefits to the entire basin. Study alternatives include modifying operations of the Missouri River reservoir system with both higher and lower reservoir releases during select periods for species habitat benefits. The current HEC-ResSim and HEC-RAS analysis shows the potential for negative impacts to flood damage reduction for alternatives that include changes in reservoir flow releases. The current study methodology, which employs an 82-year period of record, is suitable for alternative comparison and providing an indication of change in flood risk. However, the methodology does not simulate a sufficient number of events and possible runoff combinations within the large Missouri River basin to evaluate potential change in downstream flood risk. Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645467

Concern Statement: Flow modeling for the alternatives is incomplete and inaccurate and the No Action alternative does not serve as an appropriate baseline for comparison of alternatives. The approach used for modeling the No Action alternative as the baseline sets false expectations for future management scenarios and inflates the value of the baseline alternative to pallid sturgeon. USACE should consider modeling the alternative based on actual historic conditions and operations of the reservoirs. This will encompass the actual variability in flows and allow for a more realistic implementation, set of alternatives, and SAMP.

Response: Reservoir operations and basin conditions have changed throughout the period of record (e.g., reservoirs were closed at different times, operational criteria has been updated, etc.). In order to estimate impacts that occur due to the operational changes in the various alternatives, each alternative, including the No Action, needs to have the same operational criteria when not operating for an alternative's specific criteria (e.g., ESH release, spawning cue, etc.). To accomplish this, a No Action simulation representing the current reservoir operations under the current basin conditions needed to be created. Although the modeled results for each alternative will not capture all of the real-time decisions and adjustments, the impacts provide an assessment of the differences between modeled alternatives.

Representative Quotes (Correspondence ID): 122, 238
Comments (Comment ID): 645331, 638390

Concern Statement: The use of averages and the 82-year period of record which includes years with major high- and low-water events is not appropriate and minimizes the damages caused during these years from flooding and severe drought and understates the impacts of the alternatives.

Response: Comment noted. The Final EIS discloses that large impacts could occur in certain years that may not be evident in reported average values.

Representative Quotes (Correspondence ID): 168, 176
Comments (Comment ID): 645173, 645172, 644752

Concern Statement: A hydraulic model should be created for the river reach from Oahe Dam to Lake Sharpe so that channel capacity information can be included when assessing potential impacts of various flows.

Response: USACE considered the need for a separate HEC-RAS model in the reach downstream of Oahe dam. The open river portion of this reach is very short. Due to the limited number of human considerations in this reach, USACE determined that the Oahe release and Big Bend reservoir pool level were adequate to represent alternative variability. These values are available from the ResSim model output for all alternatives.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645138

Concern Statement: The Dredgers continue to object to the HEC-RAS model being used for regulatory purposes relating to permits and decision making regarding bed degradation. USACE repeatedly agreed in MRRIC sessions to note that this data should not be used for regulatory purposes. The note is absent from the document and therefore skews the decision-making prospects. The agreed to note on modeling should be added.

Response: HEC-RAS is designed to perform one-dimensional hydraulic calculations for a full network of natural and constructed channels. The purpose of the HEC-RAS models was to create a baseline that represents current river conditions and to provide a tool to evaluate potential hydraulic changes resulting from proposed management actions or alternatives (e.g., channel reconfiguration and/or flow management). HEC-RAS is used extensively throughout the world and is an appropriate model for this EIS.

In addition to the HEC-RAS analyses referenced above, a separate analysis was conducted to assess the impact that changing flow releases in accordance with the alternatives could have on sediment accumulation rates in the dredging segments. While this analysis utilized the flow routing capability of the HEC-RAS model to determine flows for the various alternatives, the evaluation was a gage analysis based on rating curves rather than a modeling exercise. It used the change in sedimentation rates from seven U.S. Geological Survey (USGS) gages located at different points between St. Joseph and Hermann, Missouri as the basis for the impact assessment. The technical basis and limitations for this analysis is further described in the supporting document "Commercial Sand and Gravel Dredging Environmental Consequences Analysis Technical Report" which is available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644785

Concern Statement: The use of years in the 82-year period of record where the government mandated artificial regulatory action that diminished the presence of navigation on the

Missouri river should be excluded from modeling. The use of these years understates the benefits of navigation in the MRRMP-EIS.

Response: Comment noted. Use of the referenced years do not affect the ability to estimate relative impacts from implementing the different alternatives.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644753

Concern Statement: The Draft MRRMP-EIS has numerous flaws in the economic and hydrologic modeling utilized to measure impacts. The data derived from these models is either insufficient or inaccurate and the economic impacts are understated and the limitations are not defined.

Response: USACE believes the analysis conducted is adequate and limitations of the modeling are well documented in the EIS. The models are a planning tool meant to estimate impacts from implementation of the various alternatives rather than a tool to exactly approximate observed or actual conditions.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644750

Concern Statement: The MRRMP-EIS should confirm modeling low flow elevations with actuals and consider potential model inaccuracies when evaluating additional impacts. There could be greater impacts than projected which could increase the costs in the MRRMP-EIS and possibly compromise transmission grid reliability.

Response: The HEC-RAS model is based on the best available channel survey information and is calibrated to 2012 conditions. Local effects on stage due to temporary changes in river conditions, including ice jams, ice cover, and transient sandbar dynamics, are not included within the HEC-RAS model. These temporary effects often cause river stage changes of several feet. However, for the purposes of alternative comparison, including transient effects is not relevant (e.g., the formation of an ice jam has the same effect on all alternatives). All constructed models were calibrated to the same period through 2012. Calibration accuracy within this reach varies by location but is generally within 0.5 to 1 foot accuracy for normal and low flows. Model calibration within the Garrison to Oahe reach is discussed in the supporting documents, HEC-RAS Calibration Report, which is available online (www.moriverrecovery.org). We acknowledge that the model accuracy at specific locations may be disputed by local information. However, we believe that model results are suitable to use for this analysis. The EIS methodology employs an 82-year period of record with current water development conditions to evaluate differences between alternatives. Use of the extensive 82-year period allows for reasonable alternative impact evaluation for a wide range of flow events.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643876

Concern Statement: It is unclear if recommendations made by Montana-Dakota Utilities Company related to the flow level at which the Heskett unit is expected to encounter a shutdown were included. USACE should take a close evaluation of the model in the Heskett reach and review actual elevation measurements to ensure the model is accurately predicting low flows for facilities. If shutdown events occur with higher flows than currently described by the model, the impacts should be reflected in the alternatives.

Response: During the EIS modeling and evaluation process, numerous conversations were conducted with Heskett personnel. Shutdown criteria was adjusted during this process as a result. The information used in the Draft EIS analysis and presented results incorporated input from Heskett personnel.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643859

AL700 *Alternatives: Actions Common to All Alternatives*

Concern Statement: Current science does not indicate that implementation of a spring rise will benefit the pallid sturgeon and the inclusion of a spring rise in any of the alternatives presents an unacceptable flood risk.

Response: Alternatives 1, 2, and 6 contain a spring pulse meant to cue pallid sturgeon spawning. Alternative 4 contains a spring pulse meant to create emergent sandbar habitat for birds. Alternative 5 contains a fall pulse meant to create emergent sandbar habitat for birds. Alternative 3 contains a one-time flow test of the spring pallid sturgeon spawning cue pulse. The criterion for pulsed flow magnitude in alternative 6 is the observation cited in the Effects Analysis that reproductive pallid sturgeon in the upper River would migrate up the Yellowstone or Missouri in response to flow pulses that were roughly 2 times the background discharge rate or higher. Under Alternative 3, if the flow pulses occurring during the 9 years are not sufficient to test the hypothesis, flow pulses up to the flow values assessed alternative 6 could be used as a one-time experiment. Current science cannot prescribe the exact magnitude or duration of a spring pulse beneficial to pallid sturgeon. Through proper implementation of adaptive management, if a spring pulse is found to be important to the pallid sturgeon, the one-time spawning cue test will be scientifically designed to elicit meaningful results. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 20, 168
Comments (Comment ID): 626651

Concern Statement: Oppose any alternative that includes flow modifications and increases downstream flood risks and jeopardizing the integrity of existing levee systems.

Response: Comment noted. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 35, 46, 59, 61, 66, 71, 93, 130, 132, 136, 138, 144, 154, 168, 173, 176, 211, 222, 228, 246
Comments (Comment ID): 628391, 628449, 632125, 628571, 632127, 633525, 633676, 633807, 633831, 633838, 633839, 633853, 633914, 635245, 635262, 640481, 641386, 642132, 644738, 644747, 644762, 644829, 645157, 640728, 640734, 645791

Concern Statement:

- Modifications in flow as presented in Alternatives 2, 4, 5 and 6 undermine the primary congressionally authorized purposes of navigation and flood control.

- The states of Missouri, Kansas, Iowa, and Nebraska own the bed of the lower river. The states have a sovereign right to their real estate and federal actions that compromise the real estate resources are a takeover in regard to states real estate and natural resources.
- The use of the HEC-RAS model for decision making in the Draft EIS is flawed. Commercial sand dredgers have continually presented their objections to HEC-RAS being used for any permitting related decisions and USACE has previously agreed during MRRIC sessions. In the Draft EIS; however, this important point is missing from the document and needs to be included in the content for this section.
- The Draft EIS fails to address the issue of sediment in the system and the lack of material movement.
- Regarding IRC construction and maintenance, USACE must give commercial sand dredgers absolute assurance that these new habitat areas will not impact their operations by making its related regulatory strategy clear.

Response: Alternatives 2, 4, 5 and 6 were not identified as preferred alternatives, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood control and navigation. Under Alternative 3, coordination with the states would occur in conjunction with any site-specific project including coordination regarding sovereign lands and any potential state permits that would be required. The use of HEC-RAS models in this planning study is appropriate and the models have undergone several rounds of internal and external review and deemed to be acceptable for planning purposes. No permitting related decisions are being made as part of the Management Plan process – permitting decisions are made by USACE Regulatory and are not the purview of the Management Plan EIS which is focused on evaluating actions for USACE endangered species act compliance. The Draft EIS acknowledges sediment related issues in Section 3.2.1.4, although no sediment related actions such as sediment bypass are planned at this time. Through proper implementation of adaptive management, a sediment bypass or augmentation action could be introduced in the future if sediment related management actions are determined to be required to remove a limiting factor for the listed species.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645512

Concern Statement: The proposed flow events will use water from the carryover storage pool which navigation depends upon during times of water shortage.

Response: Comment noted. Alternatives 2, 4, 5 and 6 were not identified as preferred alternatives, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood control and navigation. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 46
Comments (Comment ID): 628530

Concern Statement: Implementation of any alternative which includes environmental flows much be done within current flood control constraints.

Response: Alternatives 2, 4, 5 and 6 were not identified as preferred alternatives, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood control. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 46
Comments (Comment ID): 628578

Concern Statement: Because the river flow within Missouri is highly variable due to localized rain events there is no need for additional water to be released from Gavins Point Dam.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 29
Comments (Comment ID): 638525

Concern Statement: Each of the alternatives relax current flood control constraints within the Master Manual in an effort to provide flow support to the pallid sturgeon. We believe the only way USACE can implement flow changes is through a Master Manual revision, of which we have long opposed.

Response: This is true of alternatives 2, 4, 5, and 6. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed. Additional HH analyses will be conducted if AM identifies the need for future flow measures. Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 98
Comments (Comment ID): 633682

Concern Statement: Flow modifications common to Alternatives 2, 4, 5 and 6 are opposed, especially the low flow provisions of Alternative 2 which will create a split season for the Missouri River navigation industry.

Response: Alternatives 2, 4, 5 and 6 were not identified as preferred alternatives, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood control. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 64, 176
Comments (Comment ID): 633519, 644744

Concern Statement: For successful recovery of the pallid sturgeon a spring rise and fall must be simulated.

Response: Current information does not indicate that pallid sturgeon require a spring pulse to spawn although this is one hypothesis being tested. Spawning is currently occurring – best evidence shows documented reproduction occurred in 2014 during a “flat” hydrograph. A spring pulse does not appear to be needed to provide food – there is little evidence that pallid sturgeon of any size are food-limited in the Missouri River.

The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse is necessary.

Representative Quotes (Correspondence ID): 68
Comments (Comment ID): 633531

Concern Statement: USACE should not rush into construction of 12 IRCs for the pallid sturgeon, but rather should construct an initial one and monitor before committing to build the others.

Response: A scientifically designed approach is needed to understand if drifting embryos can be intercepted from the swift, deep thalweg into food-producing areas where larvae can feed and grow. An analysis indicated that 12 sites could provide a statistically meaningful response to test this hypothesis (see Appendix E of the SAMP).

Representative Quotes (Correspondence ID): 98, 130, 132, 135, 136, 140, 144, 145, 154, 173, 175, 205, 211, 222, 228, 246
Comments (Comment ID): 633689, 633823, 633836, 633849, 633866, 633922, 637269, 637643, 640485, 640756, 641392, 641399, 645848, 644789, 644809, 644810, 645470

Concern Statement: Natural flow events should be used to improve our scientific understanding, there is no need for additional flow to be released from Gavins Point.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse is necessary.

Representative Quotes (Correspondence ID): 69, 162, 241
Comments (Comment ID): 635141, 641166, 640500

Concern Statement: The one-time flow event of the preferred alternative is not supported because it has not been modeled nor were impacts properly assessed.

Response: Impacts from the one-time flow event would fall between the range of impacts seen for the spring pulse under Alternative 6. Modeling the one-time event as part of alternative 3 would not provide any additional information beyond what has already been modeled for Alternative 6. Alternative 3 is a one-time occurrence of a spring pulse equal to the pulse modeled under Alternative 6. Note that the preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse is necessary.

Representative Quotes (Correspondence ID): 29
Comments (Comment ID): 638526

Concern Statement: Alternative 2 would achieve the upper end of the BiOp restoration goal, while Alternatives 3–6 would achieve about a third of the habitat created by this alternative.

Response: The amount of early life stage habitat (shallow water habitat) under Alternatives 1 and 2 are a reflection of acreage goals in the 2003 Biological Opinion. The amount of early life stage habitat in Alternatives 3–6 are a reflection of what is needed for determining effectiveness of the IRC action and additional amounts of IRC that would be built if the Management Action is deemed effective. Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is rational to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action.

Representative Quotes (Correspondence ID): 63
Comments (Comment ID): 640076

Concern Statement: The Draft EIS fails to provide the information needed by the public to adequately assess the range of alternatives presented.

Response: Species recovery for least terns, piping plovers, and pallid sturgeon are addressed in their respective recovery plans developed by USFWS. The species objectives given to USACE by USFWS for the Management Plan and the actions presented in the alternatives are consistent with the species recovery plans. The objectives and actions are designed to contribute to species recovery keeping in mind that USACE responsibility is to avoid jeopardy to the three species. USACE believes the analysis presented in Chapter 3 is sufficient for the public to compare the effects of the different alternatives especially considering the uncertainties regarding pallid sturgeon recruitment failure. The analysis presents what is known from the best available science and predicts the potential outcomes of the management actions based on what is currently known. A comprehensive SAMP has been developed to adjust these actions as more is learned in the future. The summary table in the Final EIS is consistent with the text in Chapters 2 and 3 of the EIS. The summary table in the Draft EIS was also consistent with the text in Chapter 3 of the EIS. It was described as a summary table and pointed the reader to Chapter 3 for the full analysis of the resources evaluated in the EIS.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640113

Concern Statement: Restored ecosystem acres with predictable flow modifications would do more for recovery of the listed species than the proposed management actions and also reduce flood risk.

Response: USACE used the Purpose, Need, and Objectives to design a reasonable range of alternatives. The purpose of meeting ESA responsibilities does not free USACE from other responsibilities or from considering the impacts of ESA related actions in the decision-making process. USACE has identified a preferred alternative that attempts to

identify and correct limiting factors in the ecosystem that are causing jeopardy. USACE selected the alternative that met the species objectives and had the least detrimental impacts across a range of interests. This decision is fully explained in Section 2.9 of the Final EIS along with a full listing of all the interest categories that were considered in the decision-making process.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640166

Concern Statement: Oppose any alternative that would alter flow levels of the Missouri River and impact domestic water supplies, drainage, irrigation, and transportation.

Response: The preferred alternative does not include reoccurring flow alterations. It does include nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse is necessary.

Representative Quotes (Correspondence ID): 161
Comments (Comment ID): 641113, 641131

Concern Statement: Alternatives that use shallow water habitat actions need to reduce sediment effects on downstream water quality.

Response: Potential downstream sediment impacts will be examined for each channel modification project and if sediment impacts are identified then ways to reduce impacts will be examined. Each project will also include State Section 401 water quality certification.

Representative Quotes (Correspondence ID): 161
Comments (Comment ID): 641121

Concern Statement: Lower pool levels provide more flexibility with water storage and releases and will permit real reservoir unbalancing in more years.

Response: Lowering the base of the annual flood control zone does provide additional flood control storage. However, since that target level stays the same from year to year, runoff received during a given year still needs to be evacuated from the reservoir system prior to the start of the next year's runoff season. Lower reservoir levels have negative impacts on other authorized purpose such as navigation, hydropower, and recreation. Changing target levels from year to year is not feasible given the uncertainty about runoff that will be received in a given year.

Representative Quotes (Correspondence ID): 180
Comments (Comment ID): 641443

Concern Statement: USACE is encouraged to select management actions that will benefit a wide range of Missouri River fish and wildlife species.

Response: The actions in the preferred alternative would have benefits to fish and wildlife species beyond just the three listed species. Those benefits are described in the Fish and Wildlife section of Chapter 3 in the EIS.

Representative Quotes (Correspondence ID): 180
Comments (Comment ID): 641449

Concern Statement: Pallid sturgeon recommendations should be prioritized for implementation, including Level 1 and Level 2 research activities.

Response: Concur. The preferred alternative follows this suggested approach.

Representative Quotes (Correspondence ID): 194, 212
Comments (Comment ID): 641712, 641733

Concern Statement: A more accurate description of the alternative development process involving MRRIC and its role needs to be included in the Final EIS.

Response: The description of the alternatives development process in the Draft EIS is an accurate representation of the process that was followed. The alternatives development process was collaborative and transparent. USACE acknowledges that some aspects of the process involved higher degrees of collaboration than others. The acronym ProACT stands for (1) **P**roblem definition, (2) **O**bjectives, (3) **A**lternatives, (4) **C**onsequences, and (5) **T**radeoffs. MRRIC was engaged in each step of the process. The problem statement was shared with MRRIC and MRRIC's input was included in the final version of the problem statement and included in the EIS. Species objectives were shared with MRRIC and were evaluated by ISAP. ISAP comments and MRRIC feedback were considered and incorporated where appropriate into the final versions of the objectives. While it is true that individual MRRIC members or MRRIC as a whole did not design elements of the alternatives such as specific types of habitats, or flow management actions, the alternatives were developed by USACE using the results of the effects analysis which was reviewed extensively by ISAP and MRRIC. MRRIC was involved in evaluation of test alternatives and in two rounds of proxy analyses of consequences and tradeoffs. Individual MRRIC members and MRRIC as a committee have had opportunity to provide comment or recommendation regarding the process and its outcome from 2012 to the present.

Representative Quotes (Correspondence ID): 148
Comments (Comment ID): 642704

Concern Statement: The entire fisheries community would benefit from regular floodplain connectivity and it can assist with reduced flood risk.

Response: The actions in the EIS are designed to fulfill endangered species act responsibilities although a variety of fish and wildlife species would benefit as outlined in Chapter 3 of the EIS. Best available science at this time does not indicate that pallid sturgeon of any age are food limited or that floodplain connectivity would increase pallid sturgeon spawning habitat. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow

would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 643028, 643034

Concern Statement: The Propagation and Augmentation Program for pallid sturgeon should be continued, but only with “pure” pallid sturgeon. The numbers stocked should be based on best available science and should be considered temporary.

Response: USACE and USFWS will continue to follow the propagation protocols developed by the pallid sturgeon working group and USFWS. Stocking is considered a temporary measure; the objectives of the management plan are directed at natural recruitment. Population augmentation is designed to ensure genetic diversity using local and wild broodstock collection (Pallid Sturgeon Recovery Team 2008).

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 643064

Concern Statement: The sustainability of available sediment to continue to construct new ESH over the 50-year life of the MRRP should be evaluated.

Response: Available information and analysis performed by USACE indicate that there is not a sand volume limitation for the formation of sandbars in the Gavins Point or Garrison Reach over the 50-year planning horizon for this project. This discussion is provided in Section 3.2 of the Final EIS.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643881

Concern Statement: SWH has not been developed to the level described in the No Action alternative. As such it is not a reference or base case and really represents impacts of the alternatives that have not been realized. Additionally, the impacts to thermal power, should not be compared to the impacts modelled for Alternative 1 in an incremental or comparative manner as done in the Draft EIS. The Draft EIS must present the NED and RED results for each alternative in a total and individual manner as is done in the Hydropower section. The comparison of impacts of Alternatives 2–6 to Alternative 1 as presented makes the impacts appear less than as currently described in Alternative 1.

Response: The No Action Alternative is a forecast of the program into the future assuming the 20 acres per mile SWH objective of the 2003 BiOp is achieved. USACE believes constructing habitat to meet existing acreage goals is a reasonable assumption for the No Action alternative. It is designed to estimate impacts in the future rather than impacts that have already been realized.

In addition, the thermal power NED analysis has been re-analyzed to show the power generated (and energy values) under each of the alternatives, not the reduction in power generation from ideal conditions with no adverse conditions as shown in the Draft EIS. The Final EIS has been updated to show the total impacts under each of the alternatives over the period of record, the average annual impacts, and the change in impacts from

No Action. The “Thermal Power Environmental Consequences Analysis Technical Report” shows additional details on annual impacts.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643892

Concern Statement: USACE needs to provide a stronger commitment to the transition from Level 1 and Level 2 research activities to implementation of Level 3 actions. USACE should define and analyze the scope of Level 3 actions to remove ambiguity.

Response: USACE is committed to the adaptive management process as described in the SAMP. The adaptive management governance process details decision points, levels of engagement, and potential new hypotheses and associated management actions that could be implemented should science point in their direction in the future. The EIS describes level 3 actions where possible. In some instances, the available science does not provide a meaningful basis for determining what a level 3 action would entail.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643922

Concern Statement: The selected alternative should include a broad spectrum of potential management actions (including flow actions). A more thorough evaluation of when such actions might occur while minimizing impacts to stakeholder interests should also be undertaken.

Response: The evaluation associated with flow actions was based on the best available models and information. Actions outside of the preferred alternative, or selected alternative, are still available for implementation pending additional analysis and public involvement. USACE believes it has selected a reasonable set of initial actions to be implemented over a 15-year timeframe that address priority hypotheses and the species objectives. It would not be appropriate to include the myriad of potential actions in the selected alternative if it is not reasonably foreseeable that they would need to be implemented. The alternative is designed to give the public, Tribes, stakeholders, and other agencies reasonable expectations of what will be implemented rather than include a myriad of potential actions that may or may not be implemented. The AM process allows for new actions, not within the selected alternative, to be implemented following a transparent discourse with the Tribes, public, stakeholders, and other agencies.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643930

Concern Statement: The location of proposed IRC habitat needs a thorough siting evaluation to avoid locations such as water intake structures.

Response: Concur, each site will be designed to avoid or minimize impacts to critical infrastructure such as water intakes.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643932

Concern Statement: USACE should reconsider management actions below Fort Peck Dam for the pallid sturgeon because research results indicate there is potential for survival/recruitment of larval sturgeon.

Response: USACE believes it has followed the best available science in relation to actions below Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643933

Concern Statement: The MRRMP process only delays implementation of needed management actions by requiring prior and often redundant research into the minutiae of already successful upper basin pallid sturgeon programs such as propagation and stocking.

Response: The Effects Analysis and SAMP were developed by a team of internationally recognized experts in sturgeon biology, tern and plover biology, population modeling, adaptive management, and other related fields. The Effects Analysis and SAMP have been thoroughly reviewed by an independent science advisory panel consisting of internationally recognized experts in the field. USACE and USFWS believe the Effects Analysis represents the best available science related to the three species. The SAMP is based on the results of the Effects Analysis and provides a process where hypotheses can be tested and the agencies can adjust as more is learned. Science and implementation activities are scheduled in detail in the plan to avoid delays in knowledge acquisition and implementation.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644019

Concern Statement: Any alternative that would cause a power plant to be shut down or de-rate as a result of a low flow should not be implemented.

Response: The preferred alternative does not include flow alterations that would involve shut downs or de-rating. It does include nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse is necessary.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644080

Concern Statement: The impacts of the Yellowtail Dam on the thermograph, hydrograph, turbidity, and bedload of the Yellowstone River should not be ignored. References to near natural conditions on the Yellowstone should not be used.

Response: Concur, references to “near natural” have been removed for clarity.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644095

Concern Statement: Level 1 and Level 2 actions do not meet the definition of a management action and should not be presented as such.

Response: USACE and USFWS understand that Level 1 and Level 2 actions do not represent actions expected to have a population level response in the species. For this reason, we have included level 3 management actions in the preferred alternative despite uncertainties regarding their effectiveness. USACE believes that detailing Level 1 and Level 2 science activities will facilitate an organized and efficient means to answering key questions which will improve the effectiveness of implementation.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644101

Concern Statement: The Bozeman Fish and Technology Center is no longer producing pallid sturgeon for conservation stocking.

Response: Concur, the text has been modified as suggested.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644111

Concern Statement: A more complete description of channel widening and how will it benefit age-0 pallid sturgeon recruitment needs to be provided. Additionally, how SWH and IRCs differ should be explained (other than identifying interception, and rearing as the function of IRCs, as if these functions were not implied for SWH if age-0 pallid were to settle and survive there).

Response: A discussion about the differences between SWH and IRCs is provided in Section 4.2 of the SAMP and Section 2.6.3 of the EIS. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that *could* result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. During implementation, the most effective and efficient means to construct IRC habitat will be used. In some cases that could be modifications to a dike structure to increase interception. In other cases that could entail top-width widening to create additional foraging and feeding habitat along with interception. In the SAMP we have outlined a detailed transparent process that will occur during implementation as sites and construction methods are being determined.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644909

Concern Statement: An explanation should be provided as to why channel widening has become the proposed management action of choice for all Draft EIS early life history habitat construction alternatives when there is limited scientific evidence to support any benefits to pallid sturgeon recruitment.

Response: A discussion about the differences between SWH and IRCs is provided in Section 4.2 of the SAMP and Section 2.6.3 of the EIS. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that **could** result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. During implementation, the most effective and efficient means to construct IRC habitat will be used. In some cases that could be modifications to a dike structure to increase interception. In other cases that could entail top-width widening to create additional foraging and feeding habitat along with interception. In the SAMP we have outlined a detailed transparent process that will occur during implementation as sites and construction methods are being determined.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644910

Concern Statement: There is limited scientific evidence to support the stated benefits of channel widening to support recruitment of age-0 pallid sturgeon. USACE should clarify why channel widening appears as the primary management action to create SWH. What alternative hypotheses (under an active AM approach) were considered to create pallid sturgeon early life history habitat and the science to support them? Revise proposed management actions and associated costs for SWH construction for the No Action and BiOp alternatives to reflect historical actions employed and actual costs used to create SWH, or justify why the proposed No Action and BiOp alternatives SWH proposed costs to continue the existing program have escalated so much. Revise proposed costs for IRC construction via channel widening for Alternatives 3–6 to be in line with observed costs to create the three identified IRCs or justify why proposed costs for any additional IRCs have escalated so much.

Response: A discussion about the differences between SWH and IRCs is provided in Section 4.2 of the SAMP and Section 2.6.3 of the EIS. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that **could** result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be

achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. During implementation, the most effective and efficient means to construct IRC habitat will be used. In some cases that could be modifications to a dike structure to increase interception. In other cases that could entail top-width widening to create additional foraging and feeding habitat along with interception. In the SAMP we have outlined a detailed transparent process that will occur during implementation as sites and construction methods are being determined.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644915

Concern Statement: The differences in mechanical emergent sandbar habitat construction conveyed in the Draft EIS for alternatives are unreasonable. USACE does nothing more than intimate that the flow releases of Alternatives 3–6 may bridge the gaps in ESH between Alternative 2 and the other alternatives by creating sandbar habitat through sediment deposition. USACE should provide an estimate of sandbar habitat that might be created through flow releases.

Response: The ESH targets in Alternatives 1 and 2 are based on the 2003 Biological Opinion and are a projection of what would occur if current acreage targets are followed. ESH acreages under Alternatives 3–6 are what would be needed to achieve the new ESH targets developed by USFWS. The “gap” in ESH acreages between Alternatives 1 and 2 and Alternatives 3–6 reflect the difference between the ESH targets in the 2003 BiOp and the ESH targets generated using a newer modeling approach. Both sets of targets were given to USACE by USFWS. It is important to understand that the ESH acreage targets represent a means to achieving the fundamental objective which is measured in terms of bird response. The intent is to provide a comparison, in terms of bird response, between using the ESH targets from the 2003 BiOp vs. the newer targets that are now reflected in the 2018 BiOp. This is consistent with the requirement under NEPA to examine the No Action alternative to measure the benefits of newer courses of action vs. current courses of action. It is also important to understand that under Alternatives 4, 5, and 6 flows were first modeled to determine how much habitat could be created via flows. It was then assumed the shortfall in acres under these alternatives would be constructed mechanically. The modeled estimates of ESH that could be created with flows under Alternatives 4 and 5 (the two alternatives with flows designed to create ESH) has been added to the Final EIS in Section 3.4. The ESH acres under Alternatives 3–6 meet the piping plover objectives. There is no need at this point to look for ESH acreages that fall in-between Alternative 2 and Alternatives 3–6.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644943, 644944

Concern Statement: Tables 2-20 and 2-21 of the Draft EIS use different labels for some of the units displayed, yet the numbers stay the same confusing the reader. For example, Table 2-20 has a column with the heading "Target Acres of Channel Widening." Table 2-21 uses those same values in a column headed "Target Acres of SWH." This creates confusion over the meaning of the acreage numbers and makes it challenging to assess the validity of the range of alternatives based on the early life stage habitat management actions.

Response: A discussion about the differences between SWH and IRCs is provided in Section 4.2 of the SAMP and Section 2.6.3 of the EIS. Alternatives 1 and 2 SWH acreages are based on the low and high ends of SWH acreage targets in the 2003 BiOp. The IRC habitat targets and acre/day metrics represent what it would take to meet IRC targets recently established by USFWS. The Final Biological Assessment and Final EIS also include additional IRC habitat that could be required if level 4 implementation is determined to be different than level 3 implementation in the future.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644946

Concern Statement: The Draft EIS does not sufficiently discuss the differences between SWH and IRC. Because of stated differences, SWH and IRC should not be considered as comparable or interchangeable techniques for habitat creation. Additionally, the Draft EIS does not specify what would happen if the results of the research on IRC demonstrates that it does not benefit the pallid sturgeon.

Response: A discussion about the differences between SWH and IRCs is provided in Section 4.2 of the SAMP and Section 2.6.3 of the EIS. The Final EIS and SAMP describe the decision criteria and process that will be used to determine if IRC is effective. The same process outlines the process that will be followed to determine the next priority hypotheses that would need to be examined and what the associated actions could be.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644947

Concern Statement: Alternatives 3–6 should include varying levels of floodplain connectivity to ensure beneficial impacts to the pallid sturgeon.

Response: Best available science does not indicate that pallid sturgeon are food limited at any life stage or that additional floodplain connectivity is needed to support any other life-stage requirements for pallid sturgeon. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015.

Representative Quotes (Correspondence ID): 179, 223
Comments (Comment ID): 644954, 645208

Concern Statement: The implementation of IRC habitat should be accelerated; beginning with the assessment of the first pair that are constructed.

Response: Construction of IRC habitat will begin immediately with plans for the first sites already in development. Sites would be constructed over the first 7 years and if determined to be effective they would continue to be constructed throughout the 15-year implementation horizon of the plan.

Representative Quotes (Correspondence ID): 42, 179
Comments (Comment ID): 645241, 628511

Concern Statement: The proposed flow modifications would not only benefit the pallid sturgeon but also the entire the fish community. USACE should (1) assess the likelihood that they will implement each alternative, (2) establish a set of criteria that would place the needs of pallid sturgeon on equal footing with downstream water users, and (3) establish a set of performance criteria that would ensure accountability with the selected alternative.

Response: USACE has identified its preferred alternative along with decision criteria and a decision process that will be used to determine effectiveness and determine if we will stop, continue, or adjust actions in the future. USACE considered a full range of reasonable alternatives designed to meet the endangered species objectives and compared the impacts of these different alternatives in terms of resources described in the Affected Environment and Environmental Consequences. Section 2.9 of the Final EIS provides a clear comparison of alternatives in terms of the species objectives, Affected Environment and Environmental Consequences and provides a description of how those factors were weighed in the decision. USACE believes it has selected the alternative that is least impactful across the full range of interests while still meeting species objectives. USACE believes it has taken the full spectrum of considerations into account in the decision-making process and this is well-documented in the Final EIS and supporting materials.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645324

Concern Statement: The proposed frequency of enhanced flows is not supported by scientific evidence and is likely insufficient for pallid sturgeon recovery. If evidence does exist, USACE should include this within the EIS.

Response: Rather than a comparison to historical pre-dam and pre-bank stabilization conditions, USACE believes the science and adaptive management approach that consists of research, monitoring of natural flow events, and potential test flows is more likely to be successful given the extensive modifications to the Missouri River to support authorized purposes. The flows for ESH creation are scientifically supported. We have a population model that predicts the response of terns and plovers to different ESH creating flow events and those results are provided in the EIS.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645333

Concern Statement: The Draft EIS and supporting documents are not clear why tracking standardized ESH is necessary. If the "standard" release does not occur in a given year, it is not clear how standardized ESH is determined if it is not measured.

Response: Clarification has been added to Chapter 1 of the EIS. The value of the standardized approach is that it allows estimates of ESH acreage relative to a consistent reference

plane and permits tracking of changes in overall sandbar area independent of variable flow levels. Acres of ESH are calculated using the ESH Models for each reach and confirmed annually using remotely sensed imagery and the HEC-RAS models.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645359

Concern Statement: Scientific evidence is presented suggesting that a change in conditions other than high-magnitude flooding is required to return the Missouri River to its pre-dam condition, or restore the ecosystem to a self-maintaining state.

Response: The preferred alternative does not include flow alternations that would impact the Garrison Reach. It does include nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse from Gavins Point Dam is necessary. Available information and analysis performed by USACE indicate that there is not a sand volume limitation for the formation of sandbars in the Garrison Reach over the 50-year planning horizon for this project.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645366

Concern Statement: The Draft EIS needs to explain the cost versus benefits of constructing ESH. There are benefits to mechanical created habitat as it relates to vegetation removal from existing ESH for the free-flowing stretches of the Garrison Reach. If mechanical creation is required, it is recommended this occur only in the aggrading reaches and in the Lake Oahe delta.

Response: USACE agrees that vegetation removal can be a viable cost-effective way to create and/or maintain ESH; however, it may be necessary to mechanically construct ESH to meet targets in some years. In the future, USACE and USFWS will coordinate and consult with the ESH PDT including the State of North Dakota in planning and implementing site specific ESH projects. Concerns related to bar location, longevity, property owner concerns, and regulatory agency input would be a key part of these discussions. The ESH engagement process is explained in the SAMP.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645367

Concern Statement: Reduced flow can potentially increase the rate of erosion as the reduced flows will likely result in higher flows later in the year to evacuate flood storage in the reservoirs.

Response: Concur, clarification has been added to Section 2.5.1.9 of the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645369

Concern Statement: The State of North Dakota is not supportive of restricting human access to sandbars in areas of high human use, such as the Missouri River in the Bismarck Mandan area.

Response: Areas of high-human use are less likely to have nesting plovers and terns and are not anticipated to be restricted.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645370

Concern Statement: Flows for any alternative should be managed to be at or below the stated channel capacity, unless impacts are mitigated.

Response: The preferred alternative does not include flow alterations that would impact the Garrison Reach. It does include nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse from Gavins Point Dam is necessary. NEPA requires the analysis of a reasonable range of alternatives to meet the purpose and need including alternative that may be outside the current authorities of the agency.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645387

Concern Statement: Vegetation management is the preferred method for meeting targets for habitat acreages for piping plovers and least terns. It is recommended that USACE maintain the agreed upon moratorium of management actions in the Bismarck-Mandan area. Additionally, it is necessary to maintain a buffer one mile around boat ramps with the same restrictions.

Response: USACE agrees that vegetation removal can be a viable cost-effective way to create and/or maintain ESH; however, it may be necessary to mechanically construct ESH to meet targets in some years. USACE will continue to work with the interagency ESH Team on any site restrictions to avoid human/bird conflicts.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645399

Concern Statement: The MRRMP-EIS includes spawning cue releases as a management action without adequately explaining their effects and without adequate knowledge of what the specific beneficial impacts of the actions would be on the pallid sturgeon. The spawning cue should be analyzed over time while other management actions are being used to meet the species goals until the spawning cue release is established as a viable management action.

Response: The preferred alternative follows the suggested approach of analyzing the spawning cue over time while implementing other management actions. It is true that effects of the spawning cue pulse are uncertain; however, the spawning cue pulse emerged as a priority hypothesis to investigate from an independent group of scientists as explained in the pallid sturgeon effects analysis reports and the SAMP.

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 645417

Concern Statement: The Final EIS needs to address how long long-term monitoring at Intake would continue before AM is implemented to make the needed adjustments to ensure successful pallid recruitment.

Response: Monitoring for the Yellowstone Intake project is addressed in the Monitoring and Adaptive Management Plan for the Yellowstone Intake Project. The Monitoring and AM Plan is provided as Appendix E to the Yellowstone Intake EIS at: <https://www.usbr.gov/gp/mtao/loweryellowstone/>

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645530

Concern Statement: USACE places too much emphasis on hatchery raised pallid sturgeon as stocking creates a population that is not self-sustaining. Concern is also expressed about the cost of hatchery raised fish and the potential for introduction of disease. More emphasis should be placed on habitat restoration to support pallid recovery.

Response: There is no evidence that stocking leads to a non-self-sustaining population. Contrary to this theory, pallid sturgeon stocked early in the program are just recently reaching sexual maturity and there is documented evidence of stocked pallid sturgeon growing, spawning, and producing viable drifting embryos. A Pallid Sturgeon Basin-wide Stocking and Augmentation Plan is being developed by the Pallid Sturgeon Recovery Team and participating federal agencies due to concerns related to fish health/disease, genetics, stocking size, numbers/carrying capacity, stocking practices etc. It should be noted that the hatchery program is led by USFWS. USACE has a role in partially funding the program and providing technical input. The cost of the propagation program is much less expensive than habitat restoration.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645535

Concern Statement: The EIS should provide more detail about the flood risk associated with Level 2 field experiments.

Response: Field experimentation could include flow manipulations or channel reconfigurations that would involve risk of impacts to various interests. These are explained in the EIS in relation to the one-time test flow that could occur as a level 2 action. Continued engagement and communication with stakeholders will continue throughout the AM process.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645583

Concern Statement: Opposition is expressed for Alternatives 2, 4, 5, and 6 or any management actions that would modify flows of the river and require a change to the Master Manual.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse from Gavins Point Dam is necessary.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 645775

Concern Statement: In addition to Level 1 and Level 2 research, Level 3 and Level 4 actions need to be implemented in a manner that results in population level changes.

Response: The preferred alternative involves implementation of actions designed to have population level changes simultaneously to conducting level 1 and 2 research. Given the uncertainty in the nature of management actions needed for pallid sturgeon USACE believes it is important to invest resources in Level 1 and 2 research to inform future level 3 and 4 actions. The alternative would be to implement potentially costly, ineffective large-scale management actions that could have unintended consequences.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645836

Concern Statement: Management actions should be implemented below Fort Peck to protect the source population of pallid sturgeon.

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645838

Concern Statement: USACE should not count rehabilitating SWH as new IRC habitat because this appears to be using already created habitat to count as new habitat.

Response: USACE has expended substantial resources in building shallow water habitat over the past 14 years. USACE believes it is a reasonable expenditure of program funding to make existing channel modification projects more effective, for instance, by improving the probability of interception or expanding the area meeting the definition of food producing or foraging habitat. The new objectives developed by USFWS are species driven. Success ultimately depends on species response rather than acres of habitat that may or may not be effective at meeting species needs.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645792

Concern Statement: Any alternative considered with low summer flows may create river conditions with high temperatures and low turbidity favorable for cyanotoxins growth requiring more extensive treatment than is currently required.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, we believe this will be sufficient to determine if a spring pulse from Gavins Point Dam is necessary.

Representative Quotes (Correspondence ID): 204
Comments (Comment ID): 645749

Concern Statement: The comparison of alternatives chart included with the Executive Summary uses different metrics for different resources making any comparison by members of the public challenging.

Response: The summary table in the Final EIS is consistent with the text in Chapters 2 and 3 of the EIS. The summary table in the Draft EIS was also consistent with the text in Chapter 3 of the EIS, but did contain generalized information which was intended as a convenience for the reader. It was not meant to be used in place of the full analysis in

the body of Chapter 3 of the EIS as explained in the introductory text for the table contained in the Executive Summary of the Draft EIS:

“The following table provides a summary comparison of the general environmental consequences of each action alternative compared to Alternative 1—the No Action alternative—in terms of being beneficial or adverse. The impacts of the No Action Alternative and the Action Alternatives are provided in-detail under each resource topic in Chapter 3-Affected Environment and Environmental Consequences.”

Additional language was presented in Chapter 2 of the Draft EIS: “Average annual numbers present an important but incomplete perspective on the impacts of the alternatives...For this reason, it is important to understand the year-by-year impacts of each alternative, and these are discussed in detail in Chapter 3 and further described in a series of technical reports available at www.moriverrecovery.org. In this Summary discussion, only the most sensitive cases of this effect are noted. See Chapter 3 for a full analysis of the resources evaluated in this MRRMP-EIS.”

USACE believes the summary tables are a useful means of summarizing complicated information. Summary tables are included in the Final EIS and reflect updates made since release of the Draft EIS.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640186

Concern Statement: Support is expressed for use of the new SAMP and a suggestion made that the most critical information needs should be emphasized in future monitoring.

Response: Concur, USACE intends to follow the new AM approach outlined in the SAMP.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 643036

Concern Statement: USACE should provide the regulatory strategy for IRCs; otherwise the economics presented in the Draft EIS are incomplete.

Response: The regulatory strategy for IRCs will be determined by the actual Regulatory process; however, the Final EIS estimates the potential impacts from future protective buffers that could be placed on commercial sand and gravel dredging in the vicinity of Interception Rearing Complex (IRC) projects (Section 3.11 of the Final EIS). This analysis does not create a restriction, it does however project what impacts could be in the future if restrictions result from the Regulatory process.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644790

Concern Statement: Off-channel nesting habitat for the piping plover outside the active river channel should be included with each alternative.

Response: As explained in Section 2.5.1.4 of the Draft EIS, USFWS recommended that USACE not include sandpit habitat management or habitat development in the navigation channel as management actions in this plan (USFWS 2015a). USFWS identified several issues that would need to be resolved to consider this a feasible management action including the reproductive potential of these areas, potential for high predation, habitat preferences and dispersal, forage availability, land acquisition, and feasibility of creation and maintenance (USFWS 2015a). This management action was eliminated from further consideration because it is not currently demonstrated to be as

effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH (USACE 2012a). Although this action was eliminated from consideration in this EIS, USFWS has been working with MRRIC to pursue a pilot project with alternate funding (not through MRRP). The results of the pilot project could be evaluated through the AM process and incorporated into future management if deemed effective.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 645777

Concern Statement: Nebraska Game and Parks Commission believes that the habitat goal of 20 to 30 acres of aquatic habitat per mile remains the most fundamental means to address the critical needs of pallid sturgeon and the native fish community upon which they depend. Rather than just building habitat of general design, this effort could be greatly improved by targeting specific habitat needs for both pallid sturgeon and the native fish community.

Response: The new objectives developed by USFWS are species driven. Success ultimately depends on species response rather than acres of habitat that may or may not be effective at meeting species needs. The approach in the preferred alternative includes constructing 12 IRC sites to determine effectiveness and increasing the number of sites if they are determined to be effective. The cornerstone of this approach is the development of a thoughtful structured approach to management, monitoring and assessment where management actions with uncertain benefits are approached as methods to be tested prior to large expenditures of money and resources for very uncertain benefits.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 643113

Concern Statement: The implementation and viability of proposed alternatives is questioned because USACE to date has not successfully implemented changes in reservoir operations to support pallid sturgeon recovery.

Response: The alternatives development process and subsequent evaluation of effect on pallid sturgeon was based on the Effects Analysis results. The EIS provides a detailed accounting of the impacts of the alternatives including viability and consequences of implementation in Chapters 2 and 3. The Draft EIS recognizes the substantial uncertainty that remains relative to cause and effect relationships between managed flow actions and pallid sturgeon populations. Adaptive management was included as a component of all alternatives evaluated in the Draft EIS due to the need to implement actions for pallid sturgeon in a manner that reduces uncertainty regarding pallid sturgeon limiting factors.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645327

AL100 *Alternatives: Alternative 1, No Action*

Concern Statement: There is opposition to Alternative 1 as it still allows for a bi-modal spring rise and shallow water habitat without the science to suggest its effectiveness.

Response: Comment noted. Alternative 1 was not identified as the preferred alternative. The inclusion of a no action alternative is required by 40 CFR 1502.14(d). There are two

interpretations of "no action," depending on the nature of the proposal being evaluated. One interpretation reflects "no change" from current management direction or level of management intensity. Under the No Action alternative, the MRRP would continue to be implemented as it is currently.

Representative Quotes (Correspondence ID): 28, 33, 98, 197, 204, 228

Comments (Comment ID): 627555, 633683, 645248, 645450, 644448, 627997

Concern Statement: Alternative 1 does not serve as a baseline or reference case or meet the NEPA definitions of the No Action alternative as:

- ISAP has found the spring pulse management action does not benefit pallid sturgeon and SWH development does not provide benefit to pallid sturgeon;
- it is a major change from the current level of management intensity as it includes additional actions; and
- it describes the actions USACE would do, or would like to have done, if only it had been given the resources to comply with the existing 2003 amended biological opinion, and the Reasonable and Prudent Actions (RPAs) from the 2000 biological opinion.

Response: The No Action alternative is a reasonable reference case and meets the intent of including a No Action alternative in the planning process. It should be noted that the 2003 BiOp was developed before the recent effects analysis. To assume Alternatives 1 or 2 would follow the effects analysis results and new SAMP would not provide a useful comparison because we would be comparing Alternatives 3–6 to 2003 BiOp alternatives that assume the existence of the very alternative plans being proposed.

Representative Quotes (Correspondence ID): 107, 166, 245

Comments (Comment ID): 643781, 644907, 644922

Concern Statement: It is disingenuous to assert that Alternative 1 does not meet the needs of the birds when the only justification provided in the EIS for that assertion is that Alternative 1 includes an annual average of 107 acres of mechanical ESH construction. The 107 acres of ESH construction under Alternative 1 does not include the acres gained due to vegetation maintenance and misrepresents and underestimates the actions that are currently being implemented.

Response: Alternative 1 acres have been adjusted from the Draft EIS to 164 acres constructed per year on average. This amount is consistent with the selected alternative from the 2011 Programmatic EIS for the Creation of Emergent Sandbar Habitat. Even with the added acreage the modeling results still show Alternative 1 falling short of ESH targets in the southern bird management region. During implementation, acres of ESH maintained from vegetation management would be included in the annual ESH estimates that are used to determine if construction is needed. One priority for improving the ESH model during implementation is to develop the capability to more accurately predict the response of ESH to vegetation management.

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 645379

AL200 **Alternatives: Alternative 2**

Concern Statement: The low summer flows under Alternative 2 are opposed. They have not been proven to be a beneficial management action for pallid sturgeon. Additionally, the MRRMP-EIS states that low summer flows would only be infrequently implemented. This management action is unnatural as it would not mimic the timing of lower flows as compared to the pre-settlement hydrograph and it would cause economic and environmental harm. The Draft EIS failed to evaluate impacts and cost associated with Alternative 2 low summer flows on water supply intakes. The impacts of low summer flows on navigation would cause severe harm and would also impact sand and gravel dredging and thermal power. Alternative 2 relies on the USFWS 2003 Biological Opinion which lack scientific basis and is deeply flawed.

Response: The low summer flow in Alternative 2 was part of the 2003 Biological Opinion and was analyzed to determine the benefit to the species and impacts to other interests. Alternative 2 was not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes such as water supply and navigation coupled with uncertain benefits for the species. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 37, 118, 130, 159, 168, 173, 187, 195, 197, 228, 240

Comments (Comment ID): 628462, 645613, 645452, 645418, 645266, 645252, 641557, 641000, 633811, 633750, 642102

Concern Statement: Alternative 2 is the best alternative because it allows habitat acres to be acquired and moves toward a more natural river that will sustain wildlife and provide a more secure future for endangered species. Additionally, Alternative 2 is the only alternative that links the MRRMP-EIS to the Bank Stabilization and Navigation (BSNP) Mitigation Project. The alternative also results in the fewest visual and recreational impacts. However, the number of mechanically created habitat acres should be reduced to lower the cost and the MRRMP-EIS should use the most scientifically advanced and proactive plan for adaptive management.

Response: The new objectives developed by USFWS are species driven. Success ultimately depends on species response rather than acres of habitat that may or may not be effective at meeting species needs. The Bank Stabilization and Navigation Mitigation Project is linked to every alternative in the Management Plan. It is the authority that would be used to purchase land from willing sellers and develop habitat under each alternative as explained in the EIS. The acres of constructed habitat in Alternative 2 follow the acreage targets for ESH and SWH provided in the 2003 Biological Opinion. The assumptions for Alternative 2 were provided by USFWS and documented via planning aid letter (USFWS 2015). For transparency, this planning aid letter was also shared with MRRIC at the same time it was shared with USACE. USACE believes the most scientifically advanced and proactive plan for adaptive management is the plan developed using the results of the recent effects analysis. The 2003 BiOp was developed before the recent effects analysis. To assume Alternatives 1 or 2 would follow the effects analysis results and new SAMP would result in a meaningless comparison

because we would be comparing newly proposed alternatives to 2003 BiOp alternatives that assume the existence of the new alternative plans being proposed.

Representative Quotes (Correspondence ID): 48, 63, 77, 78, 131, 141, 163, 166, 178, 179, 180, 183, 237

Comments (Comment ID): 633627, 628592, 636783, 640074, 640139, 641272, 641426, 642853, 643069, 643947, 644927, 637298, 641436, 641444, 645200

Concern Statement: Sufficient science has not been shown to support the benefits of a bimodal spring rise considered in Alternative 2.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 98, 145, 228

Comments (Comment ID): 633683, 637626, 645450

Concern Statement: Alternative 2 provides the best option for recovery of species. However, the implementation of some of the management actions included under Alternative 2 as the 2003 Biological Opinion is distorted. The MRRMP-EIS clearly states that new research and approaches developed since 2003 provide additional advantages in achieving recovery. Yet the MRRMP-EIS developed Alternative 2 excluding that interpretation of adaptive management. Only Alternative 2 and the No Action alternative exclude it. Thus, the MRRMP-EIS includes an alternative that up front does not meet its stated need for the plan.

Response: As stated in the EIS, the Purpose of the Plan is to develop a suite of actions that meets ESA responsibilities for the piping plover, the interior least tern, and the pallid sturgeon. The plan is needed because of alteration of the ecosystem and loss of habitats due to USACE operation of the System and BSNP have contributed to the ESA listing of the pallid sturgeon, piping plover, and interior least tern. There is also a need to incorporate new scientific information into management for the listed species. Ultimately, meeting the species objectives are the means for accomplishing the purpose and need of the project and all of the alternatives are designed to meet the species objectives. It is true that Alternatives 1 and 2 partially fulfill the need for the plan, but this does not free USACE from examining these alternatives in detail to determine if they would better achieve other aspects of the need, the purpose, objectives, or have less impacts or more benefits to other resources that are under consideration. It should be noted that the 2003 BiOp was developed before the recent effects analysis. To assume Alternatives 1 or 2 would follow the effects analysis results and new SAMP would not provide a useful comparison because we would be comparing Alternatives 3–6 to 2003 BiOp alternatives that assume the existence of the new alternative plans being proposed.

Representative Quotes (Correspondence ID): 131

Comments (Comment ID): 640122

Concern Statement: The difference between the acres of ESH constructed annually under Alternative 2 and the acres constructed annually under Alternative 3 is huge. This vast range of habitat acres and incomplete analysis fails to provide the public with a reasonable and understandable choice of alternatives. This amount of annual construction is neither warranted nor feasible and would cause major impacts on the remaining actions under Alternative 2 due to the high cost of these construction activities

and anticipated USACE MRRP budget limitations. Furthermore, the creation of this large number of acres per year would require creation of ESH in what is described as the exclusionary areas.

Response: The acres of constructed habitat in Alternative 2 follow the acreage targets for ESH and SWH provided in the 2003 Biological Opinion. The assumptions for Alternative 2 were provided by USFWS and documented via planning aid letter (USFWS 2015). For transparency, this planning aid letter was also shared with MRRIC at the same time it was shared with USACE. Since release of the Draft EIS, the acres under Alternative 2 were adjusted to be consistent with an updated analysis of ESH targets that were required by the 2003 BiOp. The updated acres result from a more-detailed analysis of acres that were present on the system in 1998 which was what the 2003 BiOp targets were based upon.

Representative Quotes (Correspondence ID): 131, 162, 179, 237

Comments (Comment ID): 640127, 641200, 642993, 645210, 645211, 645213

Concern Statement: The interpretation presented in the Draft MRRMP-EIS of shallow water habitat as an uncertain benefit is like stating that IRC and spawning habitat creation are experimental.

Response: There is uncertainty associated with both SWH and IRCs. The IRC concept is rooted in the effects analysis, however, which represents the best available science at this time.

Representative Quotes (Correspondence ID): 131

Comments (Comment ID): 640128

Concern Statement: While Alternative 2 would have broad benefits, it is described as meeting the minimum requirements of floodplain connectivity and inundation recommended.

Response: USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015.

Representative Quotes (Correspondence ID): 131

Comments (Comment ID): 640129

Concern Statement: USFWS provided two sub-objectives to meet the fundamental objective of not jeopardizing the continued existence of the pallid sturgeon from USACE actions that stress the recruitment of young sturgeons. Both of these objectives are dependent on habitat construction, but a river flow management plan to fulfill the objective of natural recruitment has not been proven effective for implementation in Alternative 2. Alternative 2 proposes the continuation of a spring spawning cue pulse and low summer flows. The spawning cue has proven to be ineffective and the low summer flows are speculative actions.

Response: USFWS objectives provided for pallid sturgeon are focused on species response. In addition to habitat construction the preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed. The preferred alternative does not include a re-occurring flow management action.

Representative Quotes (Correspondence ID): 164
Comments (Comment ID): 641357

Concern Statement: The spring pallid flow release and low summer flow under Alternative 2 would support pallid sturgeon spawning aggregations, synchronicity, and ultimately their success, as well as creating ESH and provide benefits to drifting larval sturgeon by decreasing drift speeds and distances and potentially increase their likelihood of being intercepted into hospitable habitats thereby decreasing mortality rates. Natural variation in flows, higher and lower over the course of the year, is critical to make the aquatic environment which gives the necessary variations in conditions in which all the many species of fish, water insects, macroinvertebrates, and cellular organisms depend for robust populations. These benefits along with others are fully supported.

Response: The low summer flow in Alternative 2 was part of the 2003 Biological Opinion and was analyzed to determine the benefit to the species and impacts to other interests. Alternative 2 was not identified as the preferred alternatives, in part, because of the estimated impacts to other river uses including support for authorized purposes such as water supply and navigation coupled with uncertain benefits for the species. Current information does not indicate that pallid sturgeon require a spring pulse to spawn. Spawning is currently occurring – best evidence shows documented reproduction occurred in 2014 during a “flat” hydrograph. A spring pulse does not appear to be needed to provide food – there is little evidence that pallid sturgeon of any size are food-limited in the Missouri River.

Representative Quotes (Correspondence ID): 179, 237
Comments (Comment ID): 643000, 645209

Concern Statement: Most of the components of Alternative 2 are no longer supported by the latest science and/or have been tried without success. There is also a substantial difference between Alternative 2 and Alternatives 3–6 in the ways that adaptive management is implemented. This difference creates a large discrepancy between Alternative 2 and Alternatives 3–6 and leaves room for alternatives that implement the more proactive management plan. There is a gap concerning adaptive management between Alternative 2 and Alternatives 3–6, leaving room for middle-ground viable alternatives where the proactive adaptive management plan is utilized in accordance with management actions on the scale of Alternative 2. An adaptive management approach should be included under Alternative 2.

Response: Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were largely developed before 2003, prior to the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is reasonable to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative does not provide a useful comparison if it assumes the very existence of the plan being proposed.

Representative Quotes (Correspondence ID): 107, 166, 179, 223

Comments (Comment ID): 643882, 644887, 644926, 644949, 645214

Concern Statement: The high cost of Alternative 2 is unacceptable.

Response: Comment noted.

Representative Quotes (Correspondence ID): 23, 176

Comments (Comment ID): 644764

Concern Statement: Low summer flows need to be sufficiently low to provide for shallow water habitat as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon.

Response: The low summer flows described as part of Alternative 2 would likely increase the amount of areas meeting the SWH definition for the duration of the low summer flow and would likely be a benefit to nesting terns and plovers. Alternative 2 was not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood control, navigation, water supply, and hydropower. The EIS outlines other alternatives that are anticipated to meet species objectives while being less impactful to other resources and uses.

Representative Quotes (Correspondence ID): 206

Comments (Comment ID): 645146

Concern Statement: Alternative 2 was not intended to be the preferred alternative and was only included due to expectations under NEPA and as a gesture to environmentalists. A minimalist approach was used in development of the alternative primarily in only acquiring a low number of acres per year. This fails the good faith concept. Additionally, changing of unit values made it difficult to impossible to compare the amount of shallow water habitat acres with previous years and slow responses to requests for year-end summaries.

Response: An important point of clarification is that Alternative 2 was developed by USFWS and outlined in a letter to USACE in November of 2015. The same letter was also shared with MRRIC and published with the Draft EIS. Alternative 2 was included to display the impacts and benefits of full implementation of the 2003 Biological Opinion. The same level of impacts assessment and same methods were used across all of the alternatives examined in detail. The No Action Alternative (Alternative 1) and Alternative 2 represent the range of anticipated effects of the 2003 Biological Opinion carried into the future so they could be compared to action alternatives. USACE believes this is rational and is consistent with NEPA. Shallow water habitat goals are presented in terms of acres in the 2003 Biological Opinion. USFWS has defined IRCs in terms of acre/days per year to incorporate flow variability into the definition. This is documented in a planning aid letter

sent to USACE by USFWS on September 14, 2016. This letter was also published with the Draft EIS. Detailed BiOp compliance activities are documented in MRRP annual reports that have been shared with MRRIC and USFWS annually since 2004. Current and past reports are available on the MRRP website: www.moriverrecovery.org.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645207

Concern Statement: The approach used to minimize impacts to human considerations biased the evaluation of possible management actions and weighted the process away from sound biological actions under Alternative 2. Thus, Alternative 2 failed in high costs and impacts to human considerations.

Response: The alternatives are designed to meet the objectives of the plan while taking into account impacts to other resources including “human considerations.” This is consistent with NEPA requirements. An EIS attempts to meet its purpose and need while examining the environmental consequences of alternative ways to meet the purpose and need. The reason for analyzing environmental consequences in a NEPA document is so these impacts can be considered in the decision-making process. USACE developed alternative means of meeting species needs and analyzed the impact of those alternatives on human needs and factored this into identification of a preferred and ultimately a selected alternative as summarized in Section 2.9 of the Final EIS. USACE believes it has selected the alternative that is least impactful across the full range of interests while still meeting species objectives. USACE believes this is a reasonable decision and has taken the full spectrum of considerations into account in the decision-making process and this is well-documented in the Final EIS and supporting materials. Since release of the Draft EIS, USACE has completed formal Section 7 consultation with USFWS and received a non-jeopardy opinion based on implementation of Alternative 3 within the SAMP framework.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645215

Concern Statement: Alternative 2 should be modified to include the SAMP developed for implementation of Alternatives 3–6.

Response: Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is reasonable to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative would not provide a useful comparison if it assumes the very existence of the plan being proposed.

Representative Quotes (Correspondence ID): 149
Comments (Comment ID): 637684, 637683

Concern Statement: Alternative 2 should be modified to include a more ecosystem-wide approach that benefits all wildlife.

Response: Overall ecosystem restoration is outside the scope the Draft EIS. Such a plan would be reflective of the Missouri River Ecosystem Restoration Plan and EIS (MRERP).

Congress has withheld funding for MRERP since 2012 indicating it is not the intent of Congress for MRERP to move forward at this time. In addition, it would not be appropriate to adopt the objectives of MRERP under a different title and continue as if Congress intended the defunded effort to move forward. However, USACE has an obligation under the Endangered Species Act, the MRRP-EIS provides the direction on how USACE will meet those requirements within its need to manage for the authorized purposes.

Representative Quotes (Correspondence ID): 45
Comments (Comment ID): 628645

AL300 *Alternatives: Alternative 3 (Preferred Alternative)*

Concern Statement: The preferred alternative (Alternative 3) should be modified to include more off-channel habitat (non-ESH created habitat) for piping plovers.

Response: USACE considered “Off-Channel” habitat creation and mechanical creation of hydrologically connected non-ESH habitat on Missouri River segments as part of alternatives development. This management action was eliminated from further consideration because it is not currently demonstrated to be as effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH. Although this action was eliminated from consideration in the Draft EIS, USFWS has expressed a willingness to pursue funding for a pilot project. This funding would not be through the USACE MRRP; however, the results of any pilot project could be evaluated under the SAMP. As stated in the SAMP, long-term changes off-river affecting Missouri River populations may require adjustments to target criteria or objectives. The AM process would incorporate the results of future metapopulation modeling as it becomes available in order to improve management decisions.

Representative Quotes (Correspondence ID): 172
Comments (Comment ID): 641804

Concern Statement: **Concern Statement:** The preferred alternative should be modified to include additional emphasis on the pallid sturgeon science, sediment management as a component of the management plan, and address flow constraints from Fort Randall.

Response: The SAMP outlines a comprehensive and structured approach for conducting pallid sturgeon science and incorporating the results into future management. As described in Section 2.10 USACE will continue to analyze how the flow release under the preferred alternative may impact private landowners and if these impacts are covered by any existing easements. Where an easement does not already exist, USACE will continue to effectively strategize how to minimize the impacts over the next nine years. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645153

Concern Statement: There is concern that the one-time flow test could become a permanent flow regime. This action should be removed from the preferred alternative.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 27, 30, 64, 107, 159, 173, 176, 197, 204, 206, 230

Comments (Comment ID): 626704, 626827, 633522, 641013, 641389, 642772, 643515, 644443, 644453, 644746, 645128, 645243, 645878

Concern Statement: Alternative 3 would require indefinite work and maintenance due to its dependence on manual, artificially created habitat.

Response: Each of the alternatives would entail significant maintenance of constructed habitat. Maintenance costs would be highest under Alternative 2 which calls for increased acreage of constructed ESH and SWH. Maintenance costs do not differ significantly between the other alternatives as described in the cost estimates appendix of the EIS (Appendix F).

Representative Quotes (Correspondence ID): 41

Comments (Comment ID): 627007

Concern Statement: Alternative 3 or 6 provides the best opportunity for further study of the pallid sturgeon with the least adverse effect on human considerations.

Response: Comment noted. Alternative 3 was identified as the preferred alternative.

Representative Quotes (Correspondence ID): 91

Comments (Comment ID): 627568

Concern Statement: The one-time flow test should be removed from the preferred alternative due to the lack of science to support any value.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 33, 65, 107

Comments (Comment ID): 628017, 631573, 643883

Concern Statement: The preferred alternative is inadequate because of the absence of acquiring additional floodplain acres and constructing shallow water habitat.

Response: The preferred alternative includes purchasing of floodplain acres from willing sellers where needed using the BSNP Mitigation authority. The acres would be used to support IRC habitat and surrounding terrestrial areas would be developed as additional habitat. The preferred alternative involves constructing IRC habitat rather than SWH. Previous channel restoration efforts on the lower Missouri River focused on adding SWH (areas 0-5 feet deep, 0-2 feet per second current velocity). IRCs by comparison are designed specifically to provide three ecological attributes (interception hydraulics, food production habitat, and foraging habitat) to support sturgeon growth and survival. These three attributes can individually be designed to provide optimal habitat and survival benefits tailored to particular river reaches. IRCs occupy locations similar to SWH projects, but they are designed specifically to provide these three needed attributes.

Representative Quotes (Correspondence ID): 42
Comments (Comment ID): 628479

Concern Statement: The MRRMP-EIS should increase IRC construction under Alternative 3.

Response: Alternative 3 contains the amount of IRC construction needed to test the concept to see if it is effective. Alternative 3 also includes additional flexibility to add more IRCs should they be determined to be effective. The acreages of IRC in Alternatives 3–6 are in alignment with recommended levels of IRC presented to USACE from USFWS via planning aid letter in September of 2016.

Representative Quotes (Correspondence ID): 42, 207
Comments (Comment ID): 628511, 643519

Concern Statement: Alternative 3 is the least sustainable alternative due to the use of all mechanical construction and does not include an adequate amount of IRC construction.

Response: Alternative 3 contains the amount of IRC construction needed to test the concept to see if it is effective. Alternative 3 also includes additional flexibility to add more IRCs should they be determined to be effective. The acreages of IRC in Alternatives 3–6 are in alignment with recommended levels of IRC presented to USACE from USFWS via planning aid letter in September of 2016. Each of the alternatives would entail significant maintenance of constructed habitat. Maintenance costs would be highest under Alternative 2 which calls for increased acreage of constructed ESH and SWH. Maintenance costs do not differ significantly between the other alternatives as described in the cost estimates appendix of the EIS (Appendix F).

Representative Quotes (Correspondence ID): 50
Comments (Comment ID): 628615

Concern Statement: The MRRMP-EIS should describe the process for creating mechanical habitat if funding is not available in the future.

Response: If funding is not available to accomplish habitat construction or any other major component of the plan then USACE would likely re-initiate formal consultation with USFWS and a different path-forward would potentially be determined.

Representative Quotes (Correspondence ID): 55
Comments (Comment ID): 631092

Concern Statement: Alternative 3 is unlikely to reach the goal of 11,886 acres of ESH on the Missouri River.

Response: Alternative 3 is not designed to meet the goal of 11,886 acres of ESH on the Missouri River, it is designed to meet the 95 percent probability of persistence objectives developed by USFWS. The 11,886 acres of ESH is a goal from the 2003 BiOp that is based on the amount of habitat present in the system after flooding in 1997 had created large amounts of ESH in the upper river. Best available science indicates that this amount of habitat is not needed to meet the 95 percent probability of persistence goals outlined by USFWS.

Representative Quotes (Correspondence ID): 63
Comments (Comment ID): 632134

Concern Statement: Alternative 3 is inadequate in repairing the natural ecosystem and is not financially sustainable. Alternative 3 will only facilitate the reestablishment of most of the components needed to recover the pallid sturgeon, piping plover, and least tern and avoid jeopardy. Alternative 3 should include the management action included under Alternatives 4, 5, and 6 that include actions that mimic historic natural flows and habitat.

Response: Alternative 3 is designed to restore components of the ecosystem thought to be important to the three listed species based on best available science. Alternative 3 also includes a comprehensive SAMP designed to continually update the scientific knowledge base and incorporate this knowledge into management actions on the ground. Each of the alternatives would entail significant maintenance of constructed habitat. Maintenance costs would be highest under Alternative 2 which calls for increased acreage of constructed ESH and SWH. Maintenance costs do not differ significantly between the other alternatives as described in the cost estimates appendix of the EIS (Appendix F). Alternative 3 was chosen as the preferred alternative because it is anticipated to meet species objectives while avoiding impacts to other resources that occur under Alternatives 4, 5, and 6.

Representative Quotes (Correspondence ID): 103
Comments (Comment ID): 636883

Concern Statement: Alternative 3 does not do enough to conserve and protect the natural resources of the Missouri River due to the lack of flows. Establishing a more natural flow regime in combination with habitat construction through an adaptive management plan is a more prudent approach.

Response: Rather than a comparison to historical pre-dam and pre-bank stabilization conditions, USACE believes the science and adaptive management approach that consists of research, monitoring of natural flow events, and potential test flows is more likely to be successful given the extensive modifications to the Missouri River to support authorized purposes. The flows for ESH creation are scientifically supported. We have a population model that predicts the response of terns and plovers to different ESH creating flow events and those results are provided in the EIS. The analysis shows, however, that objectives for terns and plovers can be met without the use of intentional ESH flows and incurring the associated impacts to other resources.

Representative Quotes (Correspondence ID): 149, 179
Comments (Comment ID): 637677, 645206

Concern Statement: Alternative 3 should include a substantially greater commitment to land acquisition, floodplain connectivity, and habitat restoration.

Response: Alternative 3 contains the amount of IRC construction needed to test the concept to see if it is effective. Alternative 3 also includes additional flexibility to add more IRCs should they be determined to be effective. The acreages of IRC in Alternatives 3–6 are in alignment with recommended levels of IRC presented to USACE from USFWS via planning aid letter in September of 2016. As described in the EIS, the BSNP land acquisition authority would be used to purchase lands from willing sellers as needed for IRCs and surrounding terrestrial areas would also be developed as habitat. Use of the BSNP Mitigation Authority to potentially improve conditions for endangered species is also a component of the ESA 7(a)(1) Plan. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric

criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015.

Representative Quotes (Correspondence ID): 178
Comments (Comment ID): 641437

Concern Statement: Due to the uncertainty of the alternatives and the actions needed for the pallid sturgeon, piping plover, and least tern there is uncertainty in the success of these actions. Additionally, the one-time flow test is opposed.

Response: The preferred alternative outlines an initial set of actions that can be implemented as more is learned about species needs. The SAMP is designed to reduce uncertainty and feed new knowledge back into implementation decisions. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 189
Comments (Comment ID): 641574

Concern Statement: The preferred alternative should not threaten navigation.

Response: The preferred alternative does not include a split navigation season or otherwise threaten commercial navigation.

Representative Quotes (Correspondence ID): 192, 194, 212
Comments (Comment ID): 641641, 641710, 641725

Concern Statement: The preferred alternative should enhance the research surrounding Big Questions 1: Spawning Cues and include Level 2 experimental flow decreases from Gavins Point Dam in addition to the proposed release. These decreases would be timed to coincide with high flow events at appropriate water temperatures (spawning) occurring on the tributaries near Gavins Point Dam to attempt to enhance localized temperature and turbidity - known factors impacting pallid spawning behaviors. Additionally, the preferred alternative should evaluate and implement low stable flows during known periods of peak aquatic-insect laying. The Nature Conservancy also believes evaluation of the impacts on these same insects by harassment flows to discourage bird nesting on low sandbar elevations should be considered.

Response: At this point, there does not appear to be evidence that temperature and/or turbidity are needed to cue pallid sturgeon spawning below Gavins Point Dam. Spawning is currently occurring – best evidence shows documented reproduction occurred in 2014 during a “flat” hydrograph. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed. If temperature and/or turbidity are determined to be factors limiting spawning then level 2 experimental releases can be added at a future date through the science and adaptive management process. The Final EIS contains an analysis of flow management to reduce take of birds and the potential impacts to aquatic insects. This analysis is provided in Section 3.5 of the Final EIS.

Representative Quotes (Correspondence ID): 148, 229

Comments (Comment ID): 642691, 644899

Concern Statement: The number of spawning habitat sites included under Alternative 3 is insufficient and should include more.

Response: The intent of spawning site creation is to stimulate aggregation of males and females in one location for spawning; too many sites would potentially lead to further disaggregation. In the case of spawning habitat, USACE believes it is more prudent to develop one site as a pilot project prior to expanding that site if it proves to be effective.

Representative Quotes (Correspondence ID): 207

Comments (Comment ID): 643518

Concern Statement: There is concern about the knowledge concerning requirements for pallid sturgeon spawning and rearing habitat and these proposed actions in the MRRMP-EIS. Coordination between USACE and stakeholders regarding design, location, and implementation is important.

Response: A process to coordinate design, location, and implementation is being developed with MRRIC. Initial planning for the Langdon Bend project was conducted in February of 2014. All environmental compliance and National Environmental Policy Act requirements were satisfied and documented in a Project Implementation Report with Integrated Tiered Environmental Assessment and Finding of No Significant Impact. A 30-day public comment period began June 20, 2016 and ended July 20, 2016. No Recommendations from MRRIC nor comments from the members of MRRIC were received. As with all habitat sites, this site will be monitored and, if warranted, adjusted through the adaptive management process. Consistent with Langdon Bend and in addition to the IRCs included within the study design, MRRP will be modifying existing chutes and SWH to better incorporate the concepts of IRC. Any additional necessary environmental documentation will be completed as required by law.

Representative Quotes (Correspondence ID): 107

Comments (Comment ID): 643906

Concern Statement: The suite of actions in the preferred alternative alone may not meet the purpose and objectives of the Draft MRRMP-EIS. The near-complete reliance upon mechanical construction in the Missouri River system overlooks the value of ecological functions to support the program purposes. Restoring natural flows should be a cornerstone of management approaches to river ecosystems, yet the current Draft

MRRMP-EIS preferred alternative only includes them as a potential for testing the applicability of flows.

Response: Rather than a comparison to historical pre-dam and pre-bank stabilization conditions, USACE believes the science and adaptive management approach that consists of research, monitoring of natural flow events, and potential test flows is more likely to be successful given the extensive modifications to the Missouri River to support authorized purposes. The flows for ESH creation are scientifically supported. We have a population model that predicts the response of terns and plovers to different ESH creating flow events and those results are provided in the EIS. The analysis shows, however, that objectives for terns and plovers can be met without the use of intentional ESH flows and incurring the associated impacts to other resources.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643928

Concern Statement: The preferred alternative does not address the identification and removal of impediments to implement more natural flows in the Missouri River. The Final MRRMP-EIS should consider the use of land acquisition, flowage easements, coordination with landowners, and necessary site preparations, within the 15-year project implementation period to achieve the purpose and objectives of the Draft MRRMP-EIS.

Response: Rather than a comparison to historical pre-dam and pre-bank stabilization conditions, USACE believes the science and adaptive management approach that consists of research, monitoring of natural flow events, and potential test flows is more likely to be successful given the extensive modifications to the Missouri River to support authorized purposes. The flows for ESH creation are scientifically supported. We have a population model that predicts the response of terns and plovers to different ESH creating flow events and those results are provided in the EIS. The analysis shows, however, that objectives for terns and plovers can be met without the use of intentional ESH flows and incurring the associated impacts to other resources.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643935

Concern Statement: The preferred alternative (Alternative 3) is too limited in scope and it does not provide sufficient consideration for ecological function and other river resources. The preferred alternative should include management actions that achieve closer to natural flow regimes, such as those in Alternative 2.

Response: Rather than a comparison to historical pre-dam and pre-bank stabilization conditions, USACE believes the science and adaptive management approach that consists of research, monitoring of natural flow events, and potential test flows is more likely to be successful given the extensive modifications to the Missouri River to support authorized purposes. The flows for ESH creation are scientifically supported. We have a population model that predicts the response of terns and plovers to different ESH creating flow events and those results are provided in the EIS. The analysis shows, however, that objectives for terns and plovers can be met without the use of intentional ESH flows and incurring the associated impacts to other resources.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643950

Concern Statement: The preferred alternative should include other traditional shallow water habitat construction projects (bank notches, dike notches, revetment notches, placement of new structures, side channels, chutes, and channel widening/top-width widening) and should continue to be considered throughout the lower river because of their demonstrated effectiveness in providing multiple species benefits, along with flood control and water quality improvements.

Response: Techniques such as bank notching, dike notching, revetment notches, placement of new structures, and channel widening are potential methods to construct IRC habitat. There is still uncertainty about the effectiveness of the IRC concept including optimal distribution, size, and quantity. The preferred alternative analyzed the impacts of creating 276 acres of IRC from Sioux City to the Platte River, 585 acres from the Platte River to Rulo, 670 acres from Rulo to the Kansas River, 1,389 from the Kansas River to the Osage River, and 460 acres from the Osage River to the mouth.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644397

Concern Statement: Any mechanical habitat construction should be undertaken in a manner that avoids, to the greatest extent possible, deposition of sediment back into the Missouri River.

Response: Potential downstream sediment impacts will be examined for each channel modification project and if sediment impacts are identified then ways to reduce impacts will be examined. Each project will also include State Section 401 water quality certification.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644409

Concern Statement: Level 2 studies would have no effect on pallid sturgeon living in the river and insufficient statistical power to overcome what is, essentially, a policy decision preference for an intervention under the preferred alternative that may not work.

Response: Level 1 studies are research studies without changes to the system (laboratory or field studies under ambient river conditions). By definition, level 2 studies take place in the river. Level 2 actions are implemented at a sufficient level to expect a measurable biological, behavioral, or physiological response in pallid sturgeon, surrogate species, or related habitat response. Prior to implementing any level 2 study in the river, or level 1 studies monitoring ambient conditions, a statistical power analysis will be performed to ensure the study designed in a way that produces meaningful information. For example, as part of implementing IRC habitat under the preferred alternative a statistical power analysis was conducted that was used in determining the extent of monitoring and sampling intensity at IRC and control sites required to observe an effect.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644851

Concern Statement: The preferred alternative is insufficient at avoiding jeopardy for the pallid sturgeon, piping plover, and least tern.

Response: USFWS has issued a non-jeopardy opinion on implementation of the preferred alternative under the SAMP.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644860

Concern Statement: The Draft MRRMP-EIS seems to lack any detail on the amount of acquired land would occur or the types of habitat development.

Response: As described in Section 2.8.4 of the EIS under the preferred alternative approximately 1,772 acres of additional land would be projected to be purchased in association with IRC habitat construction. As described in Section 2.5.4 of the EIS the land acquisition authority for mitigation of the construction of the BSNP is not being reassessed through this Management Plan and the total mitigation authority acres remain at 166,750 acres. USACE has acquired approximately 66,616 acres of the authorized 166,750 acres, nearly 40 percent. Land acquisition and habitat development under the BSNP mitigation authority is not limited to pallid sturgeon habitat and can include restoration of native vegetation, wetlands, bottomland forest, backwaters and other Missouri River habitats lost due to the BSNP. Appropriate vegetation and habitat types are determined on a site-specific basis. It is assumed that real-estate purchases for the 15-year implementation timeframe would continue to prioritize land that contributes to jeopardy avoidance, while still constituting appropriate acquisition and development under the WRDA authorities. The current budgetary priority is on ESA compliance rather than habitat acquisition and creation for non-listed species. If budgetary priorities change the necessary authorities and NEPA framework (the 2003 Supplemental EIS for BSNP Mitigation) are already in place to fully implement BSNP mitigation.

Representative Quotes (Correspondence ID): 229
Comments (Comment ID): 644901

Concern Statement: The MRRMP-EIS should provide an explanation of how it will meet the goal of reproducing the effect of floodplain connectivity and inundation as recommended by USFWS.

Response: Best available science at this time does not indicate that pallid sturgeon of any age are food limited or that floodplain connectivity would increase pallid spawning habitat. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with

tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015.

Representative Quotes (Correspondence ID): 166, 131
Comments (Comment ID): 644928, 645761

Concern Statement: Expanding the budget for level 1 and level 2 research on the effectiveness of physical habitat creation and modification within the current river channel needs to be a priority. However, if research indicates these habitats are contributing to reproduction and recruitment of pallid sturgeon, the goal of 20 acres of shallow water habitat or IRC per river mile should be increased to 30 acres per river mile, the upper end of the range specified in the 2003 Amended Biological Opinion. Additionally, the research effort should be increased such that in 9-10 years, there is sufficient information to determine if flow modifications to annual operations of the system are needed to support pallid sturgeon recovery.

Response: Level 1 and Level 2 activities have been outlined in-detail in the SAMP and funding will be prioritized for these activities. The appropriate size, distribution, and number of sites will be determined through the AM process rather than defaulting to SWH acreage goals provided in the 2003 Biological Opinion. The preferred alternative lays out an incremental approach to increase the amount of IRC habitat should it be deemed effective. Level 1 studies during the first 9 years will be designed to produce statistically valid results used to determine if a bi-modal pulse is needed for successful spawning.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645130

Concern Statement: The MRRMP-EIS should implement the preferred alternative in a manner that would provide both beneficial habitat and improve overall channel flow conveyance and habitat construction activities within the navigation channel should be implemented only after these deficient structures are brought up to their original design dimensions.

Response: Site-specific IRC projects will be located and designed in a manner that avoids or minimizes impacts to the authorized purposes including navigation. Each site will include site-specific planning and NEPA compliance including coordination with the public, States, Tribes, and stakeholders.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645242

Concern Statement: The MRRMP-EIS should provide further explanation of how the ESH acres would be distributed between the reaches under the preferred alternative.

Response: Additional detail regarding the modeled distribution of ESH habitat construction has been added to the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645380

Concern Statement: Additional detail should be included in the MRRMP-EIS on the size, location, and timing of construction for the three spawning habitat construction sites.

Response: At this point the ideal location and size for spawning habitat construction is unknown. Several Level 1 and Level 2 studies are outlined in the SAMP that will be used to determine locations, substrate, and size.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645513

Concern Statement: The sequential approach in the preferred alternative (Alternative 3) further delays meaningful conservation of pallid sturgeon in the upper Missouri River basin through unnecessary reliance on Level 1 and Level 2 studies.

Response: The Effects Analysis and SAMP were developed by a team of internationally recognized experts in sturgeon biology, tern and plover biology, population modeling, adaptive management, and other related fields. The Effects Analysis and SAMP have been thoroughly reviewed by an independent science advisory panel consisting of internationally recognized experts in the field. USACE and USFWS believe the Effects Analysis represents the best available science related to the three species. The incremental approach described in the SAMP is based on the results of the Effects Analysis and provides a process where hypotheses can be tested and the agencies can adjust as more is learned. Science and implementation activities are scheduled in detail in the plan to avoid delays in knowledge acquisition and implementation.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 643285

AL400, AL500, AL600 Alternatives: Alternative 4, Alternative 5, Alternative 6

Concern Statement: Alternatives 4, 5, and 6 create unacceptable amounts of flooding risk in the spring or fall, increasing downstream flood control constraints, impacts to interior drainage, and doubling releases from Gavins Point.

Response: As discussed in detail in Section 3.12, beginning on page 3-261 in the Draft EIS, Flood Risk Management and Interior Drainage were discussed and evaluated for each of the alternatives. Alternatives 4, 5, and 6 were not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood risk management coupled with uncertain benefits for the species. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 33, 64, 65, 98, 144, 154
Comments (Comment ID): 628008, 631571, 633520, 633684, 633916, 640728, 646364, 626700

Concern Statement: There is opposition to Alternatives 4 and 5 as they still allow for spring or fall flows for the pallid sturgeon without the science to suggest its effectiveness.

Response: The spring flow included in Alternative 4 and the fall flow included in Alternative 5 are for Emergent Sandbar Habitat Creation, not for pallid sturgeon benefit. Alternatives 4 and 5 were not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes such as flood risk management coupled with uncertain benefits for the species. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 187
Comments (Comment ID): 641563

Concern Statement: The EIS should verify that flow duration parameters in Section 2.7.3 pg. 2-40 have been verified in the river.

Response: The model used to estimate flow durations needed to create 500 acres of ESH uses available observed river data; however, the model will be improved in the future as additional monitoring information is collected and fed back into the model. The model is a planning tool rather than a more exact representation of observed conditions.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643867

Concern Statement: Alternative 4 appears to benefit downstream interests to the detriment of upstream users, such as power generation.

Response: USACE agrees that Alternative 4 can have adverse impacts to thermal power plants in Garrison Reach, which seem to occur following a spring release when there is less water available for subsequent releases from Lake Sakakawea when compared to No Action. Power plants in the lower river would also experience some adverse impacts from flow releases under Alternative 4 as well. However, the NED model indicates that power plants in the lower river would experience some increases in power generation under Alternative 4 because river temperatures would be slightly lower in the lower river than under No Action. Not all resources benefit from the flow releases in the lower river from the Alternative 4. Water supply and irrigation water intakes can experience adverse effects in the year or years following a flow release from reduced access to water. Flood risks can also increase during the release years as well in the lower river. Alternative 4 was not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes such as power generation coupled with uncertain benefits for the species. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643873

Concern Statement: Alternatives 3–6 fail to meet the minimum floodplain connectivity and inundation recommended by USFWS or how it would achieve the goal of 11,886 acres of ESH.

Response: USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain

connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015. Alternatives 3–6 are not designed to meet the goal of 11,886 acres of ESH on the Missouri River, they are designed to meet the 95 percent probability of persistence objectives developed by USFWS. The 11,886 acres of ESH is a goal from the 2003 BiOp that is based on the amount of habitat present in the system after flooding in 1997 had created large amounts of ESH in the upper river. Best available science indicates that this amount of habitat is not needed to meet the 95 percent probability of persistence goals outlined by USFWS.

Representative Quotes (Correspondence ID): 63, 131, 166
Comments (Comment ID): 644928, 645761, 645762

Concern Statement: Alternatives 2 and 5 would have a degree of unacceptable uncertainty in impacts associated with USACE holding back flows to maintain volume in upstream reservoirs.

Response: The Master Manual indicates that the water control plan's purpose is to meet water supply requirements to the extent reasonably possible. The minimum Garrison releases in the Master Manual that are considered adequate to meet water intake or water quality requirements are used in each alternative. Although USACE can help meet short-term intake requirements (e.g., increasing releases for a short period to ensure an intake can access water), it is the intake owners' responsibility to ensure that their intake is operational under the range of flows specified in the Master Manual. Alternative 5 was not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes such as water supply coupled with uncertain benefits for the species. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643872

Concern Statement: Reservoir releases will impact thermal power and the value of the water released to create ESH should be determined in order to assess the total cost to stakeholders.

Response: Most human considerations topics have NED and RED evaluations; some of the evaluations include cost-based evaluations, while others are focused on the change in benefits under the alternatives. The RED evaluation includes various geographies depending on the resource under evaluation. In addition, some of the adverse impacts from the flow releases occur in release years, while other impacts occur in the year following a release and sometimes multiple years following a release. It would be inaccurate to aggregate all of these estimates to attempt to estimate all impacts associated with a flow release for ESH creation. The consequence table in the Chapter 2 (Tables 2-30 and 2-31) summarizes all of the possible consequences on average

associated with the alternatives; Chapter 3 and the technical reports further explain the annual economic impacts associated with each of the human considerations.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643884, 643885

Concern Statement: Alternatives 4 and 5 will not achieve desired flow release ESH habitat creation objectives due to the limited amount of time the flow releases would be fully implemented.

Response: With the exception of Alternative 1, all of the alternatives were projected to meet the 95 percent probability of persistence targets determined by USFWS.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644951

Concern Statement: USACE should manage flows after the fall flow release to restore the elevation of the big-three storage reservoirs to the base of the annual flood control pool by March 1st of each year.

Response: The preferred alternative does not include a fall flow release, however if a fall release were to be implemented in the future, USACE would attempt to manage flows to restore the elevation to the base of the annual flood control pool if possible.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645144

Concern Statement: There is opposition to Alternatives 1, 2, and 6 as it still allows for bi-modal spring rise for the pallid sturgeon without the science to suggest its effectiveness.

Response: Alternative 6 was not identified as the preferred alternative, in part, because of the estimated impacts to other river uses including support for authorized purposes coupled with uncertain benefits for the species. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 64, 98, 107, 187, 228, 239
Comments (Comment ID): 633683, 641563, 643886, 645376, 645450, 646363

Concern Statement: Please clarify what is meant by the term “the preclude” on page 2-73.

Response: The term "preclude" was removed when referring to spawning cues and ESH releases. The term is in reference to a set of circumstances that would stop the flow from occurring. The spawning cues and ESH releases have System storage checks that determine if the releases will occur. The drought preclude of 31.0 MAF used on the March 15 storage check to determine if there will be navigation season does not change in any of the alternatives.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645378

AL4000 *Alternatives: New Alternatives or Elements*

Concern Statement: USACE is encouraged to meet mitigation objectives from willing sellers by purchasing less costly lands worthy of habitat substitution for all species, not just protected species.

Response: The actions in the EIS are designed to fulfill endangered species act responsibilities although a variety of fish and wildlife species would benefit as outlined in Chapter 3 of the EIS. The acres would be used to support IRC habitat and surrounding terrestrial areas would be developed as additional habitat. The Bank Stabilization and Navigation Mitigation Project is linked to every alternative in the Management Plan. It is the authority that would be used to purchase land from willing sellers and develop habitat under each alternative as explained in the EIS.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644792

Concern Statement: Emphasis should be placed on acquiring more acres of land for development of natural habitat for the adult pallid sturgeon and then accelerated if monitoring demonstrates success. Perhaps a hybrid of Alternatives 2 and 3.

Response: Alternative 3 contains the amount of IRC construction needed to test the concept to see if it is effective. Alternative 3 also includes additional flexibility to add more IRCs should they be determined to be effective. The acreages of IRC in Alternatives 3–6 are in alignment with recommended levels of IRC presented to USACE from USFWS via planning aid letter in September of 2016. As described in the EIS, the BSNP land acquisition authority would be used to purchase lands from willing sellers as needed for IRCs and surrounding terrestrial areas would also be developed as habitat. Use of the BSNP Mitigation Authority to potentially improve conditions for endangered species is also a component of the ESA 7(a)(1) Plan.

Representative Quotes (Correspondence ID): 21, 42
Comments (Comment ID): 626567, 628485, 628512, 640077

Concern Statement: Some levees should be set back and controlled release structures placed using LiDAR elevation and GIS imaging.

Response: Levee setbacks have occurred on MRRP acquired lands in the past and could be considered in the future should floodplain connectivity or other levee setback benefit become necessary. At this time, however, pallid sturgeon do not appear to be food limited and spawning success does not appear to be related to floodplain connectivity.

Representative Quotes (Correspondence ID): 68
Comments (Comment ID): 633534

Concern Statement: USACE and USFWS should seek an alternative which allows USACE to provide flood control and protect the species at the same time; a better balance needs to be reached.

Response: USACE believes that Alternative 3 achieves the balance between flood risk reduction and species protection. The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed.

Representative Quotes (Correspondence ID): 140
Comments (Comment ID): 633862

Concern Statement: Current science validates that a broader and more dynamic management plan is needed for species recovery than just a mechanical construction only option.

Response: The Effects Analysis and SAMP were developed by a team of internationally recognized experts in sturgeon biology, tern and plover biology, population modeling, adaptive management, and other related fields. The Effects Analysis and SAMP have been thoroughly reviewed by an independent science advisory panel consisting of internationally recognized experts in the field. USACE and USFWS believe the Effects Analysis represents the best available science related to the three species. The SAMP is based on the results of the Effects Analysis and provides a process where hypotheses can be tested and the agencies can adjust as more is learned. Science and implementation activities are scheduled in detail in the plan to avoid delays in knowledge acquisition and implementation. The SAMP outlines a comprehensive and structured approach for conducting pallid sturgeon science and incorporating the results into future management. USACE believes implementation of the initial actions outlined in Alternative 3 combined with the SAMP offers a higher likelihood of success for the three species rather than implementation of full scale management actions that could have significant impacts with very uncertain benefits.

Representative Quotes (Correspondence ID): 103
Comments (Comment ID): 636886

Concern Statement: The inevitable and ongoing channel degradation below Missouri River dams means there will be less production of natural sandbars into the future; thus, the navigation channel should be modified to have a more natural cross-section to benefit the pallid sturgeon.

Response: Channel degradation is the subject of several ongoing studies. Natural sandbars are not currently identified as a limiting factor for pallid sturgeon, therefore sandbar creation was not included as a management action for pallid sturgeon.

Representative Quotes (Correspondence ID): 157
Comments (Comment ID): 637704

Concern Statement: Lower reservoir pools would give USACE more flexibility with storage and release permitting real reservoir unbalancing in future years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that too often have flooded tern and plover nests.

Response: Lowering the base of the annual flood control zone does provide additional flood control storage. However, since that target level stays the same from year to year, runoff received during a given year still needs to be evacuated from the reservoir system prior to the start of the next year's runoff season. Lower reservoir levels have negative impacts on other authorized purpose such as navigation, hydropower, and recreation. Changing target levels from year to year is not feasible given the uncertainty about runoff that will be received in a given year.

Representative Quotes (Correspondence ID): 157, 162
Comments (Comment ID): 637714, 641265

Concern Statement: The range among Alternatives 2–6 is inadequate in that there are significant differences between Alternative 2 and Alternatives 3–6. But among Alternatives 3–6 the differences are minimal.

Response: Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is rational to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative does not provide a useful comparison if it assumes the very existence of the plan being proposed. USACE believes it has examined a full spectrum of alternatives that represent the 2003 BiOp actions and actions based on results of the more recent effects analysis. Alternatives 3–6 represent substantially different means of achieving the objectives because, with the exception of Alternative 3, they all include a different re-occurring flow operation for endangered species. The impact analysis for Alternatives 3–6 show that the impacts vary widely depending on which resource is being examined. This further supports the notion that there is a substantial difference between these alternatives. Section 2.9 of the Final EIS provides a clear comparison of alternatives in terms of the species objectives, Affected Environment and Environmental Consequences and provides a description of how those factors were weighed in the decision. More-detailed comparisons of the alternatives in terms of species objectives are provide in Sections 3.3 and 3.4. USACE believes the analysis presented in Chapter 3 is sufficient for the public to compare the effects of the different alternatives especially considering the uncertainties regarding pallid sturgeon recruitment failure. The analysis presents what is known from the best available science and predicts the potential outcomes of the management actions based on what is currently known. A comprehensive SAMP has been developed to adjust these actions as more is learned in the future.

Representative Quotes (Correspondence ID): 131, 166, 179, 242

Comments (Comment ID): 640117, 644924, 645216, 645490, 640120, 640187, 644925

Concern Statement: USACE is encouraged to formulate a new alternative in the Final EIS that incorporates recovery actions that will: (1) reconnect the river to its floodplain, (2) restore wetlands, (3) provide quality habitat for self-sustaining populations of fish and wildlife, (4) incorporate BSNP Mitigation in all recovery actions, and (5) utilize natural processes for habitat restoration whenever possible.

Response: The actions in the EIS are designed to fulfill endangered species act responsibilities although a variety of fish and wildlife species would benefit as outlined in Chapter 3 of the EIS. Best available science at this time does not indicate that pallid sturgeon of any age are food limited or that floodplain connectivity would increase pallid spawning habitat. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the

language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015.

As described in Section 2.8.4 of the EIS under the preferred alternative approximately 1,772 acres of additional land would be projected to be purchased in association with IRC habitat construction. As described in Section 2.5.4 of the EIS the land acquisition authority for mitigation of the construction of the BSNP is not being reassessed through this Management Plan and the total mitigation authority acres remain at 166,750 acres. USACE has acquired approximately 66,616 acres of the authorized 166,750 acres, nearly 40 percent. Land acquisition and habitat development under the BSNP mitigation authority is not limited to pallid sturgeon habitat and can include restoration of native vegetation, wetlands, bottomland forest, backwaters and other Missouri River habitats lost due to the BSNP. Appropriate vegetation and habitat types are determined on a site-specific basis. It is assumed that real-estate purchases for the 15-year implementation timeframe would continue to prioritize land that contributes to jeopardy avoidance, while still constituting appropriate acquisition and development under the WRDA authorities. The current budgetary priority is on ESA compliance rather than habitat acquisition and creation for non-listed species. If budgetary priorities change the necessary authorities and NEPA framework (the 2003 Supplemental EIS for BSNP Mitigation) are already in place to fully implement BSNP mitigation.

Representative Quotes (Correspondence ID): 181, 241
Comments (Comment ID): 640492, 641472

Concern Statement: The Draft EIS should include recovery actions that allow the river to resume a more natural state within selected areas such as on state and federally owned lands and lands acquired from willing sellers.

Response: The actions in the EIS are designed to fulfill endangered species act responsibilities although a variety of fish and wildlife species would benefit as outlined in Chapter 3 of the EIS. Best available science at this time does not indicate that pallid sturgeon of any age are food limited or that floodplain connectivity would increase pallid spawning habitat. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis

had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015. Alternative 3 is designed to restore components of the ecosystem thought to be important to the three listed species based on best available science. Alternative 3 also includes a comprehensive SAMP designed to continually update the scientific knowledge base and incorporate this knowledge into management actions on the ground.

As described in Section 2.8.4 of the EIS under the preferred alternative approximately 1,772 acres of additional land would be projected to be purchased in association with IRC habitat construction. As described in Section 2.5.4 of the EIS the land acquisition authority for mitigation of the construction of the BSNP is not being reassessed through this Management Plan and the total mitigation authority acres remain at 166,750 acres. USACE has acquired approximately 66,616 acres of the authorized 166,750 acres, nearly 40 percent. Land acquisition and habitat development under the BSNP mitigation authority is not limited to pallid sturgeon habitat and can include restoration of native vegetation, wetlands, bottomland forest, backwaters and other Missouri River habitats lost due to the BSNP. Appropriate vegetation and habitat types are determined on a site-specific basis. It is assumed that real-estate purchases for the 15-year implementation timeframe would continue to prioritize land that contributes to jeopardy avoidance, while still constituting appropriate acquisition and development under the WRDA authorities. The current budgetary priority is on ESA compliance rather than habitat acquisition and creation for non-listed species. If budgetary priorities change the necessary authorities and NEPA framework (the 2003 Supplemental EIS for BSNP Mitigation) are already in place to fully implement BSNP mitigation.

Representative Quotes (Correspondence ID): 180, 241
Comments (Comment ID): 640498, 641453

Concern Statement: USACE is encouraged to consider actions that restore wetlands and backwater areas to reconnect the river with the floodplain, widening projects that create slow, shallow water habitat and removal of man-made pinch points on the lower river.

Response: The actions in the EIS are designed to fulfill endangered species act responsibilities although a variety of fish and wildlife species would benefit as outlined in Chapter 3 of the EIS. Best available science at this time does not indicate that pallid sturgeon of any age are food limited or that floodplain connectivity would increase pallid spawning habitat. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain

connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015. Alternative 3 is designed to restore components of the ecosystem thought to be important to the three listed species based on best available science. Alternative 3 also includes a comprehensive SAMP designed to continually update the scientific knowledge base and incorporate this knowledge into management actions on the ground.

As described in Section 2.8.4 of the EIS under the preferred alternative approximately 1,772 acres of additional land would be projected to be purchased in association with IRC habitat construction. As described in Section 2.5.4 of the EIS the land acquisition authority for mitigation of the construction of the BSNP is not being reassessed through this Management Plan and the total mitigation authority acres remain at 166,750 acres. USACE has acquired approximately 66,616 acres of the authorized 166,750 acres, nearly 40 percent. Land acquisition and habitat development under the BSNP mitigation authority is not limited to pallid sturgeon habitat and can include restoration of native vegetation, wetlands, bottomland forest, backwaters and other Missouri River habitats lost due to the BSNP. Appropriate vegetation and habitat types are determined on a site-specific basis. It is assumed that real-estate purchases for the 15-year implementation timeframe would continue to prioritize land that contributes to jeopardy avoidance, while still constituting appropriate acquisition and development under the WRDA authorities. The current budgetary priority is on ESA compliance rather than habitat acquisition and creation for non-listed species. If budgetary priorities change the necessary authorities and NEPA framework (the 2003 Supplemental EIS for BSNP Mitigation) are already in place to fully implement BSNP mitigation.

Representative Quotes (Correspondence ID): 180, 241
Comments (Comment ID): 640499, 640440, 641455

Concern Statement: The upper Mississippi River Habitat Rehabilitation Program has successfully conducted multiple large-scale projects that include the creation of islands, backwater areas, etc. and returned the river to a more natural state. These larger scale practices should be considered in the Missouri River so meaningful restoration can be accomplished. The upper Mississippi River Habitat Rehabilitation Program should be used as an example of agencies and stakeholders working together to make an ecologically relevant difference while meeting all needs and authorized purposes.

Response: The actions in the EIS are designed to fulfill endangered species act responsibilities although a variety of fish and wildlife species would benefit as outlined in Chapter 3 of the EIS. Best available science at this time does not indicate that pallid sturgeon of any age are food limited or that floodplain connectivity would increase pallid spawning habitat. USACE coordinated with USFWS during development of Alternative 2 to identify criteria for clarification of the floodplain connectivity language from the 2003 BiOp. The 2003 BiOp did not contain numeric criteria for floodplain connectivity. USFWS provided these criteria in a Planning Aid Letter submitted to USACE on November 5, 2015. The

criteria stated that the management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance. This acreage amount was an interpretation, made in 2015, of the language from the 2003 BiOp developed to inform alternatives development. USACE conducted HEC-GeoRAS mapping to determine the acres of existing floodplain connectivity in the lower Missouri River. This was the first time this type of an analysis had been done. The mapping results indicated that 147,650 acres of floodplain connectivity are currently present, not including the area of the main channel. Under each Alternative, it is assumed that normal operations combined with tributary inflow would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously, thus no additional action would be required. This analysis should not be interpreted to indicate that floodplain connectivity has increased from 77,410 acres to 147,650 acres from 2003 to present. Only that current normal operations combined with tributary inflow are meeting numeric criteria for floodplain connectivity developed by USFWS in 2015. Alternative 3 is designed to restore components of the ecosystem thought to be important to the three listed species based on best available science. Alternative 3 also includes a comprehensive SAMP designed to continually update the scientific knowledge base and incorporate this knowledge into management actions on the ground.

As described in Section 2.8.4 of the EIS under the preferred alternative approximately 1,772 acres of additional land would be projected to be purchased in association with IRC habitat construction. As described in Section 2.5.4 of the EIS the land acquisition authority for mitigation of the construction of the BSNP is not being reassessed through this Management Plan and the total mitigation authority acres remain at 166,750 acres. USACE has acquired approximately 66,616 acres of the authorized 166,750 acres, nearly 40 percent. Land acquisition and habitat development under the BSNP mitigation authority is not limited to pallid sturgeon habitat and can include restoration of native vegetation, wetlands, bottomland forest, backwaters and other Missouri River habitats lost due to the BSNP. Appropriate vegetation and habitat types are determined on a site-specific basis. It is assumed that real-estate purchases for the 15-year implementation timeframe would continue to prioritize land that contributes to jeopardy avoidance, while still constituting appropriate acquisition and development under the WRDA authorities. The current budgetary priority is on ESA compliance rather than habitat acquisition and creation for non-listed species. If budgetary priorities change the necessary authorities and NEPA framework (the 2003 Supplemental EIS for BSNP Mitigation) are already in place to fully implement BSNP mitigation.

Representative Quotes (Correspondence ID): 147
Comments (Comment ID): 640708

Concern Statement: USACE must pursue every opportunity to acquire available lands in the floodway and to remove or set back the levees in order to reduce flood risks.

Response: Levee setbacks have occurred on MRRP acquired lands in the past and they are an option in the future should floodplain connectivity or other levee setback benefit become necessary. However, the primary hypothesized benefit from floodplain connectivity is food production and it does not appear that pallid sturgeon of any size are food limited.

Representative Quotes (Correspondence ID): 163
Comments (Comment ID): 641276

Concern Statement: Level 1 and Level 2 actions should be prioritized to guide funding expenditures; the pallid sturgeon propagation and augmentation program should continue and lower river early life stage habitat construction should be implemented on a trial basis prior to full implementation. Additionally, habitat development should be undertaken on MRRP lands.

Response: Concur, this recommendation is consistent with the preferred alternative. The PSPAP is considered fundamental context to evaluating population level responses to management actions. The present redesign is intended to make it more efficient and relevant to management decisions.

Representative Quotes (Correspondence ID): 192
Comments (Comment ID): 641664

Concern Statement: The selected alternative must meet the eight authorized purposes. Insufficient time was allocated to the process of developing alternatives.

Response: The preferred alternative is consistent with supporting the eight authorized purposes. The alternatives were developed over a three-year period beginning with the effects analysis in 2016 which is considered to be sufficient time by USACE. All stages of alternatives development including the effects analysis were shared with MRRIC for input. The public comment period ranged from December 16 to April 24 providing another opportunity to provide input on alternatives.

Representative Quotes (Correspondence ID): 205
Comments (Comment ID): 642125

Concern Statement: The Nebraska Game and Parks Commission believes that a systematic plan of top-width widening for the entire channelized reach in Nebraska would provide huge positive economic benefits to the Missouri River system not considered in any of the alternatives presented in the Draft EIS.

Response: It is not clear that top-width widening of any scale would alleviate factors limiting pallid sturgeon recruitment. USACE has outlined a scaled approach that ultimately could lead to wider adoption of top-width widening or other actions if it is determined these actions would address ecosystem factors limiting pallid sturgeon recruitment. The effects analysis and the SAMP present the key uncertainties that challenge implementation decisions for the MRRP. They also detail the rationale and approach to developing the necessary supporting science so that management actions can be implemented and evaluated against expected outcomes with a reasonable expectation that the knowledge gained will contribute to improved understanding, better implementation decisions, and increased likelihood of achieving the program objectives over time. The AM framework provides a measured approach to implementation, recognizing that causal understanding and the development of management-response functions will be necessary to ensure that management actions taken will be effective. This strategy acknowledges the tradeoffs between knowledge and action, emphasizing the need for early investment in understanding so that long-term management prospects are improved. This strategy has the added benefits of reducing the risks of taking regrettable, expensive, and potentially irreversible actions that could have serious economic, social, and environmental impacts and ultimately hurt the prospects of species recovery.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 643110

Concern Statement: The definition of piping plover nesting habitat should be expanded to include oxbows, sand spoil areas, alkaline lakes, and reservoir management areas. This would greatly increase the likelihood of meeting plover objectives at a reduced cost.

Response: As explained in Section 2.5.1.4 of the Draft EIS, USFWS recommended that USACE not include sandpit habitat management or habitat development in the navigation channel as management actions in this plan (USFWS 2015a). USFWS identified several issues that would need to be resolved to consider this a feasible management action including the reproductive potential of these areas, potential for high predation, habitat preferences and dispersal, forage availability, land acquisition, and feasibility of creation and maintenance (USFWS 2015a). This management action was eliminated from further consideration because it is not currently demonstrated to be as effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH (USACE 2012a). Although this action was eliminated from consideration in this EIS, USFWS has been working with MRRIC to pursue a pilot project with alternate funding (not through MRRP). The results of the pilot project could be evaluated through the AM process and incorporated into future management if deemed effective.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643827

Concern Statement: The potential for larval pallid sturgeon to drift out of the Missouri River (and into the Mississippi River) should not deter development of IRC habitats in the very lower portion of the Missouri River or even the Mississippi River.

Response: The preferred alternative does include the ability to construct IRC habitat in the very lower portion of the Missouri River. The MRRP ISP has already begun supporting the microchemistry and genetics studies that are the basis for understanding relations with the Mississippi River. Under Big Question 4 on drift dynamics there is a level 1 field study to assess free embryo transport to the Mississippi River. This study will estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River relative to the number and survival of those that remain in the Missouri River. The SAMP is designed to be flexible and a modified geographic scope for IRC construction could be incorporated into management if needed in the future after a supplemental NEPA process is conducted.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643860

Concern Statement: USACE should identify and define actions which can be implemented immediately.

Response: As explained in the Draft and Final EIS the preferred alternative includes immediate implementation of IRC habitat construction and associated land purchases and habitat development, spawning habitat construction, continuation of propagation and stocking, construction of ESH, vegetation management, human restriction measures, predator management, and flow management to avoid take of birds.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643931

Concern Statement: USACE should commit to use other tools such as flows to meet MRRMP objectives even though it may take many years to clear the impediments to use flows to

restore the ecological function of the Missouri River. USACE should focus initial efforts in reaches where flood risk is the highest such as the reach below Fort Randall Dam and other previously identified reaches where pinch points and low-lying land are at risk.

Response: Actions outside of the preferred alternative, or selected alternative, are still available for implementation pending additional analysis and public involvement. USACE believes it has selected a reasonable set of initial actions to be implemented over a 15-year timeframe that address priority hypotheses and the species objectives. It would not be appropriate to include the myriad of potential actions in the selected alternative if it is not reasonably foreseeable that they would need to be implemented. The alternative is designed to give the public, Tribes, stakeholders, and other agencies reasonable expectations of what will be implemented rather than include a myriad of potential actions that may or may not be implemented under unfettered discretion of USACE to implement. The AM process allows for new actions, not within the selected alternative, to be implemented following a transparent discourse with the Tribes, public, stakeholders, and other agencies and supplemental NEPA analysis if needed.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643936

Concern Statement: The MRRMP fails to benefit pallid sturgeon in Montana within a realistic timeframe. In Montana, what does this plan recover, what habitats are improved, and what USACE-caused impacts that threaten this species with extinction are eliminated?

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644045

Concern Statement: The preclusion from consideration of modifications to Fort Peck Dam to address the downstream impacts of hypolimnetic dam discharge severely limit the list of possible management actions in Montana that would benefit pallid sturgeon and their habitats.

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644100

Concern Statement: Along the Missouri River from St Louis, Missouri to Montana, there are different areas that deal with different segments and different circumstances. These areas could be divided up into lengths along the river and the habitat could be enhanced in different ways, for the different circumstances.

Response: Site-specific characteristics are factored into each site-specific project planning process.

Representative Quotes (Correspondence ID): 225
Comments (Comment ID): 644420

Concern Statement: The flow hypotheses are incomplete with regard to the pallid sturgeon unless additional sediment load is placed back into the system from that which is currently trapped behind the Mainstem dams in their reservoirs.

Response: There currently is no scientific evidence that a lack of sediment in the lower river is inhibiting recruitment of pallid sturgeon and this was not identified as a priority hypothesis at this time. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644786

Concern Statement: None of the alternatives, including the preferred alternative, address the sediment starved river due to retention behind the Mainstem dams, the spawning affects related to that trapped material, and the impact on the species.

Response: There currently is no scientific evidence that a lack of sediment in the lower river is inhibiting recruitment of pallid sturgeon and this was not identified as a priority hypothesis at this time. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644823, 644830

Concern Statement: The differences in spawning habitat construction are significant and unexplained. Since spawning habitat creation has not been sufficiently studied, it is reasonable to consider an alternative in which active AM, including Level 1 and 2 studies, is first used to assess the specifications of spawning habitat construction and to determine whether the action would have positive impacts on the pallid sturgeon. An alternative using a middle-ground approach to spawning habitat construction would potentially be more effective than either including or excluding spawning habitat construction.

Response: As a point of clarification, the preferred alternative does include Level 1 and Level 2 studies prior to full construction of spawning habitat. This is explained in the SAMP.

Alternatives 1 and 2 are based on the 2003 Biological Opinion which did not include spawning habitat. Alternatives 3–6 are based on the results of the recent effects analysis which identified spawning habitat as a potential limiting factor.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644945

Concern Statement: There is a huge cost difference between the alternatives, which leaves room for middle-ground alternatives. There is clearly room for additional reasonable and feasible alternatives to create early life stage habitat with costs that fall between the ranges of Alternative 2 and Alternatives 3–6.

Response: The amount of early life stage habitat (Shallow Water Habitat) under Alternatives 1 and 2 are a reflection of acreage goals in the 2003 Biological Opinion. The amount of early life stage habitat in Alternatives 3–6 are a reflection of what is needed for determining effectiveness of the IRC action and additional amounts of IRC that would be built if the Management Action is deemed effective. Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644948

Concern Statement: Spawning habitat construction, spawning cue releases, and IRC for early life stage habitat construction need further study before they can be effectively implemented. USACE should propose at least one alternative that contains the most effective actions of Alternative 2 but also incorporates active AM and Level 1 and Level 2 studies on these topics.

Response: The most effective actions for the birds in Alternative 2 include the very same actions that are in the preferred alternative except with a different amount of ESH construction. It is uncertain which actions from Alternative 2 are “most effective” for pallid sturgeon, but most of the actions in Alternative 2 have been implemented over the past 14 years with no improvement in recruitment. USACE believes that the initial set of actions identified in Alternative 3 coupled with the SAMP represent the best chance for improving management for the listed species. They are based on the best available science and include a structured process to reduce uncertainty and introduce new management actions as necessary. USACE has completed formal ESA consultation and received a finding of non-jeopardy from USFWS in their Biological Opinion.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644953

Concern Statement: Increasing sediment transport downstream from the impounded section of the Missouri River needs to be included in the Draft MRRMP-EIS alternatives. It should also be evaluated in the Final EIS with regards to potential benefits to the listed species and to overall ecosystem health.

Response: There currently is no scientific evidence that a lack of sediment in the lower river is inhibiting recruitment of pallid sturgeon and this was not identified as a priority hypothesis at this time. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at

www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645133

Concern Statement: USACE should re-work the Draft EIS alternatives analysis, develop a greater range of alternatives, revise the cost of and add the new SAMP to it, develop a more specific Purpose and Need Statement, and reduce the over-reaching of the Human Considerations impacts.

Response: USACE believes the current range of alternatives represents the full spectrum of alternatives that could be taken in relation to the 2003 BiOp and in relation to the recent effects analysis. The cost of alternative 2 is largely driven by required ESH and SWH acreages included in the 2003 Biological Opinion. The SAMP is based on hypotheses in the effects analysis that are rooted in the best available science. The AM framework for Alternatives 1 and 2 would continue to follow the AM framework as described in the MRRP AM Framework (USACE, 2011), SWH AM Plan (USACE, 2012), and ESH AM Plan (USACE, 2011). The primary goal for the alternatives is to meet species objectives as described in the Purpose and Need Chapter of the EIS. USACE believes it has selected the plan that achieves species objectives while causing the least amount of impacts to the range of river uses. Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645200

Concern Statement: Levee setbacks and a riparian corridor along the full length of the Mainstem river would provide habitat, connectivity to the floodplain and prevention of fragmentation of habitat. This approach would also provide significant acres of adjacent lands capable of holding excess water and of providing infiltration and evaporation - all contributing to Flood Risk Reduction.

Response: Levee setbacks have occurred on MRRP acquired lands in the past and they are an option in the future should floodplain connectivity or other levee setback benefit become necessary. However, the primary hypothesized benefit from floodplain connectivity is food production and it does not appear that pallid sturgeon of any size are food limited.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645217

Concern Statement: USFWS outstanding concept of the development of habitat sites distributed along the Missouri River, giving a diversity of habitats for all species, should be incorporated in the Draft EIS.

Response: Comment noted. The comment appears to be in reference to a specific concept not introduced into the planning process by USFWS either through their role as a Cooperating Agency on the EIS or through ESA formal consultation.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645226

Concern Statement: USACE and USFWS are requested to develop and incorporate into the Draft EIS a pilot project utilizing beach nourishment technologies to transfer sediment from behind a Mainstem dam into a downstream reach of the Missouri River. Stream bed degradation in certain reaches of the Missouri River below the dams is an issue that must be addressed in the coming decades.

Response: There currently is no scientific evidence that a lack of sediment in the lower river is inhibiting recruitment of pallid sturgeon and this was not identified as a priority hypothesis at this time. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 221
Comments (Comment ID): 645297

Concern Statement: The preferred alternative would benefit from inclusion of the following management actions: (1) creation of IRC or other hydraulic roughness in the upper river section, (2) improve anoxic conditions at reservoir arms which could serve as nursery habitat for the pallid sturgeon, and (3) modifications at Fort Peck to support flows, warmer temperatures, and hydraulic roughness.

Response:

- (1) Increasing channel “roughness” in the upper river does not appear to be a viable management hypothesis because the reach of the Missouri River between Fort Peck and Lake Sakakawea is already unchannelized and any drift distance gained from mechanical channel modifications in this reach would be negligible in context of the already relatively natural channel. Any channel roughness that could be added would likely not be enough to overcome the lack of drift distance. Improvement of conditions via drawdown of Lake Sakakawea was deemed not viable given the levels of drawdown that would need to occur and the uncertainty whether the drawn-down lake pool would be hospitable to settling pallid larvae.
- (2) Anoxic conditions in the reservoir is a function of reduced river velocities and the concentration of fine particulate organic material with high microbial respiration (Guy et al, 2015). Anoxic sediments will continue to form even if existing anoxic sediment were to be removed. Removal of sediment from the headwaters of Lake Sakakawea and/or increasing dissolved oxygen in headwaters using air diffusers or similar methods is not feasible given the scale and cost of effort and the uncertainty whether this could actually be accomplished and whether it would have any benefit to pallid sturgeon if it were.
- (3) Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645325

Concern Statement: Reservoir reallocation of uses is needed to support implementation of the selected alternative; a basin wide approach could be taken to regulate flows throughout the basin. Without reallocation of reservoir storage, successful implementation of flow modifications under the alternatives outlined in the Draft EIS are unlikely to occur.

Response: There is very little scientific evidence to support flow modifications of any magnitude or frequency for pallid sturgeon including the flows called for in the 2003 Biological Opinion. USFWS acknowledged this uncertainty and urged USACE to implement the 2003 BiOp using a science and adaptive management approach. USACE believes the newly updated science and adaptive management approach that consists of research, monitoring of natural flow events, and potential test flows is more likely to be successful than prescribing and implementing flows based on little scientific knowledge. As described in Chapter 3 of the EIS, as a whole, the population of pallid sturgeon appears to be stable because of the supplemental stocking by the PSCAP but is not self-sustaining because natural recruitment is apparently not occurring. Stocked pallid sturgeon feed and grow successfully in all RPMAs where they have been stocked and have begun to reach sexual maturity in the past few years and spawning is occurring and has been documented. USACE has outlined a scaled approach that ultimately could lead to reservoir and/or flow modification if it is determined these actions would address ecosystem factors limiting pallid sturgeon recruitment. The effects analysis and the SAMP present the key uncertainties that challenge implementation decisions for the MRRP. They also detail the rationale and approach to developing the necessary supporting science so that management actions can be implemented and evaluated against expected outcomes with a reasonable expectation that the knowledge gained will contribute to improved understanding, better implementation decisions, and increased likelihood of achieving the program objectives over time. The AM framework provides a measured approach to implementation, recognizing that causal understanding and the development of management-response functions will be necessary to ensure that management actions taken will be effective. This strategy acknowledges the tradeoffs between knowledge and action, emphasizing the need for early investment in understanding so that long-term management prospects are improved.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645330

Concern Statement: What research is proposed to address the issue of hybridization of pallid and shovelnose sturgeon?

Response: Genetic testing is done for sampled sturgeon and part of the spawning habitat hypothesis is that manipulating spawning substrates will increase aggregation and reduce hybridization and improve reproductive success. Improvements to address genetic concerns (e.g., maintaining genetic variation similar to the natural population minimizing threats of hybridization, disease, stocking size etc.) are being pursued collaboratively with USFWS and others to be consistent with the Basin-Wide stocking and augmentation plan.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645541

Concern Statement: More research should be conducted on the hypothesis that the velocity and turbulence of navigation channel may be fatal to free embryos of pallid sturgeon in the lower river.

Response: Addressing the turbulence and velocity hypothesis is part of addressing Big Question 4 in the SAMP: Drift Dynamics: Can naturalization of the flow regime or channel reconfiguration (alone or in combination) contribute to decreased direct mortality and increased interception of free embryos into supporting habitats. Research is scheduled to be conducted to determine the survival of free embryos related to measures of fluid stress, including turbulent intensity and shear.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645552

Concern Statement: USACE is urged to implement recovery actions that return low velocity areas to the river. This type of aquatic habitat would provide long-term, large, beneficial impacts to fish and wildlife. Further, USACE is encouraged to implement recovery actions that restore needed habitat for the 51 of 67 native fish species that are rare or declining on the river; this can be accomplished through restoring slow and shallow water habitat, levee setbacks, and river widening projects. Other federally protected species should also be considered.

Response: The IRC habitat construction and associated land acquisition are consistent with adding low-velocity areas to the river although the IRC concept also incorporates depth and interception hydraulics.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645568

Concern Statement: More research needs to be conducted to determine if the high turbulence of the navigation channel is fatal to free drifting embryos.

Response: Addressing the turbulence and velocity hypothesis is part of addressing Big Question 4 in the SAMP: Drift Dynamics: Can naturalization of the flow regime or channel reconfiguration (alone or in combination) contribute to decreased direct mortality and increased interception of free embryos into supporting habitats. Research is scheduled to be conducted to determine the survival of free embryos related to measures of fluid stress, including turbulent intensity and shear.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645841

Concern Statement: USACE should consider an alternative in which the average ESH construction in build years falls between the 3,546 acres of Alternative 2 and the 391 acres constructed in Alternative 3–6.

Response: The ESH acres under Alternatives 3–6 meet the piping plover objectives. There is no need at this point to look for ESH acreages that fall in-between Alternative 2 and Alternatives 3–6.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 645990

Concern Statement: Increasing channel capacity in the river would benefit flow-based management actions and is a necessary prerequisite to any use of flow as an action.

Response: The SAMP outlines a comprehensive and structured approach for conducting pallid sturgeon science and incorporating the results into future management. Real-time careful consideration of precipitation forecasts and resulting downstream tributary inflow would be necessary in order to plan releases to avoid flooding potential downstream of Gavins Point Dam. However, since this release is above current channel capacity in the Fort Randall reach some impacts to private lands would likely occur. In addition, the ability to mitigate impacts by using downstream inflow forecasts is limited by the travel time downstream of Gavins Point Dam and the reduced forecast accuracy 5 to 7 days in the future. USACE has sought to minimize this impact as much as possible in the very selection of the preferred alternative. USACE will continue to effectively strategize how to minimize the impacts over the next 9 years should this test be required. The single year impacts of a partial or fully implemented pulse would be expected within range of the years where a pulse was implemented in Alternative 6. It would also be advisable to avoid this release when System storage levels are close to navigation preclusions to avoid impacts to navigation.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 646270

Concern Statement: The location of spawning and rearing habitat for pallid sturgeon should be located to minimize impacts to existing water intakes.

Response: Each site-specific construction project will be designed to avoid or minimize impacts to water intakes and other infrastructure.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 646288

Concern Statement: Flow releases should contain accompanying sediment as clear water releases have not demonstrated any benefits to pallid sturgeon.

Response: Sediment redistribution as a management action was considered and discussed in Section 2.5.1.14 of the Draft EIS. Based on the results of Phase I of the Lewis and Clark Sediment Management Study, this action was eliminated from consideration in the Draft EIS because its effectiveness at contributing towards the species objectives and implementation feasibility has not been demonstrated. Phase II of the Sediment Study is ongoing and the results of that study would be evaluated through the process established in the SAMP.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644786

Concern Statement: USACE should develop a new management action for inclusion with the appropriate alternatives that modifies the navigation channel below Sioux Falls to have a more natural cross-section to benefit pallid sturgeon.

Response: Since 2003, USACE has constructed numerous projects on the lower river to increase shallow water habitat and to provide habitats lost from the BSNP. The preferred alternative does include construction of IRC habitats which involve modifying the channel to potentially improve interception of free embryos and foraging and food producing habitat for young of year sturgeon.

Representative Quotes (Correspondence ID): 162
Comments (Comment ID): 641212

Concern Statement: USACE should create a new management action that would lower March 1st storage targets and reduce navigation service levels to provide greater operational flexibility.

Response: Lowering the base of the annual flood control zone does provide additional flood control storage. However, since that target level stays the same from year to year, runoff received during a given year still needs to be evacuated from the reservoir system prior to the start of the next year's runoff season. Lower reservoir levels have negative impacts on other authorized purpose such as navigation, hydropower, and recreation. Changing target levels from year to year is not feasible given the uncertainty about runoff that will be received in a given year.

Representative Quotes (Correspondence ID): 162
Comments (Comment ID): 641264

Concern Statement: A new management action element should be created and aligned with the appropriate alternatives that terminates barge traffic along the stretch of the Missouri River that borders Iowa and restore the natural course of the river to improve habitat conditions for the least tern, piling plover and pallid sturgeon.

Response: The authority to terminate barge traffic on the Missouri River rests with Congress rather than USACE.

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641582

Concern Statement: To support improved flood control on the Missouri River during MRRMP implementation, USACE should develop a management action for inclusion with all alternatives that would maintain reservoirs at 46.8 MAF on March 1, which would also benefit the bird species of concern.

Response: Lowering the base of the annual flood control zone does provide additional flood control storage. However, since that target level stays the same from year to year, runoff received during a given year still needs to be evacuated from the reservoir system prior to the start of the next year's runoff season. Lower reservoir levels have negative impacts on other authorized purpose such as navigation, hydropower, and recreation. Changing target levels from year to year is not feasible given the uncertainty about runoff that will be received in a given year.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645220

Concern Statement: USACE should create an alternative that requires barges to be shallow draft vessels allowing for shallower waters in the channel for spawning habitat construction.

Response: USACE does not have the authority to require use of shallow draft vessels.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645225

Concern Statement: A new alternative should be developed to include results of all science performed since 2003 with modified costs.

Response: Alternatives 3–6 were developed using the Effects Analysis which represents the best available science on the three listed species according to USFWS.

Representative Quotes (Correspondence ID): 81
Comments (Comment ID): 636790

Concern Statement: The range of alternatives is insufficient because a reasonable alternative could fall between Alternative 2 and Alternatives 3–6.

Response: The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is rational to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative is meaningless if it assumes the very existence of the plan being proposed. USACE believes it has examined a full spectrum of alternatives that represent the 2003 BiOp actions and actions based on results of the more recent effects analysis. Alternatives 3–6 represent substantially different means of achieving the objectives because, with the exception of Alternative 3, they all include a different re-occurring flow operation for endangered species. The impact analysis for Alternatives 3–6 show that the impacts vary widely depending on which resource is being examined. This further supports the notion that there is a substantial difference between these alternatives. USACE believes it has considered a range of alternatives and fully evaluated those that were determined to be reasonable. Although there could be other alternatives or variations of alternatives that could be assessed, an agency is not required to consider every potential permutation, but must consider a sufficient number covering the spectrum of the alternatives. USACE believes it has met this requirement. See generally 46 Fed. Reg. 18026 (March 23, 1981) as amended; question 1b.

Representative Quotes (Correspondence ID): 23, 63, 131, 166, 181, 183, 223, 242
Comments (Comment ID): 640085, 640117, 644942, 645490, 640107, 643934, 626669, 640172, 641459, 644921, 644923

Concern Statement: Because Alternatives 3–6 are essentially the same, the range of alternatives falls short of meeting the requirements of NEPA.

Response: The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is rational to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative is meaningless if it assumes the very existence of the plan being proposed. USACE believes it has examined a full spectrum of alternatives that represent the 2003 BiOp actions and actions based on results of the more recent effects analysis. Alternatives 3–6 represent substantially different means of achieving the objectives because, with the exception of Alternative 3, they all include a different re-occurring flow operation for endangered species. The impact analysis for Alternatives 3–6 show that the impacts vary widely depending on which resource is being examined. This further supports the notion that there is a substantial difference between these alternatives.

USACE believes it has considered a range of alternatives and fully evaluated those that were determined to be reasonable. Although there could be other alternatives or variations of alternatives that could be assessed, an agency is not required to consider every potential permutation, but must consider a sufficient number covering the spectrum of the alternatives. USACE believes it has met this requirement. See generally 46 Fed. Reg. 18026 (March 23, 1981) as amended; question 1b.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644950

Concern Statement: USACE should produce reasonable and feasible alternatives by combining the best management actions among Alternatives 2–6 to create a new preferred alternative.

Response: Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is rational to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative would not provide a meaningful comparison if it assumes the very existence of the plan being proposed. USACE believes it has examined a full spectrum of alternatives that represent the 2003 BiOp actions and actions based on results of the more recent effects analysis. Alternatives 3–6 represent substantially different means of achieving the objectives because, with the exception of Alternative 3, they all include a different re-occurring flow operation for endangered species. The impact analysis for Alternatives 3–6 show that the impacts vary widely depending on which resource is being examined. This further supports the notion that there is a substantial difference between these alternatives.

USACE believes it has considered a range of alternatives and fully evaluated those that were determined to be reasonable. Although there could be other alternatives or variations of alternatives that could be assessed, an agency is not required to consider every potential permutation, but must consider a sufficient number covering the spectrum of the alternatives. USACE believes it has met this requirement. See generally 46 Fed. Reg. 18026 (March 23, 1981) as amended; question 1b.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644952

Concern Statement: The Draft EIS needs to offer a better range of alternatives; Alternatives 4, 5, and 6 should be merged into one single alternative because they are similar in all ways except for the specifics of each of their flows and the limiting conditions.

Response: Alternatives 1 and 2 represent a different management approach than Alternatives 3–6 because the habitat goals and types described in Alternatives 1 and 2 were written in 2003, before the recent effects analysis. The habitat types and goals reflected in Alternatives 3–6 incorporate more recent guidance from USFWS and the results of the effects analysis. It is rational to predict the effects of the current course of action (the range of future implementation of the current BiOp is reflected by Alternatives 1 and 2) and compare these to new courses of action. This is a meaningful comparison; the no action alternative would not provide a meaningful comparison if it assumes the very existence of the plan being proposed. USACE believes it has examined a full spectrum of alternatives that represent the 2003 BiOp actions and actions based on results of the more recent effects analysis. Alternatives 3–6 represent substantially different means of achieving the objectives because, with the exception of Alternative 3, they all include a different re-occurring flow operation for endangered species. The impact analysis for Alternatives 3–6 show that the impacts vary widely depending on which resource is

being examined. This further supports the notion that there is a substantial difference between these alternatives.

USACE believes it has considered a range of alternatives and fully evaluated those that were determined to be reasonable. Although there could be other alternatives or variations of alternatives that could be assessed, an agency is not required to consider every potential permutation, but must consider a sufficient number covering the spectrum of the alternatives. USACE believes it has met this requirement. See generally 46 Fed. Reg. 18026 (March 23, 1981) as amended; question 1b.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645216

Concern Statement: At the very least, a dam-removal alternative should be included, for baseline analysis of a full range of opportunities for restoration of water temperature needed for sturgeon reproduction in the Final EIS.

Response: Congressional authorization would be required to remove a dam. USACE feels it has examined a full range of alternatives and has identified an alternative that meets species objectives while minimizing impacts to other river interests. Therefore; a thorough examination of dam removal is not necessary at this point.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645481

Concern Statement: Riverine fish species in the Missouri River are adapted to warm, turbid waters. Any adjustments to Fort Peck should also include considerations for their life cycle needs including turbidity.

Response: Management actions concerning Fort Peck Dam and immediately downstream were not selected due to the high level of uncertainty regarding their feasibility to achieve desired biological, hydrological, or physical results and documented issues regarding their technical feasibility. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645339

AL5000 *Alternatives: Alternatives Considered but Eliminated from the Analysis*

Concern Statement: Changes in flow without enhancing the sediment load have no value and are a waste of precious water in the system.

Response: Sediment redistribution as a management action was considered and discussed in Section 2.5.1.14 of the Draft EIS. Based on the results of Phase I of the Lewis and Clark Sediment Management Study, this action was eliminated from consideration in the Draft EIS because its effectiveness at contributing towards the species objectives and implementation feasibility has not been demonstrated. Phase II of the Sediment Study is

ongoing and the results of that study would be evaluated through the process established in the SAMP.

Representative Quotes (Correspondence ID): 34
Comments (Comment ID): 628339

Concern Statement: USFWS and USACE should not confine the geographic scope for the birds to the Mainstem Missouri River only, but also consider other habitat (i.e., non-ESH habitat, and alkali lakes) to assist in achieving their goals. Many areas could be used for habitat development including meander scars, alkaline lakes, deltas, oxbows, and sand pits.

Response: USACE considered “Off-Channel” habitat creation and mechanical creation of hydrologically connected non-ESH habitat on Missouri River segments as part of alternatives development. This management action was eliminated from further consideration because it is not currently demonstrated to be as effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH. Although this action was eliminated from consideration in the Draft EIS, USFWS has expressed a willingness to pursue funding for a pilot project. This funding would not be through the USACE MRRP; however, the results of any pilot project could be evaluated under the SAMP. As stated in the SAMP, long-term changes off-river affecting Missouri River populations may require adjustments to target criteria or objectives. The AM process would incorporate the results of future metapopulation modeling as it becomes available in order to improve management decisions.

Representative Quotes (Correspondence ID): 107, 212
Comments (Comment ID): 644440, 641729

Concern Statement: Where are provisions for designation of critical habitat for the endangered pallid sturgeon; for unbalanced reservoirs to address the situation at a particular reservoir; and for the application of the best science currently available? Perhaps having unbalanced reservoirs as a management tool in the Missouri River Mainstem Reservoir System Master Water Control Manual is adequate, but perhaps not.

Response: Designation of pallid sturgeon critical habitat is not within the jurisdiction of USACE and therefore outside the scope of the proposed action. The effects analysis on which the Draft EIS was based gave consideration to all potential hypotheses related to pallid sturgeon limiting factors. The hypotheses were ranked through a panel of experts as to those most important to the species and the final set of management hypotheses formed the basis for the development of alternatives. However, the adaptive management process allows for returning to hypotheses that were filtered out should new information provide a reason to do so.

Representative Quotes (Correspondence ID): 81
Comments (Comment ID): 636788

Concern Statement: Reservoir unbalancing should be considered as a method to manage tern and plover nesting habitat along reservoir shorelines.

Response: A reservoir water level management action to contribute towards piping plover objectives was assessed by modeling an unbalancing of Lake Oahe. Modeling indicated that this action resulted in little additional available habitat over the POR. Bird population models showed that although this action contributed to bird populations on Lake Oahe, it

resulted in a corresponding negative effect on the bird population at Lake Sakakawea due to higher reservoir levels. As a result, this management action was eliminated from further consideration because it was not effective at contributing to the bird habitat targets and in turn the species objectives. Under all alternatives, the reservoir unbalancing included in the existing Master Manual would not be implemented. Experience has shown that storing water in the annual flood control zone, particularly at Lake Oahe, as the current criteria requires in order to implement unbalancing is undesirable due to flood control impacts.

Representative Quotes (Correspondence ID): 157
Comments (Comment ID): 637705

Concern Statement: CMEPC supports a slightly revised Draft EIS preferred alternative, the addition of more off-channel, non-ESH work for plovers. Further, CMEPC believes that if the goal is to recover the species, it is imperative that for a societal economic as well as a species impact this work must be considered and implemented unless the science proves the benefits are not as robust as many believe they will be.

Response: USACE considered “Off-Channel” habitat creation and mechanical creation of hydrologically connected non-ESH habitat on Missouri River segments as part of alternatives development. This management action was eliminated from further consideration because it is not currently demonstrated to be as effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH. Although this action was eliminated from consideration in the Draft EIS, USFWS has expressed a willingness to pursue funding for a pilot project. This funding would not be through the USACE MRRP; however, the results of any pilot project could be evaluated under the SAMP. As stated in the SAMP, long-term changes off-river affecting Missouri River populations may require adjustments to target criteria or objectives. The AM process would incorporate the results of future metapopulation modeling as it becomes available in order to improve management decisions.

Representative Quotes (Correspondence ID): 134
Comments (Comment ID): 640654

Concern Statement: Lower pools also produce lower river flood damage reductions, and I hope you will consider an alternative that incorporates a lower storage target and navigation service levels, better unbalancing, and overall better management of pools for terns and plovers and other wildlife benefits.

Response: USACE conducted a separate study of potential habitat enhancements on the Mainstem reservoirs. The purpose of the Draft Study of Potential Least Tern and Piping Plover Habitat Enhancement on the Reservoirs of the Missouri River Mainstem Reservoir System (Reservoir Study) is to identify potential habitat enhancement opportunities on reservoir segments in order to provide habitat for the least tern and piping plover. It examined broad feasibility of providing reservoir habitat and summarized findings on potential habitat creation opportunities. The study evaluated 149 sites for potential habitat enhancement on the reservoirs. The Reservoir Study recommended that the priority for mechanical habitat creation efforts should remain focused on the current riverine creation efforts, and not in the reservoirs. This conclusion was based on the multiple uncertainties and risks identified, including inundation, increased incidental take, excessive cost compared to other proven habitat creation options, infrequent availability for use by the birds, biological benefit to the birds, potential exacerbated

predation, and maintenance. The Draft EIS used the results of this study in evaluated a management action that considered creation of least tern and piping plover habitat on reservoirs, which was dismissed from consideration because of the rationale presented in the Reservoir Study.

A reservoir water level management action to contribute towards piping plover objectives was assessed by modeling an unbalancing of Lake Oahe. Modeling indicated that this action resulted in little additional available habitat over the POR. Bird population models showed that although this action contributed to bird populations on Lake Oahe, it resulted in a corresponding negative effect on the bird population at Lake Sakakawea due to higher reservoir levels. As a result, this management action was eliminated from further consideration because it was not effective at contributing to the bird habitat targets and in turn the species objectives. Under all alternatives, the reservoir unbalancing included in the existing Master Manual would not be implemented. Experience has shown that storing water in the annual flood control zone, particularly at Lake Oahe, as the current criteria requires in order to implement unbalancing is undesirable due to flood control impacts.

Lowering the amount of carryover storage available in the System would diminish the System's ability to provide support to all the authorized purposes during an extended drought. In terms of providing more exposed habitat on the reservoirs, the exposed habitat that would be available after the top of the carryover zone was lowered would eventually become unusable as it becomes covered with vegetation. Therefore, there would be no habitat benefit in the long term.

Representative Quotes (Correspondence ID): 162
Comments (Comment ID): 641266

Concern Statement: Sediment transfer is a way to restore habitat and function to the Missouri and Mississippi River ecosystems while maintaining storage capacity for flood control, reducing bank erosion, and minimizing impacts on other uses of the rivers.

Response: Sediment redistribution as a management action was considered and discussed in Section 2.5.1.14 of the Draft EIS. Based on the results of Phase I of the Lewis and Clark Sediment Management Study, this action was eliminated from consideration in the Draft EIS because its effectiveness at contributing towards the species objectives and implementation feasibility has not been demonstrated. Phase II of the Sediment Study is ongoing and the results of that study would be evaluated through the process established in the SAMP.

Representative Quotes (Correspondence ID): 193
Comments (Comment ID): 641678

Concern Statement: Because the Draft EIS does not differentiate between nests on riverine and reservoir shorelines except to document that most incidental take occurs on reservoir shorelines it is misleading the public, and the science, as to the true role of the reservoirs. It is possible reservoirs and the increased shore line habitat would be a benefit to piping plover. Water level management utilizing all reservoirs to reduce the instance of incidental take on Lake Oahe and Lake Sakakawea has been adequately addressed in the Draft EIS or the Draft SAMP.

Response: USACE conducted a separate study of potential habitat enhancements on the Mainstem reservoirs. The purpose of the Draft Study of Potential Least Tern and Piping Plover Habitat Enhancement on the Reservoirs of the Missouri River Mainstem

Reservoir System (Reservoir Study) is to identify potential habitat enhancement opportunities on reservoir segments in order to provide habitat for the least tern and piping plover. It examined broad feasibility of providing reservoir habitat and summarized findings on potential habitat creation opportunities. The study evaluated 149 sites for potential habitat enhancement on the reservoirs. The Reservoir Study recommended that the priority for mechanical habitat creation efforts should remain focused on the current riverine creation efforts, and not in the reservoirs. This conclusion was based on the multiple uncertainties and risks identified, including inundation, increased incidental take, excessive cost compared to other proven habitat creation options, infrequent availability for use by the birds, biological benefit to the birds, potential exacerbated predation, and maintenance. The Draft EIS used the results of this study in evaluating a management action that considered creation of least tern and piping plover habitat on reservoirs, which was dismissed from consideration because of the rationale presented in the Reservoir Study.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643857

Concern Statement: As the result of ongoing research, it appears there may be potential for survival/recruitment of larval pallid sturgeon within the Missouri River below Fort Peck Dam (Ryan Wilson. pers. comm. 2017). USFWS encourages consideration of MRRP actions within that reach of the Missouri River, pending the additional information and subsequent review.

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643933

Concern Statement: Implementation of Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative development in the Draft EIS due to the high level of uncertainty regarding their feasibility to achieve desired biological results and documented issues regarding their technical feasibility. The SAMP identifies a comprehensive framework for research and studies to address the uncertainty regarding the effectiveness of management actions for pallid sturgeon in the upper basin.

Response: Comment noted.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644087

Concern Statement: Realizing that the scope for the Draft EIS is 15 years, it is still dismaying that Big Question 5 Components 5 and 6 (studies with temperature control device at Fort Peck Dam) do not appear on the schedules for Proposed Implementation of Actions for the Upper Missouri River (Figure 4.4, 4 - 4, {1/344} in Volume 4 of the Draft EIS and in

the SAMP). If unnatural temperatures in Missouri River below Fort Peck Dam constitute take, how can USACE avoid jeopardy without addressing the effects of hypolimnetic withdrawals?

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS. USFWS has determined the proposed action avoids a finding of jeopardy in its Final Biological Opinion (USFWS 2018).

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644106

Concern Statement: USACE should develop alternative scenarios for flow releases of retained material in the reservoirs that increase sediment load downstream changing the flow cue strategy, or abandon all flow alternatives going forward.

Response: Sediment redistribution as a management action was considered and discussed in Section 2.5.1.14 of the Draft EIS. Based on the results of Phase I of the Lewis and Clark Sediment Management Study, this action was eliminated from consideration in the Draft EIS because its effectiveness at contributing towards the species objectives and implementation feasibility has not been demonstrated. Phase II of the Sediment Study is ongoing and the results of that study would be evaluated through the process established in the SAMP.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644804

Concern Statement: Adding sediment transport below Gavins Point Dam to the range of alternatives would help reduce shoreline erosion and degradation of the river bed. Removing sediment from the Niobrara River delta would help reduce flow constraints that hamper the ability to use flow as a tool to aid in species recovery.

Response: Sediment redistribution as a management action was considered and discussed in Section 2.5.1.14 of the Draft EIS. Based on the results of Phase I of the Lewis and Clark Sediment Management Study, this action was eliminated from consideration in the Draft EIS because its effectiveness at contributing towards the species objectives and implementation feasibility has not been demonstrated. Phase II of the Sediment Study is ongoing and the results of that study would be evaluated through the process established in the SAMP.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645134

Concern Statement: A low summer flow management action should be included in the range of alternatives because it resembles a more natural flow regime.

Response: A low summer flow management action was included in Alternative 2 and therefore was included within the range of alternatives.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645219

Concern Statement: The section of the EIS describing the reasons for not considering Fort Peck Dam removal should also state USACE does not have the authority to remove the dam.

Response: A statement has been added indicating that Congressional authorization would be required to remove Fort Peck dam.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645362

Concern Statement: Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative analysis due to the "high level of uncertainty" of the actions' ability to achieve the desired result. How can these actions be considered in any section of the SAMP if the actions were not analyzed in the EIS?

Response: Eliminating consideration of an action in the Draft EIS does not mean the action cannot still be considered within the scope of the SAMP. If implementation of the SAMP proceeds and the results of Level 1 or 2 studies or new information were to indicate that actions should be implemented that were not fully evaluated in this EIS, then additional NEPA compliance would likely be necessary prior to implementation of those actions.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645371

Concern Statement: A pilot project utilizing beach nourishment technologies to transfer sediment from past a Mainstem dam into a downstream reach of the Missouri River.

Response: Available information and analysis performed by USACE indicate that there is not a sand volume limitation for the formation of sandbars in the Gavins Point or Garrison Reach over the 50-year planning horizon for this project. This discussion is provided in Section 3.2 of the Final EIS. There currently is no scientific evidence that a lack of sediment in the lower river is inhibiting recruitment of pallid sturgeon and this was not identified as a priority hypothesis at this time. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues.

Representative Quotes (Correspondence ID): 193
Comments (Comment ID): 641673

Concern Statement: Supporting appropriate releases from Fort Peck dam should be part of the Draft EIS alternative management actions, as the reach is currently part of the 2016 Biological Opinion. Resources should be dedicated to preserve this source population of pallid sturgeon. This includes investing in actions below Fort Peck to increase water temperatures, turbidity, and habitat to enhance relative drift distance.

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of

actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645838

Concern Statement: USACE should consider purchase of off-channel habitat for both the piping plover and least tern which should be attainable at less cost than mechanical ESH creation or by flow releases.

Response: USACE considered “Off-Channel” habitat creation and purchase on Missouri River segments as part of alternatives development. This management action was eliminated from further consideration because it is not currently demonstrated to be as effective or efficient at meeting species objectives relative to other available management actions such as in-river construction of ESH and vegetation management on ESH. Although this action was eliminated from consideration in the Draft EIS, USFWS has expressed a willingness to pursue funding for a pilot project. This funding would not be through the USACE MRRP; however, the results of any pilot project could be evaluated under the SAMP. As stated in the SAMP, long-term changes off-river affecting Missouri River populations may require adjustments to target criteria or objectives. The AM process would incorporate the results of future metapopulation modeling as it becomes available in order to improve management decisions.

Representative Quotes (Correspondence ID): 194
Comments (Comment ID): 641711

Concern Statement: USACE should create an alternative that includes dam removal as a management action for the Final EIS.

Response: Congressional authorization would be required to remove a dam. USACE feels it has examined a full range of alternatives and has identified an alternative that meets species objectives while minimizing impacts to other river interests. Therefore; a thorough examination of dam removal is not necessary at this point.

Representative Quotes (Correspondence ID): 94
Comments (Comment ID): 633681

AL800 *Alternatives: General Costs*

Concern Statement: The Draft MRRMP-EIS should provide the data to show that managing vegetation and predators on reservoir habitat areas is more expensive than management of (or continued creation of) ESH.

Response: USACE continues to believe that mechanically constructing ESH along with maintaining and/or creating new ESH through vegetation spraying is a viable means to meeting the tern and plover objectives of this Plan. The modeling indicates that persistence probability objectives will not be met without augmenting the ESH created by natural flows. Experience with constructing ESH and maintaining vegetation on natural

and constructed sandbars indicates these management actions are achievable and can be successful. It is true that in general the first 3-5 years are the most productive on constructed sandbars, however, this lifetime can be extended through vegetation management. As stated in the EIS, since monitoring of least tern and piping plover populations within the Missouri River began in 1986, approximately 80 percent of the total incidental take of piping plover eggs and chicks and 58 percent of least tern eggs and chicks were due to rising pool levels in reservoirs. The report cited in the EIS Draft Study of Potential Least Tern and Piping Plover Habitat Enhancement on the Reservoirs of the Missouri River Mainstem Reservoir System (USACE 2014b) presents additional detail related to the cost estimates and assumptions of creating and maintaining reservoir habitat.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643847

Concern Statement: The Final MRRMP-EIS should evaluate the annual and total costs of Management Plan and SAMP implementation in the context of the past amounts annually budgeted for the Missouri River Recovery Program and the Bank Stabilization and Navigation Project Mitigation Project, specifically. This relative cost comparison provides context for both the scale of costs and the likelihood of USACE receiving funds adequate to sustain the SAMP as described.

Response: Program implementation costs were based partly on historical cost data and from discussions with USACE technical staff regularly involved in these types of projects using a conservative approach. The assumptions and data used to generate the management plan-EIS alternatives costs were reviewed and revised where appropriate based upon historical cost information and new information made available since release of the Draft EIS.

Representative Quotes (Correspondence ID): 184
Comments (Comment ID): 643967

Concern Statement: The Draft MRRMP-EIS does not include the actual budgetary impact of implementing any of the alternatives. Resources for habitat protection, land acquisition, wastewater projects, drinking water projects, stormwater projects, just to name some examples, are diverted by the expenditures for the alternatives presented in the MRRMP-EIS.

Response: The costs from the management actions to human considerations (i.e., dredging, navigation, flood risk and interior drainage, recreation, thermal power, hydropower, irrigation, water supply, etc.) have been evaluated to the extent possible and are incorporated in the human consideration technical reports and the Draft EIS. Additionally, the Regional Economic Development evaluation focused on the impacts from the costs of management action implementation, many of which provide economic benefits.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644825

Concern Statement: Annual program implementation costs of Alternative 1 does not approximate historical costs as expected. The costs of Alternative 1 are over double that of the MRRP average annual cost from FY 2004 through 2016 and the average annual cost is higher than any maximum annual expenditure for the MRRP program over the 13-year period of record. These costs are questionable. A major purpose of the No

Action alternative is as a comparison or reference against which to evaluate all other alternatives. Given that the No Action alternative appears to misrepresent what actions were taken in the past and grossly overestimates the costs the MRRMP-EIS is left with an inability to accurately evaluate proposed alternatives including the preferred alternative. The Draft MRRMP-EIS should include annual expenditures for the duration of MRRP by analogous categories shown in EIS Alternatives - Cost Estimates as an addendum to Appendix F and used in the text when comparing costs of various alternatives to the No Action alternative.

Response: Program implementation costs were based partly on historical cost data and from discussions with USACE technical staff regularly involved in these types of projects using a conservative approach. The assumptions and data used to generate the management plan-EIS alternatives costs were reviewed and revised where appropriate based upon historical cost information and new information made available since release of the Draft EIS. The higher cost of Alternative 1 compared to past program expenditures is largely due to the assumption that much of the Shallow Water Habitat creation under Alternative 1 would be accomplished via mechanical top-width widening. This assumption was based partially on the success of the Deer Island top-width widening project and partially because space is more limited for chute and backwater construction when attempting to create 20–30 acres of SWH per river mile. Absent the effects analysis and IRC concept it was forecasted that the program would have followed the Deer Island mechanical construction method as a preferred method for constructing Shallow Water Habitat. The cost estimates have been adjusted since the Draft EIS for Alternatives 3–6. Since the Draft EIS was released it was learned that the majority of initial IRC construction can be accomplished through structure modifications which lowers the estimated cost for these alternatives. The cost estimates in the EIS are for the purpose of comparing the relative estimated costs of the alternatives across the standard 50-year planning horizon used in USACE planning studies. More-detailed annual budgets are developed by the MRRP in collaboration with MRRIC as described in Chapter 2 of the SAMP. Annual costs for the various MRRP actions, and the annual cost for the overall Program will likely vary over time based on changing system conditions. For example, the amount of ESH construction needed in a given timeframe will vary based on the amount of ESH on the system and status of bird metrics, and the amount of operation and maintenance funding will vary based on the condition and performance of habitat structures over time.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644908

Concern Statement: The proposed cost of channel widening is high compared to historical costs and are 16 times higher than the observed cost per acre for the bulk of shallow water habitat creation.

Response: Cost for channel widening were based on past channel widening project cost data for shallow water habitat, two recent IRC sites, and discussions with USACE technical staff regularly involved in these types of projects. The assumptions and data used to generate the management plan-EIS alternatives costs were reviewed and revised using historical cost information. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for

impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that **could** result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. Updated assumptions and costs are included in Appendix F of the Final EIS.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644912

Concern Statement: The average total cost for channel widening IRC construction for Alternatives 3–6 is 10 times higher than observed cost per site per year.

Response: Cost for channel widening were based on past channel widening project cost data for shallow water habitat, two recent IRC sites, and discussions with USACE technical staff regularly involved in these types of projects. The assumptions and data used to generate the management plan-EIS alternatives costs were reviewed and revised using historical cost information. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that **could** result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. Updated assumptions and costs are included in Appendix F of the Final EIS.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644913

Concern Statement: The Draft MRRMP-EIS falsely presents channel widening and the comparatively high costs associated with it as a primary management action to create SWH under Alternatives 1 and 2. The historical evidence indicates that other management actions were used to create the majority of shallow water habitat sites and at a much lower cost than is presented in the Draft MRRMP-EIS and specifically the Cost Estimates Table in Appendix F.

Response: Cost for channel widening were based on past channel widening project cost data for shallow water habitat, two recent IRC sites, and discussions with USACE technical staff regularly involved in these types of projects using a conservative approach. The assumptions and data used to generate the management plan-EIS alternatives costs

were reviewed and revised using historical cost information. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that could result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. Updated assumptions and costs are included in Appendix F of the Final EIS.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644914

Concern Statement: The proposed No Action and BiOp alternatives presented in the Draft MRRMP-EIS misrepresents what management actions were taken in the past to create shallow water habitat by largely equating shallow water habitat creation to channel widening and grossly overestimating construction costs. Inflating the costs for the No Action and BiOp alternatives relative to historical expenditures prevents the public and resource management agencies from accurately evaluating proposed alternatives including the preferred alternative against the No Action alternative (Alternative 1) and BiOp alternative (Alternative 2). The Draft MRRMP-EIS should clarify why channel widening appears as the proposed primary management action to create shallow water habitat under Alternatives 1 and 2 and also IRCs under Alternatives 2–6 when it would seldom be employed by the MRRP to create existing shallow water habitats and when the SAMP (e.g., Section 4.2.6.3.5) states that while IRCs and shallow water habitat share some attributes, they are different relative to food production and foraging habitat. The MRRMP-EIS should provide explicit evidence for the anticipated benefit to cost of channel widening to achieve IRCs and review the 'best available science' that shows IRCs are superior to shallow water habitat (not hypothesized benefits), or other channel reconfigurations when shallow water habitat has not been shown to benefit recruitment of age-0 pallid sturgeon. The MRRMP-EIS should also revise proposed management actions and associated costs for shallow water habitat construction for the No Action and BiOp alternatives to reflect historical actions employed and actual costs used to create shallow water habitat, or justify why the proposed No Action and BiOp alternatives shallow water habitat proposed costs to continue the existing program have escalated so much. Revise proposed costs for IRC construction via channel widening for Alternatives 3–6 to be in line with observed costs to create the 3 identified IRCs or justify why proposed costs for any additional IRCs have escalated so much.

Response: Cost for channel widening were based on past channel widening project cost data for shallow water habitat, two recent IRC sites, and discussions with USACE technical staff regularly involved in these types of projects using a conservative approach. The assumptions and data used to generate the management plan-EIS alternatives costs were reviewed and revised using historical cost information. In order to achieve the 20–30 acres of SWH per mile goal under Alternatives 1 and 2 it was determined that top-

width widening would need to be the primary method of SWH construction into the future because there are not enough areas projected to be available to achieve those acreages if chute or backwater construction were used as the primary method. Channel widening was also assumed for impact analysis under Alternatives 3–6 because it is still uncertain what method exactly would be used to create IRCs in every instance under Alternatives 3–6. The NEPA analysis assumed channel widening to display the impacts that could result under an all top-width widening scenario. Since release of the Draft EIS it has been determined that much of the initially required IRC habitat can be created through river structure modifications which is a less costly means of achieving IRC habitat than top-width widening. However, it is anticipated that at least some IRC habitat will need to be achieved through top-width widening in the future because eventually all the areas with a high likelihood of success via structure modifications will be used. The projected costs for Alternatives 3–6 have been updated for the Final EIS. Updated assumptions and costs are included in Appendix F of the Final EIS.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644915

Concern Statement: Although a mix of land valuation has been used in the Draft MRRMP-EIS, most of the land along the river that would be acquired is not top-quality farmland and the \$4000–\$6000 range is too high.

Response: For evaluating costs at the programmatic EIS level the cost of land was based on a weighted average of agricultural land and recreational land resulting in an average cost based on historical data, including lands of various capacities and quality. Updated assumptions and costs are included in Appendix F of the Final EIS.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645212

Concern Statement: The MRRMP-EIS should reevaluate the amount of mechanically created habitat included and factored in the economic benefits derived from improved ecosystem services including flood risk reduction, improvements to water quality, increased recreation, and benefits to native fish and wildlife.

Response: The Final EIS was updated to summarize the results from many of the other sections to describe the ecosystem services benefits under the alternatives in the Ecosystem Services Environmental Consequences section. For example, the channel widening and IRC habitat provides benefits to flood risk management, especially in the lower reaches of the river. The following ecosystem services benefits were described in the Final EIS in the Ecosystem Services Environmental Consequences section: flood risk management, water quality and water supply, recreation, climate regulation and carbon sequestration, natural resource goods, non-use values, and other cultural services (e.g., quality of life, educational, cultural and spiritual, aesthetic enjoyment, and others). An evaluation of the potential impacts to the most-affected ecosystem services resulting from the alternatives was included in the Final EIS in the Ecosystem Services section.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645510

Concern Statement: Operational costs under a low summer flow regime are underestimated and should be reexamined. The MRRMP-EIS must identify all potential regulatory burdens in advance of the implementation of any action.

Response: The impacts to operational costs under a low summer flow were evaluated under Alternative 2 for the applicable human consideration resource topics. The associated human considerations technical reports and EIS sections describe the operational costs or the impacts to operational costs.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645635

Concern Statement: The impacts to the human environment must be addressed including the budgetary impacts of implementation of the alternatives.

Response: The budgetary impacts of implementing each of the alternatives and their impacts to the human environment were analyzed under the Regional Economic Development evaluation of the Draft EIS in Section 3.25 Regional Economic Effect of Program Expenditures.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645641

Concern Statement: Mechanical habitat construction and modification are most likely to be constrained by budget, along with other management, monitoring, and research activities. The MRRMP-EIS should address these funding concerns.

Response: Future funding was not considered a legitimate criterion for alternative development to meet species objectives. If funding is not available to accomplish habitat construction or any other major component of the plan then USACE could re-initiate formal consultation with USFWS.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645517

Concern Statement: The cost estimates for the MRRMP may not be accurate.

Response: Program implementation costs were based on cost data and from discussions with USACE technical staff regularly involved in these types of projects using a conservative approach. The assumptions and data used to generate the management plan-EIS alternatives costs were reviewed and revised based upon historical cost information. Updated assumptions and costs are included in Appendix F of the Final EIS.

Representative Quotes (Correspondence ID): 97
Comments (Comment ID): 636851

EC2700 *Environmental Consequences: General Methodology for Establishing Impacts/Effects*

Concern Statement: Allowing the Missouri River to raise up to nine feet for thirty days is not replicating historical flood activity.

Response: Construction of the reservoirs has substantially reduced peak flood magnitudes in the river, shifted seasonality of high and low discharge events, and overall reduced the variability of flows within the year (e.g., Alexander et al. 2012). Nevertheless, substantial variability in river flows remains in the river due to variability in rainfall and snowmelt within the watershed (with flow regulations by USACE). The spawning cue alternatives were designed based on historic records prior to the construction of the reservoir system. The ESH flow alternatives have prolonged periods of sustained higher flow and

are designed to create sandbar habitat, not to replicate historic floods. The human considerations analysis was performed to evaluate the impacts of the ESH releases that would occur for Alternatives 4 and 5.

Reference: Alexander, J.S., R.C. Wilson, and W. R. Green. 2012. A brief history and summary of the effects of river engineering and dams on the Mississippi River System and Delta. U.S. Geological Survey, Circular 1375.

Representative Quotes (Correspondence ID): 17
Comments (Comment ID): 626407

Concern Statement: There were questions regarding how many large spring flows occurred on the river in three-year intervals over the 82-year period of record.

Response: Spawning cue flows under Alternative 6 have been designed to recreate some the variability in natural flows that has been substantially curtailed by the construction of the reservoirs along the upper Missouri River.

The spawning cue flows under Alternative 6 would build on the spring flows already occurring naturally. As summarized in Table 3-4 in the Draft EIS, the 82-year hydrological record would have resulted in 11 full completed spawning cue flow events in both March and May, and an additional 6 events in March only.

There would be negligible effects on water elevations of the lower three reservoirs (Lake Sharpe, Lake Francis Case, Lewis and Clark Lake) under Alternative 6. In the upper three reservoirs, water elevations would generally only be up to a few feet lower than under Alternative 1, particularly in Fort Peck Lake and Lake Sakakawea. Water elevations in Lake Oahe would vary more. However, over the 82-year hydrological record, water elevations in Lake Oahe under Alternative 6 (compared to Alternative 1) are lower by more than 5 feet in only three years (late spring and summer of 1981, late spring and early summer of 2000, summer and fall of 2003). Further, it is noted that the natural variability in precipitation results in substantially larger variability in water elevations in all three upper reservoirs.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645524

Concern Statement: The Draft EIS does not explain how the impact matrices are used, and there are no summaries of monetary or non-monetary values that would allow the alternatives to be compared in the aggregate.

Response: Table 2-32 summarizes the consequences of implementing each of the alternatives. No attempt was made by USACE to provide combined monetary or non-monetary summary values that would allow the alternatives to be compared in the aggregate because there is no common metric or relative weighting schemes available to combine the diversity of resources evaluated in the MRRMP-EIS.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 646378

Concern Statement: The Draft EIS does not account for the reduction of material movement throughout the river system.

Response: The necessity of conducting a sediment budget was considered during initial study scoping but determined to be unwarranted for evaluation of study alternatives. This decision was based on the fact that alternatives will not alter the trapping of sediments

within the reservoir system. None of the alternatives include sediment management or measures to pass sediments through the reservoir system to the navigation channel downstream of Gavins Point Dam. In addition, based on the 82-year flow record, the flows in the lower Missouri River and sedimentation processes would continue to be dominated by natural reservoir release events (2011, 1997) and significant tributary inflow events (1993). Analysis was performed with a “Year 15” designation that included modeling of conditions 15 years in the future. While not intended to represent detailed estimates of future reservoir and channel conditions, the results do provide an alternative comparison methodology. Comparison of results determined only minor changes between alternatives.

Representative Quotes (Correspondence ID): 34

Comments (Comment ID): 645751

Concern Statement: The economic conclusions and modeling on Alternative 3 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage, and also because the Draft MRRMP-EIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites. Additionally, the modeling limits itself to the loss of production on lands predicted to be acquired and does not include transportation, infrastructure, energy, water supply and the effects of economic multipliers from those impacts. These omissions and the limitations of modeling should be clearly described in the MRRMP-EIS.

Response: USACE believes the analysis conducted for interior drainage is adequate for determining the relative impacts of the alternatives. The assumptions and limitations of the analysis are clearly presented in the Final EIS.

Representative Quotes (Correspondence ID): 101, 130, 132, 135, 136, 140, 161, 228

Comments (Comment ID): 645555, 645488, 641125, 637267, 636859, 633864, 633840, 633833, 633810

Concern Statement: Support of the preferred alternative does not include the one-time flow test. The Draft MRRMP-EIS did not model or assess the impacts associated with this action. USACE cannot implement an action when the impacts have not been adequately assessed. A full NEPA review process must be completed before this action is initiated.

Response: The following text was inserted within the EIS, Section 3.12.2.1:

The Missouri River system as currently operated provides substantial flood damage reduction and benefits to the entire basin. Study alternatives include modifying operations of the Missouri River reservoir system with both higher and lower reservoir releases during select periods for species habitat benefits. The current HEC-ResSim and HEC-RAS analysis shows the potential for negative impacts to flood damage reduction for alternatives that include changes in reservoir flow releases. The current study methodology, which employs an 82-year period of record, is suitable for alternative comparison and providing an indication of change in flood risk. However, the methodology does not simulate a sufficient number of events and possible runoff combinations within the large Missouri River basin to evaluate potential change in downstream flood risk. Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per

USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 46, 69, 154, 159, 176, 197
Comments (Comment ID): 645243, 644749, 641050, 640731, 635152, 628575

Concern Statement: The table labeled Environmental Consequences of the Actions Compared to No Action in the Executive Summary of the Draft EIS is confusing, and needs to be printed in color for it to be interpreted.

Response: In the Final EIS, Table 2-32 presents the Environmental Consequences summary. This table is in black and white and provides a detailed summary of environmental consequences with additional explanatory text. The summary table in the Draft EIS was consistent with the text in Chapter 3 of the EIS, but did contain summary information which was intended as a convenience for the reader. It was not meant to be used in place of the full analysis in the body of Chapters 2 and 3 of the EIS as explained in the introductory text for the table contained in the Draft EIS:

“The following table provides a summary comparison of the general environmental consequences of each action alternative compared to Alternative 1—the No Action alternative—in terms of being beneficial or adverse. The impacts of the No Action Alternative and the Action Alternatives are provided in-detail under each resource topic in Chapter 3-Affected Environment and Environmental Consequences.”

Representative Quotes (Correspondence ID): 179, 225
Comments (Comment ID): 645229, 644422, 645215

Concern Statement: Alternative 2 was based on outdated data and not completely aligned with the latest scientific priorities. The Draft MRRMP-EIS does not explain the use of this outdated data for development of Alternative 2.

Response: The assumptions for Alternative 2 were provided by USFWS and documented via planning aid letter (USFWS 2015). For transparency, this planning aid letter was also shared with MRRIC at the same time it was shared with USACE. USACE believes the most scientifically advanced and proactive plan for adaptive management is the plan developed using the results of the recent effects analysis. The 2003 BiOp was developed before the recent effects analysis. To assume Alternatives 1 or 2 would follow the effects analysis results and new SAMP would not result in a useful comparison because it would result in comparing the newly proposed alternatives to 2003 BiOp alternatives that would assume the very existence of the alternative plans being proposed.

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 644959

Concern Statement: The Draft MRRMP-EIS provides "fundamental" and "sub objectives" for each species, but summarizing them as part of the purpose and need statement itself would properly narrow project goals and the means of accomplishing those goals. As a result, ESA goals would be clarified and prioritized over human consideration impacts.

Response: USACE used the purpose, need, and objectives to design a reasonable range of alternatives. The purpose of meeting ESA responsibilities does not free USACE from other responsibilities or from considering the impacts of ESA related actions in the decision-making process. USACE has identified a preferred alternative that attempts to

identify and correct limiting factors in the ecosystem that could cause jeopardy. USACE identified the alternative that met the species objectives and had the least detrimental impacts across a range of interests.

Representative Quotes (Correspondence ID): 223
Comments (Comment ID): 644940

Concern Statement: Time-series analysis is appropriate for a programmatic Draft MRRMP-EIS that anticipates future effects over 5, 15, and 50 years. However, the Draft MRRMP-EIS uses a fixed reference point in time represented by the Missouri River baseline assessment.

Response: To facilitate plan development, an implementation timeframe of 15 years was chosen for this planning process and EIS. This is a reasonable timeframe for identification of actions which, based on the current state of the science, may provide meaningful biological responses while recognizing the potential, based on AM, that substantive changes to the suite of actions identified in this MRRMP-EIS may be necessary in 15 years. However, effects to resources were based on an 82-year hydrologic period of record (POR) in order to provide an indication of the potential range of effects under the variable hydrologic conditions occurring in the Missouri River basin. The geographic scope of the federal action includes the Missouri River within its meander belt from Fort Peck Dam in Montana to its confluence with the Mississippi River near St. Louis, Missouri, and the Yellowstone River from Intake Dam at Intake, Montana, to its confluence with the Missouri River.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644882

Concern Statement: If the newer technologies and datasets could be incorporated into existing operational analysis, then many of the highly negative, human considerations costs (2011 flood, 2012 drought, projected as exemplary of future events) could be avoided. Additionally, operational decisions by rules aimed at reducing endangered species "take" for the birds above and below the reservoirs could be improved.

Response: USACE uses the Master Manual and annual operating plans to make decisions regarding the operations of the Missouri River system and balance a wide spectrum of interests. The modeling conducted for this plan used the most up to date information available and complies with USACE economic guidance and methods.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644880

Concern Statement: Economic modeling in the Draft MRRMP-EIS relies on old, outdated, and inaccurate information to assess impacts.

Response: The economic modeling complies with USACE economic guidance and methods. The human consideration models used in the EIS have been USACE certified and/or approved for use. The navigation NED evaluation has been updated to 2018 values. The evaluation includes an assessment of how river flows would affect commercial sand and gravel production, based on transportation data for the Missouri River as well as interviews with the transportation industry and transportation experts. The navigation RED evaluation used a USACE-certified RECONS model with 2004 cost data, adjusted to 2018 dollars, to estimate the impacts to the barge, towing, and port services sectors; and commercial sand production and associated truck transportation sectors.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644754

Concern Statement: It is not clear if Alternative 5 includes the spring pallid sturgeon spawning release and the impacts could be misrepresented based on the actual modeling provisions.

Response: Alternative 5 does not include the spring pallid spawning release. This information has been clarified in the Final EIS.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643895

Concern Statement: Alternative 3 has the least impacts on the authorized purposes.

Response: Comment noted.

Representative Quotes (Correspondence ID): 216
Comments (Comment ID): 643456

Concern Statement: The conclusion in the Draft MRRMP-EIS that the alternatives would not represent an irreversible or irretrievable commitment of resources assumes that there will be sufficient runoff into the Missouri River reservoirs every spring to replenish the volume of water that is released the previous year. It is incorrect to assume that water will be restored the following year.

Response: The release of water from one year to the next is not considered by USACE to be an irreversible or irretrievable commitment of resources. An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. Information was added to the EIS to clarify that water resources would generally be restored based on an assumption of annual precipitation but in some instances (i.e., period of drought) restoration may take several years.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642805

Concern Statement: It is unclear from the Draft MRRMP-EIS whether (and at what level) the various models have been subjected to scientific review, verification, and refinement. The models have not been made available for review, nor were state experts who have local knowledge and experience consulted regarding the models.

Response: The Human Consideration models presented to the ISETR for review included those areas that were not previously USACE-approved models. These included Water Supply, Thermal Power, Irrigation, Cultural Resources, and Navigation. These models underwent USACE model approval process and have all been approved by USACE Headquarters for use on the Management Plan. The models for the other HC resource areas, including hydropower, flood risk management, interior drainage, and recreation, had been previously USACE approved for use and therefore, did not need additional review approval. References to these models have also been shared with the ISETR. USACE has coordinated with several industry and local experts for data and input related to human considerations.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640185

Concern Statement: It is wholly proper to consider human impacts and seek to minimize them, but priority must at some points be given to species recovery.

Response: USACE has identified a preferred alternative that meets species objectives while minimizing impacts to other river interests.

Representative Quotes (Correspondence ID): 131

Comments (Comment ID): 640167

Concern Statement: While the Draft MRRMP-EIS provide a reasonable range of actions to recover the three species the Draft MRRMP-EIS fails to provide information that allows the public to make an assessment of the likelihood of recovery or other relevant factors.

Response: Section 2.9 of the Final EIS provides a clear comparison of alternatives in terms of the species objectives, Affected Environment and Environmental Consequences and provides a description of how those factors were weighed in the decision. Sections 3.3 and 3.4 of the EIS provide a more-detailed comparison of the alternatives in terms of species objectives.

Representative Quotes (Correspondence ID): 131

Comments (Comment ID): 640133

Concern Statement: The Draft MRRMP-EIS purports to be a long-term, holistic solution to problems on the Missouri River, but it fails to address bed degradation, which is one of the most critical problems facing USACE. Rather than passively observing the problems with riverbed degradation, USACE should take immediate, active steps to solve the problem.

Response: The Missouri River Bed Degradation Feasibility Study answers the fundamentally different question of what measures could be cost-effectively employed to minimize bed degradation damages from St. Joseph, MO to Waverly, MO. It does not test the Missouri River Recovery Management Plan-EIS alternatives. While aggradation and degradation processes are known to be occurring within the basin, those processes will continue regardless of the implementation of any alternative. These processes are discussed within multiple sections of the Draft EIS. Based on modeling results the assumption is that future bed change affects all project alternatives to a sufficiently similar level.

Additional flow releases to compensate for bed degradation is not mandated in the Master Manual and has not been included in the alternatives modeling or results.

Representative Quotes (Correspondence ID): 122

Comments (Comment ID): 638311

Concern Statement: A brief accounting of the quantification of screening of alternatives based on effects on human considerations should be presented in the Executive Summary of the MRRMP-EIS.

Response: This information is provided in Chapters 2 and 3 of the Draft and Final EIS and is too detailed for an Executive Summary.

Representative Quotes (Correspondence ID): 179

Comments (Comment ID): 645239

AE0100 *Affected Environment: River Infrastructure and Hydrologic Processes*

Concern Statement: Notching of the dikes is eating away the ground and will impact adjacent agricultural property.

Response: The effect of notching on the adjacent land was addressed for example in Section 3.2 of the Draft EIS. “Modifying structures by creating notches or lowering the structure encourages erosion of the riverbank and causes the top width of the river to increase.” In addition, USACE notching actions performed to cause bank erosion are only constructed in areas where USACE has a real estate interest in the adjacent land.

Representative Quotes (Correspondence ID): 51
Comments (Comment ID): 628670

Concern Statement: The description of geomorphology of the Garrison Reach discussed in the "Degradation and Bank Erosion" and "Reservoir Sediment Deposition and Aggradation" sections is not inaccurate but is written as if the degradation and aggradation occurring in the Garrison Reach are two separate and independent processes.

Response: We agree that degradation and aggradation are closely linked, that there are various transitional zones and conditions, and that boundaries between these processes constantly shift with time due to varying flow conditions in the river. The connection between degradation and aggradation is reflected by the text of the first paragraph of Draft EIS Section 3.2.1.3; the reference of Skalak et al. (2013) has been added to this paragraph.

The more detailed descriptions in Section 3.2.1.4 of first degradation and then aggradation set the stage for the discussion of environmental consequences, which are different for each of these processes. Transitional conditions would be addressed locally through site-specific considerations during project implementation, as applicable.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645389

Concern Statement: The Ice Dynamics section lacks detail on the effect of ice on river flows and stages in North Dakota. Ice jam-induced flooding is a concern on the Missouri River and in the Bismarck-Mandan area.

Response: The following paragraph has been added to the EIS after the first paragraph in subsection “Ice Dynamics” within Section 3.2.1.4: “Although ice-induced flooding can occur anywhere along the Missouri River, ice dynamics is of heightened concern for the Bismarck-Mandan area in North Dakota. At the beginning of winter when ice cover is forming, river stage usually rises between several feet in a short period of time. During the ice-out period, there is a high risk of ice jams and river stages can fluctuate drastically with little to no warning. Typically, USACE will temporarily reduce releases from Garrison Dam to prevent ice-induced flooding during freeze-in and ice-out periods as conditions permit.”

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645390

Concern Statement: Interception and rearing complexes (IRCs) should be adequately monitored for impacts to the channel.

Response: Implementation of IRCs would include monitoring and evaluation, as stated in the EIS and in Chapter 5 of the SAMP. In addition, the proposed project is designed to apply adaptive management to adjust the initial suite of actions over time.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644832

Concern Statement: Due to geomorphology and sediment carrying capacity of flows in the Garrison Reach of the Missouri River the ability of the Garrison Reach, and the river in general to continuously create sandbar habitat with flows over the long-term is questionable.

Response: The potential for sandbar creation from flow releases would vary along the Missouri River, based on many factors including site-specific flow velocities, sediment size, sediment supply, and channel configuration. For the Garrison to Oahe Reach, the potential for sandbar creation would be highest in the lower part of the reach, downstream of Bismarck, ND. Section 2.7.2 of the EIS provides information on sandbar habitat and flow volume. Available information and analysis performed by USACE indicate that there is not a sand volume limitation for the formation of sandbars in the Garrison Reach over the 50-year planning horizon for this project.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640276

EC0100 *Environmental Consequences: River Infrastructure and Hydrologic Processes*

Concern Statement: Extended flooding and an increase in flooding frequency would compromise the integrity of levees forcing burdens and risks on the people living within the adjacent area. Coordination of operations and flood fighting activity become increasingly critical and costly as river stages increase. Management of the river for flood control and drainage should be prioritized.

Response: The Draft EIS extensively addresses Missouri River reservoir operation and the impacts of the different alternatives. USACE recognizes that flooding, erosion, and stress on the riverine infrastructure are affected by reservoir releases which influence river flow rate, water levels, and flow velocities at any given time. The various alternatives may alter these parameters on shorter time scales. However, extreme or large-scale events are not usually affected by the various alternatives. For example, the flows of the flood of 2011, for example, greatly exceeded the maximum flow release of 60,000 cfs under any of the Alternatives. Specifically, at Gavins Point, the flow of the 2011 flood was approximately 160,000 cfs, lasting two months; this period was followed by flows of 50,000 to 60,000 cfs for another four months.

Flow releases under the Alternatives would be scheduled to avoid or minimize potential flooding along the river as is stated in multiple locations, refer to each alternative specifically for details (e.g., spawning cue release text, Section 2.8.8.2) “The magnitude of both the March and May Gavins Point spring pulses would be constrained by the Gavins Point spring pulse downstream flow limits.” Further information is provided in the Draft EIS in Section 3.2.2.3, Impacts on Hydrology from the Alternatives, and Section 3.12, Flood Risk Management and Interior Drainage.

The recommended plan does not include a change in reservoir releases. With respect to flow alteration alternatives, USACE recognizes that additional evaluation would be

necessary prior to implementation. Within Section 3.12.2.1, Impacts Assessment Methodology, a new paragraph was inserted:

The Missouri River system as currently operated provides substantial flood damage reduction and benefits to the entire basin. Study alternatives include modifying operations of the Missouri River reservoir system with both higher and lower reservoir releases during select periods for species habitat benefits. The current HEC-ResSim and HEC-RAS analysis shows the potential for negative impacts to flood damage reduction for alternatives that include changes in reservoir flow releases. The current study methodology, which employs an 82-year period of record, is suitable for alternative comparison and providing an indication of change in flood risk. However, the methodology does not simulate a sufficient number of events and possible runoff combinations within the large Missouri River basin to evaluate potential change in downstream flood risk. Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 17, 19, 156

Comments (Comment ID): 626459, 626497, 644461, 644479, 644480, 644481, 644483, 645904

Concern Statement: The Draft EIS fails to accurately analyze the amount of sediment in the system. The Draft EIS also fails to analyze how the alternatives would impact sediment loading. The use of a 20-year period to extrapolate for the 82-year period of analysis to analyze for sediment is insufficient. A robust sediment model needs to be created to adequately analyze the impacts of sediment loading and their effect on the sand and gravel industry in the Final EIS. Sediment load in the river is decreased and the effects of past actions on the ability of the river to create sandbars over time is unknown.

Response: Channelizing the river and construction of dams has indeed drastically reduced the volume of sediment in the river. The proposed project is based on the current sediment transport load with current condition for water development (all reservoirs, navigation channel, and flow control structures in place).

Reservoir releases under Alternatives 4 and 5 intend to use flow to create sandbar habitat. Releases would mobilize sediment and result in the formation of sandbars. The flow – sandbar relationship is based on data and observations from previous events that created sandbar habitat such as 1997 and 2011. Within the 82-year period of record, multiple reservoir releases occur during period of storage evacuation that would create sandbar habitat. For these alternatives, additional releases would be included to achieve the intended sandbar habitat creation goals. (i.e., creation of sandbars). The Draft EIS (Section 2.7.2) provides information on sandbar habitat and flow volume.

The necessity of conducting a sediment budget was considered during initial study scoping but determined to be unwarranted for the evaluation of study alternatives. This decision was based on the fact that alternatives will not alter the trapping of sediments within the reservoir system. None of the alternatives include sediment management or measures to pass sediments through the reservoir system to the navigation channel downstream of Gavins Point Dam. In addition, based on the 82-year flow record, the flows in the lower Missouri River and sedimentation processes would continue to be dominated by natural reservoir release events (2011, 1997) and significant tributary

inflow events (1993). Analysis was performed with a “Year 15” designation that included modeling of conditions 15 years in the future. While not intended to represent detailed estimates of future reservoir and channel conditions, the results do provide an alternative comparison methodology. Comparison of results determined only minor changes between alternatives. Comparison of alternatives does not indicate a significant difference in downstream sediment loading between alternatives.

Representative Quotes (Correspondence ID): 96, 197
Comments (Comment ID): 640274, 645280

Concern Statement: The selected alternative should not increase Missouri River bed degradation or lateral bank erosion. Higher releases could further increase degradation of the river bank, bottom, and channel in already compromised locations due to higher velocities. The Draft MRRMP-EIS states that degradation of 0.5 feet under Alternatives 4 and 5 is considered small. This is not small, as over the long-term, degradation would accumulate and shift the water surface profile. ESH-creating releases would continuously move sediment from upstream to downstream perpetuating the significant changes in geomorphology that currently exists in the Garrison Reach. A determination of impacts to geomorphology under all of the alternatives as being not significant is inaccurate. The sole purpose of the ESH-creating releases is to cause significant change in the geomorphology of the river. Mechanical creation of ESH may not have a system-wide effect on geomorphology but on a smaller scale can have morphological effects.

Response: The dominant factors for degradation in the river downstream of dams is the combination of sediment trapped by the large reservoirs of the system, and erosion during natural high flow events. Flow releases under Alternatives 4 and 5 could also have an effect. Existing data suggest that degradation response to releases under Alternatives 4 and 5 could “perhaps be on the order of up to 0.5 foot” (EIS Section 3.2.2.4). However, the available data are limited. While it is reasonable to assume that additional degradation would occur, additional study would be needed to better define a change in the degradation rate under Alternatives 4 or 5 (should one of these alternatives be considered as the preferred alternative at a later time).

Regarding geomorphology, effects from the Alternatives would overall be small compared to existing conditions, but could be large locally. This is already described in the conclusion section.

Representative Quotes (Correspondence ID): 192, 205, 216, 233, 239
Comments (Comment ID): 641636, 642819, 646283, 645758, 645396, 645395

Concern Statement: Decreased river levels will also impact groundwater wells along the River with decreased capacities, decreased water quality, and increased chemical and pumping costs.

Response: Groundwater is discussed within multiple sections of the Draft EIS. The initial resource discussion occurs within the Draft EIS, Section 3.2.1.5 Groundwater. Impacts on groundwater were assessed qualitatively because they are largely a function of stage in the river. In general, prolonged periods of higher stages would result in higher groundwater elevations; lower stages would result in lower groundwater elevations.

As stated in the Draft EIS Section 3.2.2.2, Summary of Environmental Consequences, “Over the long term and considering the hydrologic variability in the POR, the action alternatives would be expected to have small to negligible, adverse impacts on the

hydrology, geomorphology, river infrastructure, and groundwater relative to the No Action alternative. However, impacts could be large temporally and locally.”

Groundwater consequences for each alternative are further discussed in the Draft EIS Table 3-3. Additional discussion on groundwater impacts are further presented within the Draft EIS, Section 3.2.2.6 Impacts on Groundwater from the Alternatives.

Within the conclusions, Draft EIS Section 3.2.2.7, “Changing flows would affect groundwater levels locally under Alternatives 1, 2, 4, 5, and 6. No impacts would occur to groundwater levels from changing flows under Alternative 3 due to the absence of the reoccurring flow management actions.”

Representative Quotes (Correspondence ID): 205, 216

Comments (Comment ID): 643451, 645871

Concern Statement: The MRRMP-EIS should assess the manner in which the system will operate in the future over changing environmental conditions, specifically changes in sedimentation and hydrology, and impacts to the integrity of the flood control pools.

Response: Sedimentation in the reservoir system is ongoing and part of the existing conditions considered for this project. The goal of the EIS is to address the impacts of the proposed project relative to existing conditions. Operation of the System due to changes in the storage capacity under existing conditions, or any of the alternatives, is outside of the scope of the EIS.

Representative Quotes (Correspondence ID): 197

Comments (Comment ID): 645271

Concern Statement: The use of the 2012 channel geometry used in the HEC-RAS model will generally underestimate the water surface profile and it should be noted that the waters surfaces will likely be higher than modeled.

Response: The Missouri River is a dynamic system that is changing constantly over the study area, which extend from Ft. Peck dam downstream to the Missouri River mouth at St. Louis. Some areas have experienced continued degradation since 2012 while other areas have experienced aggradation. Regardless, all alternatives were modeled with HEC-RAS using the same geometry and the comparison between the Alternatives is valid.

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 645383

Concern Statement: Some of the action alternatives, in particular Alternatives 4 and 5, cause significant changes in reservoir elevations and releases from Garrison Dam. While the effect of the alternatives on reservoir elevations is small compared to natural variations, when a full ESH-creating release is implemented, the volume of water released is not insignificant. Additionally, some of the alternatives cause lower reservoir levels during drought periods that can have an incremental effect that can be devastating.

Response: The ResSim model allows comparison between pool elevations for the various alternatives over the 82-year period of record used in the analysis that is based on current water development conditions (e.g., reservoirs are installed for the entire period). Model results show that the effect of flow releases under Alternatives 1, 2, 4, 5, and 6 on reservoir elevations are typically small compared to the effect caused by the natural variability in runoff from the watershed. The Human Considerations analysis evaluates

the impacts of those ResSim results on resources including boat access, irrigation, and municipal water supply. While some years may have detrimental impacts, other years are positive. The Draft EIS in Chapter 3, Affected Environment and Environmental Consequences, contains a detailed discussion of the analysis that was performed for the many human considerations and how those resources are affected by the various alternatives. This analysis includes the evaluation of different reservoir pool levels and river flow rates.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645384, 645391

Concern Statement: The Draft MRRMP-EIS does not mention sandbar erosion and deposition, which is a critical part of river geomorphology, and is relevant to all of the proposed alternatives.

Response: The words “sandbar erosion and deposition” have been added to the EIS in Section 3.2.1.4. In addition, many of the supporting documents discuss sandbar processes. Finally, additional discussion related to the flow and sandbar relationship will be provided in the Final EIS as stated in the Draft EIS Section 2.7.2, pg. 2-39, with the document referenced (Fischenich et al. in prep).

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645388

Concern Statement: Stating that the change in hydrology expected above 35,000 cfs is insignificant is inaccurate. Additionally, implementing the fall release for 175 days throughout the entire winter is infeasible and these high flows are unacceptable due to the increased risk of ice-induced flooding. Increased flows under ice conditions with the resulting increased velocities would increase erosion and negatively affect the longevity of sandbars.

Response: The text in Section 3.2.2.3 has been revised. The ResSim model for the fall release does not release flows for 175 days, the model is constrained by maximum winter releases that start when the navigation flow support season ends on Dec 1 or Dec 10 if the season is extended.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645392

Concern Statement: Understanding the changes in dam safety risk is critical. The MRRMP-EIS needs to quantify the risk of the proposed flows under an alternative related to the increase in use of spillways, affecting long-term reliability. A determination that these impacts are not significant is premature because the risk to dam safety has not been assessed.

Response: As the quoted text in the Draft EIS states, these risks have not been quantified. However, the preferred alternative 3 does not include any increase flow changes to current operations. In addition, the following text was inserted within the EIS, Section 3.12.2.1, Impacts Assessment Methodology:

"The Missouri River system as currently operated provides substantial flood damage reduction and benefits to the entire basin. Study alternatives include modifying operations of the Missouri River reservoir system with both higher and lower reservoir releases during select periods for species habitat benefits. The current HEC-ResSim and HEC-RAS analysis shows the potential for negative impacts to flood damage

reduction for alternatives that include changes in reservoir flow releases. The current study methodology, which employs an 82-year period of record, is suitable for alternative comparison and providing an indication of change in flood risk. However, the methodology does not simulate a sufficient number of events and possible runoff combinations within the large Missouri River basin to evaluate potential change in downstream flood risk. Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration."

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 645397

Concern Statement: Information should be better communicated in the Draft MRRMP-EIS on how constructed IRC habitat can decrease stage for most flows on the lower river and the impacts IRC construction would have on bed and hydrologic conditions.

Response: IRCs may locally decrease the stage slightly due to added conveyance; however, IRC effects on river flow levels is regarded as incidental. IRC habitat project formulation was not intended to provide flood damage reduction.

IRC's would be designed to create effective interception hydraulics, food producing, and foraging habitats on the Lower Missouri River. For these projects to be effective and sustainable, the IRC projects would be designed such that the navigation channel and overall bed and hydrological conditions would largely remain unaffected. Refer to the supporting technical documents for a thorough description of modeling methodology, assumptions, and limitations.

Representative Quotes (Correspondence ID): 228, 242

Comments (Comment ID): 645587, 645790

Concern Statement: Construction activities in the inter-dam reaches would disturb the sediment in the river causing it to flow downstream and accumulate in the delta. This action would increase aggradation in the delta, thereby increasing the backwater effect and river stage. It is recommended that mechanical ESH construction in inter-dam reach use sediment from the downstream delta.

Response: ESHs are built using sand from the adjacent area. Restrictive criteria are employed in ESH design to avoid river impacts. Specifically, a small amount of sand is typically added onto an existing bar that is slightly below the water surface from the adjacent river area. ESHs are designed to balance conveyance within the same river section to avoid a net impact on flow area within that section. Aside from being very expensive, transporting sand from an area downstream of the river to an area upstream would alter the stage in the river in both areas and could thus affect flood levels.

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 645994

Concern Statement: The impacts to downstream flow support resulting from past management actions related to allocation of sedimentation to the Annual Flood Control and the Carryover Pools and viewing the operational guide curves as numerically fixed are neither mentioned nor assessed in the Draft MRRMP-EIS. The numerically-fixed guide

curves and reduction in pool capacity create a condition where the downstream flow support level established by the 2004 Master Manual fails to perform as presented.

Response: The EIS addresses the impacts of the proposed project relative to existing conditions. The impacts on sedimentation as a result of the alternatives would be comparatively small compared to the impacts from the variability in natural flows.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645270

Concern Statement: The Draft MRRMP-EIS fails to address the issue of sediment in the system and the lack of material movement. USACE needs to develop sediment analysis that examines this important component for pallid sturgeon recovery. Changes in flow, without enhancing sediment load are not impactful and waste water in the system. USACE also needs to provide assurances that IRC construction and maintenance will not impact commercial sand dredging.

Response: Available information and analysis performed by USACE indicate that there is not a sand volume limitation for the formation of sandbars in the Gavins Point or Garrison Reach over the 50-year planning horizon for this project. This discussion is provided in Section 3.2 of the Final EIS. There currently is no scientific evidence that a lack of sediment in the lower river is inhibiting recruitment of pallid sturgeon and this was not identified as a priority hypothesis at this time. Sediment transport issues are the subject of the Lewis and Clark sediment management study funded by the MRRP (available at www.moriverrecovery.org). Phase II of this study is ongoing. In the future, it is likely that MRRP will continue to fund sediment management studies where sediment issues intersect with ESA issues. IRC construction and maintenance will include site specific NEPA analysis that will seek to avoid and/or minimize impacts to other river uses.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645512

AE100 ***Affected Environment: Pallid Sturgeon***

Concern Statement: Hypoxic zone within Missouri River reservoirs is a major source of the decline and disappearance of the pallid sturgeon. In a recent study, scientists show that oxygen-depleted dead zones between dams in the upper Missouri River are directly linked with the failure of endangered pallid sturgeon hatched embryos to survive to adulthood.

Response: Management hypotheses that dealt directly with the perceived anoxia issue in the headwaters of Lake Sakakawea were considered by the panel of experts that developed the Effects Analysis, which was the basis for alternatives development in the Draft EIS. A number of hypotheses dealt with the anoxia issue through an increase in drift distance or a reduction in drift time. Alternatives development gave consideration to management actions associated with these hypotheses and was discussed in Sections 2.3 and 2.5.2 of the Draft EIS.

Representative Quotes (Correspondence ID): 128
Comments (Comment ID): 637082

Concern Statement: Habitat is the most critical component impacting pallid sturgeon on the Missouri River and the loss of 100,200 acres of aquatic and 67,800 acres of terrestrial

habitat acres in the channel below Sioux City has had the greatest impact on pallid sturgeon and other native fish species on the channelized Missouri River.

Response: The best available science remains inadequate to quantify the effects of physical (abiotic) changes to the Missouri River on pallid sturgeon population dynamics, in spite of the availability of the new information since the 2003 Amended BiOp was issued. Efforts to push beyond a basic understanding of the species' ecology to facilitate predictions of environmental causes and effects on the fish are still compromised by fundamental information gaps. Lines of evidence for many of the pallid sturgeon management hypotheses are limited to theoretical deduction, inference from sparse empirical datasets, or expert opinion. The independently-led Effects Analysis came to these conclusions. Given the high level of uncertainty regarding the necessary actions to address the listed species' needs, USACE and USFWS agreed that proceeding under a rigorous and progressive SAMP, based on the results of the Effects Analysis, would provide the most effective, efficient, and accountable way to manage risks to the species, address key uncertainties, and identify the scope and scale of actions ultimately required to achieve the MRRP objectives without wasting resources on actions which prove ineffective.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 642884

Concern Statement: Much of the current science on pallid sturgeon in the upper Missouri River basin has not been consistently applied within the Draft MRRMP-EIS and the State of Montana's institutional knowledge has not been utilized in the development of meaningful alternatives. To further this concern, the justification for excluding RPMA 1 in the MRRMP-EIS is poorly conveyed and a lack of coordination with the State has perpetuated the issue.

Response: The Effects Analysis was led by a group of independent scientists that used the best available science to develop a foundational understanding of pallid sturgeon life history requirements and assess the effects of system operations and actions on the species' populations and habitats. State, private, and Federal agency biologists were given numerous opportunities to provide input into the Effects Analysis (e.g., review, workshops, etc.) and the MRRMP-EIS (e.g., review, MRRIC, etc.) and that input was considered through the development of both. Coordination with individual agencies runs counter to the independent and open process adopted by USACE and USFWS that was used to develop the Effects Analysis; this process has led to an analysis that is credible, defensible, and independently scrutinized. Exclusion of input does not mean it was not considered; in some instances, better information was available or the input was not supported by the available science. All credible scientific input has been considered through the development of the EA and MRRMP-EIS. Finally, the appropriate avenue for state coordination on components of the MRRMP-EIS (e.g., inclusion of RPMA 1) would be with USFWS through the Fish and Wildlife Coordination Act or their state's MRRIC representative.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 643313

Concern Statement: Consider recent data presented by the State of Nebraska concerning the status of forage fish and body condition of pallid sturgeon.

Response: USACE applied the procedure for addressing significant new information described in the Draft SAMP, and at the direction of and with funding provided by USACE, the United States Geological Survey led a rigorous analysis of pallid sturgeon condition trends (Randall et al. 2017). This report documented declining condition in some lower Missouri River pallid sturgeon and provided recommendations which would narrow the field of hypotheses explaining these conditions. USFWS also identified pallid sturgeon condition as a concern and has recommended a higher priority be given to hypotheses related to declining condition. USACE and USFWS have agreed to advance the recommendations in the pallid condition report, consistent with the process highlighted in the SAMP.

Representative Quotes (Correspondence ID): 207

Comments (Comment ID): 643516

Concern Statement: The information discussing the status of the pallid sturgeon population is misleading and should be checked for accuracy.

Response: The information in this paragraph accurately reflects the conclusions of USFWS as presented in the revised Pallid Sturgeon Recovery Plan (USFWS 2014). A more thorough discussion of the status of pallid sturgeon is presented in Section 3.3.1.1.

Representative Quotes (Correspondence ID): 179

Comments (Comment ID): 645235

Concern Statement: Use of the shovelnose sturgeon as a surrogate species for pallid sturgeon life history characteristics lacks support. The Draft MRRMP-EIS should consider using only what is known about the pallid sturgeon.

Response: Shovelnose sturgeon are only used as a surrogate for pallid sturgeon where the science has identified and supports similarities in the life-history requirements or biology. It is true that there are significant differences between pallid sturgeon and shovelnose sturgeon and using shovelnose sturgeon as a surrogate would not be appropriate for life stages or behaviors where these differences occur.

Representative Quotes (Correspondence ID): 238

Comments (Comment ID): 645326

Concern Statement: Volume 2 Page 60 references to the Big Sioux River. It should say the river is in both Iowa and South Dakota as the river is the border between the states.

Response: Text was revised as suggested by the comment.

Representative Quotes (Correspondence ID): 242

Comments (Comment ID): 645591

Concern Statement: According to the scientists working on the river, few hybrids between the pallid and shovelnose sturgeon have been found in the upper river, but are common in the lower river.

Response: Yes. There have only been five pallid x shovelnose hybrids captured in RPMA 2 (Fort Peck Dam to Lake Sakakawea and the lower Yellowstone River). From Gavins Point Dam to the Missouri River mouth (RPMA 4), 238 hybrids have been collected (some of these could be of hatchery origin). Hybrids become more common closer to the mouth of the Missouri River and become very common, even prevalent on the Mississippi River.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645837

EC100 *Environmental Consequences: Pallid Sturgeon*

Concern Statement: There is uncertainty related to pallid sturgeon requirements and the EIS does not reflect the current state of science or that additional science is needed to analyze the effects of the MRRMP-EIS.

Response: USACE and USFWS recognize the results of the Effects Analysis as the best available science on pallid sturgeon. The alternatives development process and subsequent evaluation of impacts to pallid sturgeon was based on the Effects Analysis results. The Draft EIS recognizes the substantial uncertainty that remains relative to cause and effect relationships between management action and pallid sturgeon populations. Adaptive management was included as a component of all alternatives evaluated in the Draft EIS precisely due to the need to implement actions for pallid sturgeon in a manner that reduces uncertainty regarding pallid sturgeon limiting factors.

Representative Quotes (Correspondence ID): 59, 97, 107, 191, 238 242, 245
Comments (Comment ID): 632126, 636850, 644039, 644911, 645992, 645538, 645781

Concern Statement: Limitations related to pallid sturgeon health and life history requirements are not addressed in a timely manner due to the time it takes to gather data and implement new actions under adaptive management.

Response: Poor body condition of pallid sturgeon may be related to a variety of causal factors, such as disease, contaminants, or lack of food; the underlying causes for pallid condition or other health issues may be complex or difficult to discern. The apparent decline in pallid sturgeon body condition may be a short- or long-term condition for the population that will require continued monitoring. Recent data for the lower Missouri River, however, indicates that body condition for the population may be improving. The pace at which an issue like this is addressed through the AM process depends on the urgency and its complexity. One must first identify the factor(s) responsible for the decline in body condition, for example, before it can be addressed. In the case of poor body condition, the independently-conducted analyses made it clear that the cause is unknown.

Representative Quotes (Correspondence ID): 76
Comments (Comment ID): 633563

Concern Statement: The MRRMP-EIS does not include provisions for designation of critical habitat for the endangered pallid sturgeon; for unbalanced reservoirs to address the situation at a particular reservoir; and for the application of the best science currently available. Pallid sturgeon are also affected by habitat loss, fishing and caviar harvesting, entrainment and watercraft propellers, contaminants, hybridization, invasive species, and iridovirus, which are not addressed under any of the alternatives.

Response: Designation of pallid sturgeon critical habitat is not within the jurisdiction of USACE and therefore outside the scope of the proposed action. The effects analysis on which the Draft EIS was based gave consideration to a long list of potential hypotheses related to pallid sturgeon limiting factors. The hypotheses were ranked through a panel of experts as to those most important to the species and the final set of management hypotheses formed the basis for the development of alternatives. However, the adaptive

management process allows for returning to hypotheses that were filtered out should new information provide a reason to do so.

Representative Quotes (Correspondence ID): 81
Comments (Comment ID): 636788

Concern Statement: The return of areas on the Missouri River to more natural habitat will provide habitat for the pallid sturgeon.

Response: The best available science remains inadequate to quantify the effects of physical (abiotic) changes to the Missouri River on pallid sturgeon population dynamics, in spite of the availability of the new information since the 2003 Amended BiOp was issued. Efforts to push beyond a basic understanding of the species' ecology to facilitate predictions of environmental causes and effects on the fish are still compromised by fundamental information gaps. Lines of evidence for many of the pallid sturgeon management hypotheses are limited to theoretical deduction, inference from sparse empirical datasets, or expert opinion. Given the high level of uncertainty regarding the necessary actions to address the listed species' needs, USACE and USFWS agreed that proceeding under a rigorous and progressive SAMP would provide the most effective, efficient, and accountable way to manage risks to the species, address key uncertainties, and identify the scope and scale of actions ultimately required to achieve the MRRP objectives.

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641587

Concern Statement: The MRRMP-EIS should include further study on the influence of Asian carp on pallid sturgeon.

Response: Asian carp feeding on pallid sturgeon fry has not been documented. While there is the potential for Asian carp to impact various life-history stages of pallid sturgeon, or more likely pallid sturgeon prey, none have been identified as important at this time. Hypotheses related to the predation rate of invasive predators on larval pallid sturgeon were considered through the EA's hypothesis development process, but none were identified as priority hypotheses through a survey of scientific experts. However, these hypotheses are held in reserve and can be considered at a later date. In addition, much work is being done by other entities on Asian carp, and USACE will remain engaged in and aware of those efforts to better understand relevance to pallid sturgeon.

Representative Quotes (Correspondence ID): 205, 225
Comments (Comment ID): 642129, 644419

Concern Statement: The Fall ESH Creating Release under Alternative 5 has a high probability that these flows and higher velocities would result in low survival and recruitment of pallid sturgeon. Further analysis of the impacts to pallid sturgeon should be done.

Response: Comment noted. As stated on page 3-79 of the Draft EIS: "Specific impacts on pallid sturgeon from a fall reservoir release for ESH creation are not known. Increased flows during the fall would be contrary to the pattern of the natural hydrograph; however, no evidence exists to suggest a fall reservoir release would adversely affect pallid sturgeon."

Representative Quotes (Correspondence ID): 107, 237
Comments (Comment ID): 643001, 643900

Concern Statement: The MRRMP-EIS should include a description and study of benthic macroinvertebrate food sources.

Response: In the Lower Missouri River, the long-term approach to identifying and implementing management actions and addressing uncertainty is to use the AM process laid out in the MRRMP/EIS. As such, USACE is currently engaged in several studies to better understand the diet and condition of age-0 pallid sturgeon. While the Effects Analysis hypothesized a lack of food may currently be limiting age-0 pallid sturgeon in the Lower Missouri River, Jacobson et al. (2016) also noted that "...the continued growth, recruitment, and survival of shovelnose sturgeon, which are thought to share dietary requirements with pallid sturgeon at this life stage, argue against food as a limiting factor." Information gained through these ongoing studies will help determine if food is limiting to age-0 pallid sturgeon and help identify future research needs.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644889

Concern Statement: Use of the shovelnose sturgeon as a surrogate species for pallid sturgeon life history characteristics lacks support. The Draft MRRMP-EIS should consider using only what is known about the pallid sturgeon and perform additional research.

Response: Shovelnose sturgeon are only used as a surrogate for pallid sturgeon where the science has identified and supports similarities in the life-history requirements or biology. It is true that there are significant differences between pallid sturgeon and shovelnose sturgeon and using shovelnose sturgeon as a surrogate would not be appropriate for life stages or behaviors where these differences occur.

Representative Quotes (Correspondence ID): 238, 242
Comments (Comment ID): 645326, 645541

Concern Statement: The MRRMP-EIS does not explain the benefits of low summer flow in terms of how much shallow water habitat would be created and thus does nothing to prove that it is a beneficial management action for the pallid sturgeon. In addition, low summer flow "would only be implemented in the two years following implementation of a complete bimodal spring pallid sturgeon flow release" which would make implementation infrequent.

Response: The best available science remains inadequate to quantify the effects of physical (abiotic) changes to the Missouri River on pallid sturgeon population dynamics, in spite of the availability of the new information since the 2003 Amended BiOp was issued. Efforts to push beyond a basic understanding of the species' ecology to facilitate predictions of environmental causes and effects on the fish are still compromised by fundamental information gaps. Lines of evidence for many of the pallid sturgeon management hypotheses are limited to theoretical deduction, inference from sparse empirical datasets, or expert opinion. Given the high level of uncertainty regarding the necessary actions to address the listed species' needs, USACE and USFWS agreed that proceeding under a rigorous and progressive SAMP would provide the most effective, efficient, and accountable way to manage risks to the species, address key uncertainties, and identify the scope and scale of actions ultimately required to achieve the MRRP objectives. The low summer flow is part of Alternative 2. The other action alternatives include a range of alternatives that include pallid sturgeon management actions.

Representative Quotes (Correspondence ID): 240

Comments (Comment ID): 645418

Concern Statement: The fall ESH habitat creating release under Alternative 5 is not reflective of the natural historic hydrograph of the Missouri River that may have impacts on pallid sturgeon. Any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter.

Response: Comment noted.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645521

Concern Statement: The Final MRRMP-EIS should articulate how the success of pallid sturgeon bypassing the Intake Project on the Yellowstone River will be measured.

Response: Monitoring pallid sturgeon bypass at Intake is described in the monitoring and adaptive management plan for the Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana Final Environmental Impact Statement. That is a separate NEPA process than the Missouri River Recovery Management Plan and not included in the scope of the MRRMP EIS.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645527

Concern Statement: The Draft MRRMP-EIS places too much emphasis on hatchery raised pallid sturgeon. Stocking creates a population that is not self-sustaining and there are concerns with disease and water quality in the hatcheries and the fish raised there. There is also a high cost for hatchery raised pallid sturgeon. More habitat restoration in the upper and lower rivers should be performed to ensure natural production and recruitment.

Response: Implementation of the Pallid Sturgeon Conservation Augmentation Program to date has stabilized the pallid sturgeon population in the Missouri River (USFWS 2014); however, the population is not considered self-sustaining. USACE acknowledges that stocking alone is not a means to avoid jeopardizing pallid sturgeon. However, best available science indicates that inadequate drift distance is the most likely factor limiting pallid sturgeon in the upper Missouri River.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645535

Concern Statement: The MRRMP-EIS should include more research on the possible impacts of agricultural pesticides to determine if any of these chemicals are influencing recruitment of pallid sturgeon or their prey species.

Response: The application, regulation, and potential environmental consequences of agricultural herbicides and pesticides are not under the purview of USACE. If hypotheses that address impacts from agricultural pesticides are identified and prioritized through the AM process, USACE may consider addressing them through research or monitoring since there could be relevance to the effectiveness of planned or ongoing actions and in the interpretations of pallid sturgeon responses to those actions.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645547

Concern Statement: It is questionable if drawdown of Lake Sakakawea would restore desirable riverine habitat needed for larval pallid sturgeon survival and not within the timeframe of the MRRMP-EIS.

Response: The Lake Sakakawea drawdown management action was considered but dismissed from consideration in the Draft EIS. See discussion in Section 2.5.2.1 of the EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645795

Concern Statement: The MRRMP-EIS and the SAMP should discuss competition from non-native fish species.

Response: While competition from non-native fish may impact pallid sturgeon populations, at this time it is not believed to be a primary mechanism that limits recruitment in the Missouri River. In addition, much work is being done by other entities on Asian carp, and we will remain engaged in and aware of those efforts to better understand relevance to pallid sturgeon.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 645822

Concern Statement: The Draft MRRMP-EIS only used two years of water temperature data to model downstream of Fort Peck. There is evidence that Fort Peck Dam has substantially affected water temperatures.

Response: Comment noted. USACE acknowledges best available science indicates that water temperatures downstream of Fort Peck dam are suppressed.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645840

Concern Statement: The spring pulse management action, as currently designed, is unnecessary as a cue for spawning pallid sturgeon.

Response: For the Lower Missouri River (i.e., downstream of Gavins Point Dam), the SAMP will explore two competing hypotheses with respect to the role of flows on pallid sturgeon spawning:

1. Pallid sturgeon spawn with or without managed spring flow pulses, and therefore such pulses are not required for spawning (conclusion of the ISAP 2011 report), or
2. Naturalization of the flow releases from Gavins Point Dam will improve flow cues in the spring for aggregation and spawning, increasing reproductive success (a hypothesis evaluated in the recent Effects Analysis).

The lack of evidence of a correlation between flows and pallid sturgeon spawning (hypothesis A) could be due to insufficient numbers of tracked sturgeon, monitoring duration, metrics, and/or contrast in flows. ISAP did not evaluate whether existing spawning was successful or sufficient to maintain the population. Under the proposed SAMP, scientists will evaluate the relationship between pallid sturgeon spawning behaviors and flows in the Missouri River over the next decade to test hypotheses A and B. They will determine whether changes in flow lead to changes in upstream movement, aggregation, and spawning success.

If monitoring provides stronger evidence that flows do act as a spawning cue for pallid sturgeon (support for hypothesis B), then intentionally modifying flows through increased reservoir releases to mimic natural springtime pulses may be implemented in the future to stimulate spawning, increase production of young sturgeon, and help species recovery. Such flow modifications would only occur after the completion of the necessary processes outlined in the SAMP and in accordance with regulation and law, including applicable public involvement requirements.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 645903

AE200 and AE300 Affected Environment: Piping Plover and Least Tern

Concern Statement: Birds are only seen inside a levee in ponds and pools because habitat riverside of the levee has been destroyed.

Response: The reach of the Missouri River below Ponca, Nebraska includes the Bank Stabilization and Navigation Project which prevents sandbars from developing in the river channel. Nesting of least terns on this reach is rarely recorded, but did occur on sand splays after the 2011 flood and on sediment aggradation areas within the shallow water habitat project on Lower Little Sioux Bend, Iowa. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed.

Representative Quotes (Correspondence ID): 49
Comments (Comment ID): 628666

Concern Statement: The EIS needs to explain why reservoir shorelines are considered intermittent habitat but ESH, which has to be rebuilt, is not considered intermittent habitat.

Response: ESH is considered to be intermittent habitat. See the description of breeding habitat under 3.4.1.1.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643920

EC200 and EC300 Environmental Consequences: Piping Plover and Least Tern

Concern Statement: Attempts to create artificial ESH have had mixed success and have not contributed in any significant way even to the limited population of Piping Plovers using the Gavins Point site; there was no change in number of fledged Piping Plovers there from summer 2000 through summer 2009.

Response: USACE continues to believe that mechanically constructing ESH along with maintaining and/or creating new ESH through vegetation spraying is a viable means to meeting the tern and plover objectives of this Plan. The modeling indicates that persistence probability objectives will not be met without augmenting the ESH created by natural flows. Experience with constructing ESH and maintaining vegetation on natural and constructed sandbars indicates these management actions are achievable and can be successful. It is true that in general the first 3-5 years are the most productive on constructed sandbars, however, this lifetime can be extended through vegetation management.

Representative Quotes (Correspondence ID): 80

Comments (Comment ID): 640100

Concern Statement: Twenty percent of the birds are lost through attrition every year and if there is not nesting for three years 60 percent of the birds are lost.

Response: USACE believes that the Effects Analysis completed for the least tern and piping plover represent the best available science for these species. The model used for this plan was based on the results of the effects analysis. The modeling results provide the MRRP guidance on the amount of ESH that would need to be created to maintain a 95 percent probability of persistence over 50 years. Results of ongoing metapopulation studies could be incorporated into a future iteration of the effects analysis and associated modeling as new information becomes available. The SAMP is designed to react to new information and incorporate into management as needed. Section 3.1.1.1 of the SAMP contains the following statement: “The effects of nearby subpopulations of piping plovers and least terns on Missouri River Mainstem populations (metapopulation dynamics) are not fully understood, and considered a critical uncertainty within the SAMP (Section 3.1.2.5). Studies underway to measure dispersal between the Missouri River Mainstem and other breeding areas will provide information on metapopulation dynamics. As results become available, the ability to account for and model metapopulation dynamics will be evaluated and developed to the extent possible.”

Representative Quotes (Correspondence ID): 52
Comments (Comment ID): 631124

Concern Statement: Alternative 5 is contrary to the natural historic hydrograph of the river. Any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short-lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds.

Response: The ESH fall flow releases contained within Alternative 5 are designed to benefit least terns and piping plovers by creating new ESH that would last for multiple nesting seasons depending on river conditions. Releasing flows in the fall avoids some impacts associated with spring releases such as flooding existing nests in the spring. ESH created at any time of year would be subject to wind and ice erosion assuming it lasts for multiple nesting seasons. Experience indicates that constructed sandbars last 3-5 years and that lifetime can be extended through vegetation management.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645521

Concern Statement: The statement that the spring emergent sandbar habitat-creating release under Alternative 4 would have relatively large beneficial impacts from the creation of new sandbars that could occur following flows contradicts the conclusion in River Infrastructure and Hydrology which states that Alternative 4 would not have significant impacts on geomorphology. The long-term benefit of the ESH-creating release would only last until the sediment supply was exhausted, or for the inter-dam reaches, until all of the sediment was flushed into the reservoir deltas. Additionally, the ESH-creating release in the spring would have an adverse effect by increasing the flood risk of birds nesting on sandbars. This risk should be recognized in the MRRMP-EIS.

Response: The sandbar habitat-creating release under Alternative 4 would have relatively large beneficial impacts to piping plovers and least terns in comparison to Alternative 1 due to

increased amounts of ESH available to terns and plovers. The long-term impacts to geomorphology (i.e., exhausting the sediment supply) are not anticipated to be significant within the 50-year planning horizon of this plan. As stated in Section 3.2.2.4 degradation from ESH creating releases was projected to be on the order of up to 6 inches in the mid-section of the Garrison Dam to Lake Oahe reach for each release. Modeling indicates that ESH releases could only occur once every 7-10 years. The Final EIS acknowledges that the spring flows would create a higher risk of flooding for birds nesting on sandbars.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645400

Concern Statement: A section should be added to the MRRMP-EIS and SAMP on possible impacts related to piping plover science and management actions pending the results of the metapopulation study.

Response: Results of ongoing metapopulation studies could be incorporated into a future iteration of the effects analysis and associated modeling as new information becomes available. The SAMP is designed to react to new information and incorporate into management as needed. Section 3.1.1.1 of the SAMP contains the following statement: “The effects of nearby subpopulations of piping plovers and least terns on Missouri River Mainstem populations (metapopulation dynamics) are not fully understood, and considered a critical uncertainty within the SAMP (Section 3.1.2.5). Studies underway to measure dispersal between the Missouri River Mainstem and other breeding areas will provide information on metapopulation dynamics. As results become available, the ability to account for and model metapopulation dynamics will be evaluated and developed to the extent possible.”

Representative Quotes (Correspondence ID): 148, 229
Comments (Comment ID): 644900, 642694

Concern Statement: A re-evaluation of the modeling of the chance of persistence of piping plovers and least terns over 50 years should be performed. The statement under Alternative 1, that it appears the alternative would not meet the 95 percent chance of persistence over 50 years, is not supported because plovers and terns have maintained a population since closure of the last dam on the Missouri system in 1967. The facts do not support the modeling results. Additionally, modeling the Missouri River as two separate piping plover populations, Northern and Southern, with little interactions and holding emigration and immigration steady an equal in the models does not take into account the bigger metapopulation influence and has limitations. The MRRMP-EIS should include a graph or table that demonstrates the historical relationship of plover populations to acres of emergent sandbar habitat in the past.

Response: The approach of evaluating long-term persistence probabilities is conducted in recognition that there are many potential outcomes for dynamic habitat and populations. These outcomes depend on factors that are highly variable and difficult to predict, such as annual weather patterns and long-term climate trends. The historical dynamics of piping plovers depended on many factors including the frequency, timing, and magnitude of ESH-forming flows and drought periods. Future persistence depends, in part, on these factors which may or may not repeat past patterns. The objective of USFWS is to identify an acceptable level of risk. In this case, they have determined that an undesirable outcome of extirpation of plovers on the Missouri River should occur in no more than 1 of 20 potential futures. In some potential futures, plovers may persist without additional

management, but USFWS requires that probability to be 95 percent. In addition, changes to the morphology and sediment dynamics of the river may reduce the likelihood that future habitat and population dynamics will reflect the past, particularly the time shortly after dam closure.

Recently collected information about metapopulation processes was not available during the development of alternatives for the Draft EIS. This information will be incorporated to the extent possible in ongoing modeling and evaluation as part of the SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643921, 643807

Concern Statement: The MRRMP-EIS should discuss the limitations, assumptions, and caveats associated with the piping plover modeling, including that the model of emergent sandbar habitat deposition and erosion is new and based on a limited time frame; and that the population models are parameterized using current condition with a limited time of 2005-2014 for riverine habitat. The models do not consider metapopulations and differ from the models used by the piping plover Recovery Team.

Response: Limitations and assumptions associated with the modeling are provided in *Modeling to Support the Development of Habitat Targets for piping plovers on the Missouri River*, (Buenau 2016). These documents are available at www.moriverrecovery.org. The Final EIS refers the reader to this document which was available along with the Draft EIS during the public comment period.

Representative Quotes (Correspondence ID): 107, 190
Comments (Comment ID): 643806, 641605

Concern Statement: Temporary and long-term impacts to geomorphology in the Draft MRRMP-EIS from spawning cue releases could affect the availability of materials for piping plover habitat.

Response: The long-term impacts to geomorphology (i.e., exhausting the sediment supply) are not anticipated to be significant within the 50-year planning horizon of this plan. As stated in Section 3.2.2.4 degradation from ESH creating releases was projected to be on the order of up to 6 inches in the mid-section of the Garrison Dam to Lake Oahe reach for each release. Modeling indicates that ESH releases could only occur once every 7 to 10 years.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643908

Concern Statement: Least tern has been impacted by past actions on the Missouri River. Management actions proposed will provide an opportunity to return sections of the river to more natural habitat and provide habitat for least tern.

Response: The impacts analysis presented in Chapter 3 of the Final EIS indicates all of the alternatives except for the No Action alternative meet the objectives for the least tern.

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641587

Concern Statement: Any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short-lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds.

Response: The ESH fall flow releases contained within Alternative 5 are designed to benefit least terns and piping plovers by creating new ESH that would last for multiple nesting seasons depending on river conditions. Releasing flows in the fall avoids some impacts associated with spring releases such as flooding existing nests in the spring. ESH created at any time of year would be subject to wind and ice erosion assuming it lasts for multiple nesting seasons. Experience indicates that constructed sandbars last 3-5 years and that lifetime can be extended through vegetation management.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645521

Concern Statement: Restoring sandbars along the Iowa section of the Missouri River will help restore the least tern populations.

Response: The reach of the Missouri River below Ponca, Nebraska includes the Bank Stabilization and Navigation Project which prevents sandbars from developing in the river channel. The Iowa section of the Missouri River is all within the BSNP reach. Nesting of least terns on this reach is rarely recorded, but did occur on sand splays after the 2011 flood and on sediment aggradation areas within the shallow water habitat project on Lower Little Sioux Bend, Iowa. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed. Many of the same uncertainties existing for reservoir and sandpit habitats exist for habitat in this geographic area. The value of this habitat to piping plover and least tern reproduction is unknown. Habitat preference sand dispersal, forage availability, land acquisition, feasibility of creation and maintenance would all need to be resolved. Considering these uncertainties, USFWS has recommended USACE not spend resources on purposefully developing habitat below Ponca, Nebraska as a management action in the EIS at this time.

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641605

AE400 *Affected Environment: Fish and Wildlife Habitat*

Concern Statement: Asian carp impact many other fish species through stress, competition of foraging areas and river spaces, predation, and change the balance of the river species community. This issue should be addressed in the Final MRRMP-EIS.

Response: While competition from non-native fish may impact pallid sturgeon populations, at this time it is not believed to be a primary mechanism that limits recruitment in the Missouri River. In addition, much work is being done by other entities on Asian carp, and we will remain engaged in and aware of those efforts to better understand relevance to pallid sturgeon.

The impacts from non-native/invasive species to fish and wildlife were described in Section 3.5.2.10 Invasive Species and based on the potential for their introduction or spread from any of the management actions. Impacts from invasive aquatic species would decrease from implementation of the USFWS Aquatic Invasive Species Program with benefits expected from monitoring habitats to determine the distribution of invasive species, rapidly responding to new invasions, and controlling established populations. Additionally, management actions would be performed in accordance with Executive Order 13122, federal agencies may not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species. Any

management actions taken would be evaluated on a site-specific level to ensure that compliance with Executive Order 13122 is met. It is not expected that any invasive aquatic wildlife species would spread because of any of the management actions.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645223

Concern Statement: The Draft MRRMP-EIS does not appear to consider changes to vegetation due to conversion of grassland to cropland and has not calculated the effects on floodplain connectivity for fish and wildlife habitat classes.

Response: Past, present, and future conversion of grassland to cropland and loss of floodplain connectivity is discussed in Section 3.5.2.14 Cumulative Impacts, the cumulative impacts assessment for fish and wildlife.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644881

EC400 *Environmental Consequences: Fish and Wildlife Habitat*

Concern Statement: The MRRMP-EIS should consider other species that are at risk for endangerment due to Missouri River management as well as the impacts from non-native/invasive species. Management actions would also benefit non-listed species including important sportfish and improve the overall fish community.

Response: A total of 126 species that have been given special status at either the federal or state level and may occur within the geographic scope of the program were evaluated in the MRRMP-EIS. These species include 18 plants, 31 birds, 12 mammals, 17 reptiles and amphibians, 23 fish, 21 mussels and gastropods, and 4 insects. All species were initially assessed to determine if they should be evaluated in detail; those species not selected for detailed analysis are listed in Appendix E. In this appendix, the potential impacts to each special status species are recognized based upon predetermined criteria. After consultation with USFWS, three species from the list of 126 were selected for detailed analysis based on the potential for impacts that could occur to individuals, populations, or their habitats in areas where management actions might occur. These five species include: bald eagle, northern long-eared bat, and Indiana bat.

The impacts from non-native/invasive species to fish and wildlife were described in Section 3.5.2.10 Invasive Species and based on the potential for their introduction or spread from any of the management actions. Impacts from invasive aquatic species would decrease from implementation of the USFWS Aquatic Invasive Species Program with benefits expected from monitoring habitats to determine the distribution of invasive species, rapidly responding to new invasions, and controlling established populations. Additionally, management actions would be performed in accordance with Executive Order 13122, federal agencies may not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species. Any management actions taken would be evaluated on a site-specific level to ensure that compliance with Executive Order 13122 is met. It is not expected that any invasive aquatic wildlife species would spread because of any of the management actions.

The impacts to the sport fisheries were described qualitatively in Section 3.5.2.11 Commercial Fisheries in the Final EIS.

Representative Quotes (Correspondence ID): 14, 87, 177, 190, 192, 212, 239

Comments (Comment ID): 626266, 645830, 645797, 645794, 645571, 641670, 641596, 641594, 636793

Concern Statement: USACE and the State of Montana must develop guidance on how mitigation in the connected Missouri River and Yellowstone River ecosystem will mitigate for impacts to other native fish and wildlife species and this should be included in the Final MRRMP-EIS. Mitigation could be included as part of the SAMP and their inclusion could be used as Level 3 and Level 4 studies.

Response: Mitigating for impacts to fish and wildlife species beyond the three ESA listed species is beyond the scope of this Plan although it is likely that actions taken for endangered species would have incidental benefits to other native fish and wildlife species as described in Section 3.5.2 Environmental Consequences of the Final EIS.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 646302

Concern Statement: Hydropeaking during flow pulse events could exasperate the effect of dewatering aquatic habitats. Steady pulses from Fort Randall Dam would minimize the dewatering of aquatic habitats in this reach.

Response: Through the adaptive management process the effects of flow pulse events would be documented and if issues related to dewatering of aquatic habitats were observed to exist the impacts to species, including other native fish species, would be evaluated and appropriate mitigation measures implemented. The preferred alternative includes only the possibility of a one-time flow test from Gavins Point and does not include re-occurring flow changes that would exacerbate the effects of dewatering.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645982

Concern Statement: Significant drawdown of Lake Sakakawea would have devastating consequences to the fishery. Sixty years of fisheries research by North Dakota Game and Fish Department has confirmed that maintaining an adequate water level (absolute minimum of 1,825 msl) and having a rising pool during the spring spawning and egg incubation period are critical for maintaining the number one most used fishery in North Dakota - Lake Sakakawea.

Response: USACE understands that maintaining reservoir elevations and increasing reservoirs elevations in the spring is important to maintain the fishery at the upper three reservoirs. USACE staff have spoken with North Dakota Game and Fish supervisory level staff several times to discuss these issues and have read the Fisheries Management Plans for the Missouri River System. A fishing success proxy metric was developed, which is described in Section 2.4 of the "Recreation Environmental Consequences Analysis Technical Report," and is based on input from fisheries biologists, including North Dakota Game and Fish staff. Additional description of the potential impacts to the fishery if criteria noted in the fisheries management plans are not met was added to the Final EIS under alternatives with proposed releases in Section 3.5 Fish and Wildlife Habitat.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645796, 642846, 642843

Concern Statement: Sandbar habitat creating flows have the potential to severely impact the sport fishery of Lewis and Clark Lake. Both the spring and fall releases would result in

decreased walleye abundance in the Lewis and Clark Lake. The impact of a fall release and a May release on walleye would likely result in entrainment of a large percentage of newly hatched walleye. Major flow events also have the ability to flush the majority of pelagic prey (rainbow trout and lake herring) and Chinook salmon through Oahe Dam. Even if reservoir elevations are sufficient to allow good access to the reservoir after major flow events, the lack of available food resources results in the loss of the larger walleye from the reservoir due to starvation. Decreasing elevation of Lake Oahe and Francis Case during prey and game fish spawning periods (April - June) is a concern as stable-to-rising elevations are important to the success of prey fish and sportfish spawning events and egg incubation. With Lake Oahe being the lowest of the big-three storage reservoirs in the system, a spring release to create ESH will certainly remove the possibility of favorable conditions for spawning during the year of the flow implementation.

Response: The impacts to the sport fisheries described in these comments and concern statement, including the impacts to the fishery from flow events in Lake Oahe, Lewis and Clark Lake, and Lake Francis Case, are described qualitatively in the recreation in the Final EIS in Section 3.5.16 Environmental Consequences.

Representative Quotes (Correspondence ID): 206

Comments (Comment ID): 645143, 645786, 645147, 645129

Concern Statement: Low summer flows may increase the likelihood of zebra mussel juveniles settling out of the water column and attaching to water intake systems.

Response: Information related to the potential increase of zebra mussel juveniles attaching to water intake systems as a consequence of low summer flows was added to the Final EIS. Specific mitigation measures would be included in site specific documents related to invasive species as those projects are developed.

Representative Quotes (Correspondence ID): 206

Comments (Comment ID): 645753

Concern Statement: The use of herbicide use during vegetation removal on emergent sand habitat could potentially impact birds, mammals, and invertebrates. Aerial spraying and herbicide drift to fish and wildlife could cause impacts as well. More research should be performed on the potential impacts of agricultural pesticides to determine if any of these chemicals are influencing pallid sturgeon prey species.

Response: The Final EIS includes information on the potential impacts from herbicide use during vegetation removal in Section 3.5.2.3 Vegetation Management, Predator Management, and Human Restriction Measures. Although herbicides could enter the substrate when vegetation is removed during vegetation management operations, only herbicides approved by the U.S. Environmental Protection Agency for aquatic use would be applied at the recommended rates. If hypotheses that address impacts from agricultural pesticides are identified and prioritized through the AM process, USACE may consider addressing them through research or monitoring since there could be relevance to the effectiveness of planned or ongoing actions and in the interpretations of pallid sturgeon responses to those actions.

Representative Quotes (Correspondence ID): 242

Comments (Comment ID): 645547

Concern Statement: Alternative 5 does not reflect the natural historic hydrograph of the Missouri River and any habitat created during fall releases would suffer serious losses due to wind and ice erosion over the winter. Such a large release at an unnatural time of the year could have impacts on native fish species.

Response: Emergent sandbar habitat created in spring would be exposed to the same wind and ice erosion as ESH created in the fall. Typically, ESH lasts from 5 to 10 years depending on river conditions.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645521

Concern Statement: The importance of timely water level manipulation for fish and wildlife resource management cannot be over-emphasized, nor can the destructive capacity of untimely manipulation be underestimated. Correlation analyses of the total catch rate of young-of-the-year (YOY) fish (all Sakakawea) and environmental variables show significant positive correlations between catch rates of YOY fish and spring rise, total rise, and the change in maximum water levels from the previous year (Table 3). These data indicate the importance of water level management to the overall reproduction of fish in Lake Sakakawea.

Response: Information discussing the dependence of reservoir fishery health on water levels and the importance of water level management to the overall production of fish in Lake Sakakawea was added to Sections 3.5.1 Affected Environment and 3.5.2 Environmental Consequences of the Fish and Wildlife Section of the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645385

Concern Statement: Any adjustments to Fort Peck should also include considerations for life cycle needs and turbidity in the health of native fish species.

Response: Concur; however, modification to the operation of Fort Peck Dam is not a management action included within the alternatives. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645339

Concern Statement: It is not clear if the fish and wildlife modeling can detect basic differences of land cover and land use by spatial location or if the models have been validated through ground truthing. It is impossible to assess the ecosystem values from an assessment of inundation based on flow and depth.

Response: The fish and wildlife modeling does not detect absolute differences of land cover and land use by spatial location. The analysis is useful for comparing trends between alternatives (e.g., trending toward wetter or drier habitats), but should not be used as an indicator of absolute changes or shifts in habitat classes. The impacts analysis assumes

that changes in specific day inundation regimes are representative of the trends that would occur under each alternative. The fish and wildlife modeling was intended to estimate changes in vegetation classes under each alternative rather than measure ecosystem values. More detailed information is included in the “Fish and Wildlife Environmental Consequences Analysis Technical Report.”

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644883

Concern Statement: The impacts from vegetation management actions to native plant communities, such as cottonwood, and non-listed species in the Missouri National Recreation River should be addressed.

Response: As described in Sections 6.1.1 of the MRRMP-EIS, USACE understands it requirements under Section 7 of the Wild and Scenic Rivers Act and is committed to complying with the law related to construction actions contemplated within the Missouri River National Recreation River.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643953

Concern Statement: If lower elevations in reservoirs result in fish dying it would take years to recover and will not dissipate within a year as described in the Draft MRRMP-EIS. The importance of timely water level manipulation for fish and wildlife resource management cannot be overemphasized, nor can the destructive capacity of untimely manipulation be underestimated.

Response: USACE understands that maintaining reservoir elevations and increasing reservoirs elevations in the spring is important to maintain the fishery at the upper three reservoirs. USACE staff have spoken with North Dakota Game and Fish supervisory level staff several times to discuss these issues and have read the Fisheries Management Plans for the Missouri River System. A fishing success proxy metric was developed, which is described in Section 2.4 of the “Recreation Environmental Consequences Analysis Technical Report,” based on input from fisheries biologists, including North Dakota Game and Fish staff. Additional description of the potential impacts to the fishery if criteria noted in the fisheries management plans are not met was added to the Final EIS under alternatives with proposed releases in Section 3.5 Fish and Wildlife Habitat.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642709, 642707

Concern Statement: The analysis of the alternatives does not contain commercial fishing data and the economic analysis is deficient.

Response: USACE does not believe the economic analysis of commercial fishing contained within the EIS is deficient due to the lack of information. CEQ’s NEPA regulations state that data and analyses included in an EIS should be commensurate with the importance of the impact (40 CFR 1502.15). A qualitative discussion of the potential commercial fishing impacts resulting from the alternatives was included in the Draft EIS. USACE has determined that the alternatives would have a negligible impact on commercial fisheries and a detailed economic analysis of commercial fishing is not warranted. Commercial fishing is covered in Sections 3.5.2.8 and 3.5.2.11 of the Final EIS.

Representative Quotes (Correspondence ID): 76
Comments (Comment ID): 633560

Concern Statement: The rises under Alternatives 4 and 5 increase backwaters, roosting and feeding areas for migrating birds, eagles, and waterfowl of all kinds, increase hunting opportunities, and improve revenues for towns and communities.

Response: These benefits are described in the Final EIS in Section 3.5.2.7 Alternative 4 – Spring ESH Creating Release and 3.5.2.8 Alternative 5 - Fall ESH Creating Release Environmental Consequences for fish and wildlife and in Section 3.16.2 Environmental Consequences for recreation.

Representative Quotes (Correspondence ID): 50
Comments (Comment ID): 628620

AE500 ***Affected Environment: Other Special Status Species***

Concern Statement: The EIS needs to consider other listed species, including state threatened and endangered species, and species that have the potential to decline further and make the most out of rehabilitation projects and habitat creation, including the Bank Stabilization and Navigation Project, to also benefit numerous species.

Response: A total of 126 species that have been given special status at either the federal or state level and may occur within the geographic scope of the program were evaluated in the MRRMP -EIS. These species include 18 plants, 31 birds, 12 mammals, 17 reptiles and amphibians, 23 fish, 21 mussels and gastropods, and 4 insects. All species were initially evaluated to determine if they should be evaluated in detail; those species not selected for detailed analysis are listed in Appendix E. In this appendix, the potential impacts to each special status are recognized based upon predetermined criteria. After consultation with USFWS, three species from the list of 126 were selected for detailed analysis based on the potential for impacts that could occur to individuals, populations, or their habitats in areas where management actions might occur. These three species include: bald eagle, northern long-eared bat, and Indiana bat. The impacts to these three species were fully evaluated in the EIS, including the adverse and beneficial effects from implementation of management actions for each alternative considered.

Representative Quotes (Correspondence ID): 147, 177, 179, 224
Comments (Comment ID): 640691, 644406, 644621, 645224

EC500 ***Environmental Consequences: Other Special Status Species***

Concern Statement: The Draft MRRMP-EIS should consider other listed species, including state listed species and candidate species, and those that are at risk of becoming listed species.

Response: A total of 125 species that have been given special status at either the federal or state level and may occur within the geographic scope of the program were evaluated in the MRRMP -EIS. These species include 18 plants, 31 birds, 11 mammals, 18 reptiles and amphibians, 23 fish, 20 mussels, and 4 insects. All species were initially evaluated to determine if they should be evaluated in detail; those species not selected for detailed analysis are listed in Appendix E. In this appendix, the potential impacts to each special status are recognized based upon predetermined criteria. After consultation with USFWS, five species from the list of 125 were selected for detailed analysis based on the potential for impacts that could occur to individuals, populations, or their habitats in areas where management actions might occur. These five species include: whooping

crane, bald eagle, northern long-eared bat, Indiana bat, and western prairie fringed orchid.

Representative Quotes (Correspondence ID): 14, 31
Comments (Comment ID): 626266, 626962

AE600 ***Affected Environment: Water Quality***

Concern Statement: Statements in the Draft MRRMP-EIS concerning other pollutants in the water quality section are concerning. Water services in Kansas City routinely treats for atrazine removal to meet potable water contaminate levels and treats for Taste and Odor compounds.

Response: USACE concurs; the statements in Section 3.7.1.3 are simply restating facts originally highlighted in other references to describe components that are present in Missouri River water. The fact that water services in Kansas City routinely treats for atrazine, for example, shows that this compound is present in the water. The statements in Section 3.7.1.3 state that most of the compounds, especially atrazine, are not problematic and that levels do not exceed water quality criteria.

Representative Quotes (Correspondence ID): 204
Comments (Comment ID): 644455

Concern Statement: A tabular listing of Total Maximum Daily Load (TMDL), by state, would provide the public with an awareness of environmental conditions on the Missouri River that may be contributing or competing sources of jeopardy for the endangered species.

Response: USACE concurs; the TMDL reports would provide awareness of environmental conditions on the Missouri River; however, a list of all TMDLs associated with the river was outside the substantive scope of the EIS. The main goal of the water quality affected environment section (Section 3.7.1) is to concentrate the discussion on the parameters of most importance to the river and, specifically, those which would be affected by the alternatives. Throughout Section 3.7.1, the paragraphs titled “Other Pollutants” provide additional description of water quality parameters in each reach.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644920

Concern Statement: The list of water quality parameters discussed should include pH.

Response: The purpose of Section 3.7, Water Quality is to focus the analysis on the main parameters that would describe the existing conditions in the river and, specifically, those which would be affected by the alternatives. The water quality data available for analysis indicated most recorded pH values were within state limits with the exception of a few outliers.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645405

EC600 ***Environmental Consequences: Water Quality***

Concern Statement: Alternative 3 has the potential to violate water quality standards during mechanical ESH construction from release of trace elements, during Level-2 in-river

testing from loss of cold water habitat in Lake Sakakawea, and during implementation of Level 3 and 4 actions of the SAMP.

Response: Section 3.7.2 Water Quality Environmental Consequences acknowledges that mechanical construction could temporarily impact water quality by increasing nutrients, sediment and turbidity, and other pollutants and potentially decreasing dissolved oxygen concentrations. However, the water quality impacts would be temporary and localized to the area of construction and a short distance downstream. Measures would be taken to minimize and prevent these impacts and the amount of mechanical ESH construction would be limited to only the amount that is necessary to meet the bird habitat targets after accounting for available ESH. Adherence to best management practices during construction would minimize or eliminate the risk of unintended water quality effects from discharged sediment and turbidity, nutrients, and other pollutants. Each site-specific construction project would comply with Sections 401, 402, and 404 of the Clean Water Act (CWA) and applicable water quality standards through site-specific analysis and coordination. As discussed in Section 3.7.2 and Section 6.3.1, USACE would regulate any discharges of dredge or fill material into waters of the United States, including the Missouri River, pursuant to Section 404 of the CWA. The selection of disposal sites for dredged or fill material would be done in accordance with the Section 404(b)(1) guidelines. Section 401 water quality certifications would be obtained for site-specific management actions, as required, prior to construction. The certification requires a finding by the affected states that the activities permitted would comply with all water quality standards individually or cumulatively over the term of the permit. USACE will conduct testing of material for contaminants prior to using those materials for in-river ESH construction. Furthermore, site-specific NEPA analysis would take place to identify potential issues, including to water quality.

Level 2, 3, and 4 actions contained within the SAMP such as low flows from Fort Peck or drawdowns of Lake Sakakawea are outside the scope of the preferred alternative and would need an additional or supplemental NEPA process before implementing.

Representative Quotes (Correspondence ID): 3, 96
Comments (Comment ID): 645650, 640264

Concern Statement: The Draft MRRMP-EIS and the SAMP lack the details that identify the limits of hydraulic modification that could occur and the lack of a clear process to consult the state being affected by the decision-making process in implementing the SAMP. The MRRMP-EIS implies that under the SAMP the unidentified decision-makers will have science-based options to implement regardless of water quality consequences in the upper basin. North Dakota cannot support Alternative 3 without inclusion of specific boundaries in the SAMP that would protect existing beneficial uses and support water quality standards.

Response: Any actions outside of the selected alternative in the Final EIS and Record of Decision would need additional state coordination and an additional or supplemental NEPA process before being implemented. The process for state coordination is presented in the Governance section of the Final SAMP.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645651

Concern Statement: Anti-resistant microbes in soils on the riverbanks have not been considered. This in combination with water use is a concern.

Response: The purpose of the larger Section 3.7 Water Quality and Section 3.7.2 Water Quality Environmental Consequences is to analyze potential impacts from implementation of the alternatives on the primary listed parameters. Although antibiotic resistant bacteria could be present in riverbank soils along the Missouri River, USACE determined the most appropriate method to assess water quality impacts was to use the selected parameters.

Representative Quotes (Correspondence ID): 70
Comments (Comment ID): 631226

Concern Statement: Nutrient loading should be given more consideration in the MRRMP-EIS. Blue-green algae is harmful to aquatic life. Additionally, any flow regime with the potential to create conditions optimal for blue-green algal growth is a concern including low flows in summer that would have a negative impact on water quality. Limited observed temperature data was available causing inaccuracies in modeled temperature changes for the alternatives and a loss of confidence in the Water Quality Technical Report. Low flows in summer would impact water quality with high delivered water temperatures and potential for algal blooms with warmer river temperatures to increase incubation or growth of any organic organism. These would require higher concentrations of additional chemicals.

Response: Section 3.7 Water Quality provides much consideration to nutrient loading including descriptions of existing conditions in Section 3.7.1 and discussion of impacts under each alternative in Section 3.7.2. In Section 3.7.2, increased nutrient loading is discussed in relation to various actions under each alternative; however, the increase in nutrients from these actions are negligible or small compared to the river as a whole and the overall nutrient loading to the river from all sources. Both point and nonpoint source nutrient loading from other land uses along the Missouri River such as agricultural, urban, and industrial areas and from tributaries are not covered under this effort, and these sources discharge the majority of the nutrient load to the river as compared to the actions proposed under each alternative. It is understood that blue-green algae has proliferated in other waterbodies under low flow conditions; however, through experience USACE researchers have indicated this is not likely to occur on the lower Missouri River. The lower Missouri River is channelized and narrowed, and reducing flows will not impact water temperatures as much as they might in a braided river habitat. The river water levels would have to drop to a very low level for blue-green algae to become problematic. Only Alternative 2 proposes a low flow feature but because low flow is not expected to cause a blue-green algae issue, it was not discussed in the impact analysis in Section 3.7.2.5.

Representative Quotes (Correspondence ID): 40, 122, 156, 205, 216, 219, 228, 233
Comments (Comment ID): 645778, 645760, 644709, 646280, 645755, 642119, 643417, 645484, 638507, 628465

Concern Statement: State and federal agencies should be held to the same standards as agricultural and urban constituents with respect to reducing nutrient transport by way of our rivers and streams, and the practice of placing nutrient-laden sediment into the river channel will only add to the challenge of improving water quality in Iowa and downstream. Any mechanical habitat construction should be undertaken in a manner that avoids, to the greatest extent possible, deposition of sediment back into the Missouri River.

Response: As discussed in Section 6.3.1 and under alternatives in Section 3.7.2, USACE will regulate any discharges of dredge or fill material into waters of the United States, including the Missouri River, pursuant to Section 404 of the Clean Water Act (CWA). The selection of disposal sites for dredged or fill material will be done in accordance with the Section 404(b)(1) guidelines. Section 401 of the CWA allows states to grant or deny water quality certification for any activity that results in a discharge into waters of the United States and requires a federal permit or license. Certification requires a finding by the affected states that the activities permitted would comply with all water quality standards individually or cumulatively over the term of the permit. Section 401 water quality certifications would be obtained for site-specific management actions, as required, prior to construction. Each process will include compliance with Sections 401, 402, and 404 of the Clean Water Act and applicable water quality standards through site-specific analysis and coordination. Furthermore, site-specific NEPA analysis would take place to identify potential issues, including to water quality.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644409

Concern Statement: Water from Kansas reservoirs should not be used to support the alternatives presented in the MRRMP-EIS. Water quality should be should be considered one of the highest priorities with substantial impacts to human considerations.

Response: The preferred alternative does not include re-occurring flow modifications for endangered species. Alternative 3 includes the possibility of a one-time flow test from Gavins Point Dam for pallid sturgeon after 9 years if determined to be necessary. USACE will attempt to avoid impacts to Kansas reservoirs if a flow-test is necessary.

Representative Quotes (Correspondence ID): 219
Comments (Comment ID): 643493

Concern Statement: Releases from ESH construction can be managed by pre-construction sampling to identify sites with acceptable levels of pollutants and the development of a series of sediment management practices that would reduce any water quality violation to an acceptable volume and distance as a percentage of the river system.

Response: USACE concurs; construction will be guided by compliance with National Pollutant Discharge Elimination System (NPDES) permits, Clean Water Act (CWA) Section 401 water quality certification, CWA Section 404 authorization, and by using construction best management practices to minimize and prevent pollutant loading as discussed in Section 6.3.1 and throughout Section 3.7.2. At each site, elutriate testing will be performed before construction to test materials for contaminants. Furthermore, site-specific NEPA analysis would take place to identify potential issues, including water quality.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640273

Concern Statement: Mechanical habitat construction has the potential to liberate pollutants into the Missouri River that exceed the state's acute and chronic water quality standards criteria. The MRRMP-EIS does not identify any of the potential pollutants, or provide a solution to address them.

Response: Although the potential is there, the release of pollutants from mechanical habitat construction would likely be very small. As noted in Section 3.7.1, previous elutriate testing at specific sites has revealed that metal/metalloid concentrations from excavated or dredged material is less than existing water quality criteria and not considered problematic. Given the programmatic nature of this document, specific construction sites are not identified at this time. Therefore, the potential pollutants present at each site, if any, are unknown. Site-specific analysis would need to be conducted at each site prior to construction as discussed in Section 6.3.1. Solutions to minimize and prevent pollutant loading during mechanical habitat construction would also be specific to each site. In general, adverse impacts to water quality would be minimized or eliminated during mechanical habitat construction sites through by compliance with National Pollutant Discharge Elimination System (NPDES) permits, CWA Section 401 water quality certification, CWA Section 404 authorization, and by using construction best management practices. Site-specific projects would perform elutriate testing on materials to test for contaminants before beginning construction. Mitigation measures would need to be designed and prepared following site-specific analysis as discussed in Section 6.3.1.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640272, 640268

Concern Statement: USACE fails to give adequate consideration of ecosystem services and that failure impacts their evaluation of alternatives. USACE fails to give adequate clean water services to acquired acres or benefits to groundwater recharge.

Response: The discussion concerning water quality impacts from early life stage habitat for pallid sturgeon and habitat development actions was revised in Section 3.7.2 of the Final MRRMP-EIS. The revisions describe the beneficial long-term impacts resulting from the removal of acreage from land uses (e.g., agricultural, industrial) that typically have adverse impacts on water quality including the associated reduction in pollutant loading to the river. Beneficial impacts resulting from the water filtration services provided by the acquired land is already discussed in the paragraphs analyzing the impacts of habitat development. Section 3.23, Ecosystem Services, discusses the impacts of creating natural habitats and acquiring and restoring land on the provision of clean water and groundwater recharge services.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640272

AE900 *Affected Environment: Cultural Resources*

Concern Statement: The Great Plains Water Alliance Tribes are not signatories to the Missouri River Programmatic Agreement, and thus full compliance with Section 106 and the implementing regulations at 36 CFR Part 800 is mandatory. USACE Section 106 procedures are widely considered to violate 36 CFR Part 800. The Draft MRRMP-EIS does not consider that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian Tribes when complying with this part. 36 CFR §800.2(c)(2)(ii)(D). The surveys used for the computer models are outdated, and were not conducted in compliance with the consultation requirements for traditional cultural properties 36 CFR §800.2(c)(2)(ii). The inventory of known cultural resource sites used in the analysis is a representative sample and many unknown cultural resources sites exist on the landscape. That does not constitute compliance with

the identification requirements of 36 CFR 36 CFR §§800.2-800.5. Consequently, the Draft MRRMP-EIS violates the National Historic Preservation Act and its implementing regulations.

Response: USACE is dedicated to open communication and consultation in regards to fostering conditions that contribute to the preservation of historic properties. Consultation to assess the context and intensity of impacts to cultural resources including historic structures, archaeology sites, or other historic properties of religious or cultural significance to Native American Tribes has been conducted throughout the process and is ongoing. The existing cultural resource survey data were utilized to evaluate MRRMP alternatives at a programmatic level. *The Programmatic Agreement For The Operation And Management of the Missouri River Main Stem System For Compliance With The National Historic Preservation Act, As Amended, as well as The Programmatic Agreement Among The U.S. Army Corps Of Engineers, Kansas City District, U.S. Fish And Wildlife Service, Iowa Tribe Of Kansas And Nebraska, Osage Nation, Kansas State Historic Preservation Office, The Missouri State Historic Preservation Office, And The Advisory Council On Historic Preservation Regarding Implementation Of The Missouri River Recovery Management Plan In The Lower Missouri River From Rulo, Nebraska To The Confluence With The Mississippi River*, have been drafted to ensure that ongoing actions, and future projects tiered from this EIS, particularly those involving mechanical construction, are compliant with the National Historic Preservation Act, as amended and its implementing guidance 36 CFR 800.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645439

EC900 *Environmental Consequences: Cultural Resources*

Concern Statement: Alternatives that involve increasing flows have the potential to irrevocably harm significant cultural resources (i.e., archaeological sites) at the point of origin or in downstream settings. Increased flows that result in corresponding higher water surface elevations saturate cutbanks and promote conditions for long-term or permanent soil instability that often warrant extensive solutions to correct them. Fluctuating pool elevations dropping to low levels may offer limited or rare windows of opportunity for investigations to cultural resources. If other suitable habitats occur in off-channel settings then the potential conflict between competing management goals (biological vs. cultural) almost certainly would be drastically lessened or negated. Vegetation maintenance and mechanical construction ESH has the least potential to impact cultural resources in the overall scenarios as proposed.

Response: Noted. USACE is committed to open communication and consultation in regards to fostering conditions that have the least potential to impact cultural resources.

The preferred alternative does not include reoccurring flow actions with the potential to impact cultural resources. Site-specific coordination will occur for each construction project. *The Programmatic Agreement For The Operation And Management of the Missouri River Main Stem System For Compliance With The National Historic Preservation Act, As Amended, as well as The Programmatic Agreement Among The U.S. Army Corps Of Engineers, Kansas City District, U.S. Fish And Wildlife Service, Iowa Tribe Of Kansas And Nebraska, Osage Nation, Kansas State Historic Preservation Office, The Missouri State Historic Preservation Office, And The Advisory Council On Historic Preservation Regarding Implementation Of The Missouri River Recovery*

Management Plan In The Lower Missouri River From Rulo, Nebraska To The Confluence With The Mississippi River, have been drafted to ensure that ongoing actions for the preservation of critically endangered cultural resources on federally managed properties and future projects tiered from this EIS are compliant with the National Historic Preservation Act, as amended and its implementing guidance 36 CFR 800.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645407

Concern Statement: Based on information in the MRRMP-EIS management actions involving flows will negatively impact cultural resource protection. Early involvement of the State Historic Preservation Office and Historic Preservation Offices of the various Native American Tribes is encouraged during site selection for created sandbar locations.

Response: Noted. USACE is committed to open communication and consultation in regards to fostering conditions that have the least potential to impact cultural resources. The preferred alternative does not include reoccurring flow actions with the potential to impact cultural resources. Site-specific coordination will occur for each construction project. USACE recognizes the need for early involvement of federal, state, local, and Tribal partners to ensure preservation of cultural resources within the Missouri River system.

The Programmatic Agreement For The Operation And Management of the Missouri River Main Stem System For Compliance With The National Historic Preservation Act, As Amended, as well as The Programmatic Agreement Among The U.S. Army Corps Of Engineers, Kansas City District, U.S. Fish And Wildlife Service, Iowa Tribe Of Kansas And Nebraska, Osage Nation, Kansas State Historic Preservation Office, The Missouri State Historic Preservation Office, And The Advisory Council On Historic Preservation Regarding Implementation Of The Missouri River Recovery Management Plan In The Lower Missouri River From Rulo, Nebraska To The Confluence With The Mississippi River, have been drafted to ensure that future projects within the Missouri River system will be coordinated with federal, state, local, and Tribal partners, and comply with the National Historic Preservation Act, as amended and implementing guidance 36 CFR 800.

Representative Quotes (Correspondence ID): 206, 232
Comments (Comment ID): 645984, 645436

Concern Statement: The Draft MRRMP-EIS concludes that the Tribes are not impacted by current operations and the alternatives. However, USACE acknowledges that there are many unknown cultural resource sites existing on the landscape and the Final EIS Missouri River Master Water Control Manual Review and Update admits that its actions cause erosion and deterioration of Native American human remains and cultural objects.

Response: Potential impacts to Tribes from the alternatives and from past, present, and reasonably foreseeable actions are documented in Chapter 3 of the EIS. The preferred alternative does not include reoccurring flow actions with the potential to impact cultural resources. Site-specific coordination will occur for each construction project. USACE will continue to consult with SHPOs, Tribes and other interested parties on any proposed undertaking for the prevention, reduction, or mitigation of impacts to recorded and un-recorded cultural resources.

Representative Quotes (Correspondence ID): 232

Comments (Comment ID): 645472

Concern Statement: The Draft MRRMP-EIS lacks compliance with the National Historic Preservation Act and its implementing regulations and the findings are based on false or incomplete assumptions used in the determination of impacts to cultural resources.

Response: The existing cultural resource survey data were utilized to evaluate MRRMP alternatives at a programmatic level. The input and assumptions used in these evaluations were developed in consultation with states, Tribes, and cultural resources experts. The Programmatic Agreement For The Operation And Management of the Missouri River Main Stem System For Compliance With The National Historic Preservation Act, As Amended, as well as The Programmatic Agreement Among The U.S. Army Corps Of Engineers, Kansas City District, U.S. Fish And Wildlife Service, Iowa Tribe Of Kansas And Nebraska, Osage Nation, Kansas State Historic Preservation Office, The Missouri State Historic Preservation Office, And The Advisory Council On Historic Preservation Regarding Implementation Of The Missouri River Recovery Management Plan In The Lower Missouri River From Rulo, Nebraska To The Confluence With The Mississippi River, have been drafted to ensure that future projects within the Missouri river system will be coordinated with federal, state, local, and Tribal partners, and comply with the National Historic Preservation Act, as amended and implementing guidance 36 CFR 800.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645444

Concern Statement: The fluctuations in reservoir elevations contemplated in the Draft MRRMP-EIS will likely be more dramatic than the modeling suggests, resulting in greater impact to cultural resources especially impacting cultural resources at Oahe Reservoir. Additionally, the long-term forecast of diminished inflows and long-term drought in the central Great Plains caused by climate change will cause greater adverse impacts to cultural sites than forecast in the Draft MRRMP-EIS.

Response: A discussion of the influence of climate change to alternatives' operations is included in Section 3.2 River Infrastructure under Climate Change as well as Section 3.9 Cultural Resources under Climate Change, Section 3.9.2.10. Consultation and coordination with SHPOs, Tribes, and other interested parties will be conducted to manage potential impacts to this resource. Chapter 5 of the SAMP describes the process that will be followed regarding ongoing analysis of impacts to human considerations.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645443

Concern Statement: The Draft MRRMP-EIS mistakenly assumes that the environmental impacts of all alternatives will be equal in light of climate change. Each alternative will cause different levels of fluctuation.

Response: As noted in Section 3.9.2.10 Climate Change under the Cultural Resources section, potential impacts to cultural resources from climate change would follow from increases to variability of reservoir water surface elevations, and greater flow related damages in riverine settings. However, it is assumed that the variability and fluctuations from climate change would be similar under each alternative.

Representative Quotes (Correspondence ID): 232

Comments (Comment ID): 645442

Concern Statement: The use of the entire 82-year period of record to determine impacts on cultural resources ignores the effects of reservoir construction and will result in underestimating the actual impacts of water level fluctuations at the reservoirs.

Response: The alternatives considered under the Management Plan EIS including the “No Action” condition evaluates and compares impacts given the Mainstem reservoir system. The cumulative impacts section under Cultural Resources acknowledges that past, present, and reasonably foreseeable future actions have adversely affected cultural resources within the floodplain and Mainstem reservoir system.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645441

Concern Statement: The calculation of impacts to cultural resources from the alternatives in the Draft MRRMP-EIS is incorrect and the number of sites included in the model are based on outdated and incomplete cultural resource surveys.

Response: The analysis of impacts to cultural resource sites is based on existing available data in order to compare the relative impact to cultural resources across alternatives. It is understood that there are many unrecorded cultural resource sites existing on the landscape. The inventory of known cultural resource sites used in the analysis is intended to serve as a representative sample, indicating which Management Plan alternatives have greater or lesser impacts to cultural resources. A complete discussion of how the sites were selected and how data was obtained can be found in the “Cultural Resources Environmental Consequences Analysis Technical Report” available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645435

Concern Statement: Consider listing the order of the lakes in Table 3-27 from upstream to downstream.

Response: Noted. For clarity, the Mainstem lakes have been listed in order from upstream to downstream in the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645408

EC1000 *Environmental Consequences: Land Use and Ownership*

Concern Statement: It is recommended that the Land Use and Ownership section refer the reader to the Interior Drainage section for further details.

Response: The beginning of the land ownership section of the Final EIS (Section 3.10) refers the reader to the interior drainage and flood risk management section (Section 3.12 in the Final EIS), and irrigation section (Section 3.14 in the Final EIS) for further details on how the alternatives affect these agricultural activities.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645876

Concern Statement: The Land Use and Ownership section indicates that wildlife habitat is limited to “protected” acres and fails to mention that there are many acres of private lands on which conservation practices are implemented and habitat is provided; the Final EIS should remove language that refers to private lands as “unprotected” and indicate that private landowners are stewards of their lands.

Response: The terminology in the Land Ownership section in the Final EIS was (Section 3.10.1) changed to clarify that wildlife habitat is not only associated with federally owned acres, but also includes some private lands that provide wildlife habitat and private landowners are often stewards of their lands. The Final EIS Land Ownership Affected Environment section was also updated to note that the “protected” lands were defined with data from the “Protected Areas Database.” The Affected Environment section states, “Data from the Protected Areas Database of the United States (PAD-US), which is published by the USGS Gap Analysis Program, includes an inventory of federal and non-federal conservation and protected lands dedicated to the preservation of biological diversity and to other natural, recreational, and cultural uses.” According to Table 3-40 in Section 3.10.1, Land Use Affected Environment, these “protected” areas include other entities such as “non-governmental organizations or private land owners with conservation easements or other agreements that provide for protected land status.”

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645847, 645496

Concern Statement: The Land Use and Ownership section need to assess more completely impacts to lands from interior drainage.

Response: The Final EIS includes a separate section on the impacts associated with flood risk management and interior drainage. Impacts associated with interior drainage to landowners is accounted for in the interior drainage section of the Final EIS (Section 3.12). The title of the land use and ownership section was changed to “Land Ownership” in the Final EIS. The Land Ownership section refers the reader to the flood risk management and interior drainage evaluations (Section 3.12), which provide details on flooding and high-water impacts on agricultural lands and crops. The Land Ownership evaluation is focused on the estimation of regional economic impacts from land acquisition if the land was previously in agricultural production, including reductions in farm jobs and income (and multiplier impacts) as well as reductions in property tax receipts to local governments.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645634

Concern Statement: Land acquisition for habitat creation will increase flood retention and improve water quality, which should be addressed in the Final EIS.

Response: The ecosystem services benefits associated with the acquisition of lands and the development of IRC and shallow water habitat, such as improved water quality and flood water retention, are evaluated in the ecosystem services section of the Final EIS (Section 3.23).

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645578

Concern Statement: There are some inconsistencies in the targeted acres for acquisition presented in the Draft EIS (33,463 or 45,717). Please correct this error.

Response: The error was corrected in the Final EIS. The RED evaluation for Land Ownership focuses on the reduction in regional economic benefits (e.g., jobs and income) associated with the Federal acquisition of croplands. Because only a portion of the lands that would be acquired by the Federal government would be in croplands, only a portion of the acreage is used in the RED jobs and income evaluation (all federally acquired lands were used in the property tax evaluation). Section 3.10.2.1 presents the acreages used in the RED evaluation.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645548

Concern Statement: The Land Use and Ownership evaluation should clearly state that the RED impacts are overstated because of the incremental nature of the land acquisition.

Response: The Land Ownership section in the Final EIS (Section 3.12.2) states that the land acquisition and associated property tax impacts would be gradual and occur over the implementation period; this point was noted in the summary and under all of the alternatives (Section 3.12.2). The total impact at the end of the implementation period was the focus of the land ownership analysis.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645508

Concern Statement: Land use impacts occur with the rise and fall of river stages; more frequent and higher river stages cause greater economic impacts.

Response: The economic impact of changes in flood risk and interior drainage (e.g., agricultural and structural damages) due to changes in river stages and flows are addressed in the Final EIS, Section 3.12, Flood Risk Management and Interior Drainage.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645505

Concern Statement: The Land Use and Ownership evaluation is deficient for a number of reasons and understates the impacts to land use. The evaluation presents annual impacts of land acquisition, which creates a perception of smaller impacts than what is actually incurred (each year the impacts are incurred). Property tax losses are not the only impact to economic activity; farming activity contributes to federal individual and corporate taxes; and local sales tax, special use taxes, and personal property taxes. In addition, the Land Use and Ownership section should not be limited to land acquisition because any increase in river stages can affect land use (interior drainage) and many other issues (planting and harvesting, traffic, levees, infrastructure, navigation, dredging, power generation, water supply, water quality). There is a concern that USACE does not understand the subject matter or does not have the expertise to conduct the analysis.

The portion of the table devoted to Management Actions Common to All Alternatives (Table 3-42) says there are no RED impacts, no OSE impacts and no other impacts, and there is concern that increased flows under some of the alternatives would increase the risk of and the severity of flooding and impact interior drainage, which would affect land use. These impacts should be included in the table.

In addition, PILT payments are designed to offset the loss in tax revenues to local governments but these payments can vary from year to year and are capped at a maximum per acre payment.

Response: The Land Ownership evaluation estimates the regional economic impacts of land acquisition if the land was previously in agriculture, including reductions in farm jobs and income (and multiplier impacts) as well as reductions in property tax receipts to local governments. The analysis focuses on the reduction in property tax receipts at the end of the implementation period – that is, all lands would have been acquired. USACE agrees that the reduction in property taxes and jobs and income is a long-term impact that would occur each year, and this aspect has been added to the description in the Land Ownership Environmental Consequences section of the Final EIS (Section 3.10).

Additionally, estimates of PILT payments are included in the Land Ownership Environmental Consequences section of the Final EIS (Section 3.10.2). USACE agrees that federal acquisition of agricultural lands for habitat development would affect other fiscal receipts aside from property taxes. Because the land ownership would change from private to federal land, property tax receipts was a focus for the evaluation because property tax receipts to local governments would be directly affected. Other tax receipts such as corporate taxes, sales and use taxes, special use taxes, and payroll taxes could be affected as well, and the Land Ownership Environmental Consequences section (Section 3.10.2 of the Final EIS) was updated to describe these impacts. Changes in these tax receipts are anticipated to be small in relation to the estimated changes in property tax receipts, but could contribute additional adverse impacts to the reduction in local government receipts, especially in smaller rural counties. Although associated changes in other local, state, and federal tax receipts may be adverse, they would likely be small because the government payments to acquire the lands would be subject to taxes and support spending in the economy, offsetting some of the reductions in tax receipts and local government revenues.

The economic impact of changes in flood risk management and interior drainage are addressed in Section 3.12, Flood Risk Management and Interior Drainage. The flood risk management and interior drainage NED evaluation includes the damages to infrastructure and other physical property in the floodplain; flood emergency and other disaster relief costs; agricultural damages, including planting and harvesting costs. Please refer to Section 3.12.2.1 in the Final EIS for additional details on the flood risk management and interior drainage environmental consequences. Land use impacts in terms of agricultural impacts related to interior drainage, flood risk management, and irrigation are discussed in those respective sections to provide clarity on the impacts related to each resource area and to avoid double counting and/or possibly missing the estimation of benefits and losses. The Irrigation, Navigation, Commercial Sand and Gravel Dredging, Thermal Power, Hydropower, Water Supply, and Water Quality sections address impacts to those respective resources.

“Management actions common to all alternatives” do not include the flow releases because not all alternatives include flow releases. These “common to all” management actions include pallid sturgeon propagation and augmentation, vegetation management, and predator management.

Representative Quotes (Correspondence ID): 219, 228

Comments (Comment ID): 645501, 643498, 643500

Concern Statement: The Land Use and Ownership evaluation is deficient because the modeling is truncated and not scientific. The analysis omits important data and does not explain the cause and effect, starting from a baseline point. The synergistic effects of interrelated economic impacts are missing from the model (i.e., transportation and traffic,

water supply, navigation, etc.), causing the overall economic impacts of changes to land use and ownership for all alternatives to be understated.

Response: The Land Ownership section of the Final EIS (Section 3.10) evaluates the impact of the Federal acquisition of farming land for habitat, specifically the reductions in farming and multiplier jobs and income and property tax receipts associated with the change in ownership from private farmland to federal land for habitat. With regard to the comment on the baseline, the No Action Alternative includes Missouri River Recovery Program management actions because USACE currently manages the river to comply with the Biological Opinion. The No Action Alternative is used as a reference for comparison with the action alternatives. Specifically, the No Action alternative assumes the 20 acres per mile for early life stage habitat under the 2003 BiOp. USACE believes constructing habitat to meet existing acreage goals is a reasonable assumption for the No Action alternative. It is designed to estimate impacts in the future rather than impacts that have already been realized.

With regard to the comment on the assumptions for the human considerations evaluations, please refer to Section 3.12.2 in the Final EIS for a discussion of the analysis and assumptions associated with flood risk management and interior drainage; Section 3.15.2 for a discussion of the analysis and impacts to navigation; Section 3.18.2 for a discussion of the analysis and impacts to water supply; and Section 3.17.2 for a discussion of the analysis and impacts to thermal power. The assumptions for each of these evaluations are described in the associated environmental consequences methodology sections and further detailed in the associated technical reports. For example, the navigation NED evaluation estimates the loss in transportation rate savings, if navigation service levels change and/or if commodities must move off the river to overland modes of transportation. The Navigation Other Social Effects evaluation includes an estimate of the impacts to air emissions from a change in mode to truck and rail traffic under the alternatives as well as a description of the public health and safety associated with these transportation mode changes.

Regarding the comment about the synergistic impacts of the resources, other sections of the Final EIS address the impacts to flood risk, interior drainage, ecosystem services, water quality, water supply, hydropower, navigation, thermal power, and others as a result of the alternatives. The flood risk management and interior drainage NED evaluation includes the damages to agricultural damages, including planting and harvesting costs, infrastructure, and other physical property in the floodplain; flood emergency; and other disaster relief costs. Tables 2-30 and 2-31 provide consequence tables that show all impacts (beneficial and adverse) and an aggregation of the impacts, where possible, associated with the alternatives.

With regard to the hydrology and hydraulics and economic modeling, these models have been reviewed by: agency technical review; district quality control review; and independent external peer reviews. USACE believes that these approaches and model results provide sufficient information and analysis to compare across the alternatives.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645487

Concern Statement: USACE needs to consider local impacts and payments in lieu of taxes to offset the reductions in the tax base and fully analyze the impacts of land use and ownership implications in the Final EIS.

Response: The Land Ownership Environmental Consequences section of the Final EIS (Section 3.10) was updated to include estimates of PILT payments that will partially offset the reduction in property tax receipts to local governments. USACE agrees that federal acquisition of agricultural lands for habitat development would affect other fiscal receipts aside from property taxes. Because the land ownership would change from private to federal land, property tax receipts was a focus for the evaluation because property tax receipts to local governments would be directly affected. Other tax receipts such as corporate taxes, sales and use taxes, special use taxes, and payroll taxes could be affected as well, and the Land Ownership Environmental Consequences section (Section 3.10.2 of the Final EIS) was updated to qualitatively describe these impacts. Changes in these tax receipts are anticipated to be small in relation to the estimated changes in property tax receipts, but could contribute additional adverse impacts to the reduction in local government receipts, especially in smaller rural counties. Although associated changes in other local, state, and federal tax receipts may be adverse, they would likely be small because the government payments to acquire the lands would be subject to taxes and support spending in the economy, offsetting some of the reductions in tax receipts and local government revenues.

Representative Quotes (Correspondence ID): 131, 197, 221
Comments (Comment ID): 645292, 645285, 640151

Concern Statement: The impacts described in the Land Use and Ownership section are underestimated because the evaluation did not include indirect labor impacts.

Response: The Land Ownership evaluation (Section 3.10.2 in the Final EIS) uses the reduction in the value of crop production (associated with agricultural land being federal acquired for habitat) as the input into the IMPLAN Professional model. The direct, indirect, and induced impacts for jobs, income, and sales are estimated with the IMPLAN model. Direct, indirect, and induced income impacts are included in the total estimates in the tables in the Land Ownership Environmental Consequences section.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645286

Concern Statement: Landowners should be encouraged to voluntarily protect or enhance habitat for species protection. Habitat protection should only occur in areas where the conversion of the land for habitat is needed in the context of all of the habitat available. The impacts to land acquisition are understated in Section 3.10 of the Draft EIS. The economic activity generated by farming, impacts local sales tax, personal property tax, special use taxes, and these impacts are underestimated in the analysis.

Response: With regard to the comment on voluntary programs for habitat conservation, private property habitat incentive programs currently exist in the form of NRCS programs, such as the Conservation Reserve Program and the Wetlands Reserve Program, and some states also have similar programs. USFWS operates the Candidate Conservation program in partnership with state and federal agencies, Tribes, private organizations, and landowners, and the program works to reduce the threats to declining species and thus prevent the need for listing.

Many of these habitat incentive programs are identified and described in the cumulative actions (Section 3.1.3 of the Final EIS). Private property habitat incentive programs are not a part of this plan in part because of the unique in-river habitat types that are part of the alternatives (i.e., interception rearing habitat, emergent sandbar habitat).

The Land Ownership evaluation estimates the regional economic impacts of land acquisition if the land was previously in agriculture, including reductions in farm jobs and income (and multiplier impacts) as well as reductions in property tax receipts and PILT to local governments. The analysis focuses on the net reduction in local government revenue (reductions in property tax receipts less PILT) at the end of the implementation period – that is, when all lands would be acquired. USACE agrees that federal acquisition of agricultural lands for habitat development would affect other fiscal receipts aside from property taxes. Because the land ownership would change from private to federal land, property tax receipts to local governments was a focus of the evaluation. Other tax receipts such as corporate taxes, sales and use taxes, special use taxes, and payroll taxes could be affected as well, and the Land Ownership Environmental Consequences section was updated to qualitatively describe these impacts.

Representative Quotes (Correspondence ID): 219
Comments (Comment ID): 643498

Concern Statement: The Land Use and Ownership section should include the impacts of the land acquisition and habitat construction on the conversion of prime farmland to non-agricultural uses, as indicated under the Farmland Protection Policy Act. The habitat improvement activities have the potential to affect lands with NRCS easements in place.

Response: The Land Ownership Affected Environment section of the Final EIS (Section 3.10.1) was updated to include the percentages of prime farmland in the floodplain of the Missouri River. Because the exact location of the acquired lands is not known, the impacts associated with the conversion of prime farmland is uncertain. However, because of the prevalence of prime farmland in the floodplain of the Missouri River, there is the possibility that the Federal acquisition of private lands from willing sellers would result in a conversion of prime farmland to early life stage habitat for the pallid sturgeon, which has been described qualitatively in the Final EIS Section 3.10.2. Because farmland that is acquired is located within the floodplain, there can be impacts to agriculture from flooding and interior drainage, which can provide incentives for private landowners to sell their lands. Section 3.12 in the Final EIS provides the evaluation on flood risk management and interior drainage under the MRRMP-EIS.

With regard to MRRMP-EIS management actions affecting lands with NRCS easements in place, USACE understands that there are various federal, state, and local property interests along the Missouri River and will work with these agencies to ensure that the USACE land acquisition and other management actions under the MRRMP will not adversely affect agency missions and objectives. The Final EIS has been updated to describe these intentions with regard to USACE land acquisition and management.

Representative Quotes (Correspondence ID): 186, 220
Comments (Comment ID): 642147, 641525

Concern Statement: Increased floodplain connectivity and removing farmland from production would have a large economic effect on the state of North Dakota. The Land Use and Ownership section only evaluates the impacts to property tax, and there are more issues that need to be addressed. Farmers need to retain the lands to better manage them to provide a balanced ecosystem.

Response: The Land Ownership section of the Final EIS (Section 3.10) evaluates the impact of the federal acquisition of farming land for habitat, specifically the reductions in farming and multiplier jobs and income and property tax receipts associated with the change in

ownership from private farmland to federal land for habitat. The IMPLAN model is used to estimate the direct, indirect, and induced jobs, income, and sales associated with the decreased crop production. The state of North Dakota would not be affected by federal purchases of lands for interception rearing habitat and shallow water habitat because lands would only be acquired from willing sellers and acquisition of lands would only occur in the lower river from roughly Sioux City to St. Louis. Other sections in the Final EIS evaluate the impacts to agriculture from flooding and irrigation. Please see Sections 3.12 (Flood Risk Management and Interior Drainage) and 3.14 (Irrigation) for additional details.

USACE agrees that federal acquisition of agricultural lands for habitat development would affect other fiscal receipts aside from property taxes. Because the land ownership would change from private to federal land, property tax receipts was a focus for the evaluation because property tax receipts to local governments would be directly affected. Other tax receipts such as corporate taxes, sales and use taxes, special use taxes, and payroll taxes could be affected as well, and the Land Ownership Environmental Consequences section (Section 3.10.2 of the Final EIS) was updated to qualitatively describe these impacts.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640292

Concern Statement: USACE has not included an evaluation of whether federally acquired lands have increased the value of neighboring lands or properties.

Response: The Land Ownership section of the Final EIS evaluates the impact of the federal acquisition of farming land for habitat, specifically the reductions in farming and multiplier jobs and income and property tax receipts associated with the change in ownership from private farmland to federal land for habitat. The IMPLAN model is used to estimate the direct, indirect, and induced jobs, income, and sales associated with the decreased crop production. The changes in ecosystem services associated with the MRRMP-EIS alternatives are provided in Section 3.23 of the Final EIS, Ecosystem Services. The Final EIS has been updated to describe many ecosystem services associated with the acquisition of land, the development of habitat, and other MRRMP-EIS management actions. A qualitative description of the potential increased value of neighboring lands associated with adjacent Federal lands has been added to Section 2.23; these benefits were not monetized because of the uncertainty of the location of the land acquisition, the vast geographic scale, the many factors affecting the value of the property, and considerable data needed for such an evaluation.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640152

Concern Statement: The Land Use and Ownership section should note that if lands that are acquired by the federal government are prone to production issues, such as flooding, then there would be a smaller adverse impact on the tax base and the regional economic impacts of crop production. In addition, federal acquisition of these lands would also reduce federal payments for flood insurance.

Response: USACE agrees and understands that agricultural land owners that have repeated crop production issues due to flooding and interior drainage are more likely to willingly sell their lands to USACE. In addition, marginally crop-producing lands would also be relatively lower-valued agricultural lands. These aspects were added and qualitatively

described in the Final EIS, including the potential for changes to the tax base and jobs and income. In addition, the Section 3.10.2 also explains that lands that are federally acquired would no longer be susceptible to flood risk and potential payments for crop damage from flooding.

Representative Quotes (Correspondence ID): 131, 166
Comments (Comment ID): 640151, 640148, 644934

Concern Statement: USACE should work with adjacent landowners who would be affected by IRC habitat development.

Response: The siting of habitat areas considers protective measures around sensitive infrastructure and facilities, such as water supply intakes and thermal power plants. USACE works closely with nearby land and facility owners to minimize impacts and would conduct site-specific NEPA analyses prior to constructing the habitat.

Representative Quotes (Correspondence ID): 66
Comments (Comment ID): 633528

AE1100 *Affected Environment: Commercial Sand and Gravel Dredging*

Concern Statement: There appears to be an error with the statement “the primary area served by existing dredging operations is generally 2,050 miles from the sand plants.”

Response: The sentence in Section 3.11.1.2 line 18 should read, “...generally 20 to 50 miles...” This was corrected in the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645409

EC1100 *Environmental Consequences: Commercial Sand and Gravel Dredging*

Concern Statement: The Draft EIS fails to acknowledge that the HEC-RAS model is inappropriate for any permitting related decisions focused on commercial sand dredging. The analysis should consider how IRC construction would impact channel response, impacts to navigation, bend hydraulic conditions; all of which would have indirect impacts on commercial sand dredging. USACE should consider the impact of the alternatives on sovereign rights of states (Missouri, Kansas, Iowa, and Nebraska) who own the bed of the lower river.

Response: Section 404 and Section 408 regulatory processes are not part of the MRRMP-EIS process; however, the Final EIS estimates the potential impacts from future protective measures that may be necessary in the vicinity of Interception Rearing Complex (IRC) projects (Section 3.11 of the Final EIS). This analysis does not create a restriction; however, it does project what impacts could be in the future if restrictions result from the Regulatory process.

HEC-RAS is designed to perform one-dimensional hydraulic calculations for a full network of natural and constructed channels. The purpose of the HEC-RAS models was to create a baseline that closely represents current river conditions and to provide a tool to evaluate potential hydraulic changes resulting from proposed management actions or alternatives (e.g., channel reconfiguration and/or flow management). HEC-RAS is used extensively throughout the world and is an appropriate model for this EIS. In addition to the HEC-RAS analyses referenced above, a separate, high-level analysis was

conducted to assess the impact that changing flow releases in accordance with the alternatives could have on sediment accumulation rates in the dredging segments. While this analysis utilized the flow routing capability of the HEC-RAS model to determine flows for the various alternatives, the evaluation was a gage analysis based on rating curves rather than a modeling exercise. It used the change in sedimentation rates from seven USGS gages located at different points between St. Joseph and Hermann, Missouri as the basis for the impact assessment. The technical basis and limitations for this analysis is further described in the supporting document “Commercial Sand and Gravel Dredging Environmental Consequences Analysis Technical Report,” which is available online (www.moriverrecovery.org).

IRCs would be highly localized features for the interception, food-producing, and foraging habitats for age-0 pallid sturgeon, as well as for the retention of young fish in supportive habitats. Similar to past regulatory permit evaluations, USACE Regulatory Branch will consider the potential impacts of permitted activities on any ESA listed species. Past permitting actions have identified Pallid Sturgeon Resource Protection Zones based upon the best available scientific information at that time. During future permitting processes, protective measures may be added or deleted based upon new information, the need for resource protection at specific sites, and the geographic locations where the permitted activity is being evaluated. A general description of protective measures proposed by the MRRP has been added to Chapter 2 and a discussion of the potential impacts to commercial sand and gravel dredging associated with these protective zones has been added in Chapter 3. Additional site-specific analysis (NEPA) will be conducted once these locations are identified and prior to construction.

USACE understands and recognizes states’ sovereign rights, and is committed to working with the states on site-specific projects. However, projects impacting the bed are generally constructed in the navigation servitude. The navigation servitude is the dominant right of the Government under the Commerce Clause of the U.S. Constitution to use, control, and regulate the navigable waters of the United States and submerged lands thereunder for various commerce-related purposes, including navigation and flood control. The navigation servitude extends from the Ordinary High Water Mark to Ordinary High Water Mark.

Representative Quotes (Correspondence ID): 187, 228
Comments (Comment ID): 641557, 645512

Concern Statement: The Pick-Sloan Act included recommendations for the expected width of the channel and the width that should be established between the federal and non-federal levees. Neither of these guidelines were ever followed and the result is too narrow of a channel and levees too close to the river.

Response: The MRRMP-EIS describes the existing navigation channel and structures and the impacts of the alternatives in Section 3.15. Existing flood risk management and interior drainage infrastructure and the impacts of the alternatives are addressed in Section 3.12. Changes to the authorized navigation channel and flood risk management infrastructure are not part of the proposed action and are therefore outside the scope of this EIS.

IRCs would be highly localized features for the interception, food-producing, and foraging habitats for age-0 pallid sturgeon, as well as for the retention of young fish in supportive habitats. Similar to past regulatory permit evaluations, USACE Regulatory

Branch will consider the potential impacts of permitted activities on any ESA listed species. Past permitting actions have identified Pallid Resource Protection Zones based upon the best available scientific information at that time. During future permitting processes, Pallid Resource Protection Zones may be added or deleted based upon new information, the need for resource protection at specific sites, and the geographic locations where the permitted activity is being evaluated. A general description of IRC protective zones proposed by the MRRP has been added to Chapter 2 and a discussion of the potential impacts to commercial sand and gravel dredging associated with these protective zones has been added in Chapter 3. Additional site-specific analysis (NEPA) will be conducted once these locations are identified and prior to construction.

While USACE understands and recognizes states sovereign rights, the power of the United States over its waters which are capable of use as interstate highways arises from the “Commerce Clause” of the Constitution, Article 1, Section 8, Clause 3. The Missouri River is recognized as a navigable stream. The Federal Government has an inherent easement in navigable water up to the mean high water, in the exercise of which it may erect works for navigation which impair the interests of the owner of the upland, without incurring Fifth Amendment liability.

Representative Quotes (Correspondence ID): 187, 228
Comments (Comment ID): 641557, 645512

Concern Statement: For the Final EIS, USACE should evaluate the impacts of flow changes on sand and gravel operations.

Response: HEC-RAS is designed to perform one-dimensional hydraulic calculations for a full network of natural and constructed channels. The purpose of the HEC-RAS models was to create a baseline that represents current river conditions and to provide a tool to evaluate potential hydraulic changes resulting from proposed management actions or alternatives (e.g., channel reconfiguration and/or flow management). HEC-RAS is used extensively throughout the world and is an appropriate model for this EIS. In addition to the HEC-RAS analyses referenced above, a separate, high-level analysis was conducted to assess the impact that changing flow releases in accordance with the alternatives could have on sediment accumulation rates in the dredging segments. While this analysis utilized the flow routing capability of the HEC-RAS model to determine flows for the various alternatives, the evaluation was a gage analysis based on rating curves rather than a modeling exercise. It used the change in sedimentation rates from seven USGS gages located at different points between St. Joseph and Hermann, Missouri as the basis for the impact assessment. The technical basis and limitations for this analysis is further described in the supporting document “Commercial Sand and Gravel Dredging Environmental Consequences Analysis Technical Report,” which is available online (www.moriverrecovery.org). The sand and gravel dredging evaluation in the navigation section (Final EIS Section 3.15, Navigation) focuses on the impacts associated with the transportation of commercial sand and gravel for each of the alternatives; that is how high and low flow conditions affect the ability of the dredgers to extract and transport the material to their sand plants.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645281

Concern Statement: There are differences in results in the Navigation and Commercial Sand and Gravel Dredging sections for Alternatives 4–6.

Response: The Commercial Sand and Gravel Dredging Section (3.11) evaluates the impacts on the availability of sand and gravel material from changes in the sedimentation accumulation rate under each of the MRRMP-EIS alternatives. The sand and gravel dredging evaluation in the navigation section (Final EIS Section 3.15, Navigation) focuses on the impacts associated with the transportation of commercial sand and gravel for each of the alternatives because high and low flow conditions affect the ability of the dredgers to extract and transport the material to their sand plants. Additional details are described in the “Commercial Sand and Gravel Dredging Environmental Consequences Analysis Technical Report” and “Navigation Environmental Consequences Analysis Technical Report” available online (www.moriverrecovery.org). The availability of material (sediment accumulation rate) would result in negligible changes in sediment accumulation across the alternatives. The navigation sand and gravel dredging evaluation shows that there would be negligible changes compared to No Action in river flows and stages affecting the ability to dredge and transport commercial sand and gravel under Alternatives 2, 3, and 5, and negligible to small adverse impacts under Alternative 4 and 6 from additional days below low flow thresholds. Because the analyses examined different aspects of sand and gravel dredging, it is expected that the results may differ.

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 644965

Concern Statement: The Draft MRRMP-EIS overstates the impacts to sand and gravel dredging under the topic of navigation as well as under its own category, particularly since the conclusions of the MRRMP-EIS in the Commercial Sand and Gravel Dredging section conflict with the conclusions in the Navigation section. Sand and gravel dredging is not a congressionally authorized use of the Missouri River and should afford no special protection in the development of alternatives. If anything, reducing dredging activity would seem to accrue benefits to species protection.

Response: Commercial sand and gravel dredging was evaluated as part of the Affected Environment because it is an activity that currently exists on the river and has been identified by stakeholders as an important human consideration associated with the Missouri River. The analysis of impacts includes a wide range of Missouri River interests and is not limited to the congressionally authorized purposes. The statement regarding the authorized purposes in Section 2.5.3.1 has been updated to clarify that commercial sand and gravel dredging is not one of the authorized purposes.

The Commercial Sand and Gravel Dredging Section (3.11) evaluates the impacts to the availability of sand and gravel material from changes in the sedimentation accumulation rate for each of the alternatives. The navigation analysis evaluates the impacts associated with how changes in river flows and stages affect the ability to dredge and transport commercial sand and gravel. Because the analyses examined different aspects of sand and gravel dredging, it is expected that the results may differ.

USACE does not consider the impacts to sand and gravel dredging to be overstated. In Section 3.11.2.3 of the Commercial Sand and Gravel analysis, Table 3.51 states under “Summary of Impacts” that there is a negligible change in the sediment accumulation rate under each of the alternatives, thus a negligible impact to the commercial sand and gravel industry with regard to sediment availability. The navigation section evaluates the impacts to the ability to dredge and transport commercial sand and gravel. Additional details are described in the “Commercial Sand and Gravel Dredging Environmental

Consequences Analysis Technical Report” and “Navigation Environmental Consequences Analysis Technical Report” available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 239, 240

Comments (Comment ID): 644964, 644963, 644962, 644961, 645410

AE1200 *Affected Environment: Flood Risk Management and Interior Drainage*

Concern Statement: The Affected Environment section for Flood Risk Management and Interior Drainage should include surveyed data on approximately 1,400 individual interior drainage structures located along the Missouri River.

Response: In addition to the detailed assessment conducted on four representative interior drainage sites, the Final EIS includes an updated proxy analysis that incorporates survey data from over 100 interior drainage structures. This analysis provides an indication of the potential risk to interior drainage structures as a result of the alternatives and is sufficient for estimating the relative impacts of the different alternatives.

Representative Quotes (Correspondence ID): 36

Comments (Comment ID): 628350

Concern Statement: It has been reported that floodwater levels are increasing and rising along areas that have been channelized. Flood levels have increased from 1.2 to 1.9 meters.

Response: HEC-RAS model geometry is based on the best available topographic surveys. All constructed models were calibrated to the same period through 2012. Model calibration is discussed in the supporting documents, HEC-RAS Calibration Report, which is available online (www.moriverrecovery.org).

The Missouri River is a dynamic system that is changing constantly over the study area, which extends from Fort Peck dam downstream to the Missouri River mouth at St. Louis. Some areas have experienced continued degradation since 2012 while other areas have experienced aggradation. All alternatives were modeled with HEC-RAS using the same geometry and the comparison between the alternatives is valid. While trends maybe occurring at variable levels within the expansive study area, the attempt to include study trends is not relevant for alternative comparison.

An assessment of potential climate change effects on the various resources was included in the Draft EIS within subsections of each applicable resource (e.g., Section 3.2.2.7). A basin wide evaluation is described in the supporting document Climate Change Assessment – Missouri River Basin which is available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 68

Comments (Comment ID): 633532

Concern Statement: What is the economic impact of the alternatives as it relates to flood risk?

Response: A detailed description of the flood risk management analysis and results from the impacts of the Final EIS alternatives can be found in the “Flood Risk Management Environmental Consequences Analysis Technical Report.”

Representative Quotes (Correspondence ID): 127

Comments (Comment ID): 636922

Concern Statement: At higher river stages (2 to 4 feet below flood stages), interior drainage districts (L575) start to experience impacts.

Response: USACE acknowledges interior drainage impacts can begin before flood stages are reached. The Final EIS includes an updated proxy analysis that incorporates the survey data from the individual interior drainage structures.

Representative Quotes (Correspondence ID): 135, 175
Comments (Comment ID): 637265, 641397

Concern Statement: The Pick-Sloan Act included recommendations for the expected width of the channel and the width that should be established between the federal and non-federal levees. Neither of these guidelines were ever followed and the result is too narrow of a channel and levees too close to the river.

Response: Comment noted. This concern is in reference to past authorizations and construction actions and is not within the scope of the MRRMP-EIS.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645236

Concern Statement: The agencies should use the term "flood control" instead of "flood risk management."

Response: The term "flood control" is used when referring to the authorized purposes and the Flood Control Act of 1944. However, in 2008, the Army proposed an update to "flood risk management" to be used agency-wide in briefings, newsletters, and press releases, as well as in budget, management, and policy documents. This update emphasizes the broader risk management activities of USACE to ensure competency in risk assessment and to communicate to the public the nature of flood risks and how they can be managed.

Representative Quotes (Correspondence ID): 221
Comments (Comment ID): 645293

Concern Statement: The Draft EIS fails to mention that the greatest impact from flooding is the delay or prevention of agricultural activity.

Response: USACE acknowledges impacts from flooding include the delay or prevention of agricultural activity. The costs of delayed or prevention of agricultural activity are incorporated in the Flood Impact Analysis model. Please refer to Flood Risk Management and Interior Drainage Environmental Consequences Sections 3.12.3 and 3.12.4 and the associated technical reports for a discussion of the factors affecting delayed or prevented agricultural activity.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645534

EC1200 *Environmental Consequences: Flood Risk Management and Interior Drainage*

Concern Statement: The "Flood Risk Management Environmental Consequences Analysis Technical Report" provides little detail on the actual modeling that was conducted for this resource topic. The discussion in the technical report is basically a rehash of the

information that was included in the Draft EIS. The technical document does not allow reviewers to understand the approach and either agree or disagree with the results.

Response: USACE has remained transparent throughout this process and believes the description in the technical reports are an accurate description of the methods that were used. Further technical details on the flood risk management approach and modeling have been added to the “Flood Risk Management Environmental Consequences Analysis Technical Report.”

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645666

Concern Statement: The definition of significance needs to be revisited in the discussion of impacts in the Flood Risk Management section. In some places (e.g., Alternative 4), the author seems to discount an increase in over 2,000 individuals impacted, especially in rural areas.

Response: USACE has updated the discussion on significance to provide further clarity as it relates to the flood risk management impacts. The population at risk discussion in Section 3.12.3 has also been updated to distinguish impacts by location and to clarify the impacts and significance of results.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645677

Concern Statement: Any increase in flood constraints under any of the alternatives could result in the reduction and/or elimination of thousands of acres of agriculture lands and increase risks to public health and safety. The river changes greatly and sudden storm events in very short periods of time combined with a spring pulse event could lead to increased flooding in communities and agricultural areas.

Response: USACE acknowledges that changes to the length or intensity of a flow event has the ability to affect flood constraints and impacts. The current hydrology, hydraulics, and economic analyses evaluate the impacts associated with alternatives including impacts associated with changes in reservoir releases. Additional hydrology, hydraulic and economic analyses would be conducted if adaptive management identifies the need for future flow measures.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 626071

Concern Statement: Alternatives 4 and 5 have the potential to impede interior drainage and increase flooding which can harm crop production during the worst time of year.

Response: USACE acknowledges that the timing of pulse events in Alternatives 4 and 5 could adversely impact agriculture. A discussion of the potential flooding impacts resulting from Alternatives 4 and 5 is presented in Section 3.12.2.7 and 3.12.2.8 of the EIS, respectively. However, these two alternatives were not identified as preferred alternatives.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645451

Concern Statement: The Draft EIS included an abbreviated analysis for interior drainage for all alternatives. This analysis requires substantial recalibration because the economic

conclusions are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. The impact on land use-impaired interior drainage was not thought to be enough of a priority to perform modeling and impacts analyzed. Interior drainage impacts should be thoroughly analyzed using the 2005 interior drainage data, or similar data, in the Final EIS for a proper analysis of the impacts. A RED analysis should be conducted to determine the full impacts of alternatives on interior drainage.

Response: Because the models are quite complex and time consuming to develop, it was not feasible to model every levee on the Missouri River. Therefore, a sub-set of the sites evaluated for the Master Manual (USACE, 1998) were selected to be modeled in detail. Extrapolation of the results of these sites to other drainage sites is not recommended since the hydrology, hydraulics and drainage varies at each interior drainage site.

USACE also understands the concerns related to inclusion of other drainage sites. Therefore, USACE has incorporated additional data, analysis, and results of impacts to interior drainage in Section 3.12.3 in the Final EIS based on surveyed data of over 100 additional interior drainage sites. This analysis compared the frequency of stages exceeding flap gate elevations over the period of record for each alternative to provide an indication of impacts to interior drainage sites from the alternatives.

In addition, the dollar value results for the modeled sites on a per acre basis have also been included with the results discussion in Section 3.12.3 for further understanding of impacts to interior drainage sites on a per acre basis.

With regard to the interior drainage RED evaluation, the NED results were further evaluated to determine if regional economic conditions would be affected under the MRRMP-EIS alternatives. For all MRRMP-EIS alternatives, the largest increase in average annual agricultural damages from Alternative 1 was under Alternative 6 of \$7,800 (MRLS-536L), which would result in negligible changes in RED effects on the average compared to Alternative 1. The largest adverse difference in all years for agricultural damages would occur under Alternative 4 and 5 with the largest increase in damages of \$434,000 (Missouri River Levee System (MRLS-536L), which would result in a loss of up to 4 average annual agricultural jobs. Because all agricultural losses in any year would result in less than 4 jobs, a full RED analysis was not undertaken on the interior drainage impacts.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645780

Concern Statement: The discussion of impacts seems to discount the magnitude of impacts that would occur from increased flooding.

Response: The Regional Economic Development section provides an evaluation of the jobs, income, and sales that would be affected by agricultural damages from flooding. Each reach is evaluated, and the average of the 8-worst difference year damages and 8-best damage years relative to Alternative 1 and 8-best years relative to Alternative 1 were also provided in Section 4 of the "Flood Risk Management Environmental Consequences Analysis Technical Report." There are some reaches that would be affected in the average of the 8 worst difference years (up to a reduction in 13 jobs in the Gavins Point Dam to Rulo reach), but there are more years with reduced damages that would offset these adverse impacts resulting in very little change in RED effects on average associated with agricultural damages. Section 4.1 of the "Flood Risk Management Environmental Consequences Analysis Technical Report" also provides

the average annual structural damages for all of the counties along the Missouri River, by state.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645633

Concern Statement: A RED analysis needs to be conducted for flood risk management along the Mississippi River.

Response: A detailed RED assessment of impacts on the Mississippi River was not conducted because there were minimal average annual NED agricultural damages (ranging from 0.3 to 0.7 percent) and structural damages (ranging from 0.3 to 1.3 percent) across all alternatives compared to No Action. Changes in average annual NED damages would range from \$33,000 to \$161,000.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645618

Concern Statement: The SAMP indicates constructed IRC habitat can decrease stages for most flows. The Flood Risk Management section in the Draft EIS should further evaluate the impact of IRC habitat construction on flood risk management. The changes in flood risk associated with mechanical ESH construction should also be evaluated.

Response: IRC habitat construction may locally decrease the stage slightly due to added conveyance; however, IRC effects on river flow levels is regarded as incidental. IRC habitat project formulation was not intended to provide flood risk management.

IRCs would be designed to create effective interception hydraulics, food producing, and foraging habitats on the Lower Missouri River. For these projects to be effective and sustainable, the IRC projects would be designed such that the navigation channel and overall bed and hydrological conditions would largely remain unaffected. Refer to the supporting technical documents for a thorough description of modeling methodology, assumptions, and limitations.

ESHs are built using sand from the adjacent area. Restrictive criteria are employed in ESH design to avoid river impacts. Specifically, a small amount of sand is typically added onto an existing bar that is slightly below the water surface from the adjacent river area. ESHs are designed to balance conveyance within the same river section to avoid a net impact on flow area within that section.

Representative Quotes (Correspondence ID): 239, 242
Comments (Comment ID): 645587, 641841

Concern Statement: While lands acquired for habitat could reduce the amount of agricultural land that could be affected by flooding, a change in the land use and management may have implications for the regional economy, as well as, other resources on the river.

Response: USACE has updated the EIS to further explain the assumptions and methodology used for the analysis. While it is noted that lands acquired for habitat that were previously in agricultural production could reduce the amount of agricultural land that could be affected by flooding, it is also acknowledged that a change in the land use and management may have implications for the regional economy. The Land Ownership section of the Final EIS (Section 3.10) evaluates the impact of the federal acquisition of agricultural land for habitat, specifically the reductions in farm jobs and income (and

multiplier impacts) and property tax receipts associated with the change in ownership from private farmland to federal land for habitat. The IMPLAN model is used to estimate the direct, indirect, and induced jobs, income, and sales associated with the decreased crop production. Federal purchases of lands for habitat would only be acquired from willing sellers.

The Navigation, Commercial Sand and Gravel Dredging, Thermal Power, Hydropower, Water Supply, and Water Quality sections address impacts to those respective resources from each of the alternatives.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645549

Concern Statement: The RED section indicates that all flooding is due to natural hydrologic cycles and fails to mention the flood control capabilities of the reservoir system.

Response: The Missouri River system as currently operated provides substantial flood risk management to the entire basin as described in Section 3.12. In Section 3.12.3, it is noted that relatively high water or flooding years, such as those that occurred with conditions similar to 1951, 1984, 1986, 1993, and 2011, would account for the largest economic impacts from agricultural losses, and that these flooding effects are a result of the natural hydrologic cycles of precipitation and snow pack and not from the management actions under No Action. This section is not stating that damages are solely from natural events but noting that the natural hydrologic cycles of precipitation and snow pack are associated with the largest economic losses to agriculture. This statement will be clarified in the Final EIS to note that the management actions of habitat creation and the plenary pulse would not contribute to these flooding damages because the plenary pulse does not occur in any of the years noted above.

The Regional Economic Development section provides an evaluation of the jobs, income, and sales that would be affected by agricultural damages from flooding. Each reach is evaluated, and the average of the 8-worst damage years relative to Alternative 1 and 8-best years relative to Alternative 1 were also provided in Section 4 of the “Flood Risk Management Environmental Consequences Analysis Technical Report.” There are some reaches that would be affected in the average of the 8 worst difference years (up to a reduction in 13 jobs in the Gavins Point Dam to Rulo reach), but there are more years with reduced damages that would offset these adverse impacts resulting in very little change in RED effects on average associated with agricultural damages. Section 4.1 of the “Flood Risk Management Environmental Consequences Analysis Technical Report” also provides the average annual structural damages for all of the counties along the Missouri River, by state.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645545

Concern Statement: The analysis of Alternative 1 indicates that flood damage is caused by runoff events that occur downstream from the reservoir system, large upstream runoff events resulting from evacuation of flood water from reservoirs or a combination of the two but not from management actions under Alternative 1. The analysis does not account for flooding that would occur with the implementation of the bimodal Spring Pulse that could occur under Alternative 1.

Response: For purposes of modeling the No Action alternative, USACE assumed continued implementation of the plenary spring pulse as described in the Master Manual. The

impacts associated with this No Action condition is included in the flood risk management assessment.

The following text has been inserted within the EIS, Section 3.12.2.1, Impacts Assessment Methodology:

The Missouri River system as currently operated provides substantial flood damage reduction and benefits to the entire basin. Study alternatives include modifying operations of the Missouri River reservoir system with both higher and lower reservoir releases during select periods for species habitat benefits. The current HEC-ResSim and HEC-RAS analysis shows the potential for negative impacts to flood damage reduction for alternatives that include changes in reservoir flow releases. The current study methodology, which employs an 82-year period of record, is suitable for alternative comparison and providing an indication of change in flood risk. However, the methodology does not simulate a sufficient number of events and possible runoff combinations within the large Missouri River basin to evaluate potential change in downstream flood risk. Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645542

Concern Statement: Each of the six alternatives include a flow regimen though the tables that show management actions common to all alternatives fail to show NED, RED or OSE impacts from these flows. This includes impacts to agriculture production and land values. The table also claims that Alternative 2 has lower flood risks than Alternative 1 which is difficult to understand. How higher artificial flows during the rainy spring season create lower flood risk is counterintuitive and illogical. The table claims Alternative 4 modeling resulted in a -\$21 million to \$48 million impact to NED. Given the large range in impacts under Alternative 4 the model may need to be recalibrated or Alternative 4 needs to be broken into two alternatives to reflect impacts more accurately. Any management action that deliberately floods any portion of the basin should be deemed unacceptable and be eliminated from the list of alternative actions.

Response: To clarify, management actions “common to all alternatives” do not include the flow releases because not all alternatives include flow releases. These “common to all” management actions include pallid sturgeon propagation and augmentation, vegetation management, and predator management. The Management Actions Common to All Alternatives section has been updated to better illustrate the impacts shown in Table 3-31, Environmental Consequences Relative to Flood Risk Management Changes. The range of impacts from -\$21 million to \$48 million for Alternative 4 represents the annual maximum and minimum over the POR and demonstrates the variation in flow events over the period of record. USACE also acknowledges the questions and concerns regarding the flood risk results for the alternatives and has updated the EIS to further explain the approach, methodology, and results for the flood risk management and interior drainage analysis.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645539

Concern Statement: There was no inclusion of costs for rehabilitation of land, pumping costs, drainage infrastructure, repair to private levees or future yield losses due to damages to the land (sand and driftwood deposits, additional weed pressure, extra tillage requirements, etc.) included in the flood risk management RED analysis.

Response: The RED evaluation focused on the adverse regional economic impacts from flooding on agricultural and structural damages. Expenditures in the regional economy on levee repair, land rehabilitation, pumping costs, etc., generally provide increases in RED benefits, and therefore were not included in the evaluation.

However, the NED evaluation includes tangible damages to businesses, homes, and other physical property items caused by flood inundation or exposure as well as the costs of flooding such as emergency costs and disaster relief costs. Emergency cost savings encompass savings related to a wide range of flooding impacts, including emergency personnel costs, flood fighting costs (sandbagging, for example), avoidance costs (raising or evacuation of property), temporary food and housing, debris cleanup, and damage to infrastructure items not otherwise included in the damage analysis such as sewer lines. These types of impacts are further discussed in Section 2.4.3 of the "Flood Risk Management Environmental Consequences Analysis Technical Report."

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645536

Concern Statement: It should be stated that the flood risk management model does not account for the effects of ice and therefore likely underestimates the frequency of exceeding channel capacity.

Response: A footnote has been added to Table 3-65. Frequency of Releases Simulated to Equal or Exceed Channel Capacity *

* All tabulated values are for open water conditions without any ice, debris, or other effects that can significantly affect river stages.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645412

Concern Statement: USACE should make it clear if "floodplain" is referring to those areas that are determined by FEMA National Flood Insurance Program studies or if they are defining it using other methods.

Response: For the purposes of modeling impacts to flood risk management, USACE defined the floodplain as bluff-to-bluff with a buffer to account for uncertainties in the model. This is not the same as FEMA National Flood Insurance Program studies, but is likely similar. This clarification has added to the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645411

Concern Statement: The U.S. Supreme Court held that recurrent flooding, even if each flood was finite in duration, was not categorically exempt from Takings Clause liability, and that takings temporary in duration could be compensable. USACE must assume liability for damages caused to private lands and crops from any changes in flood control structures.

Response: USACE has considered the potential impacts from the alternatives and will comply with all laws, statutes, and case law when implementing the MRRMP.

Representative Quotes (Correspondence ID): 221
Comments (Comment ID): 645296

Concern Statement: USACE should consider the impacts to agricultural lands as required by the Farmland Protection Policy Act. This includes the conversion of agricultural lands due to an increase in flooding.

Response: USACE acknowledges the concerns relating to the Farmland Protection Policy Act. Federal acquiring of lands for habitat would only be acquired from willing sellers. A description of prime farmland is provided in the Land Ownership Affected Environment, Section 3.10.1 3 of the Final EIS. The effects of federal land acquisition on prime farmland have been evaluated in the OSE sections of Land Ownership (Section 3.10.2) associated with the alternatives. Because the target acreage for land acquisition for early life stage habitat is such a small proportion of the floodplain acres (agricultural floodplain from Ponca to Rulo accounts for 970,332 acres and Rulo to the mouth accounts for 560,839 acres), the land acquisition targets under Alternative 1 represent 0.2 percent and 0.9 percent of agricultural lands in the floodplain in these reaches, respectively. In addition, projected acreages for land acquisition for habitat development under Alternative 3 through 6 would be lower than under Alternative 1 and would represent only a very small fraction of these farmlands. Target acres under Alternative 2 would be the highest of all of the alternatives and would account for 1.6 and 5.4 percent of agricultural lands in the flood plain in the Ponca to Rulo and Rulo to the mouth reaches, respectively. Even under Alternative 2, the land acquisition for habitat development would represent a very small proportion of prime farmland in the four states.

USACE has incorporated additional data, analysis, and results on impacts to interior drainage in the Final EIS. The Land Ownership section of the Final EIS has also been updated to include the percentages of prime farmland in the floodplain of the Missouri River.

If flow actions are considered in the future for implementation, further risk and uncertainty assessment will be conducted prior to implementation.

Representative Quotes (Correspondence ID): 221
Comments (Comment ID): 645294

Concern Statement: The agencies should use the term "flood control" instead of "flood risk management."

Response: The term "flood control" is used when referring to the authorized purposes and the Flood Control Act of 1944. However, in 2008, the Army proposed an update to "flood risk management" to be used agency-wide in briefings, newsletters, and press releases, as well as in budget, management, and policy documents. The update emphasizes the broader risk management activities of USACE to ensure competency in risk assessment and to communicate to the public the nature of flood risks and how they can be managed.

Representative Quotes (Correspondence ID): 221
Comments (Comment ID): 645293

Concern Statement: An assumption presented in the Draft EIS is that land use would not change under different flood conditions. However, flood events have had significant impacts on land use depending on the severity of the event. USACE should estimate these indirect effects (implications of the repeated flooding of cropland on property

taxes, payments in lieu of taxes (PILT), federal tax deductions for flooded areas, and the insurability of impacted property) associated with increased flooding in the Final EIS. USACE has omitted the Environmental Quality (EQ) evaluation from the analysis even though such analysis is required by 1983 Principles and Guidelines. Missouri requests USACE conduct a full Regional Economic Development (RED) analysis and include an EQ evaluation for the Final EIS. USACE has omitted the Environmental Quality (EQ) evaluation from the analysis even though such analysis is required by 1983 Principles and Guidelines. Missouri requests USACE conduct a full Regional Economic Development (RED) analysis and include an EQ evaluation for the Final EIS.

Response: USACE acknowledges these indirect effects of flooding to agriculture. Further explanation of these other indirect effects and analysis has been provided along with additional clarification on the modeling in the Final EIS. In addition, the RED evaluation was updated to qualitatively describe how flooding can affect the loss of property values and increased flood insurance premiums. The RED evaluation uses inputs from the NED evaluation to show the impacts to jobs and income from agricultural damages and the geographic extent of the agricultural (river reaches) and structural damages (counties). The regional economic impacts from agricultural damages include the direct, indirect, and induced impacts (jobs, income, and sales) associated with reduced agricultural revenues. Further RED evaluation was not warranted because the management actions under the MRRMP-EIS would result in small impacts to flood risk management, and in most reaches, on average over the period of record, beneficial impacts to flood damages.

With regards to the comment that Regional Economic Development (RED) impacts were not evaluated in all the river reaches, the NED impacts in the Fort Peak Dam to Lake Sakakawea and the Garrison Dam to Lake Oahe reaches had less than a \$250,000 increase in agricultural damages in the worst years compared to No Action. As a result, the jobs and income evaluation for these reaches associated with agricultural damages were not conducted because less than two annual jobs would be affected in the worst difference years. The locations and magnitudes of the agricultural and structural damages were added to the RED section in the Final EIS to provide better context on the distribution of impacts.

The impacts for flood risk and interior drainage are discussed with the NED, RED, and OSE accounts (see Section 3.12.2) of the Final EIS). The topics evaluated under the EQ account include Fish and Wildlife (Section 3.5), Other Special Status Species (Section 3.6), Water Quality (Section 3.7), Air Quality (Section 3.8), Cultural Resources (Section 3.9), and Ecosystem Services (Section 3.23), Pallid Sturgeon (Section 3.3), and Least Tern and Piping Plover (Section 3.4).

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645283, 645278

Concern Statement: USACE should include a comprehensive flood risk assessment in the Final EIS.

Response: The current study methodology, which employs an 82-year period of record, is suitable for alternative comparison and providing an indication of change in flood risk. If the Management Plan moves forward with a flow action, further risk and uncertainty evaluation will be conducted per USACE requirements. The level of additional analysis will be based on USACE guidance and requirements and will identify the change in

reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645282

Concern Statement: The NOAA Weather Prediction Center routinely verifies quantitative precipitation forecast (QPF) performance. The months in which Alternatives 2, 4, 5, and 6 would have a flow event to have less than a 50 percent accuracy for even a 0.5-inch rainfall event. Therefore, USACE cannot rely on forecasts as the deciding factor in determining whether a flow event should be conducted.

Response: As a means of reducing the risk of downstream flooding during an ESH release or spawning cue, a QPF will be used to forecast flows on the Missouri River. It is recognized that QPFs are not always realized, but it adds an additional level of precaution. Since the current analysis does not utilize QPFs, the flood risks described in the Final EIS would only be reduced if a QPF was implemented during real-time operations of an ESH release or spawning cue.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645257

Concern Statement: The floodplain connectivity targets are only evaluated under Alternative 2 but not under Alternatives 3–6. The geographic footprint for analyzing floodplain connectivity probably should be the Hydrologic Unit Code (HUC) 6 watersheds contiguous to the Missouri River.

Response: Floodplain connectivity for the existing condition was evaluated with results tabulated within the Final EIS, refer to the supporting document HEC-RAS Alternatives Report. The results illustrate that the existing floodplain connectivity acres equals 147,652 acres. Since this acreage surpassed the Alternative 2 floodplain connectivity target of 100,000 acres, no changes were made to increase floodplain connectivity for Alternative 2. However, it should be noted that the floodplain connectivity acres are for the existing condition and would pertain to all alternatives.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644885

Concern Statement: The economic models used for the Draft EIS have yet to be approved by USACE HQ.

Response: The Hydrologic Engineering Center Flood Impact Analysis (HEC-FIA) model used to assess flood risk management impacts associated with the Management Plan alternatives was approved as a USACE certified model prior to the Management Plan study. The Navigation model was developed specifically for the Management Plan. The Navigation model was approved for use for the Management Plan by the USACE Office of Water Project Review on March 7, 2017.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644761

Concern Statement: Coordination of flood fighting activity becomes increasingly critical and costly as river stages increase due to increased manpower, pump station operation, stop log and sandbag gap closure, levee patrolling, etc.

Response: USACE acknowledges that flood fighting is critical and can be costly. These costs have been evaluated to the extent possible for the flood risk management impact analysis and are included as emergency costs for the analysis. Further discussions of the emergency costs are included in Section 2.4, National Economic Development Methodology, of the “Flood Risk Management Environmental Consequences Analysis Technical Report.”

Representative Quotes (Correspondence ID): 156
Comments (Comment ID): 644480

Concern Statement: Evaluation of flood impacts under Alternative 2 and 4 in the Garrison and Oahe reach do not make intuitive sense. Counties showing the greatest impacts are on reservoirs which have flood control structures while counties with the greatest populations are in the headwaters of Lake Oahe and showing much lower levels of flood risk.

Response: USACE is aware that there was an error in the translation from the modeling impacts to the correct counties. This error has been corrected and the county level impacts have been correctly displayed in the Final EIS.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 641803

Concern Statement: USACE should model the impacts of the one-time test pulse as described under Alternative 3.

Response: The Missouri River system as currently operated provides substantial flood risk management to the entire basin. The current hydrology, hydraulics, and economic analyses shows the potential for some negative impacts to flood risk management for alternatives that include changes in reservoir flow releases. Additional hydrology, hydraulic, and economic analyses would be conducted if adaptive management identifies the need for future flow measures. The level of additional analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 85
Comments (Comment ID): 636791

Concern Statement: The RED section should mention that the management of the reservoirs that has the potential to cause flooding events.

Response:

The Missouri River Mainstem dams, levees, and BSNP greatly reduce flood risk, relative to natural conditions. The MRRMP-EIS compares how different alternative plans would differ in terms of residual risk. Direct damages to structures, contents, infrastructure, crops, etc. were analyzed to characterize these differences in residual flood risk in terms of NED. The RED analysis captured the extent to which the direct damages of flooding can lead to losses in regional jobs and/or income. Again, much like the NED analysis, the RED analysis was focused on comparing alternative plans in terms of residual risk.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645632

Concern Statement: USACE should assess the potential flood risk to downstream reaches of the Missouri River caused by heavy local precipitation in the spring and fall following a release from Gavins Point Dam.

Response: As a means of reducing the risk of downstream flooding during an ESH release or spawning cue, a quantitative precipitation forecast (QPF) will be used to forecast flows on the Missouri River. It is recognized that QPFs are not always realized, but it adds an additional level of precaution. Since the current analysis does not utilize QPFs, the flood risks described in the Final EIS would only be reduced if a QPF was implemented during real-time operations of an ESH release or spawning cue.

Representative Quotes (Correspondence ID): 132, 142
Comments (Comment ID): 633878, 633830

Concern Statement: The Final EIS should include an analysis of impacts to interior drainage during full service navigation flows.

Response: The EIS evaluated the effects to resources, including interior drainage, by examining the potential impacts from a range of flows represented by an 82-year period of record. For interior drainage, this involved detailed H&H and economic modeling of four sites in addition to an analysis that determined the number of days per year that river stages exceeded flap gate elevations for over 100 drainage sites. The period of record contains multiple instances of full service navigation flows that are considered with the interior drainage analysis.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645574

AE1300 *Affected Environment: Hydropower*

Concern Statement: The Hydropower Affected Environment suggests that grain-drying machinery is operated in the summer when this process occurs in the fall season.

Response: The Hydropower Affected Environment section was updated in the Final EIS to reflect this correction.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645595

EC1300 *Environmental Consequences: Hydropower*

Concern Statement: There seem to be some inconsistencies with the hydropower results. Page Number: 3.1.3, p. 11, Table 1 Comment: This table generally shows the highest energy values for the month of February with the July and August values being significantly lower. In Section 3.13.1.4 on page 3-331 of the Draft EIS, including Figure 3-54 show the lowest demand and generation in February, with the peak in August. An explanation should be provided as to why the highest energy value occurs in the lowest demand month.

Response: The energy values shown in Table 1 were updated to FY 2018 price level and use an additional year of SPP data in the Final EIS. However, those values are intended to represent a replacement cost of energy for the region. In the case of this system, a decrease in hydropower is most likely to be replaced by thermal power. Figure 3-54 is intended to show the average monthly generation for the Missouri River hydropower

system. One simplifying assumption made for the purpose of the model is that high hourly energy prices are associated with high hourly generation periods within the daily blocks but the energy values used are intended to demonstrate a price for an additional MWh of demand in a primarily thermal system. It does not necessarily follow that lower hydropower generation months will have low energy costs.

Additionally, given that many are moving to use relatively low-cost natural gas for thermal power, but natural gas is also used to fuel furnaces in the winter, it follows that recent energy prices would spike in the colder months, especially in an area where natural gas is a large part of the overall system.

The EIS was updated to provide additional explanation to make this distinction clear and explain why energy prices in the winter may be higher than expected.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645688

Concern Statement: The consideration of only one or two years in the hydropower evaluation (pp. 34-37 in technical report) is a major flaw in the analysis because each year could be affected given a different release schedule.

Response: All years for the period of record are considered in the NED analysis. For the purposes of the RED analysis, the original approach was to consider the impact to a “typical” year (in this case 2012) and a drought year as historically identified. The Final EIS includes an average of all of the years of the period of analysis to use for comparison.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645693

Concern Statement: It is difficult to determine from the information provided in the “Hydropower Environmental Consequences Analysis Technical Report” (pages 25-27) if the power generation reported was properly calculated. It appears that there are some inconsistencies between the dam releases and the power plant cfs capacity. For example, Garrison releases for Alternative 4 are 42,500 cfs while the power plant capacity is 41,000 cfs. It is also difficult to understand if the analysis made the assumption that there would be a market for this power (during release periods) at all times, and if so, this would underestimate the impacts. It is suggested that USACE include a chart or table showing volume of water that is discharged for each power plant without generating power for each alternative.

Since the releases through the power plants are higher than the plant capacity, USACE would have to implement spillway or outlet work releases. It was recommended that USACE coordinate with state agencies (South Dakota Game Fish and Parks) to study how these releases affect fisheries resources.

Response: One assumption made by the Missouri River HBC model is that there is always a market for power. This assumption has been made more explicit in the document and added to Section 2.2 Assumptions, along with the caveat that this may result in underestimated impacts if an alternative were to shift power production to a time when there wasn’t a market for power. Additionally, the limits of the power plant capability are taken into consideration when modeling the hydropower results. Additional information has been added to the Methodology section to make the capabilities used by the model more explicit.

Given the clarifying description that was added with regard to the assumptions and modeling parameters, a table showing the volume of water discharged that is greater than the capacity of the plant should not be necessary in the “Hydropower Environmental Consequences Analysis Technical Report.”

Additional studies would need to be done in order to determine spillway and outlet release impacts on fisheries.

Representative Quotes (Correspondence ID): 1, 206
Comments (Comment ID): 645691, 646981

Concern Statement: The analysis in the “Hydropower Environmental Consequences Analysis Technical Report” should present the dams from upstream to downstream, and not in alphabetical order as currently presented in the report.

Response: The tables in the final draft were updated to display the dams from upstream to downstream rather than alphabetically.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645690

Concern Statement: The air emissions analysis conducted for the hydropower evaluation presents changes in carbon dioxide and other pollutants, but does not analyze the financial impact to offset or mitigate the environmental consequences of using natural gas compared to hydropower.

Response: An estimate of the financial impact of these shifts is provided using the U.S. Environmental Protection Agency’s Social Cost of Carbon for each alternative in this section. This estimate is intended to represent the potential financial impact of using thermal power sources.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644269

Concern Statement: The hydropower results for Alternative 6 (Section 5.1, page 34, Table 11 in the “Hydropower Environmental Consequences Analysis Technical Report”) do not appear to be accurate compared to other alternatives. In addition, Alternative 1 may not be a reasonable reference alternative.

Response: The results shown for Alternative 6 are unusual most likely because only one reference year, intended to represent a typical year in the existing condition, was used for the analysis rather than an average over the period of record as in the earlier sections. This analysis now includes an average over the period of record.

USACE believes the No Action alternative is a reasonable reference case and meets the intent of including a No Action alternative in the planning process. The No Action simulation represents the current reservoir operations under the current basin conditions. Although the modeled results for each alternative will not capture all of the real-time decisions and adjustments, the impacts provide an assessment of the differences between modeled alternatives. The models and modeling results used in this effort were reviewed extensively by experts internal and external to USACE. The limitations and intended uses of the models have been well documented in the EIS and technical reports.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644261

Concern Statement: Since the dams were built, aggradation has caused the channel capacity in downstream in the Garrison reach to decrease. Implementing additional actions that exacerbate the aggradation will affect hydropower production over time. As sediment accumulates in the delta, releases will have to decrease in order to avoid exceeding channel capacity, especially during the winter when river ice cover causes a 5- to 7-foot stage increase. The Hydropower Environmental Consequences section indicates that mechanical construction of ESH is not anticipated to impact hydropower under any of the alternatives. However, if ESH construction causes more sediment to accumulate over time in the delta regions of inter-dam reaches, especially in the downstream of Garrison reach, it would affect hydropower production.

Response: Further evaluation of aggradation and degradation can be found in the River Infrastructure and Hydrologic Process section. The year 15 modeling results were developed to address aggradation concerns.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642484, 642392

Concern Statement: The hydropower evaluation likely underestimates the adverse impacts to hydropower for the following reasons. First, the energy prices rely on only two years of SPP data, which is a short period to rely on for a long-term projection of power prices. Second, with sufficiently large reductions in power generation, Western Area Power Administration (WAPA) could change its contracts with the purchasing utilities, which would necessitate the utilities constructing new resources rather than relying on short-term fluctuating market purchases. The construction of new resources should be included in the analysis. USACE appears to estimate resource construction costs to replace the capacity of the reduced hydroelectric generation, but not for reduced energy output. Finally, the hydropower evaluation should quantify the impacts to ancillary services, which are only described qualitatively, and the potential impacts to reliability and grid stability.

Response: The Final EIS has addressed these concerns with additional discussion of these items and how this could influence the potential impacts. WAPA has only been in SPP since 2015, so there are a couple of years of applicable data available at this time.

The capacity analysis is intended to capture the costs of building additional resources to maintain the system capacity on average over the long term. Estimating replacement resources for energy loss could result in a “double-counting” of the potential impact at this time. An additional explanation and description of the energy and capacity analysis has been added to the Final EIS.

Given the relatively small impact estimated for the recommended alternative, it was determined that additional quantitative analysis related to ancillary services, reliability, and grid stability was not necessary. Additional discussion has been included to note the potential impact associated with these categories could be potentially understated.

Representative Quotes (Correspondence ID): 134, 172
Comments (Comment ID): 641813, 640596

Concern Statement: Reductions in renewable hydropower generation would be costly for CMEPC member cooperatives and rural customers and would result in a significant increase in the output of carbon dioxide from replacement thermal resources. In addition, Iowa based utilities, along with approximately 300 other consumer-owned utilities in the Missouri River basin, also depend on the Missouri River as the Western Area Power

Administration WAPA supplies electric power generated by six hydroelectric facilities located on the river to the utilities. When WAPA cannot generate enough hydroelectric power to fulfill its contractually obligated agreements due to low water, WAPA must go to the open market and purchase electricity, often at higher costs, which are passed on directly to the consumer-owned utilities that receive electricity from WAPA. Nebraska Public Power District also purchases power from WAPA and has similar concerns.

Response: The concern about a loss in power is noted and the substance of this comment was added to the Final EIS to help further describe the extent of the potential impacts.

Representative Quotes (Correspondence ID): 107, 134, 224
Comments (Comment ID): 640559, 644395, 643783

Concern Statement: Many of the alternatives reduce power generation and the availability of replacement market power and transmission capacity was not analyzed, and as a result, the hydropower and thermal power impacts are understated. In addition, the cumulative or coupled impact of the simultaneous reductions in hydropower and thermal power generation on power markets (prices), energy availability, system reliability, and grid stability is not adequately analyzed in the hydropower and thermal power evaluation. The Final EIS should evaluate whether the alternatives, especially alternative 2, could lead to brown outs or black outs at critical periods for crops and human life.

Response: The assumptions and potential for understated impacts due to the availability of replacement market power and transmission capacity have been further described in both the hydropower and thermal power technical reports in the Final EIS. Impacts to both thermal and hydropower power generation in peak season months (July, August, January and February) were assessed to determine if coupled impacts would occur under the alternatives. Interviews were conducted with representatives from SPP and MISO to better understand these impacts. The reports have been updated to provide additional information on the potential for coupled effects and its associated impacts on power markets, energy availability, system reliability, and grid stability from simultaneous reductions in thermal power and hydropower.

Representative Quotes (Correspondence ID): 100, 107, 134, 172
Comments (Comment ID): 640632, 641814, 640545, 640544, 633699, 643926

Concern Statement: The Pick-Sloan customers pay over \$1 billion in capital costs for these hydropower projects. Reductions in power generation by these projects could result in these capital investments becoming uneconomic.

Response: The recommended alternative does not result in a significant reduction in power production or changes to flows and so it is unlikely to impact the cost-effectiveness of the capital projects. Additionally, the largest impact among the alternatives analyzed is 0.77 percent value change under Alternative 4, demonstrating limited impacts to power production and value under all alternatives.

Representative Quotes (Correspondence ID): 172
Comments (Comment ID): 641810

AE1400 *Affected Environment: Irrigation*

Concern Statement: The discussion on why there are no irrigation intakes in Iowa, Kansas and Missouri is confusing. Are there are no irrigation intakes or do these states not require

intakes be permitted? Also, is there only one intake per permit (i.e., clarify the relationship between permits and intakes)?

Response: Based on conversations with the Divisions of Natural Resources in Iowa, Kansas and Missouri and local agricultural extension specialists, our understanding is that irrigation in these states is highly isolated. Permitted irrigation intakes in these states are typically used infrequently. The project team thus concluded that any impacts that may occur from the MRRMP alternatives to irrigation intakes in these three states would be negligible.

A single water permit may have multiple points of diversion (intakes). In fact, multiple water permits may even have a single point of diversion, but applied to different acreages. Typically, a water permit is attached to a particular flow rate and a total volume of water, not to a particular intake. We have clarified the discussion to reflect the relationship between permits and diversion points defined under the various permitting systems used by the states being evaluated.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642504

Concern Statement: The estimate within the EIS of permitted irrigated acres is inaccurate (Table 3.132 and Table 3.133). The Office of the State Engineer's database (same year) reports a total of 61,959 irrigated acres or a difference of thirty percent.

Response: The irrigation analysis was revised to include data from the North Dakota State Engineer's Office for all counties in North Dakota. This includes data on crop patterns and acres irrigated by the Missouri River. The tables in the Section 3.14.1 have been updated to reflect this information.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642506

Concern Statement: Information and data included in Table 3-133 appears to be incorrect. According to data maintained by the State of North Dakota, there are 265 irrigation intakes and 328 points of diversion for 251 surface water permits on the Mainstem of the Missouri River in North Dakota, each of which has one or more pumps.

Response: The irrigation analysis was revised to include data from the North Dakota State Engineer's Office for all counties in North Dakota. This includes data on crop patterns and acres irrigated by the Missouri River. The tables in the Section 3.14.1 have been updated to reflect this information.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642507

Concern Statement: The Irrigation section should include a discussion of both gross amount of water pumped from the Missouri River and the net amount applied to fields. The difference is that net amounts of water applied accounts for loss in conveyance, wind drift, evaporation, deep percolation, and runoff.

Response: The project team choose to evaluate only gross water applied to fields as the data on conveyance, wind drift, evaporation, deep percolation, and runoff for all areas included in the irrigation analysis was not available that would allow net water amounts to be estimated. For this analysis, we estimate only the gross amount of water drawn

from the Missouri River as reported by permit information, and base out analysis on changes to the gross amount of water available.

Representative Quotes (Correspondence ID): 186
Comments (Comment ID): 641534

EC1400 *Environmental Consequences: Irrigation*

Concern Statement: Additional information should be provided on the criteria used to select counties for additional analysis. The results show total number of days that intakes are impacted but would be better explained as days per year, maximum or minimum days, or percent change in operation.

Response: The discussion on the criteria used to select counties for further analysis was revised with additional detail in Section 3.0 of the “Irrigation Environmental Consequences Analysis Technical Report.” While the data can be displayed in multiple ways the project team felt that these particular criteria were most appropriate for the screening analysis.

Representative Quotes (Correspondence ID): 186
Comments (Comment ID): 641529

Concern Statement: The discussion of irrigation impacts should disclose any inequities that may occur with the distribution of impacts. In other words, some counties are experiencing higher impacts than others and that should be explicit in the results. The description of significance of impacts should also be re-evaluated.

Response: The analysis and results included in the EIS includes a discussion of impacts by county in the NED analysis. While we do not include the NED results in the RED results, the RED results on a per-county basis are proportional to the NED results on per-county basis and can be inferred. It is true that the impacts are not distributed equally across the counties and the text in Chapter 3 highlights some of those disproportionate impacts in the results.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642678, 642661, 642534

Concern Statement: The assumptions associated with the crop patterns in Williams County need to be revisited. The analysis refers to irrigated wheat and losses associated with producing wheat. The state engineer keeps records on irrigated acreage and show a small percentage of total acres in wheat. Corn and sugar beets are grown more widely in this county than wheat. If the crop patterns under Alternative 1 are inaccurate, this may lead to an underestimate in impacts under the management plan alternatives.

Response: The project team revisited the data and assumptions used to evaluate impacts to irrigation in Williams County (and other counties in North Dakota). The irrigation (Section 3.14) was revised to include data from the North Dakota State Engineer’s Office for all counties in North Dakota. This includes data on crop patterns and acres irrigated by the Missouri River. This includes the crop patterns assumed for Williams County.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642519

Concern Statement: Need to define what is meant by “significant” when describing the percentage of irrigated acres used to determine whether a county was included in analysis. The Missouri River represents 90 percent of surface water supply in North Dakota with scarce groundwater resources in western North Dakota. The river is a major source of water for irrigation operations in North Dakota.

Response: The methodology section in the “Irrigation Environmental Consequences Analysis Technical Report” (Section 3.0) was revised by removing references to significance of criteria related to the percentage of irrigated acreage using water from the Missouri River. This section was revised to clarify how the criteria were used to select counties for further analysis.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642508

AE1500 *Affected Environment: Navigation*

Concern Statement: The discussion of the navigation checks on March 15 and July 1 are inaccurate in the Draft EIS. The system volume check on March 15 determines navigation service level which could be full service, minimum service, or no service (or a service level in between). The July 1 system volume check determines season length and service level for the remainder of the navigation season.

Response: Section 3.15.1 was updated to state: “The decision on length of the navigation supported season is typically made during the July 1st storage check if a navigation season is underway.” The exact guidance provided in the Master Manual is described in Section 2.15.1.2 for Navigation Service Level and 3.15.1.3 for the Navigation Season Length. According to Table 3-154, Page VII-4 of the Master Manual “Normal and Conservation System regulation involves a check on the amount of System water in storage on March 15 to determine if a navigation season will be provided that year, and if so, the service level to provide for the first part of the navigation season. The System water-in-storage is checked again on July 1 to determine the service level for the remainder of the navigation season and the ending date or length of the navigation season.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642679

Concern Statement: The navigation analysis was based on 2014 data with little or no research in changing movements from the gulf ports, the emergence of regional agricultural export markets to Asia, increased movement of petrochemicals and petroleum products by water and the effects of an expanded Panama Canal on shipping volumes. This will enable central U.S. shippers alternative access to U.S./Asia routes and will influence freight rates in favor of agricultural products from the Midwest.

Response: The navigation analysis was updated to use the most current data and information available, 2016 Waterborne Commerce Statistics Center data. In addition, an evaluation was also undertaken to estimate the navigation NED benefits, specifically the transportation rate savings, if commercial tonnage was at 1994 levels, a considerable increase of over 3 times the 2016 tonnage levels (see Section 4.1.1. of the “Navigation Environmental Consequences Analysis Technical Report”). Additional projects and actions were added to the list of cumulative actions that could affect Missouri River navigation (i.e., export markets to Asia, increased movement of petroleum products,

expanded Panama Canal). The cumulative impacts of these actions and projects, along with the impacts of the MRRMP-EIS alternatives on navigation are described in Section 3.15.2.4, Navigation Environmental Consequences, Cumulative Impacts.

Representative Quotes (Correspondence ID): 156
Comments (Comment ID): 44663

Concern Statement: With rail capacity becoming less and an over-the-road driver shortage showing no abatement, there is evidence that inland waterways are becoming critical in the movement of freight. The first full year of operating Port KC (the Kansas City port facility) was tremendously successful. These regional advances in navigation should be acknowledged, discussed and studied in the Draft EIS.

Response: The navigation analysis used the most current data and information available at the time it was completed, 2016 Waterborne Commerce Statistics Center data. In addition, an evaluation was also undertaken to estimate the navigation NED benefits if commercial tonnage was at 1994 levels, a considerable increase of over 3 times more than the commercial tonnage moved in 2016 on the Missouri River. Additional information and discussion were added to the affected environmental section (Section 3.15.1) regarding the re-opening of the Port of Kansas City. Cumulative projects, actions, and economic trends that can affect navigation are described in the Cumulative Impacts Section 3.15.2.4. Cumulative impacts to navigation include the impacts of the cumulative actions and projects combined with the impacts of the MRRMP-EIS alternatives.

Representative Quotes (Correspondence ID): 156
Comments (Comment ID): 644669

Concern Statement: Flow changes have a direct impact on Missouri River navigation opportunities. Navigation on the Missouri River itself relies on consistent and reliable flows, and the recent return of traffic are testament to the necessity of reliable flows. Prior to the severe disruptions in flows in the late 1990s and early 2000s, towing companies operating exclusively on the Missouri River could obtain five-year contracts from shippers. After the flow changes, all line haul companies working exclusively on the Missouri River went out of business. According to the Missouri Department of Transportation, barge traffic on the Missouri River has been increasing over the last five years, in large part due to reliable flows. The 2015-2016 navigation season was also a productive year for barge traffic on the Missouri River.

Response: The navigation analysis used the most current data and information available at the time it was completed, 2016 Waterborne Commerce Statistics Center data. In addition, an evaluation was also undertaken to estimate the navigation NED benefits if commercial tonnage was at 1994 levels, a considerable increase of over 3 times compared to the commercial tonnage moved in 2016 on the Missouri River. Additional information and discussion on the historic service levels, season lengths, and tonnage shipped on the Missouri River has been added to Section 3.15.1.2, along with a discussion on the importance of navigation reliability for the industry.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644741, 644743

Concern Statement: USACE has designated service levels for its inland waterways across the country. The service level ranks those reaches on a priority level from 1 to 6. This

service level ranking for navigation on the Missouri River should be included in the Final EIS.

Response: It is the project team's understanding that the commenter is referring to the service levels for locks. The six categories are determined for each lock based on the number of lockages per year. The service level is used to shift operational funds and resources from low-use locks to critical maintenance of high commercial use locks. See <http://www.lrp.usace.army.mil/Portals/72/docs/navigation/LockSvcLvls/PublicHandoutFINAL.pdf>.

Because there are no locks on the Missouri River it is not appropriate to include this measurement in the EIS.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645550

EC1500 *Environmental Consequences: Navigation*

Concern Statement: The low summer flow under Alternative 2 would have impacts to navigation by causing a split season on the Missouri and adversely impacting the Middle Mississippi River. Low summer flows would drop flows below the Construction Reference Plane (CRP) levels and halt navigation. Navigation would once again become unreliable and the navigation community and the users of the commercial navigation system would suffer negative economic consequences. The low summer flows may also impact the navigation lane where water and power utilities may have to place barges with pumps to reach water.

Response: The navigation analysis included an assessment of all MRRMP-EIS alternatives including Alternative 2, which includes low summer flows. In the years when a low summer flow would be simulated to occur, the analysis assumed a split navigation season and the impacts of the split season were assessed and are included in the Final EIS. During the split season, all tonnage was assumed to be shipped via other modes (truck and rail) and all transportation rate savings associated with shipping commodities via navigation were estimated to be zero. In the low summer flow years, transportation rate savings would be adversely affected, with annual reductions compared to No Action up to \$2 million (compared to \$8 million on average in transportation rate savings over the period of record). Refer to Section 5.3 of the "Navigation Environmental Consequences Analysis Technical Report" for additional detail on Alternative 2. In addition to no navigation during these low summer flow events, there would also be impacts to navigation reliability, with the reduced ability for navigators to secure relatively longer-term contracts (i.e., 5 years) if navigation might be unavailable for approximately 10 weeks in the summer. These impacts are described in Section 3.15.2.1 of the Final EIS, Navigation Environmental Consequences, Alternative 2. The low summer flows may also impact the navigation lane where water and power utilities may have to place barges with pumps to reach water.

Pumps placed in the river to access water for intakes cannot be placed in the navigation channel during the navigation season unless authorized by USACE. In addition, regulations associated with Section 316(b) of the Clean Water Act prevent the use of supplemental pumps on some cooling water intakes on power plants to reduce mortality to fish.

Representative Quotes (Correspondence ID): 27, 33, 65, 145, 168, 176, 195, 205, 216, 228

Comments (Comment ID): 626696, 642102, 646281, 646278, 645576, 645159, 644771, 644735, 642102, 637632, 631570, 628004

Concern Statement: Alternatives with releases have the potential to negatively impact navigation. Flow releases (Spring or Fall) in the range of 60,000 cfs would negatively impact navigation due to high velocities. Spring releases are especially concerning as they would occur during times when natural flows are already high. The Draft EIS incorrectly concludes that Alternative 5, with both full or partial releases do not have an impact on navigation benefits. This is a false conclusion because it does not account for the harvest season and the increased export market on both the Missouri and Mississippi rivers during the fall.

Response: The navigation analysis considered the impacts of all the management alternatives (2 – 6) relative to Alternative 1; the USACE HEC-ResSim modeling simulates the level of navigation service and season length under each of the alternatives. This USACE modeling and associated navigation evaluation includes the impacts of various flow releases under Alternatives 2, 4, 5, and 6. The assessment includes an evaluation when flows exceed 60,000 cfs, which can be detrimental to navigation. The unit transportation rate savings are shown to be lower when flows are above 55,000 cfs for most commodities and lower when flows are above 65,000 cfs for all commodities when compared to full service flows (35,000 to 45,000 cfs). The unit transportation rate savings are described in Section 2.2.2 in the Methodology Section of the “Navigation Environmental Consequences Analysis Technical Report.” Under Alternative 5, there are some small decreases in transportation rate savings in some full fall release years. However, the years with relatively larger adverse impacts under Alternative 5 occur in the years following the fall releases when navigation service levels are lower than under No Action due to lower storage levels in the reservoirs in these years. A discussion of the navigation analysis and impacts associated with each of the alternatives has been updated to describe these impacts and is provided in the Section 3.15.2.2, Navigation, of the Final EIS, and additional details are provided in the “Navigation Environmental Consequences Environmental Consequences Analysis Technical Report.”

Prior to a release being implemented, USACE would notify the navigation industry and other River stakeholders of the release. An evaluation of the impacts of the MRRMP-EIS alternatives on flood risk is provided in Section 3.12 of the Final EIS, Flood Risk Management and Interior Drainage.

Representative Quotes (Correspondence ID): 168, 176, 228

Comments (Comment ID): 645913, 645177, 645584, 645161, 644756, 645579

Concern Statement: The one-time test pulse under Alternative 3 would negatively impact navigation.

Response: The one-time spawning cue test (Level 2) release that might be implemented under Alternative 3, the preferred alternative, was not included in the hydrologic modeling for these alternatives because of the uncertainty of the hydrologic conditions that would be present if implemented. Hydrologic modeling for Alternative 6 simulates reoccurring implementation (Level 3) of this spawning cue over the wide range of hydrologic conditions in the POR. Therefore, the impacts from the potential implementation of a one-time spawning cue test release would be bound by the range of impacts described for individual releases under Alternative 6. This modeling is a reasonable representation of the impacts that could occur to navigation under the one-time spawning cue test. A summary of the potential impacts under Alternative 6 has been provided in the

navigation section under Alternative 3 in the Final EIS, Section 3.15.2.2, Navigation Environmental Consequences.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 645774

Concern Statement: The impact of the alternatives on water compelled rates needs to be modeled in the Final EIS.

Response: USACE contracted with the University of Tennessee, Center for Transportation Research to conduct a quantitative precipitation forecast (QPF) qualitative assessment of water-compelled rates associated with Missouri River navigation. The University of Tennessee, Center for Transportation Research report provides a historical context of waterway and rail traffic along the Missouri River, noting the relatively recent issues with waterway reliability for navigation; describes past rail regulatory reforms; provides previous estimates of water-compelled effects; and describes the current rail environment that could have implications for these issues. The issues are complicated surrounding water-compelled rates and the dynamic economic conditions and context of the rail industry create uncertainties regarding the effect of Missouri River navigation on railroad pricing. However, the authors conclude that unless expectations regarding the Missouri River's reliability and long-run availability for navigation are reversed, water-compelled railroad rates attributable to Missouri River commercial navigation seem improbable. Further details are discussed in the "Missouri River Water-Compelled Railroad Rates: Review and Qualitative Update" available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 168, 197, 228
Comments (Comment ID): 645638, 645250, 645169, 645261, 645608

Concern Statement: The independent panel (ISETR) needs to include an economist with experience in economic navigation models.

Response: USACE believes the ISETR panel has a range of expertise appropriate for providing a thorough review of the range of resources examined in the EIS including navigation. This is evidenced by the detailed feedback on Human Considerations Objectives, Metrics, Methods, and Models including navigation and navigation-related comments received from the independent external peer review of the EIS. Panel areas of expertise and independent reports are provided online at: <https://projects.ecr.gov/moriversciencepanel/TechReviewPanel.aspx>

Representative Quotes (Correspondence ID): 168, 197, 228
Comments (Comment ID): 645575, 645251, 645178

Concern Statement: The OSE analysis for navigation needs to consider changes in traffic congestion, public safety on roads, road and bridge repair costs, and travel costs with modal shifts in transportation.

Response: The navigation OSE analysis considered the impacts on air emissions due to potential modal shifts to land under each alternative. In addition, changes in transportation rates savings is evaluated as part of the NED analysis. For the Final EIS, the project team has included a discussion of the potential OSE impacts related to traffic congestion, public safety on roads, and road and bridge repair costs in the OSE subsections of the alternatives in Section 3.15.2, Navigation Environmental Consequences, of the Final EIS. On average, over the period of record, there would be

an estimated 5,400 tons diverted off of the waterway to alternate modes under Alternative 4 compared to Alternative 1, the alternative with the largest impacts. If we assume that all of the traffic would be shipped by truck, there would be an estimated additional 208 trucks per year under Alternative 4 on the highways. Given the small number of additional trucks over a large region, and that some of the tonnage would be shipped via rail, a qualitative description of the public safety and health aspects associated with higher volumes of truck transportation was deemed appropriate.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645609

Concern Statement: The assumption that the navigation ends when the navigation season (more accurately defined as flow support) officially ends is incorrect. Shippers will continue to use the river as long as adequate flows and weather conditions persist.

Response: Navigation on the Missouri River is limited to the normal ice-free season, with a full-length flow support season of 8 months, which normally extends from April 1 through December 1. The navigation analysis evaluated the impacts to transportation rate savings only during the navigation season, when USACE provides navigation flows if System storage criteria are met. The season lengths for each alternative were based on the hydrologic and hydraulic model outputs over the period of record and the criteria for season length determination described in the Master Manual and in Section 3.15.1, Navigation Affected Environment of the Final EIS. USACE does not provide navigation flows during the non-navigation season and when the navigation criteria indicate that the navigation season should be shortened. Given these conditions, the analysis showed support for navigation flows longer in some years than others. Because the same season length criteria is applied to all alternatives, including Alternative 1, the project team does not believe relative difference in NED benefits among alternatives have been underestimated.

Representative Quotes (Correspondence ID): 176, 228
Comments (Comment ID): 645581, 644757

Concern Statement: Change the statement in EIS "Alternative means of achieving species objectives are evaluated for their effects on navigation." To "The effects of navigation on species objectives are evaluated" considering the lack of commercial traffic on the river.

Response: The EIS evaluates the impacts of the management actions under each of the alternatives on human considerations that have been noted as important. Thus, we believe that the way the statement is noted is appropriate. Overall, the plan strives to balance meeting the needs of the species while minimizing impacts to other resources that utilize the river.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645557, 645452

Concern Statement: The navigation impacts analysis must take into consideration shifts from waterborne commerce to rail or truck under the Intermodal Surface Transportation Efficiency Act (ISTEA). ISTEA requires linked connectivity between modes, productive growth, reduced energy consumption, reduced air pollution, reduced traffic congestion, and competition.

Response: The National Intermodal Transportation System includes all forms of transportation in a unified, interconnected manner, including the transportation systems of the future,

and the purpose of the inter-connect system is to reduce energy consumption and air pollution while promoting economic development and supporting the Nation's preeminent position in international commerce. The Intermodal Surface Transportation Efficiency Act (ISTEA) is described in Section 3.15.2.1 in the Navigation Environmental Consequences, Methodology, Other Social Effects of the Final EIS. In addition, the project team has included a discussion of the potential OSE impacts related to air emissions, traffic congestion, public safety on roads, and road and bridge repair costs in the alternatives sub-sections of Section 3.15.2 in the Final EIS, Navigation Environmental Consequences. The project team is not aware of any specific requirements under ISTEA that must be addressed in the navigation section.

Representative Quotes (Correspondence ID): 221

Comments (Comment ID): 645295

Concern Statement: The navigation industry requires predictability and adequate flow support. Sudden changes in flow support can be economically impactful and even dangerous. These characteristics are not factored into the Missouri River navigation economic assessments conducted in the Draft EIS. In addition, the Draft EIS does not present a summary table of navigation performance (service level and season length) among the alternatives for the 82-year dataset.

Response: For navigation, the transportation rate savings account for the changes in economic benefits/savings given changes in service level and season length for each alternative. If USACE were to implement a flow action under the management plan, advance notice would be provided of the anticipated action. Given the importance of reliability to navigation operations, the project team added a reliability discussion to the Affected Environment section for navigation, in Section 3.15.1.2, Navigation Affected Environment of the Final EIS and impacts to navigation reliability associated with MRRMP-EIS alternatives have been described in Section 3.15.2.1 of the Navigation Environmental Consequences sections of the Final EIS.

In addition, summary tables have also been presented in the "Navigation Environmental Consequences Analysis Technical Report" that show the service level and season length by alternative over the period of record (Section 3.0).

Representative Quotes (Correspondence ID): 197, 222

Comments (Comment ID): 645263, 644805

Concern Statement: It is inappropriate to include routine repair, replacement, and rehabilitation costs (R, R, and R) in the navigation analysis while omitting similar costs for other USACE projects being analyzed. For instance, each of the Mainstem dams has annual operation and maintenance costs that were not included in any of the analyses.

Response: The project team included non-routine repair, replacement, and rehabilitation costs for the HC resources if it was determined that the management alternatives would influence those costs beyond normal operations and maintenance. For instance, additional operations and maintenance costs beyond normal operations was considered for boat ramps as part of the recreational analysis. Since flow actions under the management plan alternatives could affect management of the navigation channel, the analysis considered changes in repair, replacement, and rehabilitation costs to maintain the channel associated with changes in river flows and navigation service levels.

Representative Quotes (Correspondence ID): 197

Comments (Comment ID): 645262

Concern Statement: USACE needs to properly account for the value of goods shipped on the Missouri River in the Final EIS.

Response: Per USACE guidance (ER 1105-2-100 Planning Guidance Notebook), the NED benefits for navigation account for the change in transportation rate savings required to transport commodities, not the value of the commodities. However, the types of commodities transported on the Missouri River are detailed in the Navigation Affected Environment section of the EIS, Section 3.15.1, including consideration of oversized equipment and goods.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645260

Concern Statement: USACE failed to analyze the economic impact of the management actions on navigation in the Middle Mississippi (St. Louis to Ohio River).

Response: USACE has updated the navigation evaluation to estimate the navigation NED impacts associated with anticipated changes in Middle Mississippi River navigation under the MRRMP-EIS alternatives. The evaluation used input from industry sources on tow configurations and barge loading at various low flow thresholds; operating costs per tow; and tow speeds to estimate the change in NED costs associated with the MRRMP-EIS alternatives. The Mississippi River evaluation is described in Section 3.24.5, Navigation Mississippi River Impacts of the Final EIS.

Representative Quotes (Correspondence ID): 173, 197
Comments (Comment ID): 645249, 641388

Concern Statement: The Flood Control Act of 1944 authorized USACE to govern the U.S. waterways and requires USACE to prioritize flood control and navigation as dominant functions of its authority. Though the responsibilities of USACE have increased over time with additional directives from Congress, namely those to assist in protecting endangered species, the new obligations have not diminished the original priorities. While the courts have noted the difficulty in balancing these varied interests, case law is clear that endangered species do not get to take precedence to the detriment of flood control and navigation.

Response: USACE will comply with all laws, statutes and case law when implementing the MRRMP. The Final EIS has evaluated the impacts of the management plan alternatives for both navigation and flood risk management and has been considered in the selection of the preferred alternative.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645189

Concern Statement: All the economic models used to assess the impacts of the proposed alternatives on navigation and flood control have yet to be approved by USACE Headquarters. Until the final models have been adequately reviewed and commented on by stakeholders and MRRIC, no alternative should be chosen.

Response: All models have been through Agency Technical Review and District Quality Control, and they have been approved for use on the MRRMP by USACE. In addition, the analyses and results have been reviewed by the Independent Social Economic Technical Review (ISETR) panel through an Independent External Peer Review (IEPR). The technical reports detail the models, methods, assumptions, data sources and results

and are available as part of the Final EIS documents and online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645180

Concern Statement: The economic modeling used in the Draft EIS to evaluate navigation impacts utilized data from Master Water Control Manual Missouri River Review and Update Study which is over twenty years old. USACE did not consult with members of the towing industry or its customers to obtain feedback on how to calculate transportation savings and R, R, and R costs in its NED analysis. The RED evaluation appears to be insufficient and lacking in data from the tugboat, towboat and barge industry.

Response: The navigation evaluation used 2018 prices to compute the unit transportation rate savings. Data from the 2002 Transportation Rate Analysis: Master Manual Review provided a basis for the unit rate savings analysis. National and Mississippi River transportation rate savings provided by the USACE Planning Center of Expertise and Risked Informed Economics were reviewed, alongside the updated 2018 transportation rates savings. These transportation rate savings were compared and discussed with navigation economist, Dr. Mark Burton (Burton, pers. comm. 2017). Because the Missouri River Master Manual transportation rate savings reflect the shipping characteristics and competitive influences specific to the Missouri River, the updated 2018 rates were most appropriate for the NED evaluation (Burton, pers. comm. 2017).

The navigation RED evaluation estimated how the shift in commercial tonnage from the waterway to alternate overland modes of transportation under the MRRMP-EIS alternatives would affect waterway shippers, port services, and warehousing revenues and associated direct, indirect, and induced jobs and income. The RECONS model, a certified USACE model, which uses IMPLAN© ratios and multipliers to estimate regional economic effects, was used to conduct the evaluation. IMPLAN© is a standard approach to estimate regional economic effects and is widely used by academics, government and industry.

In addition, USACE has updated the navigation evaluation to estimate the navigation NED impacts associated with anticipated changes in Middle Mississippi River navigation under the MRRMP-EIS alternatives. Industry experts were consulted on tow configurations and barge loading at various low flow thresholds; operating costs per tow; and tow speeds. This information from industry experts was used as input to estimate the change in NED costs associated with the MRRMP-EIS alternatives. The Mississippi River evaluation is described in Section 3.24.5, Navigation Mississippi River Impacts of the Final EIS.

Representative Quotes (Correspondence ID): 168, 176
Comments (Comment ID): 645175, 644754

Concern Statement: The Draft EIS includes these years in the period-of-record when artificial government actions negatively impacted navigation during these years. This includes low summer flows in the early 2000s and a large spring rise a few years later to serve as a spawning cue for the pallid sturgeon. These years should be excluded from the modeling, otherwise the benefits of navigation are substantially understated in the Draft EIS. These federal actions discouraged navigation on the river due to reliability

concerns. Navigation on the Missouri River did not begin to recover until recent years when USACE provided reliable flows.

Response: The analysis presented in the EIS does not use observed data to assess the alternatives. Each alternative is a modeled result based on the same operations applied to each year of the simulation. The No Action (Alternative 1) does contain the plenary pulse/spawning cue but does not include low summer flows, as simulated in Alternative 2. Impacts associated with implementing or not implementing the spawning cue are shown in the Alternative 1 vs Alternative 3 (Alternative 3 does not include the plenary pulse/spawning cue). Impacts associated with the low summer flows are shown in the comparison between Alternative 1 and Alternative 2.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645174

Concern Statement: Dr. Bray and Dr. Burton concluded that there is not enough traffic on the Missouri River to measure water-compelled railroad rates. This conclusion ignores the fundamental principle of water-compelled rates and does not account for the recent increase and continued growth of navigation on the Missouri River.

Response: The University of Tennessee, Center for Transportation Research report (Dr. Bray and Dr. Burton 2017) provides a qualitative assessment of the impacts of Missouri River navigation on water compelled rates. The report provides a historical context of waterway and rail traffic along the Missouri River, noting the relatively recent issues with waterway reliability for navigation; describes past rail regulatory reforms; provides previous estimates of water-compelled effects; and describes the current rail environment that could have implications for these issues. The issues are complicated surrounding water-compelled rates and the dynamic economic conditions and context of the rail industry create uncertainties regarding the effect of Missouri River navigation on railroad pricing. However, the authors conclude that unless expectations regarding the Missouri River's reliability and long-run availability for navigation are reversed, water-compelled railroad rates attributable to Missouri River commercial navigation seem improbable. Further details are provided in the "Missouri River Water-Compelled Railroad Rates: Review and Qualitative Update" available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645170

Concern Statement: The impact analysis of Alternative 2 is contradictory. The Draft EIS states "that the impacts of Alternative 2 would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible." However, the Cumulative Impacts section states "Adverse impacts could result in the reduction of the navigation season length for years with the low summer flow, and the potential reduction in service level provided that could occur in the years with the spawning cue pulse. When combined with other past, present and reasonably foreseeable future actions, the cumulative impacts on navigation associated with Alternative 2 would result in a large reduction in navigation benefits." The conclusions in the Draft EIS on the cumulative impacts of Alternative 2 on Missouri River navigation are severe and not one bit negligible contrary to the earlier conclusions.

Response: The environmental consequence section and the cumulative impacts section has been reviewed and updated for consistency across these two sections in the Final EIS

(Section 3.15.2, Navigation Environmental Consequences). The average annual change in navigation NED and RED benefits is likely to be small and adverse under Alternative 2 (0.6 percent average annual decrease in NED from No Action). However, the split navigation seasons during low summer flow events under Alternative 2 would result in large adverse impacts to commercial navigation in those years (up to \$2 million reduction from No Action); when compared to average annual navigation NED benefits of \$8.0 million. A reduction of \$2 million represents a decrease in transportation rate savings of approximately 25 percent. In addition to no navigation during these low summer flow events, there would also be impacts to navigation reliability, with the reduced ability for navigators to secure relatively longer-term contracts (i.e., 5 years) if navigation is unavailable for up to 10 weeks in the summer when water conditions allow for the spawning cue and low summer flow events to be implemented. These impacts are described in Section 3.15.2.2., Navigation Environmental Consequences, Alternative 2. The cumulative impact analysis considers both the cumulative actions or projects as well as with the impacts under the MRRMP-EIS alternatives. Because of the large adverse effects of the low summer flows on navigation under Alternative 2 in those years along with the adverse impacts to navigation long-term planning and reliability, the contribution of Alternative 2 to cumulative impacts could be large and adverse. The impacts to navigation under Alternative 2 would be significant because there would be uncertainty in the provision of navigation service for 10 months when low summer flows would occur, which would add to the variability in hydrologic flooding and drought conditions, leading to potentially unfavorable conditions for the navigation industry. Section 3.15.2.4, Navigation Environmental Consequences, Cumulative Impacts has been updated to reflect a description of these impacts to navigation under Alternative 2.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645160

Concern Statement: The modeling of a range of hydrological conditions for Alternative 6 is not sufficient to address the potential impacts of one-time spawning cue test which includes future hydrological conditions, weather patterns and the possible impacts of climate change.

Response: The one-time spawning cue test (Level 2) release that might be implemented under Alternative 3 was not included in the hydrologic modeling for these alternatives because of the uncertainty of the hydrologic conditions that would be present if implemented. Hydrologic modeling for Alternative 6 simulates reoccurring implementation (Level 3) of this spawning cue over the wide range of hydrologic conditions in the POR. Therefore, the impacts from the potential implementation of a one-time spawning cue test release would be bound by the range of impacts described for individual releases under Alternative 6. This modeling is a reasonable representation of the impacts that could occur to navigation under the one-time spawning cue test. These impacts are described in the Navigation Environmental Consequences section of Alternative 3 of the Final EIS (Section 3.15.2.6). Additional hydrology, hydraulic and economic analyses would be conducted if adaptive management identifies the need for future flow measures. The level of additional analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645158

Concern Statement: The impacts of IRC and ESH habitat construction on navigation have not been fully vetted. In the Draft EIS, navigation is given priority over ESH and IRC construction because the design of the habitat itself is supposed to prevent any impacts to navigation. USACE states that if effects to navigation do occur, then the habitat construction would be undone to return to the original use of the channel. This is significant because it means that potentially far less early life stage habitat could be created than each of the alternatives suggest, and that pallid sturgeon goals may not be met. Even if the constructed habitat would have some incidental impact on navigation, USACE should not abandon this management action because it is essential to meet species goals.

Response: The Final EIS does evaluate the impacts of IRC and ESH habitat construction on navigation. The project team concluded that ESH habitat construction would not have an impact on the portion of the river where commercial navigation takes place. This conclusion is based on the assumption that ESH construction would occur upstream of the BSNP. In addition, while it is not known specifically where the actual IRC habitat will be located, USACE will work with stakeholders and navigation interests to minimize impacts to the navigation channel. In addition, site specific analysis (NEPA) would be conducted once these locations are identified and prior to construction. Because planning for habitat construction and design would seek to minimize impacts to other authorized purposes and River uses, it is not anticipated that habitat would need to be removed. The Final EIS Section 3.15.2.1, Navigation Environmental Consequences, Alternatives Mechanical Habitat Construction sections were updated to reflect the above descriptions.

Representative Quotes (Correspondence ID): 144, 211, 240

Comments (Comment ID): 645039, 642139, 633922

Concern Statement: Each of the alternatives begins their concluding paragraph with a sentence that says the Alternatives 2, 4, 5, and 6 have negative impacts on navigation and Alternative 3 has a positive impact. The conclusion of each alternative then ends with a sentence saying that those impacts are not significant. This appears to be conflicting conclusions because each adverse impact is either slightly adverse, adverse, or largely adverse. In addition, the fact that Alternative 3 is the only alternative with positive impacts shows a bias towards that alternative, furthering demonstrating an unreasonable range of alternatives.

Response: Navigation on the Missouri River is limited to the normal ice-free season, with a full-length flow support season of 8 months, which normally extends from April 1 through December 1. The navigation analysis evaluated the impacts to transportation rate savings, per USACE guidance (ER 1105-2-100 Planning Guidance Notebook). The evaluation assessed how changes in System storage would affect navigation service levels and navigation season length. The season lengths for each alternative were based on the hydrologic and hydraulic model outputs over the period of record and the criteria for season length determination described in the Master Manual and in Section 3.15.1, Navigation Affected Environment of the Final EIS. USACE does not provide navigation flows during the non-navigation season and when the navigation criteria indicate that the navigation season should be shortened. Given these conditions, the analysis showed support for navigation flows longer in some years than others. Because the same season length criteria are applied to all alternatives, including Alternative 1, the project team does not believe relative difference in NED benefits among alternatives have been underestimated. The navigation NED evaluation showed that on average

there are negligible to small adverse effects to transportation rate savings compared to No Action under Alternatives 2, 4, 5, and 6, and a slight increase in transportation rate savings under Alternative 3 compared to No Action. However, in some years, under Alternative 2, there can be large adverse effects from the low summer flow events. The conclusions sections of the Navigation Environmental Consequences evaluation were updated for consistency with the results described under the alternatives (Section 3.15.2.2.)

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 645038

Concern Statement: There appears to be a difference in results in the navigation and sand and gravel sections for all the alternatives. An analysis of the impacts of the alternatives on navigation is a permissible consideration. However, USACE overstates those impacts where it analyzes sand and gravel dredging under the topic of navigation as well as under its own category, particularly since the conclusions of the MRRMP-EIS in the Commercial Sand and Gravel Dredging section conflict with the conclusions in the Navigation section.

Response: While commercial sand and gravel dredging is evaluated in two sections of the Final EIS, the project team does not believe the results are contradictory. These two sections evaluated different aspects of the sand and gravel industry, therefore it is expected that results may differ. The commercial sand and gravel dredging section evaluates the impacts of the management plan alternatives on the availability of materials (i.e., sediment accumulation rate) that are dredged and commercially sold as sand and gravel. The navigation section evaluated the impacts of the management alternatives on how river flows and stages would affect the ability to extract and transport the sand and gravel resources dredged from the river. Because these two sections are evaluating different aspects of the sand and gravel industry it is likely that the impact analysis for both may be different. Additional details are described in the "Commercial Sand and Gravel Dredging Environmental Consequences Analysis Technical Report" and "Navigation Environmental Consequences Analysis Technical Report" available as part of the Final EIS and online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 644965, 644964, 644963, 644961

Concern Statement: When discussing the impacts that the ESH construction of Alternative 2 would have on the sand and gravel dredging, USACE erroneously states "each project will be designed to not impact other authorized purposes including sand and gravel dredging as described in Section 2.5.3.1. Sand and gravel dredging is not a congressionally authorized use of the Missouri River and should afford no special protection in the development of alternatives. Therefore, the sand and gravel dredging industry should not be given undue consideration in the MRRMP-EIS. If anything, reducing dredging activity would seem to accrue benefits to species protection.

Response: The reference to sand and gravel dredging as an authorized purpose has been removed. However, the EIS examines a variety of human considerations, some of which are authorized purposes and others that are not.

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 644962

Concern Statement: Navigation is by far the most cost effective and efficient method of moving products long distances, and it is imperative that USACE support economic growth by having a minimum navigable draft level of nine feet for at least eight months, preferably nine months of each year. There are business opportunities now available with the deepening of the Panama Canal and the availability and reliability of navigation to ship large quantities cost effectively and in a timely manner is very important. Low summer flows and flood events worsened by unreliable releases at Gavins Point can have serious negative impacts on transportation.

Response: The MRRMP-EIS includes a suite of actions intended to preclude jeopardy status of the piping plover, the interior least tern, and the pallid sturgeon, and minimize impacts to human considerations.

The navigation NED analysis has evaluated the impacts of different flow actions under the MRRMP-EIS alternatives on navigation through changes in transportation rate savings per USACE guidance (ER 1105-2-100 Planning Guidance Notebook). Changes in transportation rate savings include any changes in transportation costs associated with shifting modes from water to over land or changes in navigation service levels. The navigation NED evaluation indicates that there would be reductions in transportation rates savings and NED values under Alternatives 2, 4, 5, and 6, and increases under Alternative 3, the preferred alternative.

Representative Quotes (Correspondence ID): 83, 168, 176
Comments (Comment ID): 644755, 627430, 645176

Concern Statement: It is unclear how the navigation results could be the same (in terms of tonnage moved) for both Alternative 3 and 5 when Alternative 5 has a fall release and Alternative 3 has no flow management actions.

Response: The navigation analysis was updated to reflect updated H&H modeling and associated RESSIM data. The navigation analysis assumes that tonnage shifts off of the river to alternate modes when river flows fall below 26,000 cfs. Under the updated evaluation, Alternatives 3 and 5 do not result in the same estimates of tonnage shifting off of the river (please see Section 7.1 of the "Navigation Environmental Consequences Analysis Technical Report").

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642687

Concern Statement: Including sand and gravel in both the Navigation section and its own standalone section creates some double counting.

Response: While commercial sand and gravel dredging is evaluated in two sections of the Final EIS, the analyses do not result in double counting. These two sections evaluated different aspects of the sand and gravel industry. The Commercial Sand and Gravel Dredging section (Section 3.11 of the Final EIS) evaluates the impacts of the management plan alternatives on the availability of materials (sediment accumulation rate) that are dredged and commercially sold as sand and gravel. The navigation section evaluated the impacts of the management alternatives on the transport of the sand and gravel resources dredged from the river, specifically how river flows would affect the ability to extract and transport sand and gravel (Section 3.15 of the Final EIS). Because these two sections are evaluating different aspects of the sand and gravel industry it is not double counting the potential impacts.

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 642681

Concern Statement: The “Navigation Environmental Consequences Analysis Technical Report” has many grammatical and formatting errors.

Response: The “Navigation Environmental Consequences Analysis Technical Report” has been updated to eliminate any grammatical or formatting errors.

Representative Quotes (Correspondence ID): 95
Comments (Comment ID): 636834

Concern Statement: Repeated or extended disruption of Missouri River flows will have impacts on transportation of coal that will impact power generation.

Response: The management plan alternatives are not anticipated to have impacts on the transport of coal on the Missouri River under the preferred alternative. As described in Section 3.0 of the “Navigation Environmental Consequences Analysis Technical Report,” the change in releases from Gavins Point Dam would have minimal impact on service levels and season length under Alternatives 3 and 5 compared to No Action. Changes in service level and season length would be large and adverse under Alternative 2 when low summer flows would be implemented. Alternatives 4 and 6 would result in reduced navigation service, reduced transportation rate savings, and increased repair, replacement, and rehabilitation costs in a number of years over the period of record, although the average annual change in NED values compared to No Action is small (less than 2.5 percent). Aside from Alternative 2, Alternatives 4, 5, and 6 as well as the preferred alternative (Alternative 3) would not result in repeated or extended disruptions to navigation. If flow actions were carried forward, navigators would be given advance notice of the flow change. In addition, there are only very small amounts of coal being transported along the river. Current statistics indicate that there has been less than 5,000 tons of coal (total) moved on the Missouri since 2000; one barge moved in 2008.

Representative Quotes (Correspondence ID): 195
Comments (Comment ID): 642103

AE1600 *Affected Environment: Recreation*

Concern Statement: The recreation Affected Environment characterization of the riverine areas as “low density use” sites, especially in North Dakota, is inaccurate as some locations experience crowded recreation facilities and high watercraft densities.

Response: The description of the riverine areas has been changed in the Final EIS, Recreation Affected Environment (Section 3.15.1) to describe high-density recreation use in the summer, especially in the Bismarck area.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642696

EC1600 *Environmental Consequences: Recreation*

Concern Statement: The recreational analysis contained in the Draft EIS is deficient because it does not consider the numerous recreational vehicle established camp grounds located along the Missouri River.

Response: The recreation valuation in the Final EIS included an evaluation of how the MRRMP/EIS alternatives would affect visitation and the economic values of recreation in the lower river. The operability of boat ramps provides an indication of how recreational access would be affected under the alternatives with the changes in river stages and flows affecting boat ramp operability. In addition, the habitat features in the lower river were assumed to improve the quality of the recreational experience, increasing the consumer surplus (unit day value) per visitor per day, which was included in the recreation NED evaluation.

The baseline visitation was obtained from the Missouri River Public Use Assessment: final Report (Steven Sheriff, Rochelle B. Renken, and Thomas B. Trainman; Missouri Department of Conservation – Resource Science Division; March 15, 2011) that uses a 2004 survey of river users. The accesses and areas included in this survey are shown in Table 1 of the report, which includes campgrounds with river access points. This study focused on estimating visitation at recreation areas, river access points, and places where people could easily reach the Missouri River. The visitation estimates from the River Public Use Assessment have been adjusted (i.e., increased) to reflect current use levels through a proportional increase in population in the counties along the river. All visitors within proximity to habitat areas in the lower river were assumed to benefit from the existence and creation of emergent sandbar, shallow water habitat, and intercept rearing habitat (through a higher consumer surplus value) because of the aesthetic qualities and potential opportunities for more remote and natural recreational experiences with these habitat areas. The recreation evaluation focused on the recreational conditions and attributes that could be affected under the alternatives, such as river stages and habitat areas, and has included RV and other campground visitation in the evaluation.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645218

Concern Statement: The economic analysis is deficient because there is no information provided on the impacts to commercial fishing.

Response: The economic analysis is not deficient due to the lack of commercial fishing information. CEQ's NEPA regulations state that data and analyses included in an EIS should be commensurate with the importance of the impact (40 CFR 1502.15). A qualitative discussion of the potential commercial fishing impacts resulting from the alternatives was included in the Fish and Wildlife section (Section 3.5) and the Ecosystem Services section (Section 3.23) of the Final EIS. USACE has determined that the alternatives would have a negligible impact on commercial fisheries and a detailed economic analysis of commercial fishing was not deemed to be warranted.

Representative Quotes (Correspondence ID): 76
Comments (Comment ID): 633560

Concern Statement: Paddlefish snagging recreational activities occur in the river below Gavins Point Dam, which could be adversely impacted by fall releases from the dam reducing snagging opportunities and harvest levels.

Young walleye abundance is highest in Lewis and Clark Lake in the late fall, and fall releases of 60,000 cfs would likely result in entrainment of the walleye. Both spring and fall releases would result in decreased walleye abundance in Lewis and Clark Lake, adversely affecting the fishery.

In Lake Oahe, major flow events result in degraded fishery quality and angler use a few years after their occurrence, resulting in low angler use even at high reservoir elevations. Major flow events have the ability to flush the majority of pelagic prey (rainbow smelt and lake herring) and Chinook salmon through Oahe Dam, resulting in long-term impacts to the fishery.

The need for an immediate source of water to support flow-related management actions could affect the elevation of Lake Francis Case during walleye spawning, thereby reducing the stability and quality of the walleye fishery, which contributes significantly to the recreation industry in South Dakota.

Response: The impacts to recreation described in these comments, including the impacts to the fishery and/or paddlefish from flow events below Gavins Point Dam, in Lake Oahe, Lewis and Clark Lake, and Lake Francis Case, are described qualitatively in the recreation environmental consequences section in the Final EIS (Section 3.16.2).

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645786, 645143

Concern Statement: The economic analysis in the EIS should assess the benefits to local and regional economies from the increased recreational opportunities in the lower river as a result of recovery habitat projects, habitat values, and sportfish production.

Response: Regional economic impact analyses that estimate jobs and income from visitor spending only include visitor spending from “non-local” visitors, typically defined as visitors that live more than 50 miles from their homes (the USACE Regional Economic System (RECONS) defines local visitors as visitors from *counties* within 50 miles from a recreation area). In general, most of visitation in the river reaches is associated with residents that live within a couple hours’ drive of the river. For example, the Missouri Public Use Assessment indicates that 75 percent of visitors to the lower river live within 30 miles. As a result, these local visitors are described in the Final EIS as “local” and do not inject outside visitor spending into economies near the river. For example, the visitors are likely coming for the day and packing their food for the trip, having purchased it near their home.

There are events, such as the Missouri River 340, a river race on the Missouri River that spans across the state of Missouri, that are likely to bring in outside visitors, generating tourism revenues for communities near these river races. However, the alternatives are not likely to affect the number of visitors to these events because flow releases would occur in the spring and the fall when most of these events would not occur, and the releases are not high enough to noticeably affect the events. A description of these events was included in the Final EIS (Section 3.16.1, Recreation Affected Environment) and noted that there would be regional economic benefits generated from these events, although there would be minimal or no differences among the alternatives when considering the visitation for these events.

In addition, although there are greater opportunities for low-density dispersed recreation along the river where habitat, especially where early life history habitat, is created, there is not a preponderance of evidence to suggest that the creation of these habitat areas would induce additional visitation to the area (Haller pers. comm. 2016, Kuhlman pers. comm. 2016, Schneider pers. comm. 2016). The habitat features improve the quality of the recreational experience, increasing the consumer surplus value per visitor per day, which was included in the NED evaluation. There was not sufficient support from recreation area managers to increase visitation associated with these habitat areas.

Because most of the visitation is “local,” there would be minimal regional economic effects associated with any changes in visitation in the lower river.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645567

Concern Statement: The EIS fails to account for the positive impacts of increased recreation and visitor spending in the OSE section of Alternative 2 associated with floodplain connectivity and improved ecosystem functioning.

Response: Alternative 2 would result in considerably more acres of shallow water habitat and emergent sandbar habitat, and land acquisition than would occur under Alternative 1. Because most of the visitors are “local” visitors in the river reaches, there is little visitor spending that injects new money to support jobs and income in these regions. In addition, although there are greater opportunities for low-density dispersed recreation along the river where habitat, especially where early life stage habitat is created, there is not a preponderance of evidence to suggest that the creation of these habitat areas would induce additional visitation to the area (Haller pers. comm. 2016, Kuhlman pers. comm. 2016, Schneider pers. comm. 2016). The habitat features improve the quality of the recreational experience, increasing the consumer surplus value per visitor per day, which was included in the NED evaluation. There was not sufficient support from recreation area managers to increase visitation associated with these habitat areas. Because most of the visitation is “local,” there would be minimal regional economic effects associated with any changes in visitation in the lower river and inter-reservoir river reaches.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645507

Concern Statement: There is an error in the NED tables in the recreation section of the EIS (Table 3-200) for Alternatives 2–6; the numbers are off by a factor of 1,000. The text above the table is not consistent with the numbers in the table.

Response: The Final EIS was updated to reflect updated H&H data and associated updated recreation NED benefits (see Section 3.16.2, Recreation Environmental Consequences in the Final EIS). All values were checked for accuracy.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645288

Concern Statement: The recreation evaluation has underestimated visitation in the lower river because it used visitation estimates from 2005, and visitation has considerably increased since then (e.g., Race to the Dome, Missouri Rover 340, Katy Trail Bike Ride, Hartsburg Pumpkin Festival). In addition, the Unit Day Value approach is an antiquated approach that has been criticized in the literature (Ready and Navrud, 2005, Lindsey et al, 2004). A hedonic pricing method is more appropriate approach to estimate recreation the lower river.

Response: The visitation estimates for the lower river relied on a 2011 study with visitation data from 2004-2005. The visitation was updated to 2015 levels based on the percent increase in population in the counties adjacent to the river reaches and reservoirs. The Final EIS includes a description of recreational events, such as Missouri River 340 (a river race on the Missouri River that spans across the state of Missouri), Katy Trail Bike

Ride, Race to the Dome (Section 3.16.1, Recreation Affected Environment). However, it is not likely that the alternatives would affect the visitation at these events.

The Final EIS recreation evaluation was updated to use a hybrid method to estimate the recreation consumer surplus values based on both the unit day value (UDV) and the travel cost method (TCM) approaches. The UDV method of estimating willingness to pay relies on expert and informed opinion to assign relative values to recreation days based on the quality of recreational opportunities supported by individual recreation areas. The TCM is a revealed preference method of economic valuation that deduces willingness to pay through observing human behavior (i.e., the number and trips and costs per trip to a recreation area). The approach to estimate the consumer surplus recreation values uses the UDV, which is based on USACE guidance and site-specific ratings and activities, but also recognizes that the UDV may reflect a relatively lower estimate of the consumer surplus value for a recreation visitor-day. Therefore, the UDV (in 2018\$) was estimated and then proportionally increased based on the difference between the UDV and TCM as estimated in the Recreation Economics Volume 6C of the Master Water Control Manual Missouri River Review and Update (USACE 1994). The "Recreation Environmental Consequences Analysis Technical Report" Section 2.4.3 describes the approaches used to estimate the consumer surplus value of a recreation visitor day.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645287

Concern Statement: The recreation evaluation used the unit day value approach, which uses boating recreation in the general recreation category, and as a result there are lower UDV's for boating visitation. Since most of the boating recreation on the upper five reservoirs are also engaged in fishing, the lower UDV is not appropriate. This simplified UDV approach is acceptable for comparing alternatives, but the RED valuation method based on expenditure data should be used when comparing recreation with other interest categories.

Response: The UDV guidance (USACE 2017) indicates that the general category should comprise activities such as swimming, picnicking, and boating. However, based on professional judgment and a review of other studies (Loomis 2005; USACE 2002), boating on the river and reservoirs was allocated to a specialized recreation category with a relatively higher value per day than the general recreation activities. The recreation NED evaluation was also updated with a hybrid approach to estimate the consumer surplus values for a recreation visitor day using both the Unit Day Value and Travel Cost Method. The method to estimate the consumer surplus recreation values uses both the UDV, which is based on USACE guidance and site-specific ratings and activities, but also recognizes that the UDV may reflect a relatively lower estimate of the consumer surplus value for a recreation visitor-day. Information on the UDV's and TCM values from the TCM study conducted as part of the Master Water Control Manual Missouri River Review and Update (USACE 1994) was used to proportionally increase the UDV's to reflect TCM values. Please see Section 2.4.3 of the "Recreation Environmental Consequences Analysis Technical Report" for additional details.

The NED, RED, and OSE impacts have been evaluated for the recreation evaluation. The NED and RED impacts address different topics. The NED and RED results are not used to compare impacts across interests, but assess the tradeoffs across the alternatives. The NED evaluates benefits and losses on a national level, and the RED analysis evaluates impacts on a regional level. The RED results across interests (or

resource topics) cannot be aggregated or compared because the methods of analysis are different among the interests and topics.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645150

Concern Statement: Water depth alone may not be an accurate predictor of habitat availability, recreational use, and subsequent recreational economic impact. Aquatic wildlife pursued by recreational users will occupy habitats when water depth, velocity, and temperature - along with other factors - are aligned for the target species. Water velocity can also affect habitat occupancy, while temperature will affect fish activity. Additional detail on the assumptions and analysis of recreation impacts for the proposed alternatives would be helpful.

Response: Additional details were added to the Final EIS (Section 3.16.2) to describe how the alternatives could affect aquatic resources and fish. The fish and wildlife analysis modeled the quantity of each habitat type to estimate the effects on fish and wildlife species. Changes in habitat types will benefit some types of species and adversely affect others, so generalizations regarding how fish and wildlife will fare under the alternatives is a complicated evaluation. The relevance of habitat availability varies by species and would require additional research to provide specific details on species impacts, which was not warranted for the Final EIS to assess effects to fish and wildlife. Time and resources did not allow for an analysis of velocity.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644636

Concern Statement: Lower reservoir levels would cause prolonged impacts to the fishery and would take years to recover. The recreation evaluation (p. 3-453) states the reservoirs could be up to 5 feet lower than under Alternative 1, and that impacts would be temporary and would typically dissipate within a year; this is not an accurate statement.

Response: This statement regarding lower reservoir elevations affecting the fishery was clarified in the Final EIS, Recreation Environmental Consequences (Section 3.16.2). The Final EIS states that the decreased lake elevations would be temporary, although in some cases, would remain lower for a number of years. It was also clarified that the fishery impacts and resulting visitation could have prolonged effects from decreased lake elevations.

The effects of the management plan on visitation at the reservoirs is based on regression equations and variables that best predict visitation. For Lake Sakakawea, visitation is best explained by a lagged mid-August water elevation variable and price of gas. The discussion in the Final EIS has been updated to describe the prolonged impacts to the fishery past a year or two.

Representative Quotes (Correspondence ID): 239.
Comments (Comment ID): 642709

Concern Statement: USACE should abide by the moratorium of management actions for least tern and piping plovers within the Bismarck-Mandan stretch, including human restriction measures agreed to by the North Dakota Interagency ESH Team. This stretch of river supports high volumes of recreation, and the management actions would bring unnecessary human/bird conflicts.

Response: USACE will continue to work with the interagency ESH team and continue to avoid constructing habitats in areas that would bring unnecessary human/bird conflicts. Constructing habitat in high human use areas is contrary to the idea of providing functional nesting habitat.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642703

Concern Statement: The ESH creation will affect boat navigation on the Garrison reach, which is heavily used during the summer season (355,000 hours of fishing effort Apr 1 – Oct 31, 2015).

Response: The Final EIS has been updated to describe how ESH creation would affect boating recreation, especially during the summer seasons (Section 3.16.2, Recreation Environmental Consequences of the Final EIS). These impacts would be notably greater under Alternative 2. Siting of the habitat areas would avoid high use areas and additional NEPA studies would accompany the habitat construction projects to further analyze these impacts. In addition, constructing habitat in high human use areas is contrary to the idea of providing functional nesting habitat.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642692

Concern Statement: Drawing down Lake Sakakawea would adversely impact the fishery, recreation, and local economies. The North Dakota Game and Fish Department has considerable research and data that shows that: 1) reservoirs must maintain adequate water levels to provide quality habitat; and 2) water levels must rise during the critical spring spawning and egg incubation period (Fryda et al. 2014, Fryda et al. 2010, Scarnecchia et al. 2008). Any alternatives in the MRRMP-EIS or actions identified in the SAMP that increase the frequency of not meeting these water conditions are detrimental to the fishery and are contrary to the management goals and responsibilities of the North Dakota Game and Fish Department – Fisheries Management Division.

There has been considerable sediment deposited in the upper portions of Lake Sakakawea (USACE 2014), and dewatering this depositional zone under the drawdown of the Lake would not undo decades of sedimentation and restore a naturally functioning river. The headwaters region of Lake Sakakawea that would be dewatered is a critical rearing area for juvenile paddlefish. The Yellowstone/Sakakawea stock of paddlefish is one of the most scientifically understood paddlefish populations in North America, and extensive research has shown good inflows combined with high lake levels are crucial for recruitment for this important paddlefish population (Scarnecchia et al. 2008).

Response: USACE understands that maintaining reservoir elevations and increasing reservoirs elevations in the spring is important to maintain the fishery at the upper three reservoirs. The Human Consideration technical staff has spoken with state biologists several times to discuss these issues and have read the Fisheries Management Plans for the Missouri River System. A fishing success proxy metric was developed, which is described in Section 2.4 of the “Recreation Environmental Consequences Analysis Technical Report,” based on input from fisheries biologists, including Dave Fryda, Chris Longhenry, and Mark Fincel. As described in Section 3.1.2 in the “Recreation Environmental Consequences Analysis Technical Report,” a number of variables were evaluated to assess the best predictors of visitation. The fishing success proxy metric was one of these variables. For Lake Sakakawea, the best predictors of visitation

between 2001 and 2012 was the price of gas and one-year lagged mid-August lake elevations. Additional description was added to the Final EIS of the potential impacts to the fishery if criteria noted in the fisheries management plans are not met. In addition, the Final EIS describes how the low lake elevations in the year and years following spring and fall releases could be detrimental to paddlefish populations in the headwaters of Lake Sakakawea.

Representative Quotes (Correspondence ID): 96, 239

Comments (Comment ID): 640213, 645796, 642843, 642846

Concern Statement: The recreation economic analysis is incomplete because RED analysis was not conducted for Lake Sharpe and the inter-reservoir river reaches. In addition, the recreation NED evaluation is also incomplete because the RED analysis was not undertaken.

Response: The Hydrology and Hydraulics models that estimate the reservoir elevations at Lake Sharpe show that lake elevations would be relatively stable and there would not be any noticeable changes to recreational access. Because lake elevations (and visitation) are not likely to be noticeably affected under the alternatives, a RED evaluation was not conducted for this lake because impacts would be the same across all of the alternatives.

The NED and the RED are separate evaluations; however, both evaluations use the estimates of visitation. The NED evaluation uses visitation to estimate the total economic value of recreation through a consumer surplus approach, while the RED evaluation uses visitation to estimate visitor spending and regional jobs, income, and sales.

Representative Quotes (Correspondence ID): 197

Comments (Comment ID): 645289, 645284

AE1700 *Affected Environment: Thermal Power*

Concern Statement: The thermal power affected environment indicates that coal-fired power plants are most economically operated as base-load plants. Although this is the case, these units are increasingly called on for dispatchable generation and have flexibility to operate at different loads as the electric market requires. This type of dispatchable generation that can be provided by coal-fired power plants (and not renewables) should be noted in the affected environment.

Response: USACE agrees with this comment and additional discussion has been incorporated into the Final EIS, Section 3.17.1, Thermal Power Affected Environment, on how coal-fired thermal power plants are increasingly being called on to supply dispatchable generation, with the flexibility to operate at different loads as the electric market requires.

Representative Quotes (Correspondence ID): 167

Comments (Comment ID): 643851

Concern Statement: The thermal power affected environment should note the new nameplate capacity for the Heskett Plant (203 MW).

Response: The thermal power affected environment in the Final EIS (Section 3.17.1) has been updated to note the new nameplate capacity for the Heskett Plant.

Representative Quotes (Correspondence ID): 167

Comments (Comment ID): 643856

Concern Statement: The Fort Calhoun nuclear plant has ceased operations and will begin a decommissioning process, which should be noted in the thermal power affected environment.

Response: The thermal power evaluation in the Final EIS has been updated to remove the Fort Calhoun nuclear plant from the analysis (Section 3.17.1).

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641584

EC1700 *Environmental Consequences: Thermal Power*

Concern Statement: It is suggested that the habitat areas and IRCs should be placed in areas that would not cause adverse effects to water supply intakes.

Response: The siting of habitat areas considers protective measures around sensitive infrastructure and facilities, such as water supply intakes and thermal power plants. USACE works closely with nearby land and facility-owners to minimize impacts and would conduct site-specific NEPA analyses prior to constructing the habitat. In addition, IRC effects on river flow levels is regarded as incidental; IRC habitat construction may locally decrease the stage slightly due to added conveyance. IRCs would be designed to create effective interception hydraulics, food producing, and foraging habitats on the Lower Missouri River. For these projects to be effective and sustainable, the IRC projects would be designed such that the navigation channel and overall bed and hydrological conditions would largely remain unaffected. Refer to the supporting hydrology and hydraulics technical documents (e.g., HEC-RAS Modeling Alternatives Report) for a thorough description of modeling methodology, assumptions, and limitations.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 646288

Concern Statement: Low summer flows under alternative 2 have the potential to adversely impact power plants, creating problems with intakes and increasing the risk of failure to comply with temperature discharge limits. The low flow conditions under Alternative 2 have the greatest potential to impact the ability to generate power and would occur during a seasonal period of peak demand.

Response: USACE agrees with this comment, and the thermal power evaluation NED, RED, and OSE evaluation in the Final EIS (Section 3.17.2) and in the accompanying “Thermal Power Environmental Consequences Analysis Technical Report” shows that the low summer flows do have considerable impacts to power generation and dependable capacity, especially during the summer season of peak power demand.

Representative Quotes (Correspondence ID): 27, 65, 118, 159, 164
Comments (Comment ID): 645769, 645764, 641000, 641329, 633750

Concern Statement: The thermal power evaluation likely underestimates the adverse impacts to thermal power due to the small number of years analyzed (for operations and river temperatures) and/or due to inappropriate modeling assumptions. The 15-year period of analysis will likely miss periods of refill and other conditions which could cause adverse impacts. The full spring release occurred in 10 of 82 years (as modeled with set release parameters), but not during the 12 years evaluated in the thermal power analysis. The thermal power evaluation should include an 82-year period of analysis.

The analysis also assumes that offset energy is available from the market and that transmission facilities could deliver that replacement energy. In addition, low summer flows under Alternative 2 could lead to problems with system reliability from shutting down thermal power plants. Montana-Dakota Utilities does not agree with the assumption in the thermal power evaluation that renewable electric generation resources would be able to replace the lost capacity of thermal fossil-fired electric generation resource if an alternative results in curtailment or shutdown of the resource. The electric load balancing services from dispatchable fossil-fired electric generating units provide a reliable, low-cost and stable transmission grid that intermittent renewable electric generation resources are not able to provide. Renewable electric generation resources such as hydropower and wind-powered generation resources should not be represented as equals when considering offsets and costs since these resources must be backed up by dispatchable electric generation resources. USACE should also consider transmission grid upgrades when representing the "Other Social Effects" associated with the alternatives.

USACE should also consider the benefits from emissions reductions and use the social cost of carbon when estimating the thermal power economic impacts (Review of Estimates of the Social Cost of Carbon in Executive Order "Promoting Energy Independence and Economic Growth" released on March 28, 2017).

Response: USACE agrees that the 15-year period of analysis for the evaluation was likely missing period of refill, especially because a full or partial release did not occur during the 15-year time period under Alternative 5. The Final EIS has been updated to include an extended period of analysis for the river temperatures (1975-2012, excluding 2011). In addition, the impacts to thermal power intakes (when river stages fall below shut down intake elevations) were evaluated in the Final EIS over the 82-year period of record and presented in the figures that show the annual impacts, Sections 3.1 and 4.0 in the "Thermal Power Environmental Consequences Analysis Technical Report."

Interviews with SPP have been conducted and experts have indicated that it is probable that there would be capacity to replace the reduced load, even during the low summer flow events when the reductions in power generation compared to No Action are the largest. However, there is the possibility under Alternative 2, that there could be more severe impacts, with potential impacts to power availability and electricity reliability. Given this, the evaluation does assume that replacement power would be available from the market (i.e., through MISO or SPP depending on the power plant/utility). The analysis does not specify that renewable sources of energy would be the replacement source, but that the MISO and SPP Regional Transmission Organizations would be able to supply replacement energy (renewable sources are part of the power mix). USACE acknowledges that under certain low water conditions and especially under the low summer flow under Alternative 2, multiple plants could be affected. In addition, the coupled effects of both hydropower and thermal power being impacted simultaneously have been analyzed and included in the Final EIS (See Section 7.0 in the "Thermal Power Environmental Consequences Analysis Technical Report"). Additional details on the risks and uncertainties associated with adverse impacts to thermal power have also been included Final EIS, Section 3.17 and in the "Thermal Power Environmental Consequences Analysis Technical Report," Sections 2.1 and 2.2.

The Final EIS, Section 3.17.2, has been updated to include a quantitative evaluation of the air emissions associated with changes in power generation and an evaluation of the social cost of carbon in the OSE subsections. Additional details on air emissions and

social cost of carbon are provided in the “Thermal Power Environmental Consequences Analysis Technical Report,” Section 6.0.

Representative Quotes (Correspondence ID): 107, 167, 228

Comments (Comment ID): 645610, 644092, 644062, 644011, 643846, 643893, 643782, 643893

Concern Statement: The impacts associated with low summer flows under Alternative 2 are underestimated for water intakes, energy generation, and sewer treatment plants and should be re-examined. Further, any regulatory burdens as well as costs to adjust to management actions (i.e., modification of intakes) that would be incurred due to management actions should be identified and estimated prior to implementation through input from the affected industries.

Response: USACE acknowledges that low summer flows under Alternative 2 would adversely affect thermal power plants. This would primarily be a result of higher river temperatures affecting the ability of plants to meet regulatory discharge requirements. When power generation is affected during peak summer and winter seasons, replacement capacity may be needed to provide dependable energy during these peak power seasons. The “Thermal Power Environmental Consequences Analysis Technical Report” describes the capital costs needed to replace lost capacity under the alternatives; Alternative 2 would require both replacement power generation and capacity from reduced power generation and capacity during peak power seasons.

Representative Quotes (Correspondence ID): 228

Comments (Comment ID): 645453

Concern Statement: There are four coal-fired power plants in Iowa that are located near the Missouri River. With low flows and stages in the river, the plants would not have sufficient cooling capacity to operate, which would require owners to generate power from more expensive units or purchase power at wholesale market rates. These plants provide important energy for Iowa industries, businesses, and residential customers, and are critical to the economic well-being of the state.

Response: USACE agrees with the comment. The thermal power evaluation estimates reductions in power generation when river flows and stages fall below the plant's shut down intake elevations. It is assumed in the analysis that power plants would have to buy power at wholesale market rates to replace the reductions in power generation. The OSE evaluation includes an assessment of the impacts of electricity reliability on industries and residential customers.

Representative Quotes (Correspondence ID): 224

Comments (Comment ID): 644394

Concern Statement: Alternative 3 is supported because it provides relatively higher river flows and lower river temperatures, resulting in a cost-effective and reliable supply of power generation from both hydropower and thermal power plants.

Response: USACE has chosen Alternative 3 as the preferred alternative for a number of reasons. The lack of a reoccurring spring pulse under Alternative 3 provides some small increases in NED and RED benefits to thermal power, hydropower, and other resources compared to No Action.

Representative Quotes (Correspondence ID): 224

Comments (Comment ID): 644393

Concern Statement: The Thermal Power section does not address the environmental impacts of a gas turbine replacement alternative from an air and water emissions perspective if it is nuclear power being replaced.

Response: The Final EIS has been updated to include a quantitative evaluation of the air emissions associated with changes in power generation and an evaluation of the social cost of carbon (see Section 3.17.2.1 of the EIS and Section 2.6 in the “Thermal Power Environmental Consequences Analysis Technical Report” for a description of the OSE methodology). The evaluation is plant-specific, and it includes the adverse impacts to air emissions associated with replacement power if a nuclear plant is impacted. Alternative 2 would result in the largest adverse impacts to carbon dioxide and carbon dioxide equivalent emissions compared to other alternatives. Nuclear plants would have similar wastewater discharge requirements as other coal and gas-fired plants; therefore, water emissions associated with replacement power if a nuclear power plant is impacted were not evaluated.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644097

Concern Statement: The impacts to thermal power plants have the potential to be significant to customers, regional energy generation, and system reliability. Shutdown of the power generation in the lower river as stated in Draft EIS could be catastrophic and life-threatening, and the Draft EIS analysis of these potential impacts is inadequate. If the Heskett Plant in the Garrison reach is shut down due to low river flow conditions, this could impact Montana-Dakota's ability to accredit all the Heskett units' output capacity in MISO and possibly impact system reliability in the area. In addition, with low river flows in the Garrison reach that would shut down Heskett Plant, other power plants in this reach would also be at risk of a shutdown, resulting in no generation from multiple facilities at the same time. If this type of event would coincide with a period of high demand, the impact to the grid system could result in significant regional transmission impacts. Further study of the likelihood of this occurrence in consideration of USACE implementation of an alternative should be completed to ensure this scenario does not occur.

Response: USACE agrees that under certain low water conditions and especially under the low summer flow under Alternative 2, multiple plants could be affected. Alternative 4 and 6 would result in some years when river flows would be reduced following the spring releases, which would affect multiple power plants as the commenter indicates. Section 3 of the “Thermal Power Environmental Consequences Analysis Technical Report” provides information on the number of power plants affected by river stages falling below shut down intake elevations and river temperatures increasing above 90 degrees. Additional interviews with SPP have been conducted to better understand how the reductions in power generation under the alternatives would affect customers, regional energy generation, power prices, and electricity reliability. Alternative 2 would result in the potential for significant impacts to wholesale energy prices, capacity and energy values and would increase the risk of an extreme event affecting power availability and electricity reliability when multiple plants would be affected. However, SPP has indicated that even in the worst years, it is probable that SPP would have capacity to replace the reductions in load. The coupled effects of both hydropower and thermal power being impacted simultaneously have also been analyzed and included in the Final EIS Section 3.17.2 and “Thermal Power Environmental Consequences Analysis Technical Report,”

Section 7. USACE has chosen Alternative 3 as the preferred alternative partly because there are no additional adverse impacts to thermal power compared to Alternative 1.

Representative Quotes (Correspondence ID): 107, 167

Comments (Comment ID): 644096, 643975, 643869

Concern Statement: In Section 2.3.1.5.3 of the Mainstem Missouri River Reservoir Simulation Report, there are minimum Garrison releases (9,000 and 10,000 cfs) specified to accommodate water supply, water quality, and irrigation uses in the reach. In addition, the Report states that there may need to be temporary increases above the open-water minimum release rates made to the extent reasonably possible to allow intake owners to take remedial action. These USACE statements show the history of established flow levels considered for operation impacts. USACE should apply a more conservative approach when incorporating minimum daily releases and acknowledge that the modeling in the EIS that predicts impacts has a relatively high degree of uncertainty.

Response: The Master Manual indicates that the water control plan's purpose is to meet water supply requirements to the extent reasonably possible. The minimum Garrison releases in the Master Manual that are considered adequate to meet water intake or water quality requirements are used in the ResSim model. The Master Manual currently specifies a minimum daily average Garrison release of 9,000 cfs to avoid low stages at downstream intakes.

Although USACE can help meet short-term intake requirements (e.g., increasing releases for a short period to ensure an intake can access water), it is the intake owners' responsibility to ensure that their intake is operational under the range of flows specified in the Master Manual. Reductions in flows during drought periods is an important water conservation measure and ensures the reservoir system can be operated for the future benefit of all stakeholders in the basin.

Representative Quotes (Correspondence ID): 167

Comments (Comment ID): 643861

Concern Statement: Thermal power impacts are likely underestimated because of the incomplete period of analysis and the inaccurate assumption of similar hydrology among the alternatives. Alternative 1 is not a proper reference case to which the action alternatives are compared because Alternative 1 does not represent the best available science and has only been minimally implemented. For example, the RED impacts for the action alternatives are only incrementally compared to Alternative 1. In addition, minimal difference between Alternative 1 (with spring pulse) and 3 (without spring pulse) is concerning. A similar concern exists between Alternatives 1 and 6. Each alternative needs to be evaluated based on its own financial impacts.

In addition, Section 3.7, Page 46, 3rd paragraph, last sentence indicates that higher river temperatures are a benefit to thermal power, which is inaccurate.

Response: USACE agrees that the 15-year period of analysis for the evaluation is likely missing a period of refill, particularly because a full or partial release did not occur during the 15-year time period under Alternative 5. The Final EIS has been updated to include an extended period of analysis for the river temperatures (1975-2012, excluding 2011). In addition, the impacts to thermal power intakes (when river stages fall below shut down intake elevations) have been evaluated in the Final EIS over the 82-year period of record and presented where possible.

Section 3.1., Introduction, of the Final EIS describes the modeling approach under No Action and the other alternatives. It should also be noted that Alternative 1 is not a representation of what has occurred in the past, but an estimate of how the System would be operated in the future.

In addition, modeled outputs for the No Action Alternative do not match what actually occurred in the past because of operational differences, river geometry changes, and depletions.

The objective of using these models was to inform decision-makers about trade-offs among the alternatives, comparing to the No Action condition. The models and modeling results used in this effort were reviewed extensively by experts both internal and external to USACE. The limitations and intended uses of the models have been well documented in the EIS and technical reports. USACE believes the models reasonably estimate impacts to resources from the alternatives and meet the objective of informing decision-makers and the public about the impacts of the alternatives.

In addition, the thermal power NED analysis has been updated to display the power generated (and energy values) under each of the alternatives; the Draft EIS estimated the reduction in power generation from ideal conditions with no adverse conditions for all alternatives, including No Action. The Final EIS has been updated to show the total impacts under each of the alternatives over the period of record, the average annual impacts, and the change in impacts from No Action. The “Thermal Power Environmental Consequences Analysis Technical Report” provides additional details on annual impacts.

The error in Section 3.7, Page 46, 3rd paragraph, in the last sentence in the Draft EIS that indicates that higher river temperatures are a benefit has been corrected in the Final EIS. Higher river temperatures, especially during the peak summer season, can cause adverse effects to power plants operations and power generation.

In terms of the differences between Alternatives 3 and 1, the “Thermal Power Environmental Consequences Analysis Technical Report” describes the methodology to assess the impacts to power generations from access to water and river temperatures, and presents the results in Sections 3.1, 3.2, 4.4, 5.4, and 6.4. Alternative 3 would increase average annual power generation by approximately 21,000 MWH in the lower river with the lack of plenary pulse and fewer acres of early life stage habitat constructed in the lower river compared to No Action. Alternative 6 would result in a decrease in power generation of 15,317 MWH on average across the period of analysis.

Representative Quotes (Correspondence ID): 107

Comments (Comment ID): 644094, 644086, 644076, 644070, 644055, 644047

Concern Statement: It is concerning that there is not a significant difference between Alternative 1 and Alternatives 3–6, which would indicate errors in the analysis. It is unclear how the alternatives would affect river temperatures; please provide information on how construction of IRC and ESH would cause increases in river temperatures. Please provide information on how USACE determined the difference in temperature impacts of SWH and IRC.

Response: The Final EIS has been updated to extend the period of analysis for the river temperatures (1975-2012). In addition, the impacts to thermal power intakes (when river stages fall below shut down intake elevations) were evaluated in the Final EIS over the

82-year period of record. The extended period of analysis shows in the Final EIS that there are some differences between Alternatives 1 and 3 and 6.

The river temperature modeling is described in the Hydrology and Hydraulics Technical Report: HEC-RAS Water Quality Model, provided as supporting documents for the Final EIS. Changes in channel geometry can affect river temperatures; generally, river temperatures can increase with a wider, shallower channel. The channel geometry is different under Alternatives 1 (SWH), Alternative 2 (more SWH), and Alternatives 3–6 (IRC). The ESH habitat is assumed to not affect the channel geometry because sandbars would be created with sediment from the river, in general, causing no change in the channel geometry and water surface elevations. The channel geometry in the HEC RAS models therefore include differences in the channel from anticipated creation of early life stage habitat (and not ESH habitat). The process to determine the channel geometry under the alternatives is described in the Hydrology and Hydraulics Technical Reports. The channel geometry under Alternatives 3–6 is the same across all four alternatives because the IRC habitat development is the same for these four alternatives.

There is considerably more early life stage habitat developed under Alternative 2 compared to No Action, resulting in a shallower river in some areas of the river causing river temperatures to be slightly higher under Alternative 2 than under No Action during peak summer temperatures. There is slightly less IRC habitat developed under Alternatives 3–6 compared to early life stage habitat developed under No Action, which results in some very small decreases in river temperatures during summer peak temperatures under Alternatives 3–6 relative to No Action. The “Thermal Power Environmental Consequences Analysis Technical Report” Section 3.2 has been updated to provide information on the annual impacts regarding river temperatures: the number of power plants (and units) each year affected by the number of days when river temperatures are above 90 degrees. The Hydrology and Hydraulics Technical Report: HEC RAS Water Quality Model provides additional details on the river temperature modeling.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644093, 644070

Concern Statement: The cumulative or coupled impact of the simultaneous reductions in hydropower and thermal power generation on power markets (prices), energy availability, system reliability, and grid stability is not adequately analyzed in the hydropower and thermal power evaluations. The coupled reductions in power generation could potentially lead to significant impacts of power shortages in the power pools and needs to be analyzed in the Final EIS.

Response: The Final EIS was updated with additional details on the coupled impacts to hydropower and thermal power generation associated with the MRRMP-EIS alternatives, with a focus on the peak season months (July, August, January and February).

Interviews with representatives from SPP have been conducted and experts have indicated that it is probable that there would be capacity to replace the reduced load, even during the low summer flow events when the reductions in power generation compared to No Action are the greatest. However, there is the possibility under Alternative 2, that there could be more severe impacts, with potential impacts to power availability and electricity reliability. USACE feels that the methodology used for the thermal power and hydropower evaluation is sufficient for the comparison across the

alternatives and that additional modeling and analysis would not change the outcome and ranking of the alternatives or the selection of the preferred alternative. Additional details on the risks and uncertainties associated with adverse impacts to thermal power have also been included Final EIS, Section 3.17 and in the “Thermal Power Environmental Consequences Analysis Technical Report,” Sections 2.1 and 2.2.

Each of the alternatives sections under Section 3.17.2 in the Final EIS, Thermal Power Environmental Consequences, includes a description of the coupled impacts and the potential impact to RED effects (market prices, electricity rates, and regional economic conditions) and OSE effects (power availability and reliability, grid stability).

Representative Quotes (Correspondence ID): 107, 134, 172

Comments (Comment ID): 644078, 641814, 644078, 640545, 641814, 640632

Concern Statement: Please clarify the statement in Section 3.4, Page 38, last paragraph of section that indicates there were no difference is flow releases out of Gavins Point Dam for Alternatives 1 and 3.

Response: Alternative 1 includes a reoccurring spring pulse, while Alternative 3 does not include a reoccurring spring pulse; as a result, there are differences in the releases from Gavins Point Dam between these two alternatives. Additional detail was added to the Final EIS in Section 3.17.2.6 that describes the impacts between Alternatives 1 and 3 in the years when there are no differences in the releases from Gavins Point Dam. When the hydrology (releases) from the dam is the same for some years/months for both Alternatives 1 and 3, the only difference between the alternatives is the channel geometry; there are more acres of SWH under Alternative 1 than IRC habitat under Alternative 3. These changes in channel geometry have very small, but measurable impacts on river temperatures, resulting in small impacts to thermal power generation. For example, river flows in the modeled years 1980, 1987, 1988, 1990, and 1991 would be relatively similar for both Alternatives 1 and 3; however, Alternative 3 shows that fewer plants would be impacted by temperature than under Alternative 1 in these years. This is likely attributable to the fewer number of acres of early life stage habitat that would be constructed under Alternative 3 relative to Alternative 1 (see Section 3.2 and Section 4.4 in the “Thermal Power Environmental Consequences Analysis Technical Report”).

Representative Quotes (Correspondence ID): 107

Comments (Comment ID): 644074

Concern Statement: The thermal power evaluation should provide the results of the impacts due to elevation/flow or temperature for each affected power plant. Please provide the number of instances of impacts to power generation from either flow/stage or from river temperature, especially noting river temperatures above 90 degrees. In addition, the tables showing the adverse effects as positive numbers is difficult to understand.

Response: The thermal power NED analysis has been updated to display the power generated (and energy values) under each of the alternatives; the Draft EIS estimated the reduction in power generation from ideal conditions with no adverse conditions for all alternatives, including No Action. The Final EIS has been updated to show the total impacts under each of the alternatives over the period of record, the average annual impacts, and the change in impacts from No Action. The “Thermal Power Environmental Consequences Analysis Technical Report” Section 3.0 has been updated to provide information on the annual impacts regarding river temperatures and river stages: the number of power

plants (and units) each year affected by the number of days when river temperatures are above 90 degrees and below shut down intake elevations. The Hydrology and Hydraulics Technical Report: HEC RAS Water Quality Model provides additional details on the river temperature modeling. The EIS and technical report do not provide results for each of the power plants due to proprietary nature of the information. USACE has made these results available to utilities/plants to show power plant-specific impacts.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644040, 644029, 644021, 643975

Concern Statement: The thermal power evaluation is incomplete because it did not include the potentially significant capital costs to power plants from flow release alternatives that would have to be mitigated. In addition, the thermal power analysis of capacity values incorrectly omits power plant decommissioning costs.

Response: The methodology for the evaluation of thermal power plants includes the capital costs to replace lost dependable capacity, as described in the “Thermal Power Environmental Consequences Analysis Technical Report.” However, as the commenter indicates, these capital costs to replace capacity do not include decommissioning costs. The Final EIS has described the needed replacement capacity under the alternatives. In addition, example decommissioning and dismantlement costs have been added to the Thermal Power Environmental Consequences section in the Final EIS (Section 3.17.2.) and in the “Thermal Power Environmental Consequences Analysis Technical Report” Section 2.4.5. The Thermal Power evaluation in the Final EIS noted that the impacts to capacity values, especially as estimated for Alternative 2, could be underestimated because decommissioning costs are not included in the capacity replacement estimates. These costs were not directly factored into this analysis because of the multiple variables affected decommissioning costs, the uncertainty of the impacts of reduced capacity on the need to decommission the power plants, and because of the need to maintain consistency in the evaluation across power plants and with the hydropower evaluation. USACE feels that the methodology used for the thermal power and hydropower evaluation is sufficient for the comparison across the alternatives and that additional modeling and cost evaluations would not change the outcome and ranking of the alternatives or the selection of the preferred alternative.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644036, 644033, 644021

Concern Statement: Please provide additional information on the ERDC HEC-NSM temperature model (where is it published and available; is it calibrated and verified). Please provide information on the differences in temperatures among the alternatives resulting from the ERDC temperature model.

Response: The methodology for the ERDC water quality (river temperature) model is documented in the HEC-RAS Water Quality Model Technical Report and is provided as a supporting document for the Final EIS. The calibration and validation process is included in this technical report. The model has undergone Agency Technical Review and District Quality Control, as well as internal ERDC reviews.

The “Thermal Power Environmental Consequences Analysis Technical Report” Section 3.2 has been updated to provide information on the annual impacts regarding river temperatures: the number of power plants (and units) each year affected by the number of days when river temperatures are above 90 degrees. The Hydrology and Hydraulics

Technical Report: HEC RAS Water Quality Model provides additional details on the river temperature modeling.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644024, 643991

Concern Statement: There is some concern about the channel geometry included in the HEC-RAS model for the channel near the Heskett Plant as the model has not been proven to be accurate (associated river stage) at low flows (those under 15,000 cfs) at Heskett. It appears that the model does not take into account channel changes since the 2012 survey was conducted and does not include Lake Oahe lake effects and channel siltation. Montana-Dakota requests that USACE confirm whether the model corresponds to flow and elevations outside of the 2012 survey timeframe and make model adjustments accordingly to demonstrate accurate model predictions. Additionally, we recommend USACE consider evaluating this for all affected water users.

Montana-Dakota recommends USACE also review the model accuracy to consider the consequences of multiple stations along the Missouri River being affected by low releases. The effect of the loss of generation from multiple facilities in a single period is much more significant than the loss of generation from one facility. Loss of generation from multiple regional or local generation resources may have the potential for a larger impact to transmission grid reliability. This subject requires more than the limited amount of discussion found on page 3-475 of the MRRMP-EIS.

Response: The HEC-RAS model is based on the best available channel survey information and is calibrated to 2012 conditions. Local effects on stage due to temporary changes in river conditions, including ice jams, ice cover, and transient sandbar dynamics, are not included within the HEC-RAS model. These temporary effects often cause river stage changes of several feet. However, for the purposes of alternative comparison, including transient effects is not relevant (e.g., the formation of an ice jam has the same effect on all alternatives). All constructed models were calibrated to the same period through 2012. Calibration accuracy within the Garrison reach varies by location but is generally within 0.5 to 1.0 foot for normal and low flows. Model calibration within the Garrison to Oahe reach is discussed in the supporting documents, HEC-RAS Calibration Report, which is available online (www.moriverrecovery.org). USACE believes that model results are suitable to use for this analysis and to compare results across the alternatives. The Final EIS methodology employs an 82-year period of record with current water development conditions to evaluate differences between alternatives. Use of the extensive 82-year period allows for reasonable alternative impact evaluation for a wide range of flow events.

During the EIS modeling and evaluation process, numerous conversations were conducted with Heskett personnel. The intake elevation shutdown criteria were adjusted during this process as a result. The information used in the Final EIS analysis incorporated input from Heskett personnel.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643858

Concern Statement: The Draft EIS fails to adequately assess the potential for significant operational impacts at Heskett, including limitations in providing fire protection safety for the facility, and shutdowns if there was not sufficient river flow from implementing

Alternatives 2, 4, and 5. It is asserted that USACE assumptions under all alternatives are problematic and further evaluation is warranted.

Response: The Final EIS has been updated to include an extended period of analysis for the river temperatures (1975-2012). In addition, the impacts to thermal power intakes (when river stages fall below shut down intake elevations) were evaluated and updated in the Final EIS. The Thermal Power environmental consequences section was also updated to include a qualitative description of other impacts to power plants when river flows are very low, including fire protection and safety concerns.

The hydrology and hydraulics models and economic approaches have been reviewed internally by USACE experts and through an Independent External Peer Review. USACE and reviewers believe that the models and approaches are sufficient to compare impacts across alternatives. Limitations and assumptions are provided in the Hydrology and Hydraulics Technical Reports and the Environmental Consequences sections of the Human Considerations resource topics.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643839

Concern Statement: The thermal power evaluation assumed there would be a small increase in maintenance costs for cleaning debris and sediment from Missouri River intakes due to increased aggradation and sediment from proposed seasonal flow releases under Alternatives 1, 2, 4, 5, and 6. There are special conditions for MidAmerican facilities in their permits that include restrictions that no work shall occur below the ordinary high watermark from March 1 to June 30 to avoid impacts to pallid sturgeon. The evaluation should include impacts from aggradation from proposed seasonal flow releases, including the potential for derating or shutdown, should significant aggradation occur during the pallid sturgeon protective period identified in the special conditions.

Response: The thermal power section in the Final EIS (Section 3.17.2) was updated to reflect the concerns noted by MidAmerican; the adverse impacts to intakes and power plants from sediment movement and debris could be serious because there are restrictions on when work can occur on intakes (between March 1 and June 30) to avoid impacts to the pallid sturgeon. In addition, USACE works closely with nearby facility owners to minimize impacts from habitat construction and would conduct site-specific NEPA analyses prior to constructing the habitat.

The cumulative impacts section of the Final EIS quantitative precipitation forecast (QPF) Thermal Power Section 3.17.2.12 describes the potential impacts of aggradation and degradation on the alternatives. Potential impacts associated with aggradation on intake maintenance and timing restrictions were described in the cumulative impacts section.

Representative Quotes (Correspondence ID): 164
Comments (Comment ID): 641365

Concern Statement: Alternatives that include flow releases hold promise for creating critical habitat, though the cost is uncertain and unpredictable. However, without extremely cautious planning, once the water is released, there is no assurance that downstream flows can be maintained at power plants and public water intakes later in the year.

Response: USACE agrees that the flow releases will reduce system storage and could result in lower subsequent releases. The 82-year period of record hydrology and hydraulics analysis shows that lower releases compared to No Action do occur in the year or years

following the spring releases or spawning cues, usually in the late fall and winter. These impacts are described in the Final EIS, Thermal Power Environmental Consequences Section 3.17.2.

Representative Quotes (Correspondence ID): 159
Comments (Comment ID): 640997

Concern Statement: Section 3.2.2.8, Page 3-54, 1st partial paragraph indicates that Alternative 2 could result in additional localized dredging to maintain the navigation channel, which in turn could adversely affect water intakes. The costs for power plants and water supply intakes to mitigate these impacts should be included in the evaluation.

Response: Because Alternative 2 would result in considerably more early life stage habitat than under No Action, there could be adverse effects to power plant intakes from sediment and channel changes. However, the siting of habitat areas considers protective measures around sensitive infrastructure and facilities, such as water supply intakes and thermal power plants, and USACE would work closely with nearby facility-owners to minimize impacts. Additionally, site-specific NEPA analyses would be conducted prior to constructing the habitat. Additional information was added to the Final EIS to clarify these considerations (in the alternatives sub-sections under Final EIS Section 3.17.2).

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643913

Concern Statement: Average daily flows can be the culmination of large discharge swings within a 24-hour period. USACE should consider the hourly minimum flows (which can be observed at river gages) when evaluating impacts to downstream water users to more accurately reflect increased power plant shutdown occurrences.

Response: In real-time operations, USACE has a standing order that specifies a minimum hourly flow for a set amount of time, which limits the peaking when releases are low. This is done to limit the stage reduction in the river reaches and to reduce impacts to intakes. Using a daily average to estimate impacts to intakes is adequate and sufficient to compare among the alternatives, which all use daily flow reservoir releases.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643862

AE700 *Affected Environment: Water Supply*

Concern Statement: Table 3-229 shows an incorrect number of intakes in Lake Sakakawea and the Garrison Dam to Lake Oahe Reach (Garrison Reach). The Office of the State Engineer water permit database lists 27 commercial/industrial intakes and 15 municipal intakes in Lake Sakakawea and seven commercial/industrial intakes and seven municipal in the Garrison Reach. The Tesoro Refinery in Mandan as well as the numerous other industrial intakes in Lake Sakakawea for oilfield use have not been included.

Response: The project team worked with the State of North Dakota to identify additional intakes not included in the Draft EIS water supply analysis. While additional intakes have been added, there were other cases where an intake may be listed as having a permit but are not currently active or share an intake with another entity. Thus, is the case for the Tesoro Refinery that shares and intake with the City of Mandan. To the best of our

abilities, the project team reviewed and verified information on operating and shut-down elevations for water supply intakes included in the analysis.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642715, 642719

Concern Statement: Content of Table 3-230 is erroneous. The title says the table contains information regarding flows and elevations associated with water supply intakes, however, the table only includes elevations. It is pointless to show intake elevations as they only matter in relationship to the water surface elevation at the intake. Also, providing elevations in the 1988 vertical datum is fine for the river but the reservoir elevations are referenced to the 1929 vertical datum.

Response: Table 3-230 has been removed from Section 3.18.1 as it was determined it did not provide additional information that was helpful for describing the approach used to evaluate the impacts to water supply intakes from the MRRMP alternatives.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642721

Concern Statement: The EIS needs to make the necessary corrections to the affected environment for water supply intakes to properly describe the intake location, elevation, pumping capacity and population served.

Response: The project team reviewed and verified the data and information used to evaluate impacts to water supply access. For public safety reasons, specific information on individual intakes is not included in the affected environment of the water supply section (e.g., identification, location, elevation, and pumping capacity).

Representative Quotes (Correspondence ID): 204
Comments (Comment ID): 644445

EC700 *Environmental Consequences: Water Supply*

Concern Statement: The economic analysis should assume that intakes would need to install permanent low water pumps to adapt to lower water surface elevations and the costs these systems should be considered instead of renting pumps. The costs included in the Draft EIS that only consider the rental of submersible pumps underestimate the impacts. The Draft EIS does not estimate the cost to communities when they lose access to water. A more detailed examination on the economic impacts to the basin of even one day of interruption to residential and industrial water users needs to be conducted. USACE should quantify the impact of communities being without a water supply for a day and include risk assessment in each of the alternatives. The Draft EIS fails to recognize and address Missouri River bed degradation, which is impacting water supply intakes.

Response: The project team conducted additional research on the use of submersible pumps as credible approach to address short-term temporary impacts when water surface elevations fall below operating thresholds. There is evidence that intake managers, both small and large have used the approach, either currently or in the past, to address the type of impacts that are modeled under the MRRMP alternatives. While this approach may not be the one that would be used by water supply managers in all cases, there is enough evidence that it may be one approach that would be considered. Applying this approach for all alternatives provides a way to compare impacts that may occur under

the different alternatives which is the objective of the analysis. While applying other approaches may bring the analysis closer to what may happen under actual conditions, including these other measures would not change the ranking of the alternatives. The project team did not consider community costs associated with the loss of water supply because the use of submersible pumps to address temporary periods when access to water would be curtailed would avoid further costs to communities as loss in water access would be avoided. The project team did not complete a risk assessment of each alternative as it is not warranted for a Programmatic EIS. The Draft EIS and the Final EIS recognize bed degradation and discuss the impacts the MRRMP alternatives are having on this river process. While the MRRMP-EIS does include an evaluation of the potential impacts of bed degradation and aggradation, the Missouri River Bed Degradation Feasibility Study Technical Report, released in May 2017, contains a more detailed evaluation of bed degradation in the lower river.

Representative Quotes (Correspondence ID): 38, 122, 205, 219, 223, 228

Comments (Comment ID): 628360, 638468, 643490, 645611, 645636, 638514, 642118

Concern Statement: It does not appear that the Draft EIS is using the most current information on actual operating and shut-down elevations for the Missouri River water supply intakes.

Response: The project team reviewed and verified all the operating and shut-down elevations used in the analysis for water supply intakes and updated where necessary in the Final EIS.

Representative Quotes (Correspondence ID): 122, 233

Comments (Comment ID): 646376, 642832

Concern Statement: Low summer flows have the potential to adversely impact the operation of water supply intakes for municipal, irrigation, and recreation uses in the riverine reach below Gavins Point Dam.

Response: The impacts of low summer flows on water supply intakes were evaluated under Alternative 2 for intakes located below Gavins Point Dam.

Representative Quotes (Correspondence ID): 206

Comments (Comment ID): 645752

Concern Statement: The model cannot identify the shorter periods of time of possible shutdown events for intakes that have continuous operations because the low end of a daily swing may be masked in a daily average flow value.

Response: In real-time operations, USACE has a standing order that specifies a minimum hourly flow for a set amount of time, which limits the peaking when releases are low. This is done to limit the stage reduction in the river reaches and to reduce impacts to intakes. Because of this, using a daily average to estimate impacts to intakes should be adequate.

Representative Quotes (Correspondence ID): 167

Comments (Comment ID): 645750

Concern Statement: Alternative 3 would result in 22 intakes experiencing an average of 14 days below shut down elevations. There is not a single water utility that has enough

storage or access to alternative sources to be able to operate for 14 days without a water supply.

Response: While the analysis does show that water supply intakes would experience days below both operating and shut-down elevations, the number of days would be less under Alternative 3 than they would be under Alternative 1. Implementation of Alternative 3 would represent a slight improvement in conditions for water supply intakes. The impacts under Alternative 1 include 26 intakes experiencing 22.7 days below shut-down elevations on average per day and thus not a result of implementing Alternative 3.

Representative Quotes (Correspondence ID): 122, 228
Comments (Comment ID): 645615, 638494

Concern Statement: The Draft EIS constitutes the first public report documenting that Missouri River basin communities could be in danger of losing their water supply (under Alternative 1). Water supply operations are a mission-critical, non-stop business and it would be unacceptable and irresponsible to wait until water levels are at critical levels and then rent pumps. The Draft EIS wrongly assumes there would be an adequate supply of pumps in the size and quantity needed to operate the 55 intakes on the river. The NED analysis details another incorrect assumption in the Draft EIS, stating that 55 water suppliers could acquire portable pumps for a cost of \$376,000 per year, which is very low and based upon inaccurate facts. USACE's analysis of renting submersible pump costs and sizes are unrealistic for a major utility intake as the KCMO plant operates with a capacity of 400 million gallons per day (MGD) and average production of 100 MGD increasing to over 200 MGD during high temperature dry periods. Bed degradation already requires winter flows much higher than Master Manual flows.

Response: The project team did not estimate the costs (under Alternative 1) to mitigate the impacts associated with bed degradation that is occurring in many parts of the river as this was not the focus of the analysis. Instead, the project employed a methodology that was focused on measuring impacts, specifically management actions that included changes in flows that may impact intakes. For the Final EIS, the project team considered alternative approaches in addition to submersible pumps that may be implemented to mitigate short-term, low flow conditions especially for larger intakes located on the lower river.

Representative Quotes (Correspondence ID): 122, 186, 228
Comments (Comment ID): 645612, 638299, 641537

Concern Statement: Flow requirements which are much higher than the minimums mentioned in Master Manual due to riverbed degradation, especially in the Kansas City, Leavenworth and St. Joseph areas, should be considered. The current assumption regarding the flows in the Draft EIS is not reasonable to correctly estimate the impacts and costs. USACE should reevaluate its approach and model realistic flow requirements to keep water supply intakes in operations at all times.

Response: The Master Manual indicates that the purpose of the water control plan is to meet water supply requirements downstream of the system to the extent reasonably possible. The minimum Gavins Point releases in the Master Manual that are considered adequate to meet water intake or water quality requirements are used in the ResSim model. Although USACE can help meet short-term intake requirements (e.g., increasing releases for a short period to ensure an intake can access water), it is the intake owners' responsibility to ensure that their intake is operational under the range of flows specified

in the Master Manual. Reductions in flows during drought periods is an important water conservation measure and ensures the reservoir system can be operated for the future benefit of all stakeholders in the basin.

Representative Quotes (Correspondence ID): 37, 156, 204
Comments (Comment ID): 644452, 644707, 628461

Concern Statement: USACE needs to identify all potential regulatory burdens in advance of the implementation of any management plan action. In any instance in which the regulatory cost of compliance increases (i.e., modification of intakes), thorough input needs to be gathered from affected industry sectors to ensure that the impact to both utility companies and ratepayers alike remains minimal.

Response: The MRRMP- EIS is a programmatic evaluation that where possible attempted to identify the regulatory and cost implications of certain management actions on water supply intakes. Because the actual location and scope of management actions is not completely known at this time, additional NEPA evaluations will need to be completed to consider more localized impacts once those projects or actions are defined.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645453

Concern Statement: Falling reservoir levels can adversely impact public water supply and irrigation intakes through increased pumping costs and possible exposure of intakes. Public drinking water systems can also face increasing turbidity as well as taste and odor problems due to low reservoir levels. This not only increases the cost of treatment and, ultimately, the cost to the consumer, but also threatens the ability to comply with the Safe Drinking Water Act.

Response: The water supply analysis included in the Draft EIS evaluated the change in pumping costs that could occur with each of the management plan alternatives. The project team has interviewed water quality experts who have indicated that the management plan alternatives are not expected to cause impacts to water quality. Water quality impacts associated with the management actions are further evaluated in Section 3.18.7 of the Final EIS.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645148

Concern Statement: There has been no effort made to evaluate the impacts and cost associated with low summer flows under Alternative 2 on the water supply.

Response: The impacts of low summer flows on water supply intakes were evaluated under Alternative 2 as documented in Section 3.18.2 of the EIS.

Representative Quotes (Correspondence ID): 37, 40, 156, 204, 216, 233
Comments (Comment ID): 644703, 644451, 644449, 643418, 642806, 628465, 628462

Concern Statement: The access to water at lower flows has been exacerbated by 15 feet of channel degradation occurring in reaches near intake structures over the last 15 years. This degradation has resulted in a regionally supported study by USACE, which must be taken into consideration when evaluating flow effects on water intakes in the Kansas City reach.

Response: The feasibility study studying implications of bed degradation in the lower Missouri River was not available during the preparation of the MRRMP Draft EIS but was released in June 2017. The project team reviewed and integrated relevant information from this study into the Final EIS.

Representative Quotes (Correspondence ID): 204
Comments (Comment ID): 644446

Concern Statement: The report is also inconsistent in assessing risk assuming the worst case for flows, but best case for water utility to respond. The costs for the pumps are not accurate, asset life was shown as 10 years which is too long for this type of service under these conditions, it was also not apparent that a reduced wire to water efficiency was taken into account when calculating electrical costs and the cost in the report should be modified to reflect these considerations.

Response: The project team reviewed and verified the assumptions used for the submersible pumps and updated where necessary for the Final EIS.

Representative Quotes (Correspondence ID): 219
Comments (Comment ID): 643486

Concern Statement: The information on the size of pumps and costs necessary to draw water from the river are under estimated. If a water outage would occur, the State regulatory agency will most certainly require a Boil Order to be issued. USACE should consider the power requirements to operate these auxiliary pumps and if there will generators available to supply power.

Response: The size and number of the pumps used in the analysis was tied to the capacity of each intake. The analysis also included power requirements associated with the pumps. The project team determined that other costs (e.g., boil orders, treatment costs, etc.) were not necessary as the use of submersible pumps would avoid these other costs under the alternatives.

Representative Quotes (Correspondence ID): 216
Comments (Comment ID): 643422

Concern Statement: Water utilities will be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternatives 4, 5, and 6.

Response: The analysis did consider low flow conditions during the winter months on water supply intakes. The results indicated that some of the management plan alternatives did result in impacts to water supply intakes during the winter due to flow actions that would occur earlier in the year or the year before.

Representative Quotes (Correspondence ID): 205, 216, 233
Comments (Comment ID): 643419, 642821, 642121

Concern Statement: The reported NED and RED impacts are grossly under estimated if a water utility is unable to provide water for 14.7 days, let alone one day.

Response: The H&H modeling results shows that on average, 26 of the 59 water supply intakes evaluated would experience 22.7 days below shut-down elevations under Alternative 1. This is the baseline condition and does not represent an impact from the Management Plan Alternatives. The analysis did not try and estimate the costs to mitigate the impacts under Alternative 1 as these impacts would occur with or without the plan. It is likely that

the water supply intakes showing impacts under Alternative 1 would need to be modified to account for these adverse conditions.

Representative Quotes (Correspondence ID): 216, 233
Comments (Comment ID): 643416, 642802

Concern Statement: There appears to be a discrepancy in the comparison of costs across alternatives for the lower and upper basins. Having water surface elevations fall below shut-down elevations is never a small impact, regardless of how large or small the population is that relies on that intake. Characterizing that effect as small in nature makes it sound trivial.

Response: The analysis focused on the costs to mitigate adverse conditions (water surface elevations falling below operating conditions) and treated intakes in the upper and lower basin the same. While the lower basin tends to have larger intakes serving larger populations, the costs are also larger than for smaller intakes that are generally located in the upper basin. The significance of impacts, in part, were based on the magnitude of costs estimated under each of the alternatives (both in absolute and percentage terms).

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642737, 642727

Concern Statement: While it is understood that the methodology was chosen to simplify the evaluation, it underestimates and oversimplifies the effect to water supply intakes on reservoirs.

Response: The methodology used for water supply intakes was designed to evaluate the impacts of the management plan alternatives relative to the No Action alternative. The project team believes the approach is reasonable for the objective of evaluating these alternatives. As with any modeling activity, this analysis is a simplification of actual operations and conditions on the reservoirs.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642723

Concern Statement: Because there was no RED analysis to determine the local effect on water supply, the whole evaluation is skewed in favor of the lower basin. For smaller populations, like many of the communities in the upper basin, the cost for modifying an intake is spread out over less people. A RED analysis, or some kind of local analysis, would potentially paint a different picture when it comes to water supply impacts.

Response: A RED analysis focuses on changes in economic conditions (jobs, income, taxes, etc.). A RED analysis specific to water supply would require determining changes in water rates and how those changes in rates would affect household and business spending. Because the changes in water rates were expected to be small, it was not feasible to conduct a RED analysis for water supply. However, the project team did evaluate the costs to mitigate adverse conditions (water surface elevations falling below operating conditions) and treated intakes in the upper and lower basin the same. While the lower basin tends to have larger intakes serving larger populations, the costs are also larger than for smaller intakes that are generally located in the upper basin. The significance of impacts, in part, were based on the magnitude of costs estimated under each of the alternatives (both in absolute and percentage terms).

Representative Quotes (Correspondence ID): 205, 239
Comments (Comment ID): 642713, 642120

Concern Statement: Reduced river flows increase silt content in the water and processing costs. Low flows also may require further modification of each municipality's intake structures.

Response: The project team interviewed water quality experts who indicated that the management plan alternatives are not expected to cause impacts to water quality, including impacts associated with low summer flows. There is no indication that silt levels will increase significantly under the management plan alternatives. The H&H modeling showed several intakes that would experience adverse conditions (water surface elevations below operating conditions) under Alternative 1 (No Action). It is likely that these intakes would require modifications regardless of whether the management plan was implemented. The water supply analysis focused on the impacts that are likely to occur under each of the management plan alternatives relative (or in addition to) those that occur under Alternative 1. Because the impacts under the management actions are smaller in nature to those likely to occur under the No Action Alternative, the project team concluded that intake modification would not be appropriate to mitigate impacts.

Representative Quotes (Correspondence ID): 195
Comments (Comment ID): 642105

Concern Statement: Impacts could occur to intakes and outfall structures on Lake Sakakawea and on the Fort Peck and Garrison reaches of the Missouri River. The EIS needs to address likely pollutant discharges into the Missouri River from mechanical habitat construction.

Response: The water supply analysis included in the Draft EIS evaluated the impacts to water supply intakes on Lake Sakakawea and those located in the Fort Peck to Garrison Reach. In addition, the Draft EIS did evaluate the impacts of mechanical habitat construction. In addition, it is expected that additional analysis would be conducted in site specific NEPA analysis once the actual location of habitat construction is known.

Representative Quotes (Correspondence ID): 96
Comments (Comment ID): 640268

Concern Statement: The Draft EIS concluded that the impacts under the Other Social Effects (OSE) would be negligible based on the assumption that no community would experience an interruption in their service due to the Management Plan. Conclusions based on this false assumption do not capture the full impacts of the alternatives.

Response: The project team believes that the full impacts to water supply intakes have been addressed in the Draft EIS.

Representative Quotes (Correspondence ID): 122
Comments (Comment ID): 638484

Concern Statement: The EIS needs to quantify how many times the water surface elevations fall below operating conditions and during what period time would they occur (e.g., season). The frequency of the occurrences and associated costs should be included in the final report for each alternative.

Response: The project team provided additional results in the "Water Supply Environmental Consequences Analysis Technical Report" that shows the average number of days per season that water surface elevations fall below operating thresholds. Due to privacy

concerns, this information is aggregated across all intakes. Additional information will be made available upon request from individual water supply operators.

Representative Quotes (Correspondence ID): 122
Comments (Comment ID): 638479, 638457

Concern Statement: USACE should complete additional analysis and modeling the pulse that may occur in year nine for the Final EIS.

Response: The one-time spawning cue test (Level 2) release that might be implemented under Alternatives 3, 4, and 5 was not included in the hydrologic modeling for these alternatives because of the uncertainty of the hydrologic conditions that would be present if implemented. Hydrologic modeling for Alternative 6 simulates reoccurring implementation (Level 3) of this spawning cue over the wide range of hydrologic conditions in the POR. Therefore, the impacts from the potential implementation of a one-time spawning cue test release would be bound by the range of impacts described for individual releases under Alternative 6. This modeling is a reasonable representation of the impacts that could occur to water supply under the one-time spawning cue test.

Representative Quotes (Correspondence ID): 122
Comments (Comment ID): 638300

Concern Statement: The flow actions under the alternatives may lead to low reservoir discharge rates that may cause issues for water intake structures, especially in the winter.

Response: The water supply analysis evaluated changes in flows under each of the management plan alternatives. The analysis showed that impacts can occur to water supply intakes, especially during the winter months. These impacts were included in the analysis.

Representative Quotes (Correspondence ID): 204
Comments (Comment ID): 644447

EC1800 *Environmental Consequences: Wastewater Facilities*

Concern Statement: The wastewater evaluation indicates that in North and South Dakota, low-flow conditions do not drive the wastewater discharge effluent limits for wastewater facilities. However, the EIS should consider that reductions in river flows and the flow regime due to adaptive management or the building of new facilities may affect the ability to discharge to the Missouri River in the future.

Response: USACE conducted interviews with the water quality regulators in North Dakota and South Dakota (Haroldson pers. comm. 2015; Spangler pers. comm. 2015) for the wastewater evaluation. The management plan alternatives were described, and the regulators indicated that the flows are sufficient such that technology based effluent standards are always used to assess the wastewater facilities located along the Missouri River, even under the low water months and years. The alternatives are not anticipated to affect lower flows to the extent that they would affect future effluent requirements in the short-term. Major changes in the standards and associated regulations could change effluent discharges through the application of more stringent water-quality based standards; however, any major changes would be speculative. Because the magnitude of flows in the Missouri River in these reaches would remain largely the same under all of the alternatives, and the flows currently necessitate technology-based effluent

standards for wastewater facilities, these facilities were not carried forward in the wastewater evaluation.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642757

Concern Statement: Low summer flows under alternative 2 have the potential to adversely impact sewer treatment plants, creating problems with intakes and increasing the risk of failure to comply with conditions of discharge permits.

Response: USACE agrees that the low summer flows under Alternative 2 would have adverse impacts to power generation and the ability to discharge wastewater from wastewater treatment plants. The low summer flows, as described in Section 3.19.2 in the Wastewater Facilities section of the Final EIS, have the potential to decrease the summer low flow criteria, on which the effluent discharges are regulated, by up to 19 percent, with the potential for large adverse impacts on two wastewater facilities in Missouri. Low summer flows under Alternative 2 also have the potential to affect the ability for power plant to discharge cooling water during the summers, which can affect the ability of the plants to generate power. These impacts are further documented in Sections 3.17.2 and 3.19.2, the Wastewater and Thermal Power Environmental Consequences evaluations, in the Final EIS.

Representative Quotes (Correspondence ID): 27, 65
Comments (Comment ID): 645769, 645764

Concern Statement: There are concerns about how the habitat construction under Alternative 2 could have large adverse impacts on wastewater facilities. In addition, the wastewater evaluation incorrectly assumes that wastewater facilities will be able to make improvements as needed to address management actions such as low flows in the summer. This assumption is not accurate because investment decisions rely on many variables, including funding, other requirements, logistics, and permitting.

Response: The Final EIS describes the pending technology upgrades on two wastewater facilities, which may be able to treat the discharge to meet more stringent wastewater discharge limits anticipated under Alternative 2 due to the low summer flows. In addition, the Final EIS states that there is uncertainty because of the State of Missouri's pending ammonia standards, effects of low flows under Alternative 2 on the actual effluent limits, and the ability of the new technologies to meet these standards and limits. The facilities either have already made the investment decision or are planning to make investments because of the current and future anticipated regulatory environment, funding, and many other variables, as the commenter indicates. Additional details on the factors affecting these investment decisions were added to Section 3.19.2.5 of the Final EIS to clarify the state of the investments.

The mechanical habitat construction under Alternative 2 would have the potential to have negligible to small adverse impacts on wastewater facility outfalls because each habitat site would be designed to avoid or minimize impacts to environmental, cultural, and socioeconomic resources. In addition, a more detailed hydraulic/geomorphic assessment would also be completed during site-specific planning, engineering and design phases to further mitigate impacts associated with these actions on wastewater facilities. With the site-specific planning and sensitive resource restrictions in place, the impacts of the habitat construction management actions on wastewater facility outfalls would be temporary and negligible to small.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645616

Concern Statement: The impacts associated with low summer flows under Alternative 2 are underestimated for water intakes, energy generation, and sewer treatment plants and should be re-examined. Further, any regulatory burdens as well as costs to adjust to management actions (i.e., modification of intakes) that would be incurred due to management actions should be identified and estimated prior to implementation through input gathered from the affected industries.

Response: USACE agrees that the low summer flows under Alternative 2 would have adverse impacts to power generation and the ability to discharge wastewater from wastewater treatment plants. The low summer flows, as described in Section 3.19.2 in the Wastewater Facilities section of the Final EIS, have the potential to decrease the summer low flow criteria, on which the effluent discharges are regulated, by up to 19 percent, with the potential for large adverse impacts on two wastewater facilities in Missouri. Low summer flows under Alternative 2 also have the potential to affect the ability for power plant to discharge cooling water during the summers, which can affect the ability of the plants to generate power. These impacts are further documented in Sections 3.17.2 and 3.19.2, the Wastewater and Thermal Power Environmental Consequences evaluations, in the Final EIS.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645453

Concern Statement: There is concern that the low summer flows under Alternative 2 would be negatively impact the Blue River Wastewater Treatment Plant. This facility is not specifically identified in the wastewater evaluation.

Response: The facility names have been omitted from the evaluation to protect the proprietary nature of the information. There are two facilities located in St. Joseph and Kansas City in Missouri affected under Alternative 2.

Representative Quotes (Correspondence ID): 204
Comments (Comment ID): 644456

EC1900 *Environmental Consequences: Tribal Interests (Other)*

Concern Statement: Tribal water rights will be detrimentally impacted by implementation of the EIS. Concern is expressed about the type of development that would negatively impact water quality and quantity. Plant species, including those of medicinal, spiritual and cultural importance to the Tribes are at high risk due to the proposed development and potential pollution.

Response: Comment noted. Impacts to Tribal resources are acknowledged in Section 3.20 Tribal Interests (Other), Section 3.9 Cultural Resources, and in various other sections of the environmental consequences chapter. The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty. A description of Tribal water rights is provided in Section 6.5.

Representative Quotes (Correspondence ID): 94
Comments (Comment ID): 633679

Concern Statement: The scope of issues discussed in the Draft EIS is too narrow and excludes concerns of importance to the Tribes including (1) plant species of important to Tribes, (2) need for mitigation of impacts, (3) alternatives to avoid jeopardy for the three listed species such as dam removal, and (4) modernization of the Master Manual.

Response: Plant species important to Tribes are specifically covered in Section 3.5 Fish and Wildlife Habitat of the EIS. Mitigation for impacts to Tribal resources including plant species of importance and cultural resources would occur on a site-specific level as necessary during implementation of construction or vegetation management activities. At the programmatic level, no impacts from the proposed alternatives were identified that would trigger the need for mitigation of impacts. In addition, USACE has a Programmatic Agreement in place with several basin Tribes which serves to mitigate impacts from operation of the reservoir system on a programmatic level. USACE feels it has examined a full range of alternatives and has identified an alternative that meets species objectives while minimizing impacts to other river interests. Therefore, a thorough examination of dam removal is not necessary at this point. Broader updates to the Master Manual for purposes other than ESA are outside the scope of this plan.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645478

Concern Statement: The manner in which impacts to Tribes were determined and quantified is not explained in the Draft EIS.

Response: The methodology used for the human considerations is described in detail in Chapter 3 of the Draft EIS and in the HC technical reports. The evaluations of Tribal interests use the same methodologies as the rest of the HC analysis and are disaggregated (to the extent possible) to the Tribe and/or reservation level.

Examples:

1. The Flood Risk Management analysis of Tribal Interests in Section 3.12.2 Environmental Consequences used calculations of agricultural and structural flood risk (in dollars) within reservation boundaries. This analysis was limited to reservations with land that is in the floodplain of the Missouri River Mainstem and that could be affected by differences between the MRRMP alternatives.
2. The Irrigation analysis of Tribal Interests in Section 3.14.2 Environmental Consequences identified the counties that both overlap with reservation boundaries and could have significant differences between the MRRMP alternatives in terms of Irrigation benefits. The "Tribal Interests" subsection of the "Irrigation" section of the Draft EIS directs the reader to the tables showing differences in county-level benefits for those counties. The irrigation analysis could not be disaggregated further than the county level.
3. The Recreation analysis of Tribal Interests in Section 3.16 Environmental Consequences used the results of the recreation analysis at the level of the reservoir and/or river reach. The differences between MRRMP alternatives at the reservoir/reach level provide the best indication of differences in recreation benefits at the reservation level. The recreation analysis could not be disaggregated further than the reservoir/reach level.
4. The Water Supply analysis of Tribal Interests in Section 3.18.2 Environmental Consequences used an inventory of specific intakes that serve Tribal communities, focusing on differences in intake operating cost between the different MRRMP alternatives.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645473

Concern Statement: The manner in which USACE currently operates the dams pursuant to the Master Manual has a significant adverse effect on the Tribes; so the statement on page 3-545 of the Draft EIS indicating that Alternative 1 is not anticipated to have a significant impact on Tribal interests is not valid and should be reassessed.

Response: USACE acknowledges that construction of the Dams adversely impacted Tribes. A detailed examination of the construction and operation of the reservoir system is outside the scope of this effort. This effort is focused on analyzing the impacts of a suite of alternatives designed to benefit endangered species. Impacts to the Tribes from construction and operation of the system are acknowledged in Section 3.20.2.10 Cumulative Impacts.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645469

Concern Statement: The Draft EIS includes an evaluation of impacts on Tribal subsistence activities but contains no baseline data upon which to make this analysis.

Response: The baseline for this analysis would be the No Action alternative, which is a projection of current management for endangered species carried forward into the future. Impacts to Tribal subsistence resulting from implementation of the preferred alternative are presented Section 3.20.2 Environmental Consequences in the EIS.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645458

Concern Statement: The evaluation of potential adverse impacts to plant species used by the Tribes for healing, medicinal and ceremonial purposes is problematic and should be more fully analyzed and disclosed in the Draft EIS.

Response: USACE believes the analysis completed for this effort is sufficient for a programmatic analysis. USACE is committed to continuing to work with the Tribes as site-specific projects are implemented in order to avoid impacts to important Tribal Resources.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645457

AE2100 *Affected Environment: Environmental Justice*

Concern Statement: The EIS needs to include the Three Affiliated Tribes and the Standing Rock Sioux Tribes as potential environmental justice populations in North Dakota.

Response: The Environmental Justice Affected Environment Section has been updated to reflect the Three Affiliated Tribes and the Standing Rock Sioux Tribe as environmental justice populations in North Dakota.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642766

AE2200 *Affected Environment: Ecosystem Services*

Concern Statement: The Ecosystem Services section should consider the ecosystem services benefits to: flood risk management from floodplain connection, habitat creation, levee setbacks, and channel widening; water quality and groundwater recharge associated with the federal acquisition of acres for habitat; recreation opportunities; and native fish and wildlife.

Response: The Final EIS was updated to summarize the results from many of the other sections to describe the ecosystem services benefits under the alternatives in the Ecosystem Services Environmental Consequences section.

The following ecosystem services benefits were described in the Final EIS: water regulation and flood attenuation, water quality and water supply, recreation, climate regulations and carbon sequestration, land values, natural resource goods, non-use values, and other cultural services.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640143

EC2200 *Environmental Consequences: Ecosystem Services*

Concern Statement: USACE has not adequately evaluated ecosystem services in the Draft EIS. Ecosystem services that need to be evaluated include flood risk management, recreation, clean water services, and ground water recharge which would all benefit from land acquisition and habitat construction, levee setbacks, wetlands, a wider channel, and floodplain connectivity. Other ecosystem services that should be addressed include savings on flood insurance or FEMA costs; infiltration of rain; greater diversity of plant species; increase in invertebrate diversity; prairie bird nesting; hunting opportunities; buffer crop or buildings from river rises; water quality enhancement, quality of life; natural areas provide relaxation, stress reduction, and thus contribute to the health of a population; interaction with nature which has deep roots in the human psyche; natural lands provide fellowship with others while hiking, boating, camping, fishing, and hunting clubs; a religious interaction with nature and their Creator; and the cultural and religious connections to the river by the Tribes. It is not apparent that these values are captured in other sections of the Draft EIS.

In addition, the Final EIS needs to provide or estimate the values of the ecosystem services. Examples include natural landscapes that also benefit fish and wildlife along the Missouri River and provide aesthetic enjoyment, educational opportunities, and a quality of life component; carbon storage in habitat acreage; and RED values in carbon trading markets.

Response: The Final EIS Ecosystem Services (Section 3.23) was updated to summarize the results from many of the other sections to describe the ecosystem services benefits under the alternatives. For example, the channel widening and IRC habitat provides benefits to flood risk management, especially in the lower reaches of the river. The following ecosystem services benefits were described in the Final EIS in the Ecosystem Services Environmental Consequences section: water regulation and flood attenuation, water quality and water supply, recreation, climate regulation and carbon sequestration, natural resource goods, land values, non-use values, and other cultural services (e.g., quality of life, educational, cultural and spiritual, aesthetic enjoyment, and others).

CEQ's NEPA regulations state that data and analyses included in an EIS should be commensurate with the importance of the impact (40 CFR 1502.15). An evaluation of the potential impacts to the most-affected ecosystem services resulting from the alternatives was included in the Final EIS in the Ecosystem Services section. The alternatives would have a negligible impact on all other ecosystem services and an evaluation was not warranted (for example, for carbon trading values). In some cases, these ecosystem service impacts are quantified (i.e., flood risk management and recreation), and in other cases they are not quantified because of the scale of the analysis needed, the uncertainty in the ecological effect (e.g., varying hydrology under alternatives on ground water recharge and water quality), the programmatic nature of the evaluation, and the anticipated negligible change in the effect among the alternatives.

Representative Quotes (Correspondence ID): 23, 77, 166, 179, 242

Comments (Comment ID): 626661, 645763, 645570, 645232, 644933, 644931

Concern Statement: USACE evaluates many of the ecosystem services in the other sections (e.g., Water Quality, Flood Risk Management). Since the full range of ecosystem benefits is not summarized within the Ecosystem Services section, this separation obfuscates the analysis of ecosystem services. The three ecosystem services that are evaluated in this section are vaguely and qualitatively compared. It is recommended that USACE correct these inconsistencies by giving values to ecosystem services in its own category and presenting the values in a quantified and comparative form to facilitate meaningful comparisons among the alternatives.

Response: The Final EIS was updated to summarize the results from many of the other sections to describe the ecosystem services benefits under the alternatives in the Ecosystem Services Environmental Consequences section. For example, the channel widening and IRC habitat provides benefits to flood risk management, especially in the lower reaches of the river. The following ecosystem services benefits were described in the Final EIS in the Ecosystem Services Environmental Consequences section: flood risk management, water quality and water supply, recreation, climate regulation and carbon sequestration, land values, natural resource goods, non-use values, and other cultural services (e.g., quality of life, educational, cultural and spiritual, aesthetic enjoyment, and others).

CEQ's NEPA regulations state that data and analyses included in an EIS should be commensurate with the importance of the impact (40 CFR 1502.15). An evaluation of the potential impacts to the most-affected ecosystem services resulting from the alternatives was included in the Final EIS in the Ecosystem Services section. The alternatives would have a negligible impact on all other ecosystem services and an evaluation was not warranted (for example, for carbon trading values). In some cases, these ecosystem service impacts are quantified (i.e., flood risk management and recreation), and in other cases they are not quantified because of the scale of the analysis needed, the uncertainty in the ecological effect (e.g., varying hydrology under alternatives on ground water recharge and water quality), the programmatic nature of the evaluation, and the anticipated negligible change in the effect among the alternatives.

Representative Quotes (Correspondence ID): 240

Comments (Comment ID): 644960

Concern Statement: In the ecosystem service evaluation, it is not clear why climate regulation and carbon sequestration are part of the Ecosystem Services section. Climate regulation and carbon sequestration are not directly associated with the river. It is concerning that

none of the ecosystem services were quantified. In addition, the section was not written well.

Response: The Final EIS was updated to summarize the results from many of the other sections to describe the ecosystem services benefits under the alternatives in the Ecosystem Services Environmental Consequences section. The following ecosystem services benefits were described in the Final EIS in the Ecosystem Services Environmental Consequences section: water regulation and flood attenuation, water quality, water supply, recreation, climate regulation and carbon sequestration, land values, natural resource goods, non-use values, and other cultural services (e.g., quality of life, educational, cultural and spiritual, aesthetic enjoyment, and others). An evaluation of the potential impacts to the most-affected ecosystem services resulting from the alternatives was included in the Final EIS in the Ecosystem Services Section 3.23. The alternatives would have a negligible impact on all other ecosystem services and an evaluation was not warranted (for example, for carbon trading values). In some cases, these ecosystem service impacts are quantified (i.e., flood risk management and recreation), and in other cases they are not quantified because of the scale of the analysis needed, the uncertainty in the ecological effect (e.g., varying hydrology under alternatives on ground water recharge and water quality), the programmatic nature of the evaluation, and the anticipated negligible change in the effect among the alternatives.

Air quality, specifically carbon sequestration, was qualitatively evaluated under Ecosystem Services (Section 2.23 in the Final EIS) as it pertains to changes in land ownership and availability of habitat through federal land acquisition and habitat creation because carbon sequestration can potentially affect human well-being. Other human considerations topics, such as thermal power, navigation, and hydropower, evaluated how the alternatives could affect carbon dioxide emissions (and other air emissions) and the social cost of carbon. Please see the Other Social Effects sections of the Final EIS for these resources for additional details (Sections, 3.17, 3.15, and 3.13, respectively).

With respect to the definitions of non-use value, please see Section 3.23.1.8 for additional details. Non-use values, also referred to as “passive use” values, are values that are not associated with actual use, nor are they directly valued in the market. Many natural ecosystems, endangered species, environmental components, and natural amenities are often appreciated by people but may not be directly or indirectly used by humans. Non-use values stem from a desire to preserve or improve a resource (e.g., natural landscape, restored ecosystem, endangered species) as a social or public good (existence value), for future use (option value), or for enjoyment by future generations (bequest value) (Sanders et al. 1990; Brown et al. 2007). Since these values or benefits are not associated with behavior or use, their valuation must rely on people stating their preferences for these preferences, goods, and/or services.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645231

Concern Statement: In the summary and consequence table, ecosystem services are rated the same across all of the alternatives. It is not clear how ecosystem services cannot vary across the alternatives. The units are confusing in the chart. Suggestions for improvement include breaking the chart into smaller sections, and using darker hash marks vs. light dots/line rather than colors.

Response: A qualitative summary of the Ecosystem Services results are provided in the summary and consequence table of the Final EIS. The Final EIS was updated to

summarize the results from each of the other sections to describe the ecosystem services benefits under the alternatives in the Ecosystem Services Environmental Consequences section. The following ecosystem services benefits were described in the Final EIS in the Ecosystem Services Environmental Consequences section: water regulation and flood attenuation, water quality, water supply, recreation, climate regulation and carbon sequestration, natural resource goods, land values, non-use values, and other cultural services (e.g., quality of life, educational, cultural and spiritual, aesthetic enjoyment, and others).

Representative Quotes (Correspondence ID): 166, 179

Comments (Comment ID): 645230, 644932

AE2300 ***Affected Environment: Mississippi River***

Concern Statement: The link between the Missouri and Mississippi River should be better studied. Reductions in navigation flow support have cascading impacts, not only to uses on the Missouri River, on the Mississippi River, which is 40 percent of the flow to the Middle Mississippi during normal conditions and peaked at more than 70 percent during the 2012 drought.

Response: Variation in Mississippi River flow for each of the Alternatives could be influenced by a number of downstream factors. All Alternatives were modeled and analyzed with HEC-RAS and ResSim using the same methodology. These models have the capability to accurately assess daily flow change and the comparison between the Alternatives using model output on the Mississippi River is valid. However, the current hydrology, hydraulics, and economic analyses shows the potential for some negative impacts to resources for alternatives that include changes in reservoir flow releases. Additional hydrology and hydraulic analyses would be conducted if adaptive management identifies the need for future flow measures. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration.

Representative Quotes (Correspondence ID): 46, 154, 176

Comments (Comment ID): 628533, 640951, 644739

Concern Statement: The Draft MRRMP-EIS should state that USACE is not authorized to operate the Mainstem Missouri River for the Mississippi River.

Response: The Final EIS has been updated to include the following information. As required by the Master Manual, USACE operates the Missouri River Mainstem Reservoir System for the Congressionally-authorized purposes within the Missouri River basin. USACE lacks authority to alter the purposes of the System or to modify the regulation of the System under the Master Manual for the central purpose of benefiting the Mississippi River.

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 642781

Concern Statement: The Draft MRRMP-EIS should include the analysis of water compelled rates in Section 3.24, Mississippi River Impacts.

Response: USACE acknowledges that there could be some adverse impacts in some years to Mississippi River navigation, especially during the fall and winter months under Alternatives 2, 4, and 6. The Final EIS was updated to include a navigation NED

evaluation that assessed the changes in operating costs for navigators for the flow changes under the MRRMP-EIS alternatives. Because of the temporary changes in flows under the action alternative relative to No Action, the changes in costs would be temporary and not likely to affect water compelled rates on the Mississippi River. The changes in river flows would not cause a shift in mode to alternate sources. Therefore, a water-compelled rate study was not deemed necessary.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645608

EC2300 *Environmental Consequences: Mississippi River Impacts*

Concern Statement: Low summer flows associated with Alternative 2 will adversely affect navigation flows to the Middle Mississippi River and this economic impact should be addressed in the Draft EIS.

Response: A NED evaluation has been conducted on navigation on the Mississippi River. There are impacts to Middle Mississippi River navigation when river stages fall below 0 at the St. Louis gage. The tonnage impacted and costs associated with reductions in river flows and stages on the Middle Mississippi River are provided in Section 3.24.5.2, Mississippi River, Navigation, Environmental Consequences. USACE acknowledges that the spawning cue releases and low summer flows under Alternative 2 could have impacts to Middle Mississippi River navigation in some years, which have been described in this section.

Representative Quotes (Correspondence ID): 27, 29, 33, 65, 145, 197, 228
Comments (Comment ID): 645621, 626696, 646284, 645265, 646277, 631570, 645765, 626742, 645637, 645623

Concern Statement: There is no mention of the biological resources in the Middle Mississippi River within the Draft EIS.

Response: Impacts to biological resources in the Middle Mississippi are assessed and reported in the Draft EIS beginning on page 3-595 in Section 3.24.3. This section describes the methodology and results of assessing the impacts from alternatives to biological resources in the Middle Mississippi. Although Alternatives 2, 4, 5, and 6 include flow actions, they are not large enough to be measurable beyond what can be described as "small or negligible" in the Middle Mississippi, as reported in the Draft EIS.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645622

Concern Statement: The Draft EIS fails to perform an adequate RED, NED, OSE, and EQ analyses on navigation in the Middle Mississippi River in a similar way as analyzed for the Missouri River. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the local and regional economic conditions (jobs, income, revenues). Finally, the failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also unacceptable given the Mississippi Rivers major contribution to the Nation's economy. By failing to conduct and NED, RED, OSE, and EQ analysis in its modeling, the Draft EIS is significantly understating the economic, environmental, and social impacts of the alternatives on Mississippi River navigation.

Response: A NED evaluation has been conducted on navigation on the Mississippi River with input from industry and the USACE St. Louis District. There are impacts to Middle

Mississippi River navigation when river stages fall below 0 at the St. Louis gage. The tonnage impacted and costs associated with reductions in river flows and stages on the Middle Mississippi River are provided in Section 3.24.5.2, Mississippi River, Navigation, Environmental Consequences. USACE acknowledges that the releases under Alternatives 2, 4, and 6 could have adverse impacts to Middle Mississippi River navigation in some years, which have been described in this section. A RED and OSE evaluation was not conducted as part of the Mississippi River navigation evaluation because changes in river stages would not cause navigation to cease on the Middle Mississippi River such that commodities would need to be shipped by alternate modes. Reduced river flows in a number of years would increase operating costs. In addition, the average annual increase in operating costs would be greatest under Alternative 6, with an increase in NED costs of \$197,000 (0.4 percent). There would be six years over the POR where operating costs would be over \$1 million higher under Alternative 6 compared to No Action, with the average of the 8 worst change years resulting in an increase in operating costs of \$1.8 million compared to No Action. Because the impacts would be temporary and small in most years, a RED and OSE evaluation was not conducted for navigation on the Middle Mississippi River.

Representative Quotes (Correspondence ID): 168, 176, 228

Comments (Comment ID): 645620, 645619, 645168, 645167, 644774, 644768, 644767, 644766

Concern Statement: The geographic scope of the Draft EIS does not include the Middle Mississippi River from St. Louis, MO to Cairo, IL. The failure to include the Middle Mississippi River in Draft EIS geographic scope raises questions about USACE's ability to accurately analyze the impacts of the alternatives on the Mississippi River. Pallid sturgeon are using the Middle Mississippi and Draft EIS alternatives should consider the Middle Mississippi and the Missouri Rivers as one and be evaluated as such.

Response: The preferred alternative does include the ability to construct IRC habitat in the very lower portion of the Missouri River. The MRRP ISP has already begun supporting the microchemistry and genetics studies that are the basis for understanding relations with the Mississippi River. Under Big Question 4 on drift dynamics there is a level 1 field study to assess free embryo transport to the Mississippi River. This study will estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River relative to the number and survival of those that remain in the Missouri River. The SAMP is designed to be flexible and a modified geographic scope for IRC construction could be incorporated into management through the AM process if necessary.

Representative Quotes (Correspondence ID): 228

Comments (Comment ID): 645617

Concern Statement: Under Alternatives 2, 4 and 6, the number of days of normal loading is reduced in these months and navigation restrictions shift to lower (i.e., more restrictive) action level categories with greater impacts. These impacts are substantial enough to not be muted even when evaluating annual impacts.

Response: A NED evaluation has been conducted on navigation on the Mississippi River with input from industry and the USACE St. Louis District. There are impacts to Middle Mississippi River navigation when river stages fall below 0 at the St. Louis gage with impacts to tow configurations and loading of barges. The tonnage impacted and change in operating costs associated with reductions in river flows and stages on the Middle

Mississippi River are estimated in Section 3.24.5.2, Mississippi River, Navigation, Environmental Consequences. USACE acknowledges that the releases under Alternatives 2, 4, and 6 could have adverse impacts to Middle Mississippi River navigation in some years, especially in the fall and winter months, which have been described in this section.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645264

Concern Statement: Increasing flow from Gavins Point Dam while the Mississippi River is experiencing flooding could present a significant threat to public safety. This creates a serious potential for the environmental flow releases on the Missouri River to coincide with regional flooding on the Middle Mississippi River and increase flood risk for communities along the Middle Mississippi River.

Response: Prior to implementing any management action that alters reservoir operations, a comprehensive flood risk evaluation will be conducted per USACE requirements. The level of additional hydrologic analysis will be based on USACE guidance and requirements and will identify the change in reservoir pool probability, reservoir release frequency, river stage-frequency, and river stage-duration. A release would not occur if regional flooding is occurring downstream of Gavins Point Dam. The average annual damages for the Middle Mississippi reach decrease by 0.1 percent or less in Alternatives 2, 3, 5, and 6, and Alternative 4 would result in a 0.1 percent average annual damage increase.

Representative Quotes (Correspondence ID): 168, 197
Comments (Comment ID): 645258, 645182

Concern Statement: The impacts to stage, flood control and navigation on the Middle Mississippi River are significantly understated due to flaws in the hydrological and economic models. The Draft EIS also claims that the spring and fall flow releases in Alternatives 2, 4, 5, and 6 would be partially to largely attenuated by the time they reach Hermann, Missouri. However, the Draft EIS does not provide any detailed analysis as to why this would be the case.

Response: The hydrology and hydraulics models and economic approaches and models have been reviewed internally by USACE experts (Agency Technical Review and District Quality Control) and through an independent external peer review; although more extensive and comprehensive modeling could be undertaken, USACE and reviewers believe that the models and approaches are sufficient to compare impacts across alternatives. Limitations and assumptions are provided in the Hydrology and Hydraulics Technical Reports and the Environmental Consequences sections of the Human Considerations resource topics.

The Missouri River is a dynamic system that is changing constantly. The flow releases from Gavins Point Dam under Alternatives 2, 4, 5, and 6 gradually attenuate in the lower river due to a number of factors, including: (a) the large distance between Gavins Point Dam and the confluence of the Missouri River and the Mississippi River results in flow release peaks spreading out; and (b) rainfall in the watersheds of the numerous tributaries downstream of Gavins Point Dam further spreads out flow release peak (for example, approximately two thirds of the total flow in the Missouri River enters the river downstream of Gavins Point Dam). Attenuation of the flow releases with distance from Gavins Point Dam implies that potential impacts to flooding, navigation, and other

resources also decrease to a similar degree. Residual peaks from flow releases are further attenuated in the Mississippi River from the combined flow. These additional details and description have been added to the Final EIS.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645183, 645181

Concern Statement: The failure to include an independent comprehensive analysis of water compelled-rates in the Draft EIS is inappropriate. By not including this analysis, USACE has understated both the economic benefits of navigation and the impacts of these alternatives on both Missouri and Mississippi River navigation.

Response: USACE acknowledges that there could be some adverse impacts in some years to Mississippi River navigation, especially during the fall and winter months under Alternatives 2, 4, and 6. The Final EIS was updated to include a navigation NED evaluation that assessed the changes in operating costs for navigators for the flow changes under the MRRMP-EIS alternatives. Because of the temporary changes in flows under the action alternative relative to No Action, the changes in costs would be temporary and would not likely affect water compelled rates on the Mississippi River. The changes in river flows would not cause a shift in mode to alternate sources. Therefore, a water-compelled rate study was not deemed necessary.

USACE contracted with the University of Tennessee, Center for Transportation Research to conduct a qualitative assessment of water-compelled rates associated with Missouri River navigation. The University of Tennessee, Center for Transportation Research report provides a historical context of waterway and rail traffic along the Missouri River, noting the relatively recent issues with waterway reliability for navigation; describes past rail regulatory reforms; provides previous estimates of water-compelled effects; and describes the current rail environment that could have implications for these issues. The issues are complicated surrounding water-compelled rates and the dynamic economic conditions and context of the rail industry create uncertainties regarding the effect of Missouri River navigation on railroad pricing. However, the authors conclude that unless expectations regarding the Missouri River's reliability and long-run availability for navigation are reversed, water-compelled railroad rates attributable to Missouri River commercial navigation seem improbable. Further details are discussed in the "Missouri River Water-Compelled Railroad Rates: Review and Qualitative Update" available online (www.moriverrecovery.org).

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645170, 645169

Concern Statement: The Draft EIS indicates that the impacts to flood risk management in Section 3.24 were evaluated using two of the four economic account models: NED and OSE. By only using these two accounts to evaluate the impacts to flood risk management, the Draft EIS has omitted key data points resulting in a major understatement of the costs and impacts to Mississippi River flood control interests. A comprehensive RED analysis for the Mississippi River, if done properly, would illustrate the negative impacts of these alternatives on local and regional economic conditions, such as employment, income, sales, sales tax revenue, flood damages, and other potential cost.

Response: There are only very small changes from No Action for flood risk on the Mississippi River. All of the action alternatives 4 show slightly higher flood risk damages, losses and

costs. The magnitude of the change in NED impacts are on the order of 1 percent or less. As a result, a RED analysis for the Missouri River flood risk management evaluation was not warranted for the MRRMP-EIS.

Representative Quotes (Correspondence ID): 168
Comments (Comment ID): 645166

Concern Statement: The impacts relating to the Middle Mississippi are direct and not cumulative. The relationship of the Middle Mississippi and the Missouri River pallid sturgeon is not sufficiently developed in the Draft EIS. Flow and lack thereof affect the performance of the Middle Mississippi and have significant social and economic consequences to the users of the Mississippi River. The failure to directly examine the impact of alternatives to the Middle Mississippi in a direct fashion, and to ignore science indicating the pallid sturgeon's potential gain, requires greater examination of the Middle Mississippi, which should be included in the Draft EIS.

Response: The preferred alternative does include the ability to construct IRC habitat in the very lower portion of the Missouri River. The MRRP ISP has already begun supporting the microchemistry and genetics studies that are the basis for understanding relations with the Mississippi River. Under Big Question 4 on drift dynamics there is a level 1 field study to assess free embryo transport to the Mississippi River. This study will estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River relative to the number and survival of those that remain in the Missouri River. The SAMP is designed to be flexible and a modified geographic scope for IRC construction could be incorporated into management through the AM process if necessary.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644787

Concern Statement: The implementation of the proposed alternatives, based on the Draft EIS, cause a significant impact to the Middle Mississippi River system located north of Cairo, IL for both flood control and navigation. Any change/alternative producing an induced increase to the water surface elevation on the Middle and Lower Mississippi River is unacceptable.

Response: USACE acknowledges that there could be some adverse impacts in some years to Mississippi River navigation, especially during the fall and winter months under Alternatives 2, 4, and 6. A NED evaluation has been conducted for Mississippi River navigation and additional detail has been added to the Final EIS to describe the impacts under the alternatives. On average, all of the action alternatives would result in changes compared to No Action of less than 0.5 percent.

There are only very small changes from No Action for flood risk on the Mississippi River. All of the action alternatives 4 show slightly higher flood risk damages, losses and costs. The magnitude of the change in NED impacts are on the order of 1 percent or less. As a result, a RED analysis for the Missouri River flood risk management evaluation was not warranted for the MRRMP-EIS.

Representative Quotes (Correspondence ID): 196
Comments (Comment ID): 644145

Concern Statement: When considering NED and associated impacts that USACE should recognize that the waters from the Missouri River do not stop at the arch in St. Louis, nor

does the tonnage coming off of our system, and that while a per ton mile is evaluated, those same tons go all the way to the gulf almost without exception.

Response: The NED evaluation for inland navigation uses transportation rate savings, which estimates the cost savings provided by navigation compared to the next cheapest transportation alternative. Transportation rate savings are calculated using the entirety of the movement, and any movement that touches the Missouri and, for example travel to Gulf Coast, is accounted for in the NED evaluation.

A NED evaluation has been conducted on navigation on the Mississippi River with input from industry and the USACE St. Louis District. There are impacts to Middle Mississippi River navigation when river stages fall below 0 at the St. Louis gage with impacts to tow configurations and loading of barges. The tonnage impacted and change in operating costs associated with reductions in river flows and stages on the Middle Mississippi River are shown in Section 3.24.5.2, Mississippi River, Navigation, Environmental Consequences. There are not anticipated to be navigation NED impacts associated with river flows from the Missouri River below the Ohio River. However, the Middle Mississippi River navigation NED evaluation assumed round-trip mileage for tows to estimate the NED effects.

Representative Quotes (Correspondence ID): 95
Comments (Comment ID): 636843

Concern Statement: The failure to directly examine the impacts of alternatives to the Middle Mississippi River in a direct fashion and to ignore science indicates the pallid sturgeon's potential gain would require greater examination in the Draft EIS.

Response: The preferred alternative does include the ability to construct IRC habitat in the very lower portion of the Missouri River. The MRRP ISP has already begun supporting the microchemistry and genetics studies that are the basis for understanding relations with the Mississippi River. Under Big Question 4 on drift dynamics there is a level 1 field study to assess free embryo transport to the Mississippi River. This study will estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River relative to the number and survival of those that remain in the Missouri River. The SAMP is designed to be flexible and a modified geographic scope for IRC construction could be incorporated into management through the AM process if necessary.

Representative Quotes (Correspondence ID): 34
Comments (Comment ID): 628342

EC2500 *Environmental Consequences: Climate Change*

Concern Statement: Climate change discussions are required in a Draft EIS, but the predictions used in the analyses are mere speculation.

Response: The climate change analysis included in the Draft EIS is consistent with USACE Engineering and Construction Bulletin (ECB 2016-25) "Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Project." The climate change analysis was prepared consistent with CEQ Final Guidance on the Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA. CEQ withdrew this guidance in April 2017.

Representative Quotes (Correspondence ID): 239

Comments (Comment ID): 642741

Concern Statement: Counter to statements made in the Draft EIS that environmental impacts due to climate change will be equal across alternatives, differences will be experienced because each alternative will cause different levels of fluctuations in Missouri River reservoirs which have detrimental consequences on cultural resources.

Response: USACE concurs that the alternatives would cause different levels of fluctuations in the reservoirs; however, it is assumed that each alternative would be affected by the same climate change scenario.

Representative Quotes (Correspondence ID): 232

Comments (Comment ID): 645442

Concern Statement: Because the consequences of climate change are uncertain and likely will not be distributed across the country equally, USACE should use an increased SCC.

Response: The climate change analysis included in the Draft EIS is consistent with USACE Engineering and Construction Bulletin (ECB 2016-25) "Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Project." The climate change analysis was prepared consistent with CEQ Final Guidance on the Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA. CEQ withdrew this guidance in April 2017.

Representative Quotes (Correspondence ID): 171

Comments (Comment ID): 645198

Concern Statement: USACE should continue to monetize the social costs of carbon by accounting for the global harms caused by climate change.

Response: The global impacts of climate change is beyond the scope of this analysis. The intent of including the social cost of carbon as an aspect of the OSE analysis is to try to estimate and quantify the impact of reduced hydropower production under different alternatives from a national perspective.

Representative Quotes (Correspondence ID): 171

Comments (Comment ID): 645197

Concern Statement: In future impact analyses USACE should use higher underlying estimates for damages from climate change as demonstrated by numerous scientific studies published since 2009.

Response: USACE used the most recent available information from the U.S. Environmental Protection Agency for this analysis at the time.

Representative Quotes (Correspondence ID): 171

Comments (Comment ID): 645196

Concern Statement: Because any agency decision related to climate change will impact future generations in uncertain long-term ways, it was appropriate for USACE to use a lower discount rate for the SCC analysis for the MRRMP-EIS. It should use an even lower discount rates in future analyses.

Response: Comment noted.

Representative Quotes (Correspondence ID): 171

Comments (Comment ID): 645193, 645195, 648194

Concern Statement: Circular A-4 recommends conducting SCC analyses with discount rates of seven percent and three percent; however, additional evidence suggests the lower risk-free discount rate should be less than one percent.

Response: Comment noted.

Representative Quotes (Correspondence ID): 171
Comments (Comment ID): 645192

Concern Statement: USACE should use current dollar values (2016–2017) and not 2007 dollars for determining the value of a metric ton of CO² for the SCC analysis.

Response: The value used for Social Cost of Carbon was obtained from U.S. Environmental Protection Agency sources, which used this price level and the 3 percent discount rate. A 3 percent discount rate was chosen as representative for this estimate because it was closest to the current Federal Interest rate for water resource projects.

Representative Quotes (Correspondence ID): 171
Comments (Comment ID): 645191

Concern Statement: Monetizing the consequences of climate change better informs the public and decision makers. Without context, it is difficult for many decision-makers and the public to access the magnitude and consequences of climate change.

Response: Comment noted.

Representative Quotes (Correspondence ID): 243
Comments (Comment ID): 645116

Concern Statement: USACE should monetize methane and nitrous oxide as well as carbon and adjust for yearly increases in evaluating the potential consequences of climate change.

Response: The climate change analysis included in the Draft EIS is consistent with USACE Engineering and Construction Bulletin (ECB 2016-25) “Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Project.” The climate change analysis was prepared consistent with CEQ Final Guidance on the Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA. CEQ withdrew this guidance in April 2017.

Representative Quotes (Correspondence ID): 244
Comments (Comment ID): 645114

Concern Statement: USACE should move beyond the use of a single estimate to account for the growing social cost of greenhouse gas emissions and acknowledge that increased emissions over time would be more costly. USACE should also acknowledge that there is a range of the social cost of greenhouse gas estimates, including a 95th percentile value that captures uncertainty, risk aversion, and the potential for catastrophic outcomes.

Response: The climate change analysis included in the Draft EIS is consistent with USACE Engineering and Construction Bulletin (ECB 2016-25) “Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Project.” The climate change analysis was prepared consistent with CEQ Final Guidance

on the Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA. CEQ withdrew this guidance in April 2017.

Representative Quotes (Correspondence ID): 244
Comments (Comment ID): 645113

Concern Statement: Small changes in climate variables, if detected and included, in the various models used in the Draft EIS can cause significant differences in model output regarding the consequences of climate change.

Response: Comment noted.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644878

TC1000 *Resources of Concern - Tribal*

Concern Statement: Tribal water rights are being ignored in the Draft MRRMP-EIS. Tribal water rights adjudication and development is quickly advancing. USACE needs to quantify, recognize, and assess these impacts among the alternatives within the Final EIS.

Response: The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty. A description of Tribal water rights is provided in Section 6.5.

Representative Quotes (Correspondence ID): 1, 197, 232
Comments (Comment ID): 645694, 645275

Concern Statement: There should be "rip-rapping" of Tribal areas to preserve 1620 line.

Response: This suggestion is outside the scope of the Management Plan EIS.

Representative Quote: 10
Comments (Comment ID): 627493

Concern Statement: Cultural resources of the Tribes are just as important as the three listed species.

Response: Comment noted. The importance of cultural resources to the Tribes is understood by USACE. Potential cultural resources impacts are examined in-detail in the EIS.

Representative Quotes (Correspondence ID): 10
Comments (Comment ID): 627495

Concern Statement: How will spring/fall pulse impact Tribal intake systems with silt increases and inundation?

Response: The preferred alternative would not include flow options that would increase siltation/inundation of Tribal intakes.

Representative Quotes (Correspondence ID): 10
Comments (Comment ID): 627499

Concern Statement: Concern is expressed over the cultural aspects of scared plants and animals within the habitats that would be impacted by the actions described in the Draft EIS.

Response: Comment noted. Cultural resources impacts and impacts to plants important to Tribes are evaluated in the EIS.

Representative Quotes (Correspondence ID): 57
Comments (Comment ID): 632104

Concern Statement: The quality of water used for water supply should not be affected by increased sediments.

Response: The MRRMP-EIS acknowledges that mechanical construction could temporarily impact water quality by increasing sediment and turbidity. However, any potential water quality impacts will be temporary and localized to the area of construction and a short distance downstream. Given the programmatic nature of this document, specific construction sites are not identified at this time. It should be noted that there would not be any mechanical habitat construction on the reservoirs unless introduced in the future through the adaptive management process. The preferred alternative does not include mechanical habitat construction on the reservoirs. In river reaches, measures will be taken to minimize and prevent construction related impacts and the amount of mechanical construction will be limited to only the amount that is necessary to meet the habitat targets after accounting for available habitat. Adherence to best management practices during construction will minimize or eliminate the risk of unintended water quality effects from discharged sediment and turbidity. Each site-specific construction project will comply with Sections 401, 402, and 404 of the Clean Water Act (CWA) and applicable water quality standards through site-specific analysis and coordination. As discussed in 3.7.2 and 6.3.1., USACE will regulate any discharges of dredge or fill material into waters of the United States, including the Missouri River, pursuant to Section 404 of the CWA. The selection of disposal sites for dredge or fill material will be done in accordance with the Section 404(b)(1) guidelines. Section 401 water quality certifications would be obtained for site-specific management actions, as required, prior to construction. The certification requires a finding by the affected states that the activities permitted would comply with all water quality standards individually or cumulatively over the term of the permit. USACE will conduct testing of material for contaminants prior to using those materials for in-river habitat construction. Furthermore, site-specific NEPA analysis would take place to identify potential issues, including to water quality. As stated in 2.5.1.2, mechanical habitat construction would be guided by a principle of systematic avoidance of potentially sensitive resources (e.g., known locations of protected plant and animal species, natural heritage and cultural resources, public and private infrastructure features) and the de-selection of less suitable project areas.

Representative Quotes (Correspondence ID): 57
Comments (Comment ID): 632121

Concern Statement: The water rights of the Tribe would be detrimentally impacted by the actions discussed in Draft EIS. As a member of the Tribe I am opposed to mechanical construction in the Oahe reservoir. I am also opposed to the type of development which would impact the water quality or quantity. The water rights and water supply issues directly impact me as a Tribal member. The plants, including medicinal and those which

are important to the spiritual and cultural lifeways of my people are at high risk due to the development and resulting pollution along the length of the river.

Response: The MRRMP-EIS acknowledges that mechanical construction could temporarily impact water quality by increasing nutrients, sediment and turbidity, and other pollutants and potentially decreasing dissolved oxygen. However, any potential water quality impacts will be temporary and localized to the area of construction and a short distance downstream. Given the programmatic nature of this document, specific construction sites are not identified at this time. It should be noted that there would not be any mechanical habitat construction on the reservoirs, including Lake Oahe (as stated in 2.5.1.3). Measures will be taken to minimize and prevent these impacts and the amount of mechanical construction will be limited to only the amount that is necessary to meet the habitat targets after accounting for available habitat. Adherence to best management practices during construction will minimize or eliminate the risk of unintended water quality effects from discharged sediment and turbidity, nutrients, and other pollutants. Each site-specific construction project will comply with Sections 401, 402, and 404 of the Clean Water Act (CWA) and applicable water quality standards through site-specific analysis and coordination. As discussed in 3.7.2 and 6.3.1., USACE will regulate any discharges of dredge or fill material into waters of the United States, including the Missouri River, pursuant to Section 404 of the CWA. The selection of disposal sites for dredge or fill material will be done in accordance with the Section 404(b)(1) guidelines. Section 401 water quality certifications would be obtained for site-specific management actions, as required, prior to construction. The certification requires a finding by the affected states that the activities permitted would comply with all water quality standards individually or cumulatively over the term of the permit. USACE will conduct testing of material for contaminants prior to using those materials for in-river habitat construction. Furthermore, site-specific NEPA analysis would take place to identify potential issues, including to water quality. As stated in 2.5.1.2, mechanical habitat construction would be guided by a principle of systematic avoidance of potentially sensitive resources (e.g., known locations of protected plant and animal species, natural heritage and cultural resources, public and private infrastructure features) and the de-selection of less suitable project areas.

Representative Quotes (Correspondence ID): 94
Comments (Comment ID): 633679

Concern Statement: The true environmental impacts on Tribes are not properly considered by USACE in the Draft EIS.

Response: USACE believes the analysis of impacts to Tribal Resources are properly considered given this is a programmatic EIS. A more-detailed examination of impacts would occur on a site-specific basis as projects are implemented.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645423

Concern Statement: The Draft EIS establishes new demands for water, but proposes no changes to current Missouri River operations under the Master Manual in order to fulfill the increased demand. The current operations under the Master Manual degrade Tribal water supplies and impact the Tribe's ability to put water to beneficial use. USACE acknowledges in the Draft EIS that it is Tribal water supplies that will be the source for the downstream fish and wildlife uses (Draft EIS, p. 3-28). The Tribes did not cause the decline of these species, but under the MRRMP, we pay the price of habitat restoration.

Response: The preferred alternative does not include flow options that would increase demands on water.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645425

Concern Statement: The alternatives in the Draft EIS, in combination with the construction of the Mainstem dams, the pattern of water releases pursuant to the Master Manual, and the management of Pick-Sloan project lands for oil and gas pipelines, have a significant, adverse and disproportionate impact on the Indian Nations of the Missouri Basin. Important issues facing the Tribes such as noxious weeds and invasive species on Indian lands caused by USACE Missouri River operations are totally ignored in the Draft EIS.

Response: Comment noted. Cumulative impacts to the Tribes are presented in the Cumulative Impacts analysis and were considered in the decision-making process.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645445

Concern Statement: Council on Environmental Quality regulations require USACE to evaluate the cumulative environmental impact of the proposed action with other past and foreseeable future actions (40 CFR § 1508). The cumulative impact of past actions on the Missouri River, particularly on Tribes needs to be addressed in the Draft EIS cumulative impact assessment.

Response: Comment noted. The cumulative impacts analysis addresses cumulative impacts on the Tribes.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645447

Concern Statement: Cumulative impact to Tribal water supplies in the upper basin, from current USACE operations under the Master Manual, which will be made worse by the proposed alternatives in the Draft EIS need to be considered in the Final EIS.

Response: Comment noted. The cumulative impacts analysis addresses cumulative impacts on the Tribes. The preferred alternative is not anticipated to increase impacts on the Tribes.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645454

Concern Statement: Although USACE mentions the Missouri River Master Manual, the 999 EIS fails to disclose the significant adverse impact of the construction of the dams or the on-going adverse impacts caused by the Master Manual on Indian water.

Response: The EIS baseline is with the dams in place and a hydrologic modeling of social effects of the construction of the dams on Tribes is beyond the scope of this EIS. The cumulative impacts analysis recognizes the effects of dams on the Tribes. Comment noted. Impacts to Tribal resources are acknowledged in the Tribal Resources section, the Cultural Resources section, and in various other sections of the environmental consequences chapter.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645455

Concern Statement: USACE acknowledges that Tribes will incur increased costs to access water in the future, upon implementation of the alternatives in the Draft EIS (Draft EIS, p. 3-28). These cumulative adverse impacts on Tribal economies should be disclosed and evaluated by USACE.

Response: The analysis included in the Draft EIS did consider how costs would change for water supply intakes under each of the Management Plan alternatives. This includes costs associated with Tribal intakes. The results under the alternatives indicate a slight increase in costs under certain alternatives.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645459

Concern Statement: The cumulative impacts summarized in Table 3-1 of the Draft EIS identify oil and gas production as a related cumulative action affecting Tribes. However, the approval of the Dakota Access Pipeline and the Presidential Permit for the Keystone XL Pipeline pose significant environmental risk to the Missouri River, and there is no quantitative analysis of this risk. Table 3-1 simply is not an adequate disclosure of the cumulative impacts of oil and gas pipelines and MRRMP on the Tribes.

Response: The alternatives in the EIS primarily consist of changes in flow operations and construction activities and would not exacerbate the impacts that could be incurred as a result of an oil spill or other pipeline related impact.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645460

Concern Statement: The Draft EIS fails to properly account for the effects of the alternatives on Indian Tribes, and fails to acknowledge the overall disproportionate impact of USACE Missouri River operations on Indian Tribes.

Response: USACE believes the analysis of impacts to Tribal Resources are properly considered given this is a programmatic EIS. A more-detailed examination of impacts would occur on a site-specific basis as projects are implemented. The analysis does not indicate that a disproportionate impact would be incurred by Tribes from implementation of the preferred alternative.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645463

Concern Statement: The general impact analysis on Tribes fails to identify the impact of Pick-Sloan on Indian land and water, the assumptions used in the qualitative analysis are incorrect, and the conclusions in the Draft EIS with respect to Tribal impacts are erroneous.

Response: The EIS baseline is with the dams in place and a hydrologic modeling of social effects of the construction of the dams on Tribes is beyond the scope of this EIS. The cumulative impacts analysis recognizes the effects of dams on the Tribes. Impacts to Tribal resources are acknowledged in the Tribal Resources section, the Cultural Resources section, and in various other sections of the environmental consequences chapter.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645465

Concern Statement: The Human Considerations analysis totally downplays Tribal concerns with the disproportionate and long-term negative impacts suffered by the Tribes. The negative impacts experienced by Tribes far exceeds any negative impacts on non-Indian communities, because USACE located the Mainstem reservoirs in Indian Country.

Response: The EIS baseline is with the dams in place and a hydrologic modeling of social effects of the construction of the dams on Tribes is beyond the scope of this EIS. The cumulative impacts analysis recognizes the effects of dams on the Tribes. Impacts to Tribal resources are acknowledged in the Tribal Resources section, the Cultural Resources section, and in various other sections of the environmental consequences chapter.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645474

Concern Statement: A written submission on Human Considerations of the Standing Rock Sioux Tribe/Rosebud Sioux Tribe/Oglala Sioux Tribe/Flandreau Santee Sioux Tribe, as the Great Plains Tribal Water Alliance, has been totally ignored in the Draft EIS.

Response: This written submission was received and considered in the EIS. The letter emphasized the impacts to Tribes resulting from construction of the Mainstem dams and the 1944 Flood Control Act. The cumulative impacts assessment describes past, present, and reasonably foreseeable impacts to Tribal interests and acknowledges impacts to the Tribes resulting from the Mainstem dams.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645475

Concern Statement: USACE has proven it cannot analyze environmental impacts to the Standing Rock Sioux, much less impacts on our valuable water rights.

Response: Comment noted. USACE disagrees and believes the impacts analysis in the EIS is sufficient for a programmatic EIS and the modeling done for this effort used state of the art methods.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645476

Concern Statement: A full evaluation of the impact of Pick-Sloan on Tribes, and the mitigation of those impacts, remains lacking in the Draft EIS.

Response: The EIS baseline is with the dams in place and a hydrologic modeling of social effects of the construction of the dams on Tribes is beyond the scope of this EIS. The cumulative impacts analysis recognizes the effects of dams on the Tribes. Impacts to Tribal resources are acknowledged in the Tribal Resources section, the Cultural Resources section, and in various other sections of the environmental consequences chapter.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645485

Concern Statement: Use natural processes for habitat restoration whenever possible; protect Tribal cultural and; historic resources; work to compensate Tribes for adverse impacts from the dams; improve communications and relations with Tribes, and discuss in the Draft EIS the threat from oil pipelines.

Response: Comment noted. A variety of actions for restoration were examined in the EIS and their impacts on Tribal resources were examined. Compensation to the Tribes from dam related impacts is beyond the scope of this effort. USACE will continue to seek opportunities to coordinate and consult with the Tribes during program implementation. The impact of oil and gas development is discussed in the cumulative impacts section.

Representative Quotes (Correspondence ID): 180
Comments (Comment ID): 645785

Concern Statement: Although pre-dam conditions are included in the assumptions for river and reservoir simulation models, pre-dam conditions on the Reservations are not taken into account as part of the Tribal interests. The negative impacts to Tribes from construction and operation of the dams are not identified. The costs incurred by the Tribes as a result of the Pick-Sloan program are ignored.

Response: The EIS baseline is with the dams in place and a hydrologic modeling of social effects of the construction of the dams on Tribes is beyond the scope of this EIS. The cumulative impacts analysis recognizes the effects of dams on the Tribes. Impacts to Tribal resources are acknowledged in the Tribal Resources section, the Cultural Resources section, and in various other sections of the environmental consequences chapter.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645917

Concern Statement: The MRRMP will exacerbate negative impacts, by supplying Indian water for habitat recovery.

Response: The preferred alternative would not include flow options that would increase demands on water.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645926

OT1000 *Other AE/EC Resource Topics*

Concern Statement: Dam safety needs to be included as one of the primary risk categories within the Draft EIS.

Response: Under Alternative 3, negligible impacts are expected because of the absence of the spawning cue release of the No Action alternative would have a negligible effect. Minor changes in dam safety risk from releases could occur under Alternatives 2, 4, 5, and 6. Although the EIS indicates that risk increases would be minor, as a precautionary measure and following USACE policy, additional HH analyses will be conducted to quantify risk if AM identifies the need for future flow measures as explained in Section 3.12.2.1 of the Final EIS.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644875

EC2400 *Environmental Consequences: Other Socioeconomic Impacts*

Concern Statement: When managing the Missouri River, it is important that the economic impacts to farmers and communities be considered as well as the risks to human lives.

Response: The Final EIS evaluates the impacts from flooding on crop production, planting and harvest costs, structures, infrastructure, and other property in the floodplain in Section 3.12, Flood Risk Management and Interior Drainage. In addition, this section also includes an evaluation of the populations at risk and critical infrastructure affected under the alternatives.

Representative Quotes (Correspondence ID): 13
Comments (Comment ID): 626258

Concern Statement: The costs of the alternatives, especially Alternative 2, will be considerable. Further analysis needs to be performed on the jobs and economic activity that would be created in the recreation industry as well as on the ecosystem services benefits from the additional habitat created under Alternative 2.

Response: The Ecosystem Services Environmental Consequences section (Section 3.23) of the Final EIS was further updated to describe the ecosystem services benefits under the alternatives. For example, the channel widening and IRC habitat provides benefits to flood risk management, especially in the lower reaches of the river. An evaluation of the potential impacts to the most-affected ecosystem services resulting from the alternatives was included in the Final EIS in the Ecosystem Services section. The following ecosystem services benefits were described in the Final EIS in the Ecosystem Services Environmental Consequences section: flood risk management, water quality and water supply, recreation, climate regulation and carbon sequestration, land values, natural resource goods, non-use values, and other cultural services (e.g., quality of life, educational, cultural and spiritual, aesthetic enjoyment, and others). These ecosystem services impacts are analyzed quantitatively or qualitatively as appropriate for the impact analysis. Jobs and economic activity associated with improved ecosystem services have been estimated where feasible (i.e., reduced agricultural flood damages, recreation visitor spending) in the respective Final EIS sections (Section 3.16, Recreation; Section 3.12, Ecosystem Services).

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645506

Concern Statement: Relying on averages over the 82-year period of record does not allow a proper evaluation of the flooding and drought conditions and understates the impacts to navigation and other resources. For example, the drought of the late 1980s impacted the resiliency of the navigation sector.

Response: The technical reports associated with the Final EIS include an annual evaluation of impacts for the human considerations including flood risk management, navigation, hydropower, thermal power, irrigation, recreation, water supply, fish and wildlife habitat, cultural resources, commercial sand and gravel dredging, and land ownership. Charts and graphs were included in the technical reports that show the estimated annual impacts associated with the alternative and the difference in the effect from No Action. Flow releases (i.e., pulses) from Gavins Point Dam would not occur during drought or flooding conditions because of the constraining rules that guide when these releases can occur. In most cases, the action alternatives would not affect these extreme conditions on the river. However, residual effects from previous flow releases (e.g., reduced system storage) can have some impacts on navigation and other resources; these impacts are evaluated in the environmental consequences sections and associated technical reports.

In addition, discussion will be added to the affected environment and environmental consequences sections for navigation on the importance of reliability of the Missouri River to navigation operations. This discussion was added to the navigation environmental consequences section in the EIS.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644751

EC2600 *Environmental Consequences: Other Impacts*

Concern Statement: Flow rates and lake levels should be maintained so that residents will continue to have access to clean drinking water, particularly related to the Cedar-Knox Rural Water Project. Additionally, alternatives should strive to reduce adverse impact on farmland preservation.

Response: Regulation of the Missouri River Mainstem reservoir system is conducted by the Missouri River Basin Water Management office and is based upon the objectives in the Master Manual (USACE 2006). Alternative formulation and the interaction with the Master Manual is described throughout the Draft EIS in multiple sections, primarily within Chapter 2 and 3. Actual real-time regulation of the reservoir system is accomplished using the best information and tools available and is adjusted to respond to changing conditions on the ground with one of the objectives to minimize flooding of agricultural lands within the floodplain and preserve these lands for future use.

Representative Quotes (Correspondence ID): 153, 220
Comments (Comment ID): 637690, 637691, 642151

EC2800 *Environmental Consequences: Cumulative Impacts*

Concern Statement: The loss of aquatic and terrestrial habitat below Sioux City is the most critical component impacting native fish species on the Missouri River.

Response: As discussed in the cumulative impacts section for both pallid sturgeon and fish and wildlife habitat, the loss of habitat has adversely affected the pallid sturgeon specifically, as well as other fish and wildlife.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 642884

Concern Statement: A sediment analysis needs to be undertaken for the entire river. At the macro level the study should: (1) document the lack of material in the system and (2) demonstrate the importance of sediment in the effort to preserve the pallid sturgeon.

Response: The necessity of conducting a sediment budget was considered during initial study scoping but determined to be unwarranted for the evaluation of study alternatives. This decision was based on the fact that alternatives will not alter the trapping of sediments within the reservoir system. None of the alternatives include sediment management or measures to pass sediments through the reservoir system to the navigation channel downstream of Gavins Point Dam. In addition, based on the 82-year flow record, the flows in the lower Missouri River and sedimentation processes would continue to be dominated by natural reservoir release events (2011, 1997) and significant tributary inflow events (1993). Analysis was performed with a "Year 15" designation that included modeling of conditions 15 years in the future. While not intended to represent detailed

estimates of future reservoir and channel conditions, the results do provide an alternative comparison methodology. Comparison of results determined only minor changes between alternatives. Comparison of alternatives does not indicate a significant difference in downstream sediment loading between alternatives.

Representative Quotes (Correspondence ID): 34
Comments (Comment ID): 628337

Concern Statement: Models used to evaluate river conditions within the Draft EIS do not account for actions that may be taken to address bed degradation. Actual water releases should be used for the baseline analysis.

Response: Actions to address bed degradation are outside the scope of the analysis which is focused on management actions to benefit endangered species. It is not clear that bed degradation is a limiting factor to pallid sturgeon recruitment.

Representative Quotes (Correspondence ID): 122
Comments (Comment ID): 646375

Concern Statement: Ongoing bed degradation should be factored into the Draft EIS impact analysis because river bed degrades additional flow releases to meet authorized needs. The creation of the self-scouring channel has promoted the degradation of the river bottom and caused water to recede from the previously connected backwaters. The nearly completed Missouri River bed degradation study needs to be factored into the evaluation.

Response: While aggradation and degradation processes are known to be occurring within the basin, those processes will continue regardless of the implementation of any Alternative. USACE discusses these processes within multiple sections of the Draft EIS. Based on modeling results, the assumption is that future bed change affects all project alternatives to a sufficiently similar level such that Alternatives can be adequately compared.

Additional flow releases to compensate for bed degradation is not mandated in the Master Manual and has not been included in the alternatives modeling or results.

The Missouri River Bed Degradation Feasibility Study answers the fundamentally different question of what measures could be cost-effectively employed to minimize bed degradation damages from St. Joseph, MO to Waverly, MO. It does not test the Missouri River Management Plan Alternatives.

Representative Quotes (Correspondence ID): 73, 122, 131, 205, 207, 216, 233
Comments (Comment ID): 642834, 635364, 635359, 642123, 643517, 646276, 640161, 645862, 638298

Concern Statement: Low summer flows under Alternative 2 would have a long-term negative cumulative impact on the reliability of Missouri River navigation and would cause shippers to seek other modes of shipping merchandise.

Response: The navigation analysis evaluated the impacts of low summer flows, a management action of Alternative 2, in Section 3.15. In addition, the cumulative impact analysis considered the impacts of low summer flows in addition to past, present and future actions on navigation. In both sections the analysis indicated that navigation would be negatively impacted by low summer flows. While the analysis did not specifically consider the effects on reliability of the river, additional discussion will be added to the Final EIS that addresses this issue.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645911

Concern Statement: The Draft EIS cumulative impact analysis should be amended to bring the focus of all impacts together through more extensive modeling and analysis, including studies of interior drainage.

Response: As defined by NEPA, cumulative impacts are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes the actions. The methodology used for assessing cumulative impacts in this EIS is described in Section 3.1.3. The analysis focuses on each specific resource that could be impacted rather than examining impacts to multiple resources collectively. The EIS provides an exhaustive assessment of impacts on “human considerations” (i.e., the economic, cultural and social values of the system). Additionally, the analysis evaluates the impacts, when possible and appropriate, in terms of the four USACE analysis accounts: national economic development, regional economic development, environmental quality, and other social effects. The robust programmatic analysis provides the public and decision-makers with the necessary information and analysis to understand the type, intensity, and duration of expected impacts. USACE agrees that a statement should be included in the Final EIS that conveys to readers that impacts from one resource could affect others; however, additional extensive economic modeling is not warranted.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645873

Concern Statement: The Draft EIS representation of land use impacts is inaccurate, incomplete and unworthy of the hard work and sincere effort that stakeholders have put forth to recover the species.

Response: USACE disagrees that the land use analysis is inadequate. The analysis focuses on agriculture, the dominant land use in the study area and land acquisition based on the federal government acquiring lands to construct pallid sturgeon early life stage habitat. The analysis examines the impacts using the regional economic development and other social effects accounts. The analysis describes the expected effects from land acquisition related to job losses and property taxes, among other factors. When analyzing the cumulative impacts, it is important to accurately describe the context of the expected impacts. Additionally, including the other actions that could impact land use, especially agriculture, is important in understanding the contribution of impacts from the alternatives when considering other actions. The analysis accurately describes other actions that affect agriculture beyond those impacts expected from the proposed alternatives. The impacts from the proposed alternatives are limited to land acquisition and require willing sellers. The analysis accurately describes the magnitudes of these impacts in relation to other cumulative actions that affect land use and agriculture.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645511

Concern Statement: The cumulative impact analysis should include USACE proposed rulemaking on Use of USACE Reservoir Projects for Domestic, Municipal and Industrial Water Supply. In particular, the impact on Tribal economics should be evaluated.

Response: Given that it is a proposed rule and not final, the analysis cannot be explicit in terms of expected impacts until a final rule is issued.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645461

Concern Statement: Emerging risks to pallid sturgeon recovery associated with Zebra Mussels and other ANS should be evaluated. These risks include modification to substrate, changes to ecological trophic status and the addition of various chemicals into the riverine system to control ANS.

Response: USACE has added discussion of this topic in the pallid sturgeon cumulative impact section.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645404

Concern Statement: The cumulative impacts analysis for water quality should include the effects of oil and gas development along North Dakota's portion of the Lower Yellowstone River and Missouri River.

Response: Information is included in Section 3.7.2.12 that describes the cumulative impacts to water quality from oil and gas development based upon available information related to these impacts.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645347

Concern Statement: The Draft EIS cumulative impact analysis does not adequately address the effects from groundwater use, oil and gas production and grazing. USACE should (1) assess the potential impacts of oil spills on pallid sturgeon survival, (2) provide evidence that pallid sturgeon survival is not impacted by surface water-groundwater interactions, (3) that snag removal does not impact either the pallid sturgeon or their prey species, and (4) evaluate the impacts of animal grazing in the floodplain.

Response: If hypotheses related to impacts from groundwater use, oil and gas production, or grazing are identified and prioritized through the AM process, USACE may consider addressing them through research or monitoring since there could be relevance to the effectiveness of planned or ongoing actions and in the interpretations of pallid sturgeon responses to those actions.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645345

Concern Statement: USACE should re-examine the cumulative impacts of the watershed use on the pallid sturgeon as too much emphasis is placed on navigation.

Response: Modification of the Missouri River to serve authorized purposes such as Navigation are considered in the cumulative impacts analysis.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645344

Concern Statement: Water depletion and water allocations are topics that should be considered as a reasonably foreseeable action to be evaluated as part of the cumulative impact analysis.

Response: The ResSim model accounts for current basin conditions for the entire period-of-record. This includes depletions representative of current basin conditions at the time of the analyses provided by the U.S. Bureau of Reclamation.

Draft surplus water reports were completed on each of the Mainstem reservoirs to try to identify the possible use of surplus water beyond that is currently being used (new agreements). Based on that analysis, future withdrawals are not expected to be significant given the large amount of storage and available flow. The reports tried to identify enough surplus such that we would not need another Surplus Report for a while. The purpose was not to make a prediction on the amount of water withdrawals or the timing of when those withdrawals would come online. Of the 282,917 ac-ft identified as available for use under the Surplus authority on the Missouri Mainstem, only 33,792 (or 12 percent) has been requested. Further use beyond what has been requested is not considered a foreseeable action.

In addition, USACE is not currently moving forward with a permanent reallocation study, and if it did, it would likely overlap with identified water supply under the Surplus authority. USACE is not aware of any large future changes in the number of depletions related to water supply, especially since oil and gas exploration has slowed. There are not any reasonably foreseeable actions identified that have not been evaluated as part of the EIS.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645277, 645276, 645274, 645272

Concern Statement: The text in Draft EIS (Section 3.3.2.11) dealing with the topic of fish stocking and river system alternation should be removed because the claims are unsubstantiated and other scientific information disagrees with stated conclusions.

Response: The referenced statement was removed from the Final EIS.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645149

Concern Statement: The economic effect of MRRP annual expenditures should be factored into the cumulative impact analysis.

Response: The economic impact of program expenditures associated with the MRRP are evaluated under the RED analysis. This includes an analysis of current program expenditures under Alternative 1 and the expenditures that would be expected to occur under each of the management plan alternatives over the next 15 years. The project team believes this analysis meets the requirements of NEPA.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644826

Concern Statement: Past actions and activities on the Missouri River should be considered in the evaluation of cumulative impacts of fish habitat along the Iowa border.

Response: The cumulative impacts analysis includes past, present, and reasonably foreseeable actions such as construction and maintenance of the Bank Stabilization and Navigation Project.

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641592

Concern Statement: Prior actions on the river have had long-term negative impact on the three listed species.

Response: USACE concurs; the impacts of past Missouri River actions on the three species of concern are documented in Sections 1.3.1 Pallid Sturgeon and 1.3.2 Interior Least Tern and Piping Plover and further detailed in Sections 3.3.1 Pallid Sturgeon Affected Environment and 3.4.1 Piping Plover and Least Tern Affected Environment.

Representative Quotes (Correspondence ID): 190
Comments (Comment ID): 641581

Concern Statement: USACE should measure the effects of ESH mechanical construction over the life of the MRRP and include this as part of the cumulative impact analysis.

Response: Based on past experience, impacts from mechanical ESH construction are temporary construction related impacts. These impacts are considered in the EIS.

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640159

AM1000 *Adaptive Management*

Concern Statement: What is the process for demonstrating that the spring rise is actually beneficial to listed species?

Response: The process, described in detail in Section 4.2 of the SAMP, can be summarized as follows:

1. conduct 9 years of monitoring of actual flows and pallid sturgeon responses (movement, aggregation, spawning, reproduction) to test alternative hypotheses concerning the influence of spring flows;
2. at the end of that 9-year period, draw conclusions regarding the need for a managed release of spawning flows, using the evidentiary framework in Table 48 of the Draft SAMP;
3. if it were concluded from the evidentiary framework that managed spawning flows should be implemented, conduct one Level 2 Test of such flows; and
4. based on the results of that test, determine if it would be beneficial to implement further spawning flows.

Representative Quotes (Correspondence ID): 15
Comments (Comment ID): 626301

Concern Statement: Adaptive management decisions regarding proposed actions or modifications of existing actions that are outside those approved under the MRRMP-EIS ROD must undergo additional NEPA review, including public review.

Response: The processes required for different types of AM decisions are described in Chapter 2 of the SAMP and Chapters 2 and 4 of the EIS.

Representative Quotes (Correspondence ID): 33, 98, 145
Comments (Comment ID): 628023, 633688

Concern Statement: The SAMP needs a stronger “stop doing” function integrated into AM implementation.

Response: In general, AM programs for species at risk can make two types of errors: 1) not implementing actions that would benefit the species (a conservation risk); and 2) implementing actions that do not benefit the species (a waste of resources). The comment is concerned about the second type of error. The intent of the SAMP is to put in place strong science programs and experimental designs which reduce the likelihood of both types of errors, as described in Chapters 3 and 4 of the Draft SAMP, and in Appendices C, D, E, F and G. Due to the high amount of variability in some biological indicators, it will take several years before we know with confidence whether or not certain actions are effective (e.g., 7 years to determine if IRCs are increasing the catch per unit effort of age-0 pallid sturgeon, as described in Appendix E.1). Prematurely stopping an action (e.g., discontinuing IRCs after fewer than 7 years) could cause the first type of error.

Representative Quotes (Correspondence ID): 172
Comments (Comment ID): 641807

Concern Statement: Additional information is requested about Big Question 5: Passage, drift and recruitment, Level 2 initial action involving Fort Peck flows and drawdowns. What types of flow modifications and drawdown are under consideration; what constraints have been put into place. The SAMP should clarify these issues (Section 4.4.2).

Response: Changes to Fort Peck flows and drawdown of Lake Sakakawea are not part of the preferred alternative of the MRRMP-EIS. Uncertainty still surrounds what flow adjustments may be needed at Fort Peck to provide favorable conditions to encourage pallid sturgeon recruitment in the Upper Basin. USACE has committed, in an amendment to the Biological Assessment, to work with USFWS and MRRIC to review previous information and information generated since the Effects Analysis to formulate test flows from Fort Peck and an AM framework for their implementation. Until this is completed it is not possible to describe the details of these actions.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642838

Concern Statement: Clarification is requested regarding was is meant by the statement “the SAMP lays out how different types of decisions could be made that are outside the scope of real-time water management.” Does the statement mean the SAMP does not apply to water management or will it be used to decide on flow releases outside the bounds of the Master Manual?

Response: The processes required for different types of AM decisions are described in Figure 13 of the SAMP. Actions outside of the current Master Manual would require going through the process to amend the Master Manual.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642902

Concern Statement: The AM portion of the preferred alternative is lacking in clarity and boundaries; any action outside the constraints of the current Master Manual should be coordinated with the state of North Dakota. This includes any flow actions that are part of the preferred alternative or any flow actions outside the bounds of the MRRMP-EIS as a result of future AM decision-making.

Response: The processes required for different types of AM decisions are described in Figure 13 of the SAMP. Actions outside of the current Master Manual would require going through the process to amend the Master Manual.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 643015

Concern Statement: Support is stated for the ongoing propagation and augmentation of pallid sturgeon as long as the stocked fish are “pure” pallid sturgeon and the number of fish stocked are based on the best available science. The propagation program should be considered temporary until natural levels of recruitment are obtained.

Response: The statement is consistent with USFWS decision criteria for halting Propagation and Augmentation, which are described in Section 4.1.1 of the SAMP, and is also consistent with the goals for population augmentation, described in Section 4.2 of the SAMP. The Pallid Sturgeon Basin-wide Stocking and Augmentation Plan is being developed by the Pallid Sturgeon Recovery Team.

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 643064

Concern Statement: The numerous administrative and regulatory process requirements may slow movement of management actions during implementation of the SAMP; therefore “action forcing” criteria should be developed to ensure appropriate changes are made in a timely manner within both the scientific and administrative portions of the SAMP. Additionally, the full suite of actions that can be taken for listed species recovery should be evaluated in the Final EIS to reduce potential delays during implementation of the MRRP.

Response: The Final SAMP attempts to minimize process delays, while respecting established procedures (e.g., required steps for amending the Master Manual).

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643925

Concern Statement: Monitoring program for the pallid sturgeon should include monitoring assistance with data gathering for Level 1 and Level 2 activities and revised to address the broader need implications of future Level 3 and Level 4 actions.

Response: The form of management actions and the form of monitoring will be reviewed and adjusted as required, when actions move from Level 2 to Levels 3 or 4. In general, population level monitoring will be the most important form of monitoring at Levels 3 and 4, as only actions shown to be effective at Level 2 (confirmed via action effectiveness monitoring) would be implemented at Levels 3 and 4.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643943

Concern Statement: Monitoring forage fish that are important to pallid sturgeon and also use of telemetry technology to evaluate habitat use should be implemented.

Response: Both forage fish and telemetry technology are being considered in the evaluation of the PSPAP by the Effects Analysis Team. This evaluation is examining the costs and benefits of various components of monitoring. Ongoing progress of the PSPAP review (and opportunities for comment) can be accessed here: <https://mcolvin.github.io/PSPAP->

Reboot/. The PSPAP review began with a review of all potential objectives for the PSPAP at a workshop held on March 21, 2017 at the Missouri River Natural Resources Conference, which was attended by USFWS.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643944

Concern Statement: The ongoing and/or future Pallid Sturgeon Population Assessment Program should be continued and described in more detail in the Final EIS.

Response: The PSPAP is described in Chapter 4 and Appendix D of the SAMP.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643955

Concern Statement: The approach to AM implementation should be simplified to four steps identified by USFWS in the 2003 BiOp: (1) identify desired outcomes, (2) implement management actions to achieve desired results, (3) monitor, and (4) make adjustments based on new information.

Response: The approach taken to AM in the SAMP reflects the need to use Level 1 and Level 2 research to reduce critical uncertainties that affect decisions about which management actions to implement at Levels 3 and 4. In general, AM programs for species at risk can make two types of errors: 1) not implementing actions that would benefit the species (a conservation risk); and 2) implementing actions that do not benefit the species (a waste of resources). This commenter is concerned about the first type of error. Other commenters are concerned about the second type of error. The intent of the SAMP is to put in place strong science programs and experimental designs which reduce the likelihood of both types of errors, as described in Chapters 3 and 4 of the Draft SAMP, and in appendices C, D, E, F and G. USACE is not “performing research as a surrogate for evaluating the effects of management actions.” Instead, the Draft SAMP describes how research, Level 2 and Level 3 actions, and action effectiveness monitoring can collectively provide the most effective set of strategies for the listed species.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644028

Concern Statement: The Big Questions for the Lower Missouri River appear to be focused on age-0 pallid sturgeon and should be expanded to include all life stages and the full range of management actions to address the life cycle needs of the pallid sturgeon.

Response: As illustrated in Figure 61 of the SAMP, USACE is indeed considering all life stages of the Pallid Sturgeon, not only age-0, though age-0 appears to be the greatest bottleneck in the population. Various actions (Intake, creation of spawning habitat, population augmentation) address life stages other than age-0. The recent analysis of fish condition under the New Information process (described in Section 4.1.2.4 of the Draft SAMP), may lead to more research into other life stages, and potentially future management actions.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644408

Concern Statement: Flow release using AM may affect spring planting of crops and fall harvesting. Request that any alternative which includes AM allow the maximum amount of time between approval and implementation of flow releases and associated water

risers to give impacted residents and businesses the opportunity to prepare and make appropriate protective decisions.

Response: Effects on agricultural land (and other human considerations) would be considered prior to the implementation of spring or fall flow pulses. The processes required for different types of AM decisions are described in Figure 13 of the SAMP. Actions outside of the current Master Manual would require going through the process to amend the Master Manual.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644411

Concern Statement: Doubt is expressed that answers to Big Questions 1-4 can be answered by passively monitoring existing USACE operated flows (SAMP, Section 4.2.4, Table 43). Only Alternative 2 aims at approximating natural flows.

Response: If monitoring over nine years and historical data provide insufficient contrast in flows to assess the benefits of spawning cue flows, then a Level 2 test spawning flow would be implemented. The monitoring designs are not purely “passive” and will seek to make use of both reproductively ready hatchery fish and intensive telemetry to maximize the rate of learning (to be described in Appendix E.4 in the Final SAMP). The intent of the monitoring effort is to distinguish between two competing hypotheses:

- A. Pallid sturgeon spawn with or without managed spring flow pulses, and therefore such pulses are not required for spawning (conclusion of Independent Science Advisory Panel [ISAP, Doyle et al. 2011*]), or
- B. Naturalization of the flow releases from Gavins Point Dam will improve flow cues in the spring for aggregation and spawning, increasing reproductive success (a hypothesis evaluated in the recent Effects Analysis).

* Citation: Doyle M, Murphy D, Bartell S, Farmer A, Guy C, Palmer M. 2011. Missouri River Recovery Program, Independent Science Advisory Panel Report on Spring Pulses and Adaptive Management. U.S. Institute for Environmental Conflict Resolution and Oak Ridge Associated Universities, Third Party Science Neutral.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644851

Concern Statement: Hope that the AM as adopted in the ROD will be sufficient to ascertain ecosystem signals of distress for the three species of concern and prevent further endangered species listing.

Response: While the SAMP focuses on the listed species, ecosystem effects are being considered.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644886

Concern Statement: The MRRMP-EIS ROD should integrate the content of the SAMP and acknowledge that it is a living document that draws from the other alternatives analyzed as part of the NEPA process and not be hindered by a limited ROD.

Response: The processes required for different types of AM decisions are described in Figure 13 of the Draft SAMP. Just like the Final EIS and Final SAMP, the ROD will describe the approach to implementation which relies heavily on the SAMP.

Representative Quotes (Correspondence ID): 229
Comments (Comment ID): 644898

Concern Statement: A section should be added to both the EIS and SAMP on possible impacts to the piping plover science and proposed management actions pending results of the metapopulation study.

Response: Section 3.4 of the EIS and Chapter 3 of the SAMP describe the metapopulation study, but do not attempt to foresee the outcome of the study or its impact on piping plover science or proposed management actions. Once the study is complete the results will inform the ongoing AM process.

Representative Quotes (Correspondence ID): 229
Comments (Comment ID): 644900

Concern Statement: The overall philosophy of the Pallid Sturgeon Populations Augmentation Program should shift to place more emphasis on the quality of stocked fish rather than the quantity as is emphasized in the Draft EIS. Quality of stocked fish should be recognized as a limiting factor and addressed in the SAMP. This can be achieved under big Question 6, Population Augmentation components 1 and 2.

Response: Quality of fish is a major concern under discussion by the Pallid Sturgeon Recovery Team which is working to update the Pallid Sturgeon Basin-wide Stocking and Augmentation Plan.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644916

Concern Statement: The stated goal of increasing pallid sturgeon recruitment to age-1 is too simplistic to understand all the involved mechanisms and thus insufficient for the SAMP; USACE should develop sub-metrics such as prey species abundance, competitor abundance, substrate type, and other factors of importance in the conceptual models.

Response: All of the factors listed are under consideration in the re-evaluation of the PSPAP. This evaluation is examining the costs and benefits of various components of monitoring. Ongoing progress of the PSPAP review (and opportunities for comment) can be accessed here: <https://mcolvin.github.io/PSPAP-Reboot/>.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645322

Concern Statement: Based on statements made by the ISAP supporting additional flow releases, an SAMP should be prepared for the Lower River (below Gavins Point) outlining restoration practices to prevent further species decline including higher than prescribed flow releases, lower base flows and sediment management.

Response: All of the actions listed by the commenter were evaluated in the Effects Analysis. The Independent Science Advisory Panel (Doyle et al. 2011; pg. 1-2) concluded that:

“Pallid sturgeon have spawned in the lower Missouri River in all years for which data are available, with and without managed spring pulses. Based on that information, the ISAP concludes that the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning in pallid sturgeon.”

Representative Quotes (Correspondence ID): 238

Comments (Comment ID): 645329

Concern Statement: Clarification is requested for a statement contained in the EIS under Alternative 2 – Actions would ultimately be implemented through AM as impediments to implementation were removed. How would the SAMP respond to changing implementation conditions?

Response: The phrasing is intended to indicate that some of the actions in Alternative 2 would not be fully implemented without first removing barriers to implementation such as an unacceptable level of HC impacts.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645499

Concern Statement: USACE should follow the SAMP process by constructing one IRC site and monitoring its performance and impacts on the listed species and human considerations before constructing all 12 sites.

Response: The statistical power analysis in Appendix E.1 shows that you need at least 7 years of monitoring multiple treatment and control paired sites to have adequate confidence in a conclusion regarding the effects of IRCs on catch per unit effort of age-0 pallid sturgeon. Ultimately, the Technical Team syntheses of evidence (reviewed by ISAP) will determine whether or not it is appropriate to continue, adjust, or stop an action and whether to maintain, adjust, or reject a hypothesis.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645639

Concern Statement: Socioeconomic analyses should inform the adaptive management process and be integrated into decision making regarding future management actions and/or adjustments of management actions of the preferred alternative as they are implemented.

Response: Socioeconomic analyses are described in Section 5 of the SAMP.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645810, 645812, 646297, 645813

Concern Statement: State governments should be accepted as active participants in any future decisions that affect pallid sturgeon or other fish and wildlife resources within the SAMP.

Response: The avenues for state involvement are detailed in the Governance section of the SAMP.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 645816, 646299, 646301, 646300

Concern Statement: The Final EIS should be more explicit about the length of time monitoring will need to be conducted in order to make adjustments to ensure the project is successful for pallid sturgeon recruitment.

Response: Appendix E.1 clearly describes the duration of monitoring of Level 2 IRC actions (7 years, based on the staircase design), and the gradual expansion of IRCs to Levels 3 and 4 (if shown to be effective) is described in Table 42 of the Draft SAMP. Monitoring of the effects of flows on pallid sturgeon movement, aggregation and reproduction will occur for nine years after the ROD, as described in Table 42 and Section 4.2.6.6 of the

Draft SAMP. Other extensions to Appendix E will provide similar information for other Level 2 actions.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645824

Concern Statement: A mechanism should be created for the future inclusion of newly listed endangered species into the adaptive management program.

Response: If a new species is listed USACE would re-consult with USFWS.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644890

Concern Statement: The interagency coordination language contained in the last paragraph of Section 6.10.1 should be incorporated into Chapter 4 describing how AM will be implemented for the preferred alternative.

Response: The Final SAMP has been modified as suggested.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643958

Concern Statement: Existing constraints on the volume of flow which can be used to create ESH or potentially benefit the pallid sturgeon need to be addressed as part of the implementation of the preferred alternative.

Response: The preferred alternative includes nine years of study of existing spring pulses from intervening tributary flows to better understand pallid sturgeon responses. Combined with existing data, it is possible this will be sufficient to determine if a spring pulse is necessary and the one-time test may not be needed. As stated in Section 2.10 of the EIS, USACE will continue to analyze how this release, or others, may impact private landowners and to strategize how to minimize impacts over the next nine years.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645137

Concern Statement: The AM process described in the Draft EIS is too complex and convoluted to enable work to be completed on schedule.

Response: The Plan provides detailed information on the strategy for addressing uncertainties for each species, a governance structure for the program as a whole, clearly defines roles and responsibilities for all participants and describes how data are managed and how program actions and results will be communicated and reported.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644031

TC4500 *Tribal Consultation and Coordination*

Concern Statement: USACE should place more emphasis on Tribal consultation with the 29 Tribes. Additionally, Tribal cultural property surveys and archeological surveys need to be conducted.

Response: USACE offered government to government consultation to each Tribe in the basin and had extensive interaction with members of the Standing Rock Tribe in development

of the EIS through MRRIC and several additional meetings. Appendix H of the EIS details the Tribal engagement that occurred throughout the process.

Representative Quotes (Correspondence ID): 10, 232

Comments (Comment ID): 627492, 627494, 627501, 645482

Concern Statement: Who are the 29 stakeholders (e.g., perhaps Indian Tribes)?

Response: At this time the following are the 29 stakeholders that hold a seat on the Missouri River Recovery Implantation Committee (MRRIC):

- Agriculture
- Conservation Districts
- Environmental/Conservations Organizations
- Fish and Wildlife
- Flood Control
- Hydropower
- Irrigation
- Local Government
- Major Tributaries
- Navigation
- Recreation
- Thermal Power
- Water Quality
- Water Supply
- Waterway Industries
- At Large

The 29 Tribes that have a seat at MRRIC are:

- Apsaalooke (Crow Nation)
- Assiniboine and Sioux Tribes of Fort Peck
- Blackfeet Tribe
- Cheyenne River Sioux Tribe
- Chippewa Cree Tribe of Rocky Boy's
- Crow Creek Sioux Tribe
- Eastern Shoshone Tribe
- Flandreau Santee Sioux Tribe
- Gros Ventre and Assiniboine Tribes of Fort Belknap
- Iowa Tribe of Kansas and Nebraska
- Kickapoo Tribe in Kansas
- Lower Brule Sioux Tribe
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Oglala Sioux Tribe
- Omaha Tribe of Nebraska
- Osage Nation
- Ponca Tribe of Nebraska
- Prairie Band Potawatomi Nation
- Rosebud Sioux Tribe
- Sac and Fox Nation of Missouri in Kansas and Nebraska

- Santee Sioux Tribe of Nebraska
- Sisseton-Wahpeton Oyate
- Spirit Lake Sioux Tribe
- Standing Rock Sioux Tribe
- Mandan Hidatsa Arkikara Three Affiliated Tribes
- Turtle Mountain Band of Chippewa Indians
- Winnebago Tribe of Nebraska
- Yankton Sioux Tribe

Representative Quotes (Correspondence ID): 10
Comments (Comment ID): 627500

Concern Statement: The Oglala Sioux Tribe has its own ordinance for Tribal consultations; there are two types of consultation, government to government and Section 106.

Response: Thank you. We have received the Tribal ordinance and will follow it as well as all other regulations, treaties, and Executive Orders.

Representative Quotes (Correspondence ID): 57
Comments (Comment ID): 632123

Concern Statement: Tribal participation on MRRIC does not constitute full Tribal consultation and has been misrepresented in the Draft EIS.

Response: The EIS does not state that MRRIC participation constitutes full Government to Government Consultation. The Missouri River Recovery Implementation Committee (MRRIC) is a 70-member committee made up of federal, state, Tribal, and stakeholder representatives from throughout the basin. MRRIC is authorized by Section 5018 of the Water Resources Development Act of 2007 and established by the Assistant Secretary of the Army for Civil Works. The Committee makes recommendations and provides guidance on a study of the Missouri River and its tributaries, as well as on the existing Missouri River recovery and mitigation plan. USACE understands this committee does not take the place of USACE and USFWS federal responsibility of Government-to-Government Consultation.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645354, 645431

Concern Statement: The Draft EIS contains rhetoric with respect to Tribal consultation; however, it makes no mention of Article XI, or of any other Treaty rights of our Tribes. The consultation process was not initiated in a timely manner to allow Tribes to have input in the alternative selection process.

Response: USACE, as an entity of the federal government has responsibilities to Tribes resulting from the federal trust doctrine, including treaties, executive orders, and agreements between the United States Government and Tribal Governments. USACE has extended the invitation in several letters over the course of the study, as detailed in Chapter 5 of the EIS and Appendix H.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645428

Concern Statement: Appendix H of the Draft EIS includes a list of meetings identified as "Alternatives Development Meetings," with the names of Tribes and dates of meetings.

However, the listing of the meetings contains no record of the participants or the discussion. Oglala Sioux Tribe meeting minutes reveal there was no discussion of the alternatives published in the Draft EIS. The entire listing in the appendix must be questioned.

Response: We acknowledge that there may have been a misunderstanding regarding the intent of the meeting. The power point presented at the meeting was titled as "Management Plan – Human Considerations Preliminary Results – DEIS Alternatives" However, the agenda did not call out that this was the main intent of the meeting.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645429

Concern Statement: There was no government-to-government consultation with any Tribes on the Draft EIS.

Response: USACE, as an entity of the Federal Government has responsibilities to Tribes resulting from the Federal Trust Doctrine, including treaties, Executive orders and agreements between the United States Government and Tribal Governments. USACE has extended the invitation in several letters over the course of the study, a detailed in Chapter 5 of the EIS and in Appendix H. Letters requesting government-to-government consultation on the Draft EIS were sent to Tribes on December 16th 2016. Letters requesting government-to-government consultation on the Biological Opinion and Final EIS development were sent to Tribes in December 2017. As Tribes are sovereign nations, they are able to request formal government-to-government at any time during this process.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645430

Concern Statement: The lack of government-to-government consultation in the preparation of the Draft MRRMP-EIS is evidenced by the fact that none of the Tribes' concerns are addressed in the plan. For example, Appendix E of the Draft EIS identifies "Special-Status Species" of the basin states. However, Tribes have identified riparian plant species of extreme concern, due to historical medicinal and nutritional uses of these species. However, these species are not identified in the Draft EIS.

Response: USACE offered government to government consultation to each Tribe in the basin and had extensive interaction with members of the Standing Rock Tribe in development of the EIS through MRRIC and several additional meetings. Appendix H of the EIS details the Tribal engagement that occurred throughout the process. Impacts to plant species important to the Tribes are addressed in the Tribal Resources section in Chapter 3 of the EIS.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645432

Concern Statement: USACE failed to comply with Article XI of the 1868 Fort Laramie Treaty, Executive Order 13175, the DoD American Indian and Alaska Native Policy, NEPA, and the Council on Environmental Quality regulations, all of which require timely and meaningful government-to-government consultation in the preparation of the Draft MRRMP-EIS.

Response: In August 2013, USACE held a series of six Tribal scoping meetings for the MRRMP-EIS at various locations across five states. Beyond fulfilling USACE

responsibilities under the National Environmental Policy Act (NEPA), the purpose of the Tribal scoping was to inform the Tribes about the proposed action and possible alternatives and provide meaningful opportunity for comment and participation in the process. Tribal scoping also allowed the Tribes to help identify the scope of issues to be addressed and to identify potentially significant issues related to the MRRMP-EIS. Letters of invitation were distributed to all 29 Tribes in the Missouri River Basin in mid-July 2013. The letters included a description of the project and a complete schedule of the Tribal scoping meetings. Meetings were held in Fort Peck and Billings, Montana; Bismarck, North Dakota; Vermillion, South Dakota; Pawhuska, Oklahoma; and Lawrence, Kansas. Members of the Tribes were invited to submit comments in person at the Tribal scoping meetings, by mail, email, or online. The letters also offered government-to-government consultation if the Tribal leaders requested at any time during the process.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645433

Concern Statement: The Draft EIS violates Section 106 of NHPA because (1) the surveys of cultural sites utilized for the impacts analysis are outdated and incomplete; (2) USACE failed to consult with the Tribal Historic Preservation Officers on traditional cultural properties, and USACE NHPA Section 106 procedures in Appendix C violate the Advisory Council requirements at 36 CFR Part 800; and (3) the assumptions in the computer model are flawed.

Response: USACE believes the analysis of impacts to Tribal Resources are properly considered given this is a programmatic EIS. A more-detailed examination of impacts would occur on a site-specific basis as projects are implemented. The model is intended as a planning tool to inform decision making rather than an exact representation of on the ground conditions. The inventory of cultural sites is sufficient to model the difference between the impacts of the different alternatives. Additionally, the preferred alternative does not include a reoccurring change to flow management.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645434, 645439, 645440, 645444

Concern Statement: USACE has not complied with Council on Environmental Quality Guidance on consultation with minority and Tribal communities. The Draft EIS contains erroneous information on the impacts of the Pick-Sloan program and MRRMP on Tribes, in part because USACE never conducted the required scoping as prescribed in the Council on Environmental Quality Guidance.

Response: The EIS baseline is with the dams in place and a hydrologic modeling of social effects of the construction of the dams on Tribes is beyond the scope of this EIS. The cumulative impacts analysis recognizes the effects of dams on the Tribes. Impacts to Tribal resources are acknowledged in the Tribal Resources section, the Cultural Resources section, and in various other sections of the environmental consequences chapter. USACE offered government to government consultation to each Tribe in the basin and had extensive interaction with members of the Standing Rock Tribe in development of the EIS through MRRIC and several additional meetings. Appendix H of the EIS details the Tribal engagement that occurred throughout the process. Early and continued scoping was conducted regularly as part of this process.

Representative Quotes (Correspondence ID): 232

Comments (Comment ID): 645477

Concern Statement: USACE never conducted the proper scoping, and the Draft EIS fails to identify or address Tribal concerns as a result.

Response: In August 2013, USACE held a series of six Tribal scoping meetings for the MRRMP-EIS at various locations across five states. Beyond fulfilling USACE responsibilities under the National Environmental Policy Act (NEPA), the purpose of the Tribal scoping was to inform the Tribes about the proposed action and possible alternatives and provide meaningful opportunity for comment and participation in the process. Tribal scoping also allowed the Tribes to help identify the scope of issues to be addressed and to identify potentially significant issues related to the MRRMP-EIS. Letters of invitation were distributed to all 29 Tribes in the Missouri River Basin in mid-July 2013. The letters included a description of the project and a complete schedule of the Tribal scoping meetings. Meetings were held in Fort Peck and Billings, Montana; Bismarck, North Dakota; Vermillion, South Dakota; Pawhuska, Oklahoma; and Lawrence, Kansas. Members of the Tribes were invited to submit comments in person at the Tribal scoping meetings, by mail, email, or online. The letters also offered government-to-government consultation if the Tribal leaders requested at any time during the process.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645479

TC3500 *Guiding Regulations, Policies, Laws - Tribal*

Concern Statement: Tribal water rights and Tribal lands must be treated with respect in the Draft EIS.

Response: USACE has tremendous respect for the Tribes, their lands, and rights. The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty. A description of Tribal water rights is provided in Section 6.5.

Representative Quotes (Correspondence ID): 26
Comments (Comment ID): 626693

Concern Statement: Tribal reserve water rights needs and treaties need to be acknowledged and factored into the Draft EIS impact analysis.

Response: The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

Representative Quotes (Correspondence ID): 57, 232
Comments (Comment ID): 632098, 632124

Concern Statement: The Draft EIS totally ignores the treaty rights of the Great Plains Water Alliance. The requirement to honor treaty rights applies to USACE with the MRRMP. Consequently, the Draft EIS must include a description of the Indian Treaty rights within the study area, and describe how USACE will comply with the dictates of Executive Order 13175 to honor treaty rights.

Response: The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645357, 645414, 645415, 645419

Concern Statement: Indian water rights are treaty rights. The Draft EIS appears designed to justify the continuation of USACE current water management under the Master Manual. USACE operations under the Master Manual infringe on Indian reserved water rights, by degrading Tribal water supplies in favor of downstream navigation flows.

Response: Modifying the operation of the system for other purposes other than endangered species is outside the scope of the analysis. The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645416

Concern Statement: The preferred alternative potentially diminishes the feasibility of Indian water projects by increasing the costs, as acknowledged by USACE on page 3-513 of the Draft EIS. Thus, the Draft EIS infringes on Indian reserved water rights.

Response: The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645421

Concern Statement: USACE Missouri River operations pursuant to the Master Manual degrade Indian waters and create uncertainty for the availability of water, thereby violating the trust responsibility and infringing on Indian reserved water rights.

Response: The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645422

Concern Statement: The Draft EIS proposes alternatives that involve the use and management of water subject to our Winter Doctrine claims. USACE should revise the Master Manual, in order to avoid jeopardy to the listed species and to mitigate the impacts of the Pick-Sloan program on the Tribes.

Response: The preferred alternative does not include re-occurring changes to flow management. The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645424

Concern Statement: The Draft EIS fails to acknowledge that the exercise of Tribal water rights in the future could affect USACE's ability to implement the preferred alternative. The Draft EIS should propose alternatives that involve revisions to the Master Manual in order to recreate a natural hydrograph for the lower Missouri River, and for the protection of future Indian water uses in the upper basin.

Response: The preferred alternative does not include re-occurring changes to flow management. The alternatives do not define, regulate, or quantify water rights or any

other rights that the Tribes are entitled to by law or treaty. A description of Tribal water rights is provided in Section 6.5.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645426

Concern Statement: USACE must review the Missouri River Master Manual, and make changes as needed to fulfill Tribal water rights in the upper basin.

Response: Updates to the Master Manual are outside the scope of this analysis other than the changes in operations that were examined for their potential to benefit endangered species. The alternatives do not define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law or treaty. A description of Tribal water rights is provided in Section 6.5.

Representative Quotes (Correspondence ID): 232
Comments (Comment ID): 645483

CC1000 Consultation and Coordination: General Comments

Concern Statement: The annual consultation with the North Dakota Emergent - Interagency Emergent Habitat Sandbar Team should be continued.

Response: USACE plans to continue the interagency emergent sandbar habitat meetings on an annual basis. USACE will also conduct project-specific scoping and engagement as appropriate. North Dakota will also have the opportunity to participate in the fall science meetings as a MRRIC member.

Representative Quotes (Correspondence ID): 25
Comments (Comment ID): 626692

Concern Statement: The Final EIS should provide for direct consultation with affected states for consideration of flow modifications or deviations outside the bounds of the current Master Manual.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645649

Concern Statement: Decision-making within the SAMP needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governor's offices on matters of high-consequence is imperative.

Response: As described in Section 2.3 of the Draft SAMP, each state will have responsibilities within their boundaries that could be affected in this process and the AM governance structure does not and will not change or impeded on any of the rights and responsibilities of a state codified by law. Annual operating plans will continue to be provided each fall describing the planned operation of the reservoir system for the coming year under a variety of runoff conditions. The States will have the opportunity to provide comments on the draft annual operating plan at the fall public meetings or by providing written comments during the comment period. At any time, States may submit an official letter to USACE, commenting on any issue related to the Management Plan or

ongoing AM process. The States also have an additional role through their representation at MRRIC.

Representative Quotes (Correspondence ID): 46
Comments (Comment ID): 628581

Concern Statement: Should USACE choose an alternative other than Alternative 3, the process for creating flow changes needs to be clear to stakeholders and be aligned with the Master Manual.

Response: As stated in Section 2.4 of the SAMP, the decision process for the MRRP includes the mechanisms by which information about project and program performance, species status, system state, and other knowledge is gathered and evaluated, shared with agency managers, MRRIC, and stakeholders, and used to make improved implementation decisions. The decisions to implement flows would fall under what is described in the previous sentence.

Representative Quotes (Correspondence ID): 65, 69
Comments (Comment ID): 631574, 635065

Concern Statement: USACE should use the Bureau of Reclamation's "2007 Colorado River Interim Guidelines Record of Decision" as a benchmark for federal/state consultation.

Response: As described in Section 2.3 of the SAMP, each state will have responsibilities within their boundaries that could be affected in this process and the AM governance structure does not and will not change or impeded on any of the rights and responsibilities of a state codified by law. Annual operating plans will continue to be provided each fall describing the planned operation of the reservoir system for the coming year under a variety of runoff conditions. The States will have the opportunity to provide comments on the draft annual operating plan at the fall public meetings or by providing written comments during the comment period. At any time, States may submit an official letter to USACE, commenting on any issue related to the Management Plan or ongoing AM process. The States also have an additional role through their representation at MRRIC.

Representative Quotes (Correspondence ID): 158
Comments (Comment ID): 640080

Concern Statement: To be a true partnership, the Final EIS should provide for direct consultation with affected states regarding flow modifications or deviations outside the bounds of the current Master Manual and other aspects of MRRP implementation.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 96, 239
Comments (Comment ID): 640144, 645382

Concern Statement: MRRMP implementation will require a continued working relationship with stakeholders throughout the Missouri River basin and adoption of management practices that reflect the importance of flood control and navigation as well as the other uses authorized by Congress.

Response: Impacts to human considerations including flood risk management and navigation were assessed and reported under each alternative in the EIS. USACE plans to maintain working relationship with stakeholders throughout the Missouri River Basin.

Stakeholders will have the continued opportunity to engage with USACE and participate as a MRRIC member. USACE will continue to maintain the authorized purposes including flood control and navigation on the Missouri River.

Representative Quotes (Correspondence ID): 154
Comments (Comment ID): 640960

Concern Statement: States are lumped into the MRRMP-EIS as a “stakeholder” – this approach is inadequate and the basin states need to be identified in some unique form within the document.

Response: USACE plans to continue the interagency emergent sandbar habitat meetings on an annual basis. USACE will also conduct project-specific scoping and engagement as appropriate. North Dakota will also have the opportunity to participate in the fall science meetings as a MRRIC member. Furthermore, as described in Section 2.3 of the SAMP, each state will have responsibilities within their boundaries that could be affected in this process and the AM governance structure does not and will not change or impeded on any of the rights and responsibilities of a state codified by law. Annual operating plans will continue to be provided each fall describing the planned operation of the reservoir system for the coming year under a variety of runoff conditions. The States will have the opportunity to provide comments on the draft annual operating plan at the fall public meetings or by providing written comments during the comment period. At any time, States may submit an official letter to USACE, commenting on any issue related to the Management Plan or ongoing AM process. The States also have an additional role through their representation at MRRIC.

Representative Quotes (Correspondence ID): 185, 239
Comments (Comment ID): 641485, 643023

Concern Statement: Information regarding MRRIC’s involvement in the alternative development process as conveyed in the Draft EIS is incorrect and should be corrected.

Response: During the development of the Draft EIS, USACE sought and obtained feedback on the specification of management actions on a frequent basis. At various points in the iterative development of management options, predicted information on how the human considerations represented by MRRIC might be affected by the actions was provided.

USACE did not directly co-develop management actions with MRRIC, but the actions USACE created for evaluation were designed to incorporate specific human considerations it had heard from members. USACE was not able to analyze all member suggestions for management options (e.g., ‘off-channel bird habitat’) since some of these were not within the stated bounds of technical appropriateness or acceptability articulated by USFWS.

Representative Quotes (Correspondence ID): 107, 239
Comments (Comment ID): 643864, 645373

Concern Statement: Additional coordination with NPS may be required if management actions directly or indirectly affect NPS related resources.

Response: Each site-specific project would entail additional coordination with the appropriate Tribes, stakeholders, and agencies including NPS.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643957

Concern Statement: Southern Region standardized emergent sandbar habitat acres shown as available is contingent upon continued interagency coordination and consideration of the set-aside acres NPS has identified within its draft ESH Management Plan.

Response: Continued interagency coordination and consideration of areas for vegetation management will continue to occur, however the modeling is currently not able to take into account these types of considerations.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643959

Concern Statement: The Mississippi River Commission along with the landowners protected, and those not protected, by the MR&T project should be considered and involved in the decision process of any modifications within the Mississippi Watershed that impacts downstream flood control and navigation.

Response: USACE will conduct project-specific scoping and engagement as appropriate. Furthermore, actions implemented as part of this Management Plan will not significantly alter or change in flows to the Mississippi from the Missouri. Section 3.24, beginning on page 3-585 of the Draft EIS describes resources in the Middle Mississippi River that could be potentially affected by the alternatives and reports the evaluated impacts.

Representative Quotes (Correspondence ID): 196
Comments (Comment ID): 644163

Concern Statement: Only five economic models on human considerations were presented to the ISETR for review and evaluation; moving forward with any alternatives prior to the completion of these economic models is inappropriate.

Response: The Human Consideration models presented to the ISETR for review included those areas that did not have previously USACE-approved models. These included Water Supply, Thermal Power, Irrigation, Cultural Resources, and Navigation. These models underwent the USACE model approval process and have all been approved by USACE-Headquarters for use on the Management Plan. The models used for the other HC resource areas including hydropower, flood risk management, interior drainage, recreation had already been previously USACE approved for use and therefore, did not need to undergo review approval.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644758

Concern Statement: If spatial location output is available, then make it public and show us the maps- preferably, in a form that can be compared with other datasets. We hope for this kind of transparency to emerge from the MRRMP and SAMP.

Response: USACE is obligated to protect certain spatial information related to cultural resources and private property.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644884

Concern Statement: USACE should produce a new biological assessment before selecting a preferred alternative.

Response: USACE has prepared a Biological Assessment and has completed consultation with USFWS in accordance to Section 7 of ESA. USFWS issued a non-jeopardy Biological Opinion on the USACE proposed action.

Representative Quotes (Correspondence ID): 240
Comments (Comment ID): 645420

Concern Statement: In the Final EIS, the document should be modified to state that MRRIC did not reach a consensus agreement, and that there was little or no tradeoff discussion before the committee regarding the issues discussed within Volume 6 on page 140.

Response: The acronym PrOACT stands for (1) **P**roblem definition, (2) **O**bjectives, (3) **A**lternatives, (4) **C**onsequences, and (5) **T**radeoffs. MRRIC was engaged in each step of the process. The problem statement was shared with MRRIC and MRRIC's input was included in the final version of the problem statement and included in the EIS. Species objectives were shared with MRRIC and were evaluated by ISAP. ISAP comments and MRRIC feedback were considered and incorporated where appropriate into the final versions of the objectives. While it is true that individual MRRIC members or MRRIC as a whole did not design elements of the alternatives such as specific types of habitats, or flow management actions, the alternatives were developed by USACE using the results of the effects analysis which was reviewed extensively by ISAP and MRRIC. MRRIC was involved in evaluation of test alternatives and in two rounds of proxy analyses of consequences and tradeoffs. Individual MRRIC members and MRRIC as a committee have had opportunity to provide comment or recommendation regarding the process and its outcome from 2012 to the present. After release of the Draft EIS, MRRIC members requested, and were given opportunity, to come to consensus recommendations on their "common ground" issues related to the EIS. There also will be opportunity for MRRIC to participate in tradeoffs analysis of specific management actions through participation in the adaptive management process as described in Chapters 2 and 5 of the SAMP.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645588

Concern Statement: An assessment of the pros and cons associated with each the alternatives has not occurred at a MRRIC meeting and should.

Response: The acronym PrOACT stands for (1) **P**roblem definition, (2) **O**bjectives, (3) **A**lternatives, (4) **C**onsequences, and (5) **T**radeoffs. MRRIC was engaged in each step of the process. The problem statement was shared with MRRIC and MRRIC's input was included in the final version of the problem statement and included in the EIS. Species objectives were shared with MRRIC and were evaluated by ISAP. ISAP comments and MRRIC feedback were considered and incorporated where appropriate into the final versions of the objectives. While it is true that individual MRRIC members or MRRIC as a whole did not design elements of the alternatives such as specific types of habitats, or flow management actions, the alternatives were developed by USACE using the results of the effects analysis which was reviewed extensively by ISAP and MRRIC. MRRIC was involved in evaluation of test alternatives and in two rounds of proxy analyses of consequences and tradeoffs. Individual MRRIC members and MRRIC as a committee have had opportunity to provide comment or recommendation regarding the process and its outcome from 2012 to the present. After release of the Draft EIS, MRRIC members requested, and were given opportunity, to come to consensus recommendations on their "common ground" issues related to the EIS. There also will be opportunity for MRRIC to

participate in tradeoffs analysis of specific management actions through participation in the adaptive management process as described in Chapters 2 and 5 of the SAMP.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645589

Concern Statement: The Final EIS needs to address what issues might prevent USACE from having time to engage MRRIC in discussion of trade-offs and their preference for one approach over another regarding implementation of specific management actions.

Response: The Final SAMP clarifies the type of time-sensitive situations where engaging with the MRRIC process may not be possible (e.g., emergency situations, acting within available budget time-windows, etc.).

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645590

Concern Statement: Greater clarity should be provided in the Final EIS on USACE plans to engage the state fish and wildlife agencies about federal actions that would affect management of endemic wildlife within their borders.

Response: State wildlife and resource agencies would be engaged on site specific projects as part of scoping and coordination. As is required under NEPA, federal actions would not be implemented without undergoing and completing the NEPA process where state agencies and the public would have the opportunity to engage. Furthermore, at any time, States may submit an official letter to USACE, commenting on any issue related to the Management Plan or ongoing AM process.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 645807

Concern Statement: States retain the right to comment or request consultation outside of MRRIC, FWCA, and ADP processes on any issue related to the MRRMP or ongoing SAMP implementation via official letter.

Response: Noted. At any time, States may submit an official letter to USACE, commenting on any issue related to the Management Plan or ongoing AM process.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 645808

RF1000 *References: General Comments*

Concern Statement: Incorporating the ongoing nature of scientific research and results would enhance credibility of the Draft EIS, particularly since 2003.

Response: One of the initial undertakings in the development of the MRRMP-EIS was the collection of all updated and current scientific information available on the three species as part of an Effects Analysis. As part of this effort, all available scientific literature, databases and models regarding the three species were compiled, reviewed, and synthesized. The information emerging from the effects analysis is what was used to evaluate alternatives in the Draft EIS. This information and data will be continuously updated as part of the adaptive management process.

Representative Quotes (Correspondence ID): 162

Comments (Comment ID): 641193

Concern Statement: Within this Draft EIS, or rather the Management Plan outcomes, citizens of the Missouri River basin need for the operations to be based on tools with higher, and faster, predictive power since many reservoir decisions are made at watershed levels on monthly, weekly and daily bases.

Response: Real-time regulation of the Missouri River Mainstem Reservoir System is conducted by the Missouri River Basin Water Management office and is based upon the objectives in the Master Manual (USACE 2006). Alternative formulation and the interaction with the Master Manual is described throughout the Draft EIS in multiple sections, primarily within Chapter 2 and 3. For the purposes of this study, a ResSim model was created that allows simulation of an 82-year period-of-record. This ResSim model uses historic data for alternative comparison. This study is separate from the daily regulation decisions made by the Water Management office. Actual real-time regulation of the reservoir system is accomplished using the best information and tools available and is adjusted to respond to changing conditions on the ground.

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644879

Concern Statement: The Draft EIS does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations.

Response: One of the initial undertakings in the development of the MRRMP-EIS was the collection of all updated and current scientific information available for each of the species of concern. As part of this effort, all available scientific literature, databases and models regarding the three species were compiled, reviewed, and synthesized. The information emerging from the Effects Analysis is what was used to evaluate alternatives in the Draft EIS. This information and data will be continuously updated as part of the adaptive management process.

Representative Quotes (Correspondence ID): 205, 216, 233
Comments (Comment ID): 645754, 645759, 646279

AMP1000 *Governance of the Adaptive Management Program*

Concern Statement: Text is proposed for inclusion in Section 2.3.8.1 of the SAMP providing a more defined role for state governments and agencies in the implementation of the MRRP.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645654

Concern Statement: For high-consequence decisions there needs to be an avenue for direct consultation with state agencies; this consultation process needs to be separate and independent from MRRIC, FWCA, and annual operating plan processes already in existence.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 3, 25, 206, 222, 228, 236
Comments (Comment ID): 645655, 626689, 644831, 645151, 645154, 646301, 645816, 646299, 645809, 645802, 645803

Concern Statement: The AM process compromises the authority of the governors in the river basin to a lower priority in decision-making; a suggestion is made that they be given a higher priority within the AM process.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 34, 222
Comments (Comment ID): 628335, 644783

Concern Statement: The SAMP fails to outline options for notifying states when management actions may occur outside the bounds of the Master Manual. The SAMP should be modified to add additional consultation with states at specific trigger points or at least for high consequence events.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 158
Comments (Comment ID): 640079

Concern Statement: Replacement text is proposed for inclusion in Section 2.3.8.1 describing the states' role in the implementation of the MRRP. The proposed replacement text essentially indicates that the AM process does not change or impede any of the rights and responsibilities of a state codified by law.

Response: The consultation process is outlined in the SAMP including a description of state involvement.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 643306

Concern Statement: MRRIC representatives should communicate with MRRIC State representatives as a mechanism for communicating with interested state agencies and relaying their concerns to MRRIC.

Response: Concur.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 643312

Concern Statement: Various agencies encourage continued engagement with partners and stakeholders to ensure the success of conservation efforts within the Missouri River basin.

Response: The expertise, research and management actions by Montana Fish, Wildlife and Parks and other state fish and wildlife agencies are indeed absolutely critical to efforts to conserve and recover pallid sturgeon. The review of the Draft EIS is an opportunity for Montana, Fish, Wildlife and Parks to comment on fundamental objectives in the MRRMP-EIS.

In addition, the process currently underway to revise the Pallid Sturgeon Population Assessment Program (PSPAP) presents another opportunity to comment on the hierarchy of objectives guiding population monitoring. Ongoing progress (and opportunities for comment) can be accessed here: <https://mcolvin.github.io/PSPAP-Reboot/>. The PSPAP review began with a review of all potential objectives for the PSPAP at a workshop held on March 21, 2017 at the Missouri River Natural Resources Conference, including the fundamental objective stated in comment 646300. This workshop was attended by two representatives of Montana Fish, Wildlife and Parks.

Representative Quotes (Correspondence ID): 183, 236
Comments (Comment ID): 643946, 646300

Concern Statement: Figure 7 of the SAMP (page 18) should be modified to: (1) have the Agency Management Team Box overlap with the various Team levels, and (2) better identify interactions between the Management Team and the Bird, Fish and Human Considerations Team.

Response: There are many interactions among the groups represented on Figure 7. We deliberately decided to not add arrows or overlap boxes in this figure to keep it simple. The interactions among groups are described in the text, and in Figures 20 and 24 of the SAMP. The process of interactions has been substantially revised since the Draft EIS was written, through extensive consultation with the MRRIC AM Governance Planning Ad Hoc Group and modifications are documented in the Final SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644297, 644386, 644429

Concern Statement: Section 2.3.1 (page 73) last paragraph of the SAMP should be modified to indicate the USFWS Regional Director will approve recommendations emerging from the SAMP process rather than suggesting he initiates them.

Response: This is a reasonable suggestion and the text has been reworded.

Examples of such decisions include the *approval* ~~development~~ of or *recommended* changes to targets and decision criteria, disposition of hypotheses, introduction of new management actions, advancement of implementation levels for pallid sturgeon, etc.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644387

Concern Statement: The Human Considerations Work Group should be the full MRRIC membership. Additionally, MRRIC meetings should be at different times than fish and bird team meetings to allow MRRIC members to participate on a species team and also the Human Considerations Team.

Response: Considerable dialogue has occurred on these issues with the AM Governance Planning Ad Hoc Group since the Draft EIS was released. The Fish, Bird and HC Work Groups (with representatives nominated and approved by MRRIC) will provide draft recommendations for consideration by MRRIC, but the Work Groups cannot themselves make any recommendations to the Fish, Bird and HC Teams. These modifications are documented in the Final SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644389

Concern Statement: The line of communication to ISAP should be through the appropriate organization as prescribed in panel documents rather than from a Technical Support group directly to either ISAP or ISETR (SAMP, Section 2.3.4, page 83).

Response: We should clarify that the Technical Team is a group of independent scientists charged with synthesizing the complex scientific information to support decision making; we believe interaction between the Technical Team and ISAP will be beneficial to both. There are two different kinds of engagements with ISAP and ISETR. The first kind of engagement is a formal review of documents, such as the IEPR, or reviews of the Draft SAMP, which we agree should operate through the appropriate procedures for the Team, MRRIC and USACE. The second kind of engagement is an informal exchange (e.g., on the first day of MRRIC meetings, at the fall science meeting, at the AM workshop) between Technical Team members and ISAP/ISETR members, as well as any MRRIC members who are interested in attending. These informal and open exchanges offer valuable opportunities for early input into draft products and insights, and should be maintained. Such informal advice (consistent with the advisory role embodied in the 'A' of ISAP) does not undermine the independence of ISAP and ISETR, as they are not engaging in actually doing any of the technical work.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644415

Concern Statement: The role and make-up of the Technical Support Group needs to be better defined; a group membership list should be maintained. This list should be provided to MRRIC for review and comment.

Response: This is a reasonable suggestion and such a list will be provided once the composition of the Technical Team is finalized.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644417

Concern Statement: The roles and responsibilities depicted in the SAMP should be consolidated into fewer positions.

Response: We will consider ways to make the process and program as efficient as possible, while still retaining the appropriate participation and collaboration.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644417

Concern Statement: The SAM Work Group is not needed for SAMP implementation as the Bird, Fish, and Human Considerations Work Groups can bring appropriate information and recommendations to MRRIC.

Response: Agreed. At the May 2017 MRRIC meeting, it was proposed to sunset the SAM Work Group at the August 2017 MRRIC meeting. The SAM Work Group is not reflected in the Final SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644426

Concern Statement: The Fall Science Meeting and Annual AM Workshop should not be held at prescribed times but rather occur after data and analysis reports are made available and time allocated for review; flexibility is key.

Response: We disagree. Having firm dates allows for better preparation and planning by the Technical Team, ISAP/ISETR, MRRIC, and the Bird, Fish and HC Teams. Experience in other AM programs has demonstrated that fixed dates for such review meetings result in a more efficient processing of scientific information into insights for managers, and expedite the development of data management systems.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644428

Concern Statement: Work Groups for MRRIC should have co-points of contact to share workload management responsibilities.

Response: This is a reasonable suggestion which will be discussed with MRRIC and the AM Governance Planning Ad Hoc Group.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644431

Concern Statement: A recommendation is made to maintain an ISAP and a separate ISETR panel and that a rotational process be established for panel membership. The SAMP (Section 2.3.7.3, page 97) should be modified to address the two roles of each panel – review and advisory. As the SAMP is implemented, the primary role of each panel should be reviewed. Any advisory role should be done in a manner to maintain the neutrality of the panels.

Response: The arguments for combined and separate panels were summarized in a presentation by Dr. Craig Fischenich on January 31, 2017 at the MRRIC meeting. As noted by Dr. Fischenich in his presentation, the members of ISAP and ISETR panels favor a combined panel for the following reasons:

- There are often “cross-cutting” opportunities where collaboration between physical, biological and social scientists might be able to identify more effective ways to meet some biological goals.
- The often-repeated goal of MRRIC to “...recover the species while minimizing the impact to human considerations...” suggests integration of physical, biological and social perspectives might be able to provide some insights that separate natural and social sciences panels may not be able to provide.
- A single panel may afford the opportunity for science advisors and social science advisors to more readily discuss the diverse interactions, dependencies, opportunities, and constraints that challenge resource managers
- Evaluating the socio-economic and ecological trade-offs of proposed management actions would likely benefit from having a single panel
- Wherever possible, and particularly for issues that are likely to escalate to the attention of MRRIC, efforts should be made to secure panel consensus.
- A combined panel was used very effectively in the IEPR review of the Draft EIS. For all of the above reasons, it is preferable to retain a combined panel, with clear allocation of questions according to the expertise of panel members, as occurred in the IEPR.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644432, 644430

Concern Statement: The role of the Third-Party Science Neutral should involve coordination of the two panels and not technical review or expression of opinion.

Response: This comment is consistent with the description in the SAMP. In facilitating work by the Panel, the Third-Party Science Neutral needs to keep the panelists focused on the questions posed to the Panel, and to explore the degree of consensus where differing opinions emerge.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644433

Concern Statement: The organizational interactions utilized to develop the SAMP as described in Section 2.3.7.5 (page 100 lines 4-38) probably will not be necessary for implementation of the SAMP and should be eliminated.

Response: We disagree. Experience from other AM programs shows the need for a range of interactions with interested participants.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644434

Concern Statement: Membership of the Technical Teams as currently defined may include Federal and state agency personnel, university professors, and contractors selected to address the science aspects of the Program. The specific role of state fish and game agencies is unclear and needs to be clarified.

Response: If personnel from state fish and game agencies join the Technical Team, their roles would be the same as other members of the Technical Team, as described in the SAMP. In summary, these roles are to: 1) provide policy-neutral scientific analysis, modeling and assessments to the decision-making process, culminating in the annual AM report; and 2) providing policy-neutral AM expertise to the MRRP relevant to program and species objectives, updating the SAMP as needed.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644644

Concern Statement: Implementation of the SAMP and decision-making should not contradict existing regulatory paradigms and requirements without proper rulemaking.

Response: The Science and SAMP recognizes the need to respect existing regulations, procedures and requirements, as illustrated in Figures 13 and 21.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644784

Concern Statement: The SAMP governance structure is flawed and requires revision. For example, MRRIC membership is selected by USACE and there is the possibility of selecting members that are biased. Additionally, the MRRIC charter can be revised by removing key presumptions, such as requiring unanimous consensus.

Response: Comment noted. USACE does not share the view that ultimate selection of members by USACE or recommendations by consensus are flaws and the comment fails to explain the basis for these statements. MRRIC members are selected to represent their respective interest categories so some level of bias toward their interest category is understandable. The member selection process is transparent and MRRIC

members are allowed to comment on prospective new members and members up for renewal.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644822

AMP1100 *Decision Needs to Adaptively Manage the MRRP*

Concern Statement: Since the preferred alternative does not contain any flow modifications (with the exception of a potential spring spawning cue release) the Final EIS and ROD should clearly state that adaptive management implementation would not include a flow modification outside the boundaries of the current Master Manual without consulting with affected states and preparing an additional EIS.

Response: The Final EIS fully describes the required procedures for revision of the Master Manual, beyond what is currently included in the Draft SAMP.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645653

Concern Statement: The SAMP needs a stronger “stop doing” function to more quickly eliminate hypotheses that lack quantitative scientific support.

Response: The history of science shows that there is indeed a risk of holding on to a hypothesis for too long in the face of evidence contradicting it*, but there is also a risk of prematurely rejecting a hypothesis. For example, the statistical power analysis in Appendix E.1 shows that you need at least 7 years of monitoring multiple treatment and control paired sites to have adequate confidence in a conclusion regarding the effects of IRCs on catch per unit effort of age-0 pallid sturgeon. Ultimately, the Technical Team syntheses of evidence (reviewed by ISAP) will determine whether or not it is appropriate to continue, adjust, or stop an action and whether to maintain, adjust, or reject a hypothesis.

*Citation: *Kuhn, Thomas S. (1962). The Structure of Scientific Revolutions (1st ed.). University of Chicago Press. 172 pp.*

Representative Quotes (Correspondence ID): 172
Comments (Comment ID): 642101

Concern Statement: A commitment should be contained in the Final EIS and SAMP to implement Level 3 and Level 4 actions within the 15-year period of the MRRMP.

Response: The tradeoffs between different learning strategies are described in Section 4.2.2 of the SAMP. The AM strategy needs to find the appropriate balance between three risks: 1) premature implementation of ineffective actions, which wastes resources; 2) excessive delay in implementing actions which would have helped the population; and 3) implementation of multiple concurrent actions without an ability to determine which actions are most effective, which makes future management adjustments more difficult. Level 4 actions are already being implemented for piping plovers and least terns (i.e., construction of Emergent Sandbar Habitat) at a level sufficient to promote persistence of the population. Supplementation of pallid sturgeon is already at Level 3, and the Intake bypass would be a Level 3 action. Figure 65 and Table 42 of the SAMP summarize the process by which actions that begin at Level 2 (e.g., IRCs, spawning habitat) can advance to Levels 3 and 4. Table 48 of the SAMP describes the process by which Level

1 observations of the correlations between flow and pallid sturgeon spawning behaviors could lead to Level 2 and Level 3 implementation of spawning flows.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644103

Concern Statement: The 2nd full paragraph of Section 1.4.5 (page 43) should be modified to identify locations of where IRC habitat could be located to provide the most benefit for the pallid sturgeon, which might be the Mississippi River.

Response: Analyses using advection-dispersion models have helped to determine the general location of IRCs such that embryos will have developed sufficiently to swim and forage for food; those analyses are a key reason for focusing on the portion of the Lower Missouri River downstream of Kansas City (see Figure 74 of the SAMP). Assessing the potential benefit of IRC habitats in this part of the Lower Missouri River requires actually building such habitats, and evaluating their effectiveness through a rigorous experimental design with treatment-control comparisons (a 'staircase' design). With respect to the Mississippi River, the SAMP includes Level 1 research (Appendix C) to estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River, relative to the number and survival of those that remain in the Missouri River.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644371

Concern Statement: A process needs to be developed to ensure decision criteria are developed at the earliest possible time to influence decision making, perhaps during an annual review.

Response: Decision criteria will be developed whenever an action has advanced from the general planning stage to the detailed design stage. Such decision criteria could be included as part of the annual AM report. Statistical criteria for evaluating action effectiveness are being developed as part of revisions Appendix E of the SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644383

Concern Statement: The Fall Science meeting should be for the Technical Teams; results can be presented/discussed with the work group and MRRIC at more appropriate meetings/formats.

Response: Considerable dialogue has occurred on these issues with the AM Governance Planning Ad Hoc Group since the Draft EIS was released. The current plan for the Fall Science Meeting will involve webinars attended by the Teams and other interested members of MRRIC.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644435

Concern Statement: Figure 17 of the SAMP ignores the role of the technical teams in the process and what information should be communicated with USACE leadership and MRRIC.

Response: The role of the technical teams is described further in the text that describes the process:

“The Science Update process begins when system-wide and action-specific monitoring data becomes available, along with preliminary after-action assessments. A Fall Science Meeting (see Section 2.4.3.1) is held to review initial observations from the field season, identify analytical needs with a focus on the AM workshop, and review the Strategic Plan. The Technical Team performs necessary data analysis and synthesis to evaluate action effectiveness and the habitat and species status and needs. The Team conducts any additional analyses as requested by the ISP Manager or Bird, Fish, HC, and Management Teams, and as approved by the SPM.”

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644436

Concern Statement: While the SAMP primarily focuses on hypotheses for the recovery of three listed species, ecosystem function should be more thoroughly considered.

Response: The full suite of hypotheses considered in the Effects Analysis, as well as those prioritized for investigation in the SAMP (Table 37), consider multiple attributes of ecosystem function affecting pallid sturgeon (i.e., hydrologic connectivity, channel form, primary and secondary production, flow naturalization, rearing habitats, food availability, growth and bioenergetics, turbidity and temperature). As noted in the reviewer’s comment, the new information process can bring other hypotheses forward, such as investigations into possible explanations of poor condition (e.g., reduced carrying capacity, changes in the amount of suitable habitat following the 2011 flood, changes in prey base, intraspecific and interspecific competition, and changes in fitness).

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644646

Concern Statement: The pallid sturgeon decision criteria presented in the SAMP should be modified to include whether additional species are listed as threatened or endangered. Any additional species could serve as criterion for evaluating the current listed species. Additionally, the decision criteria depicted in Figure 64 might also include whether there is a relationship between flow, turbidity, and food availability.

Response: If additional species are listed by USFWS then the agencies could initiate consultation on the new listed species depending on what factors might be responsible for the listing. Relationships between flow, turbidity and food availability / foraging efficiency are considered in the working hypotheses listed in Table 37 and are part of the Level 1 science investigations.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644648

Concern Statement: The Draft EIS allows USACE unchecked authority by permitting a broad range application of AM that goes beyond the authority established in previous adaptive management plans.

Response: The EIS does not allow USACE to have “unchecked authority.” For example, Figure 13 outlines how USACE would follow established procedures if it were necessary to consider an action outside of those evaluated in the EIS. This concept is also addressed in Chapters 2 and 4 of the EIS.

Representative Quotes (Correspondence ID): 176
Comments (Comment ID): 644765

Concern Statement: IRC metrics need to be better defined and the approach expanded to the Upper Missouri River. For those alternatives with a focus on IRC habitat, performance metrics need to be better defined. USACE should define “equivocal” and explain the range of results that would be considered positive, including whether statistical significance would be required to support additional IRC construction.

Response: The Effects Analysis developed a decision tree for the Upper Missouri population which summarizes the most critical information needs and potential actions (Figure 63 of the SAMP). Until it can be demonstrated that there is sufficient drift distance for embryos to develop into the free-swimming stage prior to entering Lake Sakakawea, it would not be appropriate to build IRCs in the Upper Missouri.

The EIS commits USACE to implementing twelve treatment-control pairs of IRCs in a staircase design over seven years, using statistical methods that are described in Section 4.2 and Appendix E.1. The EIS also commits USACE to modifying some shallow water habitat projects into IRCs. The staged development of IRCs is outlined in Table 42 of the SAMP.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645342

Concern Statement: Additional clarification is needed in the SAMP to describe how USACE would respond to changing implementation conditions to enable continued implementation of management actions, particularly for Alternative 2.

Response: Comment noted. Flexibility to respond to changing conditions are part of the AM Process as described in the SAMP. Without specific recommendations as to what these changing conditions might be it is difficult to respond to the comment with any detail other than stating that adopting an AM approach in itself is an indication that the agencies understand conditions can change and are open to adapt.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645499

Concern Statement: Droughts should be considered a major event that would occasionally be the subject of post-event investigations to update information on Human Considerations effects.

Response: Concur.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645586

Concern Statement: More emphasis needs to be placed on ensuring available empirical information is utilized in the process of evaluating hypotheses and development of alternatives for implementation, particularly information developed by state agencies.

Response: Science information developed through the State agencies was used and cited throughout the EA process, and information from representatives of State agencies was used in multiple expert elicitation processes. Monitoring and evaluation throughout the history of Missouri River Recovery has involved collaborations with scientists from State agencies and future efforts will necessarily continue collaborations because of the extensive scope of information needs. The Effects Analysis developed a decision tree for the Upper Missouri population which summarizes the most critical information needs and potential actions (Figure 63 of the SAMP). Uncertainty still surrounds what flow

adjustments may be needed at Fort Peck to provide favorable conditions to encourage pallid sturgeon recruitment in the Upper Basin. USACE has committed, in an amendment to the Biological Assessment, to work with USFWS and MRRIC to review previous information and information generated since the Effects Analysis to formulate test flows from Fort Peck and an AM framework for their implementation. The SAMP identifies a comprehensive framework for research to address the uncertainty regarding the effectiveness of management actions for pallid sturgeon in the upper basin.

Representative Quotes (Correspondence ID): 236
Comments (Comment ID): 645779

Concern Statement: The process should be streamlined to identify and implement management actions to mitigate USACE impacts to pallid sturgeon in the state of Montana by utilizing research results and scientific information made available by the state.

Response: USACE is supporting multiple efforts to ensure that there is no duplication of effort in pallid sturgeon research, including the Missouri River Natural Resources Conference, the Independent Science Program, and involvement of research scientists across the Basin in the Effects Analysis, as well as a broad-based elicitation of ideas for revision of the Pallid Sturgeon Population Assessment Program.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 646289

AMP1200 ***Adaptive Management Decision Process, Critical Engagement and Workflow***

Concern Statement: Decision making occurring during implementation of the SAMP needs to be open and transparent and should involve consultation and coordination with states' governor's offices on decisions of high consequence.

Response: Comment noted. The AM governance process is described in the SAMP including specifics regarding state involvement.

Representative Quotes (Correspondence ID): 29, 69
Comments (Comment ID): 626824, 635176

Concern Statement: There is no legal premise for implementing actions that exceed provisions of the Master Manual; any changes to the manual need appropriate review, analysis and public involvement.

Response: Attachment A.9 of the SAMP includes a description of procedures for revision of the Master Manual.

Representative Quotes (Correspondence ID): 34
Comments (Comment ID): 628333

Concern Statement: Any action implemented outside the boundaries of the ROD must go through a full NEPA analysis and public review. Likewise, any AM decision that goes beyond the scope of the Master Manual should undergo public review.

Response: Chapters 2 and 4 of the EIS discuss the process to be followed for actions outside of the ROD. Attachment A.9 of the SAMP includes a description of procedures for revision of the Master Manual.

Representative Quotes (Correspondence ID): 98, 145, 168, 228
Comments (Comment ID): 633688, 637641, 645185, 645627

Concern Statement: IRC habitat should be described and quantified to determine if there is an adequate amount of available habitat across the entire river system, not just below Kansas City. Likewise, rearing and feeding habitat for all life stages of the pallid sturgeon should be described and quantified to guide restoration efforts. The same should be done for native fish species critical to the life stages of the pallid sturgeon.

Response: The Level 3 goals for IRC development will be determined in Stage 3 of IRC development, as shown in Table 42 of the SAMP. Input from Nebraska Game and Parks Commission and other state game and fish agencies is welcome on how these goals should be determined. As described in Section 4.2.6.4 of the SAMP, the rehabilitation of SWH into IRCs will begin with an inventory of existing SWH areas, and their suitability for rehabilitation into IRCs. Figure 76 includes many projects upstream of Kansas City, which will be included in this review. Input from Nebraska Game and Parks Commission and other state game and fish agencies is also welcome as part of this review. The rationale for placing IRCs preferentially in the downstream half of the Lower Missouri River is documented in the EA and is based on prioritization of early life stage survival, among hypotheses, to explain declines in pallid sturgeon populations. The contributions of prey base and habitats used by older life stages did not emerge as a priority hypothesis, although this is subject to change as additional information becomes available (such as that contributed through the fish-condition evaluation process).

Representative Quotes (Correspondence ID): 237
Comments (Comment ID): 642913

Concern Statement: USACE needs to include “action forcing” criteria in the SAMP to ensure appropriate changes are made in a timely manner within both the scientific and administrative portions of the plan. A full suite of potential management actions should be evaluated in the Final EIS to avoid further process delays during implementation of the MRRP.

Response: The Final SAMP includes consideration of steps which can be taken to minimize process delays, while respecting established procedures (e.g., required steps for amending the Master Manual).

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643925

Concern Statement: The events described in SAMP, Section 2.4.3.1 and Figure 18, are too prescriptive in terms of what they are and when they need to occur.

Response: We disagree. Clarity in the content and timing of events in the AM process is important. These processes have been extensively discussed with MRRIC’s Science and AM Work Group, and more recently MRRIC’s AM Governance Planning Ad Hoc Group. At the May 2017 MRRIC meeting, the group reviewed version 27 of the AM Process Diagram.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644437

Concern Statement: A NEPA check for decisions related to moving between pallid sturgeon implementation levels is recommended (Section 2.4.6.8, page 140 of the SAMP V6).

Response: The Final SAMP includes consideration of steps which can be taken to minimize process delays, while respecting established procedures (e.g., required steps for amending the Master Manual).

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644438

Concern Statement: Concern expressed about moving forward with IRC construction with limited scientific information regarding potential success. A recommendation is made to move forward with just one IRC project, monitor to determine actual performance and environmental impact. Then using the adaptive management process implement the other IRC projects.

Response: The power analysis in Appendix E.1 of the Draft SAMP shows that you need at least 6 pairs of IRCs and control sites to be able to get sufficient statistical power to detect the effects of IRCs on catch per unit effort of age-0 pallid sturgeon, given the high amount of natural variability in catch per unit effort. The Draft EIS proposes 12 pairs of IRCs and control sites, so as to increase the potential biological benefits and test the feasibility of different methods for IRC construction.

Representative Quotes (Correspondence ID): 222
Comments (Comment ID): 644789

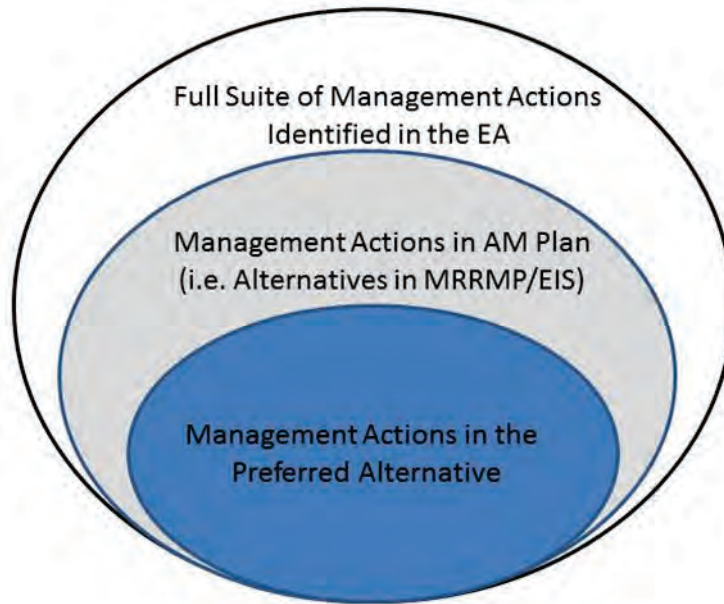
Concern Statement: Rather than committing the vast majority of MRRP budgetary resources to habitat construction, more funds should be allocated to research and monitoring to better understand species habitat requirements. Additionally, the SAMP feedback loop needs to be used.

Response: We agree that rigorous science, feedback and learning are all extremely important components of adaptive management. The annual science updates and AM workshops are meant to sharpen and accelerate the AM learning cycle. The SAMP includes a very substantial research program to assess various applied hypotheses prior to implementing certain management actions (see decision trees in Figure 63 and 64 of the SAMP). For other management actions, such as IRCs, the Effects Analysis concluded that there was sufficient evidence to support a comparative field experiment at Level 2. A rigorously designed field experiment is described in Section 4.2.6.3 of the SAMP and Appendix E.1 (i.e., staircase design of 12 IRC treatment-control pairs implemented over a 7-year period).

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645253

Concern Statement: A question is asked regarding how potential management actions at Fort Peck and Lake Sakakawea (i.e., lake drawdown) can be mentioned and considered in any section of the SAMP when these actions were eliminated in the Draft EIS because of a high level of uncertainty.

Response: Figure 6 (page 15 of Draft SAMP, and pasted in below) shows how the range of management actions differs between the Effects Analysis, the Draft SAMP, the EIS, and the preferred alternative. The SAMP provides a broader range of actions, in case those proposed in the preferred alternative (and implemented in the ROD) prove to be insufficient for maintaining the persistence of listed species. Additional NEPA process would be required for actions outside of the preferred alternative.



Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 645371

Concern Statement: Concern is expressed about the lack of provisions for actual measurement, how it will be conducted and how results will inform the decision making during implementation of the AM process.

Response: Sections 3, 4 and 5 of the SAMP describe proposed monitoring of birds, pallid sturgeon and human considerations in a great amount of detail. Further details are provided in Appendix E for pallid sturgeon, and Appendix G for birds.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645553

Concern Statement: AM decisions made outside the bounds of the ROD and/or conditions of the Master Manual must undergo a NEPA analysis and public review and also undergo an independent peer review of the science used to make decisions. USACE should communicate what actions are implementable using AM and make involve the public in the decision-making process. Additionally, USACE should commit to retain the two scientific panels as it is important to have the socio-economic review as part of the AM process.

Response: Responses are numbered to correspond with the points made below:

1. AM does not mean that actions are not yet identified; it means that planned actions are implemented through rigorous designs and monitoring to evaluate their effectiveness, and make necessary adjustments (or stopping them if required). Section 4 of the Draft SAMP describes a series of actions for pallid sturgeon (i.e., supplementation, intake passage, IRCs, rehabilitation of SWHs, spawning habitat, spawning flows) in considerable detail, and the associated monitoring / evaluation which would occur. Further details are provided in Appendix E. Figure 13 of the Draft SAMP describes what processes are required to implement actions of various types,

including NEPA processes, decision documents, or amendments to the Master Manual.

2. Table 40 of the SAMP describes the current status of various actions. Tables like this will be updated annually based on current information.
3. Independent socio-economic review will continue to be a part of the AM process and HC impacts will be thoroughly considered.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 645625

Concern Statement: Concern is expressed that the adaptive management provisions laid out in the Draft EIS will result in more uncertainty for landowners with respect to the impacts of water flow management and timing of pulses that may contribute to flooding on agricultural lands. Also of concern are the Interior Drainage NED risks of Alternatives 2 and 4 as projected in the area of MRLS 575-L, some of which occur beyond the release year, as reported in the “Agriculture and Interior Drainage Environmental Consequences Analysis Technical Report.” Therefore, we request that any implemented alternative which incorporates adaptive management include provisions that maximize the amount of time between approving and implementing flow pulses and associated water level rises, particularly in the spring and early fall. This will give states and impacted residents and businesses appropriate opportunity to weigh in on implementation decisions and prepare for potential impacts.

Response: The preferred alternative in the EIS (Alternative 3) does not include any new flow actions until at least 9 years after the Record of Decision, at which time a Level 2 test of spawning flows might occur, depending on the outcomes of Level 1 research conducted over those 9 years.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644411

AMP1300 *Protocols and Procedures for Adaptive Management Program Implementation*

Concern Statement: Prior to implementation, any new or modified management actions which are outside the bounds of the ROD need to be the subject of through review, including public review as provided by NEPA.

Response: Figure 13 of the Draft SAMP describes what processes are required to implement actions of various types, including NEPA processes, decision documents, or amendments to the Master Manual. This concept is also discussed in Chapters 2 and 4 of the EIS.

Representative Quotes (Correspondence ID): 33
Comments (Comment ID): 628023

Concern Statement: Any changes to the SAMP which deviate from conditions of the Master Manual should require direct consultation and receipt of input from affected States. Additionally, variations in future management actions should only occur through the MRRIC approval process.

Response: Figure 13 of the Draft SAMP describes what processes are required to implement actions of various types, including NEPA processes, decision documents, or

amendments to the Master Manual. This concept is also discussed in Chapters 2 and 4 of the EIS.

Representative Quotes (Correspondence ID): 160, 185
Comments (Comment ID): 633988, 641492

Concern Statement: USACE needs to reinitiate Section 7 consultation. The SAMP needs to be based on the best available science and not the 2003 BiOp.

Response: The Effects Analysis gathered and used the best available science (since the 2003 BiOp) to develop alternatives, models and the AM actions and USACE re-initiated consultation with USFWS. The comment is in agreement with the process that was followed.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644288

Concern Statement: Any implemented alternative involving adaptive management and flow management should give state governments and potentially impacted businesses and residents the maximum amount of time to react.

Response: Chapter 2 of the SAMP describes the governance process that will be followed during implementation.

Representative Quotes (Correspondence ID): 224
Comments (Comment ID): 644411

Concern Statement: MRRIC team members may want to make individuals associated with the Working Group and MRRIC aware of concerns so recommendations can be made.

Response: Comment noted.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644439

Concern Statement: The current version of the SAMP should be archived and replaced with a more concise document that: (1) describes the hypotheses to be tested, (2) describes the monitoring program and evaluation processes to address those hypotheses, and (3) contains clearly stated goals and objectives.

Response: We acknowledge that the SAMP is a long and detailed document. That level of detail, including the appendices, is necessary for such a complex program in such a complex basin, to guide those who will be implementing the SAMP.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644442

Concern Statement: Implementation of the SAMP should be done in coordination and consultation with basin states, including transition from Level 1 and Level 2 actions to Level 3 and Level 4 actions.

Response: Comment noted. The comment is in agreement with the planned process as outlined in the SAMP.

Representative Quotes (Correspondence ID): 96, 197
Comments (Comment ID): 645254, 645818

Concern Statement: Continuation of independent review of the SAMP and other Program documents is encouraged as is a competitive proposal process for scientific research and monitoring efforts.

Response: We agree. The SAMP includes a continuation of the ISAP and ISETR review process for the overall program (Section 2.3.7.3), as well as internal and external reviews of proposal to the Independent Science Program, and competitive proposal processes (Section 2.5.6.5, Appendix J).

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645267

Concern Statement: Predictive estimates should be reconciled with actual conditions prior to implementing management actions and the process to accomplish this defined in the SAMP to make appropriate adjustments accordingly to ensure species needs and human consideration implications are understood.

Response: Agreed. Empirical observations will be combined with predictive models, as well as other lines of evidence.

Representative Quotes (Correspondence ID): 159
Comments (Comment ID): 645800

Concern Statement: Information conveyed during In-Progress meetings with USACE and USFWS management should also be shared with MRRIC members.

Response: Key topics of discussion and information conveyed at in-progress meetings relating to matters of interest at MRRIC are routinely reported out at MRRIC meetings and this would continue to be the practice in the future. Due to the deliberative nature of some of the conversations not all information is ripe to be shared with the committee or is relevant.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645814

AMP2000 *Plover and Tern Monitoring*

Concern Statement: The monitoring program for the piping plover should be modified to incorporate improvements outlined in Shaffer et al. (2013) to better account for adult numbers that are claimed to be underestimated and the reported improved detection rates in other studies.

Response: Work is underway to develop an improved monitoring program for plovers and terns. This process is considering the recommendations from Schaffer et al. (2013), as well as additional modeling and statistical analyses, to develop a monitoring program that addresses management objectives while remaining cost-effective. A goal for the monitoring program is to handle uncertainty better than the existing program, either by increasing accuracy, measuring observation error so that it can be accounted for, or both.

Representative Quotes (Correspondence ID): 239
Comments (Comment ID): 642876, 645377

Concern Statement: An explanation is requested of what is meant by the statement in Table 22 of the SAMP “when navigation requirements allow.”

Response: The intent of this statement is to indicate that useful information about flow changes during the nesting season (e.g., effects on nest inundation, chick stranding, and foraging habitat) could be collected within the range of reservoir operations currently allowed for in the Master Manual. That is, if it were possible to alter flow releases such as the magnitude or rate of increases during the nesting season without affecting navigation or other factors driving summer releases, then that alteration may provide a learning opportunity. This is in contrast to changing release patterns in ways that would require changes to operating procedures or the Master Manual.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645559

AMP2100 *Plover and Tern Evaluation*

Concern Statement: Text should be added to the SAMP and Final EIS describing the potential implications to piping plover science related to pending results of the meta-population study.

Response: The SAMP acknowledges that metapopulation dynamics are a critical uncertainty (Sections 3.1.1.1, 3.1.2.5, 3.5.2.3). The results of the metapopulation study were still forthcoming during the development of the EIS and SAMP and so have not specifically influenced the content. However, the intent as described in the SAMP is to incorporate metapopulation information as it becomes available and to the extent possible in the plover population model. Considerable uncertainties will likely remain in this modeling unless further and ongoing investment in metapopulation research occurs. At this time, it is not anticipated that increased metapopulation understanding will alter the objective of maintaining emergent sandbar habitat acres as a primary habitat type on the Missouri River. It is anticipated that metapopulation understanding may alter the amount of emergent sandbar habitat required to meet plover population targets (increasing or decreasing habitat targets). Metapopulation understanding may also aid in interpretation of monitoring results to improve decision-making about timing and magnitude of management actions to better meet population objectives.

Representative Quotes (Correspondence ID): 148
Comments (Comment ID): 642694

Concern Statement: The section of the SAMP dealing with bird habitat and population modeling (Section 2.4.3) should be modified to include the caveats that are listed in the document entitled Modeling to Support the Development Targets for the Piping Plover on the Missouri River (May 2015) to enable better understanding of model limitations. The section should also be modified to communicate the variability and uncertainty associated with the ESH acreage needed to meet established targets.

Response: Section 2.4.3 of the SAMP was modified to include information about modeling caveats and uncertainties with regard to ESH acreage targets.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643832

Concern Statement: Model verification needs to be undertaken to determine if the models are reflective of actual habitat created since the models were developed.

Response: The evaluation of ESH model performance has been provided in Fischenich et al. (2014) "Habitat Analyses for the Missouri River Effects Analysis—Geomorphic Team

Integrative Report” in Chapter 4, section Model Performance. This report has been provided as supporting material for the Draft EIS.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643865

Concern Statement: Additional research is needed to determine the viability of methods other than protective cages for nesting birds that do not attract predators.

Response: Research into alternative nest protection methodology was added to the list of potential studies to resolve management uncertainties about nest protection.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645546

AMP2200 *Plover and Tern Decisions and Planning Contingencies*

Concern Statement: Piping plover decision making criteria need to be more definitive to enable timely decision making regarding future management actions.

Response: As knowledge advances on pallid sturgeon, it will become possible to develop more decision criteria, and we agree that this is needed. The decision criteria included in the SAMP are as specific as they can be at this time.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643780

Concern Statement: The SAMP is rather open-ended with regard to what constitutes “enough” to avoid jeopardy. A question is asked if the “recovery-oriented” targets can be equated to non-jeopardy thresholds. The State of North Dakota also requests an opportunity to review the draft Biological Opinion before it is finalized.

Response: The targets in the SAMP are meant to avoid a jeopardy determination. There are multiple uncertainties in defining such targets, and indeed some are still to be determined. It is important that the targets are indeed sufficient to avoid a jeopardy determination, and they have been developed accordingly. Achieving the targets to avoid jeopardy will provide the foundation for subsequent decisions on how to move towards delisting of these species, and associated targets for that milestone, some of which are described in existing recovery plans.

USFWS followed its normal procedures with respect to the development of the draft and final Biological Opinion, which are described here: https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf. However, the Draft BiOp was made available to MRRIC prior to finalization and was reviewed by the MRRIC ISAP prior to finalization.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645652

Concern Statement: Guidance should be developed for Section 3176 of WRDA 2007 which allows USACE to implement actions based on best available science which will avoid jeopardy for the piping plover regardless of whether or not the action is on the Mainstem of the Missouri River (e.g., off channel habitat and alkali lake habitat).

Response: USFWS has defined acceptable non-sandbar habitat as habitat which is hydrologically connected. Under the SAMP they may choose to amend this decision if

additional evidence becomes available, but it is fundamentally a decision of USFWS as to what actions address jeopardy on the Missouri River.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645657

Concern Statement: The Draft SAMP is oriented toward in-channel sandbar habitat and other hydrologically connected habitat for the birds and does not consider the use of off-channel habitat for bird recovery.

Response: USFWS has defined acceptable non-sandbar habitat as habitat which is hydrologically connected. Under the SAMP they may choose to amend this decision if additional evidence becomes available, but it is fundamentally a decision of USFWS as to what actions address jeopardy on the Missouri River.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645656

Concern Statement: Remove the reference to interior drainage as one of the authorized purposes in a statement made in the SAMP since it is not one of the authorized purposes (SAMP, page 225).

Response: This correction was made in the Final SAMP.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645577

AMP3000 *Pallid Sturgeon Monitoring*

Concern Statement: The stocking of non-native sport fish and the introduction of invasive species are potential obstacles to successful recovery of the pallid sturgeon.

Response: This is a valid point, and is being considered as part of the revision of the Pallid Sturgeon Population Assessment Program, as well as potential factors affecting fish condition in the new information process.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643915

Concern Statement: True population studies should be undertaken as appropriate for Level 3 and Level 4 actions. Monitoring crews should assist with data gathering under Level 1 and Level 2 research actions as they overlap with Level 3 and Level 4 monitoring activities. As Level 1 and Level 2 research activities transition to Level 3 and Level 4 actions; USFWS would like to be involved in the developed of a revised pallid sturgeon monitoring program.

Response: It is proposed to monitor the population as well as monitoring the shorter-term activities. USFWS has been involved at every step of the development of this EIS, AMP, including the monitoring plans. USFWS has provided valuable input into the revision of the population monitoring program (PSPAP), as well as into the design of action effectiveness monitoring (Appendix E of the SAMP). The continued participation of USFWS in the design and revision of monitoring programs is critical to their success. Ongoing progress on the PSPAP reboot (and opportunities for comment) can be accessed here: <https://mcolvin.github.io/PSPAP-Reboot/>.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643943

Concern Statement: The monitoring program for pallid sturgeon should include forage fish important to the diet of the pallid sturgeon and also inclusion of telemetry technology to evaluate habitat use by the fish.

Response: Forage fish are being considered as part of the PSPAP review and revision, and investigation into fish condition. Telemetry technology is a major component of Level 1 research (see the SAMP, Appendix C).

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643944

Concern Statement: The existing Pallid Sturgeon Population Assessment Program should be described in more detail in the SAMP and Chapter 4 of the EIS. The program should be continued and made more robust to provide a more complete accounting of what is occurring in the river and how pallid sturgeons are affected.

Response: The PSPAP, and intended improvements to it, are described in Appendix D of the SAMP. Appendix D will be updated based on current work to revise the PSPAP, as described at: <https://mcolvin.github.io/PSPAP-Reboot/>, which welcomes your input. The SAMP appendices also detail research components to increase fundamental understanding of pallid sturgeon biology (Appendix C) and robust monitoring designs for evaluating effectiveness of actions (Appendix E). Appendix D describes the collaborative population model which will be used to estimate population response. The description of the SAMP in Chapter 4 of the EIS is intended to be a higher-level description of the AM process.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643955

Concern Statement: The decision to only monitor for larval (non-drifting) pallid sturgeon below Kansas City is based on flow models that have not yet been validated and thus is a concern as mention is made of the observation of drifting free embryos above the Platte River.

Response: The response is mistaken about the scope of PSPAP and monitoring efforts. The reinvented PSPAP will include a range of life stages, not just larval fish, although larval fish will be emphasized in downstream segments. The larval drift models will be subject to continued validation through PSPAP sampling, IRC monitoring, and level 1 research components. The redesign of PSPAP continues to use State and Federal agencies for input. Similarly, designs of monitoring for management actions (flow cues, spawning habitat, IRCs) are being developed based on experience of State and Federal agencies and will be subject to review by those agencies.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644650

Concern Statement: The Final EIS and SAMP should address how long Intake monitoring will be conducted to determine if pallid sturgeon recruitment is successful before adjustments will be made to ensure project success.

Response: Detailed monitoring plans for Intake are being developed in coordination with multiple agencies and will be included as Attachment E.5 of Appendix E of the SAMP.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645530

Concern Statement: The Final EIS should address how an accurate pallid sturgeon population estimate can be made; and what criteria are used to make these estimates. The Final EIS should describe the level of effort and geographic scope of the pallid sturgeon monitoring.

Response: The SAMP describes the monitoring efforts required before an accurate pallid sturgeon population estimate can be made. The SAMP describes the full level of effort and geographic scope of pallid sturgeon monitoring.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645537

AMP3100 *Pallid Sturgeon Evaluation*

Concern Statement: A factor in the recovery of the pallid sturgeon is the need to recreate a riverine ecosystem that resembles pre-dam conditions.

Response: The focus of the MRRP is on listed species. As investigations proceed (such as those prompted by the investigation into skinny fish), we will learn more about the ecological factors that impede successful reproduction, growth and survival of pallid sturgeon, which in turn will lead to ideas about what actions are required to improve those conditions. The full suite of hypotheses considered in the Effects Analysis, as well as those prioritized for investigation in the SAMP (Table 37), consider multiple attributes of ecosystem function affecting pallid sturgeon (i.e., hydrologic connectivity, channel form, primary and secondary production, flow naturalization, rearing habitats, food availability, growth and bioenergetics, turbidity and temperature).

Representative Quotes (Correspondence ID): 131
Comments (Comment ID): 640136

Concern Statement: The SAMP is too focused on age-0 pallid sturgeon and management actions that may result in recruitment to age-1. More emphasis should be placed on other life stages due to recent evidence of poor body conditions of adult sturgeon.

Response: Indeed, all life stages are important, and this is recognized in overall conceptual model (Figure 61 in the SAMP), the redesign of the PSPAP (Appendix D of the SAMP), as well as in the detailed design of monitoring for various actions (to be included in an expanded Appendix E in the Final SAMP). The recent investigations into possible explanations of poor condition by the Effects Analysis team has led to recommendations to explore a number of alternative mechanisms (e.g., reduced carrying capacity, changes in the amount of suitable habitat following the 2011 flood, changes in prey base, intraspecific and interspecific competition, and changes in fitness).

Representative Quotes (Correspondence ID): 147, 224
Comments (Comment ID): 640690, 644408

Concern Statement: Given all the uncertainty, water quality hypotheses for the Lower River should be included as a potential explanation of why pallid sturgeons are not successfully recruiting.

Response: Water quality was considered in the hypothesis-filtering process conducted in the Effects Analysis, became one of the working set of management hypotheses (Table 5 in Jacobson et al. 2016b¹), and is thoroughly discussed in the Final Effects Analysis (Jacobson et al. 2016c²). Water quality remains a reserve hypothesis which can be activated to a higher priority if required.

Citations

1. Jacobson, R.B., Parsley, M.J., Annis, M.L., Colvin, M.E., Welker, T.L., and James, D.A., 2016b, Development of working hypotheses linking management of the Missouri River to population dynamics of Scaphirhynchus albus (pallid sturgeon): U.S. Geological Survey, Open-file Report 2015-1236, 33 p. <https://pubs.er.usgs.gov/publication/ofr20151236>
2. Jacobson, R.B., Annis, M.L., Colvin, M.E., James, D.A., Welker, T.L., and Parsley, M.J., 2016c, Missouri River Scaphirhynchus albus (pallid sturgeon) effects analysis—Integrative report 2016: U.S. Geological Survey Scientific Investigations Report 2016–5064, 154 p., <http://dx.doi.org/10.3133/sir20165064>.

Representative Quotes (Correspondence ID): 107

Comments (Comment ID): 643829, 643923

Concern Statement: USACE should consider committing to the funding and prioritization of analysis and synthesis of monitoring data beyond annual project completion reports by sampling segment prior to the implementation of a new monitoring program.

Response: This is a good suggestion which should be considered as part of the revision of the PSPAP.

Representative Quotes (Correspondence ID): 183

Comments (Comment ID): 643945

Concern Statement: Statements in the SAMP indicating that one or more critical processes accounting for the lack of population growth in the upper basin are incorrect. Results of recent scientific studies have demonstrated that entrainment of drifting free embryos into toxic headwater habitat is the basis for the lack of natural recruitment.

Response: Progress in understanding has occurred over the last two years. The document describing working hypotheses (Jacobson et al. 2016b) summarizes workshops which occurred in 2015, and was an input to the Effects Analysis (Jacobson et al. 2016c), which evaluated the evidence for alternative hypotheses. As described in the summary of the Effects Analysis in the SAMP (Section 4.1.2.5, pg. 294) the predominant hypothesis for recruitment failure in the Upper Missouri is insufficient drift distance of embryos prior to entering the anoxic waters of Lake Sakakawea, which is consistent with the comment. We would also note that toxicity of headwaters of Lake Sakakawea has yet to be documented and accepted in peer reviewed literature; additional mechanisms for mortality may exist.

Representative Quotes (Correspondence ID): 191

Comments (Comment ID): 644060

Concern Statement: Level 1 and Level 2 actions do not meet the definition of a management action and should not be considered as such in the description of alternatives.

Response: Level 1 work are indeed studies, and we agree that they should not be described as management actions. Level 2 work involves “implementation of actions at a level

sufficient to expect a measurable biological, behavioral or physiological response in pallid sturgeon, surrogate species, or related habitat response” (Table 39, in SAMP). Such activities (e.g., construction of 12 IRC sites, construction of spawning habitat) are legitimate management actions, whether or not they are of sufficient scale to cause a population response.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644101

Concern Statement: A reference is needed in Tables 4 and 5 of the SAMP directing the reader to where the alternative hypotheses can be found.

Response: Section 1 is a short summary and cannot include all of the details in the rest of the SAMP. The text of Section 1.4.2 of the SAMP, which includes Tables 4 and 5, references Section 4.1.2, which summarizes the development of hypotheses in the Effects Analysis. Section 4.1.2 in turn references Jacobson et al. 2016b, which lists all of the alternative hypotheses and the prioritization process.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644312

Concern Statement: A hypothesis should be added to Table 5 describing the use of the Mississippi River by the pallid sturgeon.

Response: All of the working management hypotheses in Table 5 are phrased in terms of potential *management actions* which might improve the survival, growth or reproduction of pallid sturgeon; Table 5 is not a list of uncertainties. The SAMP includes hypotheses which have stimulated proposed research on the use of the Mississippi River by pallid sturgeon, as part of Big Question 4 (drift dynamics), Hypotheses 14 and 19, for the Lower Missouri River; see BQ4/L1/C5, Appendix C. This research would estimate the number and survival of age-0 to juveniles hatched in the Missouri that reach the Mississippi River, relative to the number and survival of those that remain in the Missouri River.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644341

Concern Statement: For the metric of catch rates on Age-2 and Age-3 pallid sturgeon associated with the sub-objective dealing with increased recruitment to Age-1 to be meaningful, other questions should be considered because of the low wild fish catch rates. Issues such as potential gear bias, or whether the correct habitats are being sampled, or are pallid sturgeon not reaching these age classes should be evaluated.

Response: These are all excellent points, and are being considered in the redesign of the PSPAP.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644649

Concern Statement: The SAMP would benefit from reporting other pallid sturgeon population estimates for various stretches of the lower river segments to provide a more complete range of anticipated pallid sturgeon populations below Gavins Point Dam.

Response: Agreed. This issue of spatial coverage is also being considered in the redesign of the PSPAP.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644651

Concern Statement: Pallid sturgeon modeling results may not be reliable if the targets for the mark-recapture monitoring efforts in the Recovery Priority Area 4 are not obtained (i.e., the established target may be unrealistic).

Response: The issue of reliability in mark-recapture estimates is being explored with the collaborative population model as part of the redesign of the PSPAP.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644652

Concern Statement: Concern is expressed that the management actions of Alternative 3 are not sufficient to address Big Questions 1-4 (SAMP, Table 43) and avoid a jeopardy situation.

Response: The selection of the preferred alternative involved a number of steps, which are described in Chapter 2 of the EIS. The SAMP proposes to use Level 1 field studies, not lab studies, to better understand the effects of flows on various behaviors by reproductively ready pallid sturgeon (movement, aggregation, reproduction); see Section 4.2.6.6 of the SAMP. We acknowledge in the flow evidentiary framework (Table 48 of the SAMP) that the ability to use Level 1 field studies to evaluate such hypotheses depends (in part) on the range of flow magnitudes which occur during the 9 years after the ROD. Statistical power to detect such associations also depends on the number of telemetered sturgeon that are reproductively ready and tracked; Appendix E.4 will discuss how many tagged sturgeon are required. If a sufficient range of flows do not occur, then a Level 2 test spawning flow may be implemented in the Lower Missouri River once 9 years of monitoring has occurred (see bottom of Table 48 of the SAMP).

Representative Quotes (Correspondence ID): 166
Comments (Comment ID): 644851

Concern Statement: What scientific evidence is available to support the case for inclusion of IRC as a management action to benefit survival of age-0 pallid sturgeon? What other actions were considered as there is scant mention of the benefit of channel widening in either the Effects Analysis report, Draft EIS, or SAMP?

Response: Evidence for the potential benefits of channel reconfiguration (IRCs) for the Lower Missouri River is discussed in the Effects Analysis for hypotheses 17 to 19 (Jacobson et al. 2016c, pages 112-120). The *findings* of the Effects Analysis for these hypotheses (Table 38 of the SAMP) were “Theoretical support, inference from hydrodynamic models, but data are equivocal as limiting factor and population response.” The staircase design proposed in the SAMP, with 12 IRC treatment-control pairs implemented over 7 years, is the comparative field experiment recommended in the Effects Analysis. Particle tracking models indicate that IRCs are likely to increase interception of age-0 pallid sturgeon. It is not certain that IRCs will have a statistically significant benefit in increasing the abundance, growth and survival of age-0 pallid sturgeon; the comparative field experiment included in the Draft SAMP will be able to rigorously evaluate those questions.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644911

Concern Statement: Support is offered for the development of IRC habitat and a request made for increasing the funding of Level 1 and Level 2 research on the effectiveness of physical habitat creation. If research results are positive, goals for the amount (acreage) of habitat creation should be increased. Additionally, research activities should be increased such that in years 9-10 there is sufficient information to determine if flow modifications are required to support pallid sturgeon recruitment.

Response: These suggestions are generally consistent with the intent of the Draft SAMP. If the first two stages of IRC development indicate that IRCs are effective, then stage 3 of IRC development (Table 42 of the SAMP) will determine the required rate of Level 3 implementation of IRCs (based on stages 1 and 2). We don't know now how many acres per mile would be required to benefit the population. The issues related to evaluating the need for spawning flows are discussed in response to several other comments.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645130

Concern Statement: More communication with MRRIC and the general public regarding the IRC concept should occur.

Response: This is a good suggestion, and will be considered for future MRRIC meetings. The fact sheets developed for IRCs (and other topics) are one step in improved communication, which MRRIC members can use when speaking to the people they represent (<http://moriverrecovery.usace.army.mil/mrrp/f?p=136:70#FactSheets>).

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645514

Concern Statement: The stated goal of increasing pallid sturgeon recruitment to age-1 is too simplistic to understand the mechanisms behind the metric and should be augmented with sub-metrics (e.g., prey species abundance, competitor abundance, types of substrate and habitat, and other factors considered important in the conceptual models).

Response: These suggestions will be considered as part of the revision of the PSPAP, as well as in development of monitoring plans to assess the effectiveness of actions, which will be described in Appendix E. Substrate and habitat are part of the monitoring plans for several actions (Intake bypass, spawning habitat development, IRCs, rehabilitation of shallow water habitat into IRCs). The abundance of prey species is under consideration for the revised PSPAP, and also as part of the investigations into poor fish condition. Investments in monitoring do involve tradeoffs between breadth and depth of coverage.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645322

Concern Statement: A decision tree should be created highlighting the future operational changes that might need to occur if spawning cue releases are demonstrated to benefit pallid sturgeon recruitment. A scenario analysis should be undertaken with decision criteria and performance metrics developed to communicate under what conditions flow modifications would occur.

Response: Table 49 of the SAMP provides the proposed rules for spawning flow releases. It seems that what is being requested is an analysis to determine how often such releases would occur based on historical water years. The HEC-RESSIM and HEC-RAS runs from alternative 2 codified the conditional rules so the results should in theory address

and incorporate this concern. That information may already exist in the HydroViz tool. We will consider this suggestion in revisions to the Draft SAMP.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645334

Concern Statement: Management actions should be developed and implemented to enhance habitat conditions for important prey species, especially within tributaries and side channels of the Missouri River.

Response: We will consider these suggestions as the AM program is implemented. The geographic scope of the MRRP, as currently defined in Section 4.1.1.1 of the Draft SAMP, does not include tributaries, other than the Yellowstone River. This scope does not however preclude efforts by USACE to coordinate with other entities involved in developing actions on tributaries. At present prey species populations are not considered a priority hypothesis; the EA hypothesis filtering and conceptual ecological model reports document that carrying capacity issues presently have equivocal science support. This could change as the fish-condition question evolves.

Representative Quotes (Correspondence ID): 238
Comments (Comment ID): 645336

Concern Statement: A transplant experiment at the Yellowstone Intake could result in harming pallid sturgeon during transport.

Response: This is a wise precaution, and all efforts will be made to ensure that stress is minimized. In preparation for a pilot implementation of the translocation experiment in 2017, the study plan addressed this concern with procedures to minimize stress, handling, and transport distance. All handling of the fish followed the established pallid sturgeon fish-handling protocol. U.S. Fish and Wildlife Service, 2012, Biological procedures and protocols for researchers and managers handling pallid sturgeon: U.S. Fish and Wildlife Service, 40 p.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645529

Concern Statement: The fitness of adult pallid sturgeon needs further examination as condition concerns of adult fish could hinder successful recruitment. Additional research is recommended to verify condition concerns and determine what can be done to improve the health and productivity of adult sturgeon.

Response: The comment is valid and is being addressed. Concerns about fish condition raised by the Nebraska Game and Parks Commission led to an investigation by the Effects Analysis team, as described in the SAMP. The EA team has recommended several lines of research into the potential causes of poor fish condition in some segments of the Missouri River, including reduced carrying capacity, changes in the amount of suitable habitat following the 2011 flood, changes in prey base, intraspecific and interspecific competition, and changes in fitness.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645533

Concern Statement: Available SWH sites are not sufficient to support pallid sturgeon spawning activities because virtually no documented spawning or recruitment success has been

recorded. Enhanced or restored spawning habitat should be in place prior to any flow test to determine if the flow release will be sufficient for pallid sturgeon.

Response: USGS studies have documented spawning in many areas in the Lower Missouri River (DeLonay, A.J., Chojnacki, K.A., Jacobson, R.B., Albers, J.L., Braaten, P.J., Bulliner, E.A., Elliott, C.M., Erwin, S.O., Fuller, D.B., Haas, J.D., Ladd, H.L.A., Mestl, G.E., Papoulias, D.M., and Wildhaber, M.L., 2016, Ecological requirements for pallid sturgeon reproduction and recruitment in the Missouri River: A synthesis of science, 2005-2012: U.S. Geological Survey Scientific Investigations Report 2015-5145, 224 p., [Also available at <http://dx.doi.org/10.3133/sir20155145>].) and this information has been compiled in the EA reports, notably the integrated report (Jacobson, R.B., Annis, M.L., Colvin, M.E., James, D., Welker, T.L., and Parsley, M.J., 2016, Missouri River Scaphirhynchus albus (Pallid Sturgeon) Effects Analysis—Integrative Report 2016: U.S. Geological Survey Scientific Investigations Report 2016-5064, 154 p., [Also available at <http://dx.doi.org/10.3133/sir20165064>].) This information establishes that spawning is relatively common – measured as egg release. What is not known is whether eggs are fertilized, incubated, and hatched successfully. Engineered spawning habitat will be in place prior to any test of spawning cue flows. However, fish behavioral responses to migrate and aggregate in response to a flow pulse will provide valuable information about the role of flow pulses even if the fish do not find optimal spawning habitat. As described in Table 42 of the SAMP, spawning habitat is required to be in place within 2 years of the Record of Decision, whereas a Level 2 test of spawning flows (if implemented, depends on evidence summarized in Table 48 would not occur until at least 9 years after the ROD.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645544

Concern Statement: Competition from non-native fish species needs to be evaluated and included in the SAMP for pallid sturgeon.

Response: Competition from non-native fish species including Asian Carp is not currently a priority hypothesis but could be introduced into the process at a later date should it be determined that pallid sturgeon are food limited.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 645822

Concern Statement: Discussion of the Pallid Sturgeon Population Augmentation Program should focus on the quality of stocked fish rather than quantity. Quality of stocked fish should be identified as a limiting factor and include physiological and ecological factors, such as overall health of fish when stocked and ability to adapt to natural river conditions (e.g., feeding).

Response: Quality of stocked fish is one of the many potential indicators being considered as part of the redesign of the PSPAP.

Representative Quotes (Correspondence ID): 245
Comments (Comment ID): 644916

Concern Statement: The wild pallid sturgeon population is aging and there is not sufficient time to wait ten years to conduct the one-time spawning cue test. Additionally, this test needs to be repeated to provide meaningful data.

Response: It will be very important to learn as much as possible during the 9-year period after the ROD. Revisions are being made to Appendix E to explore how to maximize learning during this period. Table 48 of the Draft SAMP (page 393) describes the process by which Level 1 observations of the correlations between flow and pallid sturgeon spawning behaviors could lead to Level 2 and Level 3 implementation of spawning flows, including the possibility (if required) of implementing such flows once every three years. We acknowledge in Table 48 and the associated text that the ability to use Level 1 field studies to evaluate such correlations depends (in part) on the range of flow magnitudes which occur during the 9 years after the ROD. Statistical power to detect such associations also depends on the number of telemetered sturgeon that are reproductively ready and tracked; Appendix E.4 will discuss how many tagged sturgeon are required.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645233

AMP3200 *Pallid Sturgeon Decisions and Planning Contingencies*

Concern Statement: USACE should make a commitment in the Draft EIS and the SAMP to implement appropriate Level 3 and 4 management actions (in Montana specifically) following research conducted during Level 1 and 2 actions and evaluation of new scientific information.

Response: Modifications at Fort Peck Dam were considered during alternatives formulation. Please see Section 2.5.21 of the Final EIS for a detailed discussion of the status of actions at Fort Peck Dam. In recognition of the scientific uncertainty surrounding Fort Peck flow adjustments, USACE agreed to formulate test flows from Fort Peck and an AM framework for their implementation during formal ESA Section 7 consultation on this plan. Studies under the framework may include additional drift studies, tracking of fish and documentation of spawning locations, telemetry evaluations and methodology improvements, risk analysis, and engineering studies. Implementation of an identified hydrograph to test hypotheses would be considered; however, depending on the specifics of the test hydrograph, may be outside the scope of this EIS.

Representative Quotes (Correspondence ID): 191
Comments (Comment ID): 644102

Concern Statement: Assessment of impacts to Missouri River fish communities as a result of reliance on short-term science projects to test specific hypotheses of fish species interactions will not be sufficient to properly assess predicted impacts of management action implementation to fish communities as a whole.

Response: There is indeed a tradeoff between investigations into the factors limiting the reproduction, growth and survival of pallid sturgeon (the focus of the MRRP), versus a comprehensive study of the entire fish community.

Representative Quotes (Correspondence ID): 177
Comments (Comment ID): 644653

Concern Statement: A timeline for movement of an average management action from Level 1 to Level 4 should be provided.

Response: The current timelines for completion of Level 1 and Level 2 studies are summarized in Figure 81 of the SAMP. Evaluations of the potential implementation of some Level 3

actions (e.g., spawning habitat, spawning flows) would occur following completion of Level 1 and Level 2 work. The timeline for moving IRC work from Level 2 to Level 3 (if Level 2 tests are successful) would be 7 years after the ROD, and for moving from Level 3 to Level 4 (if Level 3 tests are successful) would be 10 years after the ROD, as described in Table 42 of the SAMP. Both supplementation and the Intake bypass are Level 3 actions.

The time limits for the Level 3 implementation in the framework are not inflexible, but are also not arbitrary – they generally reflect an estimate of the time required to execute underpinning Level 1 and 2 studies, represent a point in time when field study using AM is needed to advance understanding on a key uncertainty, or were identified in deliberations between USACE and USFWS because they provide necessary assurances/commitments on the part of USACE to take action should the science remain equivocal.

Representative Quotes (Correspondence ID): 179
Comments (Comment ID): 645240

Concern Statement: What research/monitoring activities are proposed to address concerns about the hybridization of pallid and shovelnose sturgeons?

Response: Hybridization is indeed a concern, and is discussed in the SAMP (e.g., in Section 4.1.2.4: “Spawning habitats should be designed to reduce (not increase) hybridization of pallid and shovelnose sturgeon. Trends in hybridization over time should be tracked, so that they don’t confound field and model based estimates of the effects of various management actions.”). Genetics research currently under way by Dr. Edward Heist (S. Illinois University) and USGS is advancing the ability to use genetic algorithms to distinguish pallid sturgeon from shovelnose sturgeon, and this work (which found more hybridization in the Lower Missouri, and little in the Upper Missouri) has implications for stocking strategies. See abstracts from 2017 Missouri River National Resources Conference at [http://mrnrc2017.com/2017%20Presentation%20Abstracts\[48710\].pdf](http://mrnrc2017.com/2017%20Presentation%20Abstracts[48710].pdf).

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645541

Concern Statement: Research should be conducted to determine if the velocity and turbulence experienced in the navigation channel is detrimental to free embryos of pallid sturgeon within the lower portions of the river.

Response: Level 1 research (BQ4/L1/C2) has been planned to address this question. See text in Appendix C, which describes research in experimental flumes, relevant to Big Question 4 on Drift Dynamics:

“The objective of this screening component is to characterize how resilient pallid sturgeon free embryos are to hydraulic conditions, particularly turbulent energy. If embryos are fragile, flow modifications, such as increased flow during spawning periods may increase embryo mortality. If embryos are found to be susceptible to mortality due to physical disturbance imparted by velocity or turbulence, flow regimes may be modified to minimize embryo mortality.”

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645552

Concern Statement: More emphasis should be placed on pallid sturgeon habitat creation and associated research.

Response: The Draft SAMP includes the creation of IRC habitats and spawning habitat, as well much associated research.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645770

AMP4000 *Human Considerations Adaptive Management*

Concern Statement: Recommendation to continue with two MRRIC independent scientific review panels, especially the Independent Socio-economic Technical Review Panel to ensure a more socio-economic focus is maintained.

Response: This issue is addressed in response to comment 644432.

Representative Quotes (Correspondence ID): 197
Comments (Comment ID): 645268

Concern Statement: Adaptive management processes should be developed and implemented to review socioeconomic data and make appropriate adjustments to management actions as new information regarding impacts to social and economic resources is made available.

Response: Concur. AM related to human considerations is described in Section 5 of the Draft SAMP.

Representative Quotes (Correspondence ID): 228
Comments (Comment ID): 646296, 646298

Concern Statement: Greater specificity regarding human considerations monitoring needs to be integrated into SAMP Section 5.0.

Response: Additional specificity has been added and is reflected in Chapter 5 of the Final SAMP.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645658

Concern Statement: Additional clarification is required regarding a statement in the SAMP (Section 5.8.3.9, page 488) addressing decision making for human considerations during a proposed flow release: Revise the following sentence for clarity. “The case of a sudden, acute HC issue that might preclude the use of a flow release in season...would be raised directly at the Management Team level at the discretion of the USACE.” For example, does this mean USACE’s Missouri River Basin Water Management Division has discretion to preclude a flow release due the possibility of exceeding an established threshold?

Response: A description of the Water Management communication process and schedule is provided in the SAMP.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645664

Concern Statement: Thresholds that could be used to avoid and/or mitigate impacts of a spring flow release (e.g., improved weather forecasting, snowpack conditions, local

precipitation events, presence of ice in the river, etc.) should be established and discussed more explicitly in the Final EIS and SAMP.

Response: The Final EIS contains a description of the types of considerations for mitigating impacts of one-time test releases in Chapter 2.

Representative Quotes (Correspondence ID): 3

Comments (Comment ID): 645663

Concern Statement: Establishing thresholds for flow management activities to avoid cascading effects to human considerations for an extended period of time is important to protect those resources for which the state is responsible for managing. Establishment of the thresholds should be coordinated with the states.

Response: The Final EIS contains a description of the types of considerations for mitigating impacts of one-time test releases in Chapter 2.

Representative Quotes (Correspondence ID): 3

Comments (Comment ID): 645660

Concern Statement: Implementation of the adaptive management process would benefit from consultation with state agency experts regarding how to avoid adverse effects to human considerations, particularly as it relates to flow management changes on the Missouri River.

Response: States are free to join the Human Considerations team which is a collaborative MRRIC group that will track impacts to human considerations. Additionally, each site-specific project will involve state coordination and compliance with all applicable state laws and regulations.

Representative Quotes (Correspondence ID): 3

Comments (Comment ID): 645659

Concern Statement: The SAMP governance structure places too much emphasis on the three listed species and insufficient emphasis on human considerations.

Response: The governance structure is balanced with respect to birds, fish and human considerations, and has been developed collaboratively with MRRIC.

Representative Quotes (Correspondence ID): 222

Comments (Comment ID): 644818

AMP5000 *Data Acquisition, Management, Reporting and Communication Related to AM*

Concern Statement: Potential risks of implementing Level 2 experiments to flood control, power generation, water supply and navigation need to be better communicated in the Final EIS (and also the SAMP) and with stakeholders.

Response: The Final EIS contains a description of the types of considerations for mitigating impacts of one-time test releases in Chapter 2.

Representative Quotes (Correspondence ID): 242

Comments (Comment ID): 645583

Concern Statement: USACE should use the communication method of the Water Management Division to communicate with elected officials and local units of governments throughout the basin to report recovery program updates, perhaps once or twice a year. This process should be described in the SAMP.

Response: A description of the Water Management communication process and schedule is provided in the SAMP.

Representative Quotes (Correspondence ID): 242
Comments (Comment ID): 645607

Concern Statement: A number of incomplete sections in the SAMP (especially associated appendices and attachments) hinder a complete and meaningful review of the document.

Response: The Draft SAMP included some sections that were incomplete pending additional discussions with MRRIC work groups. These sections have been finalized for the Final SAMP.

Representative Quotes (Correspondence ID): 3
Comments (Comment ID): 645665

AMP6000 Effects Analysis in Relation to AM

Concern Statement: The need for increased sediment load within the riverine system should be factored into hypotheses addressing life cycle needs of the pallid sturgeon.

Response: Sediment augmentation is considered in Big Questions 4 for the Upper Missouri River, and the associated hypothesis 6, as described in Table 43 of the Draft SAMP and in Appendix C of the SAMP.

Representative Quotes (Correspondence ID): 34
Comments (Comment ID): 628340

Concern Statement: What are the hydrological conditions represented by Hamburg and Lisbon-Jameson bends that make these best suited for pallid sturgeon. Additionally, the best condition for pallid sturgeon larval growth may be on the Mississippi River.

Response: The EA was careful to state that the Hamburg and Lisbon Bends were used as best *available* conditions, not optimal. The interpretation on best available is by comparison with historical measures of channel complexity and availability of shallow, slow water. These sites have more complexity, more variability, and are more like historical conditions. Some relevant information is available in: Jacobson, R.B., and Galat, D.L., 2006, Flow and form in rehabilitation of large-river ecosystems: An example from the Lower Missouri River: Geomorphology, v. 77, no. 3-4, p. 249–269, [Also available at <http://dx.doi.org/10.1016/j.geomorph.2006.01.014>]. And Jacobson, R.B., Johnson III, H.E., and Dietsch, B.J., 2009, Hydrodynamic Simulations of Physical Aquatic Habitat Availability for Pallid Sturgeon in the Lower Missouri River, at Yankton, South Dakota, Kenslers Bend, Nebraska, Little Sioux, Iowa, and Miami, Missouri, 2006-07: 2009-5058, [Also available at <http://pubs.er.usgs.gov/publication/sir20095058>], and cited references.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 643838

Concern Statement: Sediment bypass below Gavins Point Dam should be added to Section 1.4.2 and Table 4 within the umbrella question and related hypothesis.

Response: Sediment bypass did not receive priority ranking for downstream of Gavins Point Dam during the expert-based filtering process; it remains in the conceptual ecological models and the reserve hypotheses Jacobson, R.B., Parsley, M.J., Annis, M.L., Colvin, M.E., Welker, T.L., and James, D.A., 2015, Development of conceptual ecological models linking management of the Missouri River to pallid sturgeon population dynamics: U.S. Geological Survey Open-File Report 2015-1038, 47 p., [Also available at <http://dx.doi.org/10.3133/ofr20151038>]. Jacobson, R.B., Parsley, M.J., Annis, M.L., Colvin, M.E., Welker, T.L., and James, D.A., 2016, Development of working hypotheses linking management of the Missouri River to population dynamics of Scaphirhynchus albus (pallid sturgeon): U.S. Geological Survey Open-file Report 2015-1236, 33 p., [Also available at <http://dx.doi.org/10.3133/ofr20151236>]. The rationale was that sediment for bedload or suspended load did not seem to be limiting (for benthic habitat or for turbidity) in most of the Lower Missouri River, at least downstream of the Big Sioux River. Moreover, calculations of annual sediment loads have shown that the annual load to Lewis and Clark Lake would be a small percentage of the historical load at Yankton (Jacobson, R.B., Blevins, D.W., and Bitner, C.J., 2009, Sediment regime constraints on river restoration: An example from the Lower Missouri River: The Geological Society of American -Special Paper, v. 451, [Also available at <http://specialpapers.gsapubs.org/content/451/1.short>].) A different case could be made for the importance of sediment bypass for emergent sandbar habitats for terns and plovers.

Representative Quotes (Correspondence ID): 183
Comments (Comment ID): 643960

Concern Statement: Assumptions used to develop each model need to be documented and updated as new knowledge is gained from field monitoring and/or research activities.

Response: Comment noted. The current models are fully documented in the effects analysis reports and the human considerations and hydrology and hydraulics technical reports. Model descriptions will continue to be updated as changes occur in the future.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644294

HHTR300 *Hydrology and Hydraulics Technical Report - HEC-ResSim Alternatives*

Concern Statement: Using Garrison Dam as an example, steady releases (for the purposes of not flooding nested birds) would be implemented from May 15 to August 31 as long as the elevation of Lake Sakakawea was between 1,790.6 feet and 1,850 ft. The navigation system storage preclude is defined in the Master Manual as 31 MAF. This equates to an elevation of 1,795 feet on Lake Sakakawea. Elevation at 1,850 feet is the top of the annual flood control zone. It is understood that criteria had to be chosen to simulate reservoir operations, however, operating the system in this fashion puts less emphasis on mitigating floods and drought conditions, and more emphasis on endangered bird species.

Response: In real-time operations, Garrison releases are attempted to remain constant during the summer nesting season to the extent reasonably possible in an attempt to balance the authorized purposes. The decision to increase/decrease releases is made by

Missouri River Basin Water Management on a case-by-case basis. During the calibration of the ResSim model, the listed elevations were used to mimic the decision of when to increase/decrease releases.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645697

RTT100 *Recreation Technical Report: General Comments*

Concern Statement: The recreation evaluation used the unit day value approach, which considers boating recreation as part of the general recreation category, and as a result, there are lower UDV's for boating visitation. Since most of the boating recreation on the upper five reservoirs is also engaged in fishing, the lower UDV is not appropriate. This simplified UDV approach is acceptable for comparing alternatives, but the RED valuation method based on expenditure data should be used when comparing recreation with other interest categories.

Response: The Final EIS recreation evaluation was updated to use a hybrid method to estimate the recreation consumer surplus values based on both the Unit Day Value (UDV) and the travel cost method (TCM) approaches. The UDV method of estimating willingness to pay relies on expert and informed opinion to assign relative values to recreation days based on the quality of recreational opportunities supported by individual recreation areas. The TCM is a revealed preference method of economic valuation that deduces willingness to pay through observing human behavior (i.e., the number and trips and costs per trip to a recreation area). The approach to estimate the consumer surplus recreation values uses the UDV, which is based on USACE guidance and site-specific ratings and activities, but also recognizes that the UDV may reflect a relatively lower estimate of the consumer surplus value for a recreation visitor-day. The UDV guidance (USACE 2017) indicates that the general category should comprise activities such as swimming, picnicking, and boating. However, based on professional judgment and a review of other studies (Loomis 2005; USACE 2002), boating on the river and reservoirs was allocated to a specialized recreation category with a relatively higher value per day than the general recreation activities. The UDV (in 2018\$) was estimated and then proportionally increased based on the difference between the UDV and TCM as estimated in the Recreation Economics Volume 6C of the Master Water Control Manual Missouri River Review and Update (USACE 1994). The "Recreation Environmental Consequences Analysis Technical Report" Section 2.4.3 describes the approaches used to estimate the consumer surplus value of a recreation visitor day.

We have considered the NED, RED, and OSE accounts in the impact assessment. The NED and RED impacts address different topics. The NED and RED results are not used to compare across interests but assess the tradeoffs across the alternatives. The NED looks at the interest for the nation, and the RED analysis has different regions for analysis. The RED results across interests cannot be aggregated and compared because the boundaries are different among the interests and topics.

Representative Quotes (Correspondence ID): 206
Comments (Comment ID): 645150

WSTR100 *Water Supply Technical Report: General Comments*

Concern Statement: The water supply analysis appears to underestimate the size of pumps needed to service intakes when water surface elevations fall below operating conditions. The analysis also does not consider the difficulty of locating and renting pumps in a timely fashion especially if multiple jurisdictions needed pumps of similar size. In addition, not all low water conditions could be solved using submersible pumps. In some cases, utilities may have to lay miles of pipe just to reach the source water. Also, the river channel could migrate away from the intake. The costs of these impacts (other than submersible pumps) need to be considered in the analysis.

Response: The water supply analysis utilized information to match pump size and capacity with intake pumping capacity to determine the size and number of pumps needed to mitigate issues when flows fall below intake operating conditions. Because the management plan alternatives represent a short-term increase in the number of days that flows would fall below operating conditions, the project team applied one approach water supply operators could use to mitigate these type of short term impacts. The project team did some additional research on the use of submersible pumps as credible approach to address short-term, temporary impacts when water surface elevations fall below operating thresholds. There is evidence that intake managers, both small and large have used the approach, either currently or in the past, to address the type of impacts that are modeled under the MRRMP alternatives. While this approach may not be the one that would be used by water supply managers in all cases, there is enough evidence that it may be one approach that would be considered. The project team felt applying this approach for all alternatives provides a way to compare impacts that may occur under the different alternatives which is the objective of the analysis. While applying other approaches may bring the analysis closer to what may happen under actual conditions, including these other measures would not change the ranking of the alternatives. In addition, further analysis of the impact the MRRMP alternatives may have on stages was conducted and described in the “Water Supply Environmental Consequences Analysis Technical Report” in Section 3.1. The analysis showed that stage levels were not impacted under the management alternatives and would not require intake modification beyond what would occur under Alternative 1.

Representative Quotes (Correspondence ID): 32, 38
Comments (Comment ID): 627964

Concern Statement: The frequency of low flow occurrences and the associated costs with mitigating these conditions should be included in the analysis.

Response: The project team provided additional detail on the frequency and season of low flow occurrences under the management plan alternatives in the technical report. Due to privacy concerns, this information is only available upon request from individual water supply operators.

Representative Quotes (Correspondence ID): 40
Comments (Comment ID): 628464

HTR100 *Hydropower Technical Report: General Comments*

Concern Statement: The lack of modeling of the spring sturgeon pulse for Alternatives 3–6 results in errors in the analysis for hydropower. Alternatives 1, 4, and 5 do not use the same operational base.

Response: The description included in this section is intended to describe the alternatives generally and describes Alternatives 4 and 5 as similar to Alternative 1, but it is not meant to imply that those alternatives are using different operational bases than the other alternatives. Alternative 1 is the alternative against which the other alternatives are being compared. The final “Hydropower Environmental Consequences Analysis Technical Report” will include an updated and clarified description of the alternatives analyzed.

Representative Quotes (Correspondence ID): 107
Comments (Comment ID): 644257

HHTR200 *Hydrology and Hydraulics Technical Report - Period of Record Development*

Concern Statement: It is not clear how evaporation was accounted for in the HEC-ResSim model. The data in the report is not consistent with the evaporation plots for Lake Oahe in the Missouri River Mainstem HEC-ResSim Modeling – Mainstem Missouri River Reservoir Simulation Report.

Response: The data in Missouri River Mainstem HEC-ResSim Modeling - Mainstem Missouri River Reservoir Simulation Report is what was used in the ResSim modeling. The figures and text in the Time Series Data Development for Hydrologic Modeling Report will be updated to reflect the text and data in the Simulation Report.

Representative Quotes (Correspondence ID): 1
Comments (Comment ID): 645696

HEC100 *HEC-ResSim Modeling Report: General Comments*

Concern Statement: The MRRMP-EIS should provide further review of hourly flows, incorporate discussion on potentially impacting low flows, and consider impacts in the evaluation of alternatives.

Response: In real-time operations, the Mainstem projects have standing orders issued by Missouri River Basin Water Management that specifies a minimum hourly flow/energy for a set amount of time, which limits the peaking when releases are low. This is done to limit the stage fluctuations in the river reaches, which reduces impacts to intakes. Using a daily average to estimate impacts to intakes should be adequate since there would not be much stage fluctuations at low flows.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643866

Concern Statement: Updates provided on intake elevations at the Heskett Plant should be physically confirmed with the model inputs and confirm that the low flow elevations the model is projecting are accurate when compared with the elevations provided by facility owners for low flow event impacts.

Response: For the portion of the comment pertaining to the RAS model:

HEC-RAS model geometry is based on the best available topographic surveys. All constructed models were calibrated to the same period through 2012. Calibration accuracy within this reach varies by location but is generally within 0.5- to 1-foot accuracy for normal and low flows. Model calibration within the Garrison to Oahe reach

is discussed in the supporting documents, HEC-RAS Calibration Report, which is available online (www.moriverrecovery.org).

The Missouri River is a dynamic system that is changing constantly over the study area, which extend from Ft. Peck dam downstream to the Missouri River mouth at St. Louis. Some areas have experienced continued degradation since 2012 while other areas have experienced aggradation. Regardless, all alternatives were modeled with HEC-RAS using the same geometry and the comparison between the Alternatives is valid.

Local effects on stage due to temporary changes in river conditions, including ice jams, ice cover, and transient sandbar dynamics, are not included within the HEC-RAS model. These temporary effects often cause river stage changes of several feet. However, for the purposes of alternative comparison, including transient effects is not relevant (e.g., the formation of an ice jam has the same effect on all alternatives). The EIS methodology employs an 82-year period of record with current water development conditions to evaluate differences between alternatives. Use of the extensive 82-year period allows for reasonable alternative impact evaluation for a wide range of flow events.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643848

Concern Statement: Use of the 2012 channel geometry to evaluate the impacts of the alternatives has not been proven accurate at low flows at Heskett intake. It appears that the model does not take into account channel changes since the survey was conducted, as well as Oahe Lake effects, within the river reach near Heskett and channel siltation. There is also concern that actual elevations at Heskett intake were not confirmed at the time of the 2012 survey. USACE should confirm whether the model corresponds to flow and elevations outside of the 2012 survey timeframe and make model adjustments accordingly to demonstrate accurate predictions. Additionally, USACE should consider evaluating this for all affected water users and review the model accuracy to consider the consequences of multiple stations along the Missouri River being affected by low releases.

Response: For the portion of the comment pertaining to the RAS model:

HEC-RAS model geometry is based on the best available topographic surveys. All constructed models were calibrated to the same period through 2012. Calibration accuracy within this reach varies by location but is generally within 0.5- to 1-foot accuracy for normal and low flows. Model calibration within the Garrison to Oahe reach is discussed in the supporting documents, HEC-RAS Calibration Report, which is available online (www.moriverrecovery.org).

The Missouri River is a dynamic system that is changing constantly over the study area, which extend from Ft. Peck dam downstream to the Missouri River mouth at St. Louis. Some areas have experienced continued degradation since 2012 while other areas have experienced aggradation. Regardless, all Alternatives were modeled with HEC-RAS using the same geometry and the comparison between the Alternatives is valid.

Local effects on stage due to temporary changes in river conditions, including ice jams, ice cover, and transient sandbar dynamics, are not included within the HEC-RAS model. These temporary effects often cause river stage changes of several feet. However, for the purposes of alternative comparison, including transient effects is not relevant (e.g., the formation of an ice jam has the same effect on all alternatives). The EIS

methodology employs an 82-year period of record with current water development conditions to evaluate differences between alternatives. Use of the extensive 82-year period allows for reasonable alternative impact evaluation for a wide range of flow events.

Representative Quotes (Correspondence ID): 167
Comments (Comment ID): 643858

Attachment 1: Index by Organization

This index is listed alphabetically by organizations that provided comments during the public comment period. Under each organization is a list of the correspondence numbers (shown in blue) associated with the organization, followed by the codes that were used to categorize comments within the correspondence. Commenters not associated with an organization are shown in the category “Unaffiliated Individual” at the end of this index.

1974

[7](#), PN3000

Abrams Clinic University of Chicago Law School

[171](#), EC2500

AGRIServices of Brunswick

[95](#), AL350, EC1500, EC2300, OPP100

AgriVision Equipment Group, Hamburg Store Manager

[13](#), AL750, EC1200, EC2400

Ameren Services

[159](#), AE3000, AL200, AL300, AL350, AMP1300, EC1700, EC2700, EC3000, MT1000

(The) American Waterways Operators

[168](#), AL200, AL250, AL350, AL450, AL550, AL650, AL700, AMP1200, EC1500, EC2300, EC3000, HH1000, ON1000, OPP100, PN10000, PN3000

Audubon Missouri

[163](#), AL200, AL4000, AM1050, MT1000, PN10000

Beckmeyer Farms, Inc.

[211](#), AE700, AL700, AL750, EC1200, EC1500, HH1000, PN10000

Benton-Washington Levee District

[87](#), EC400, OPP100

Callaway County

[83](#), EC1500

Carroll County Commission

[235](#), AL150, OPP100

Central Montana Electric Power Cooperative Inc.

[134](#), AE3000, AL250, AL300, AL5000, AL750, AM1050, AMP1100, EC1300, EC1700, MT1000, SUP100

City of Barnesville Municipal Utility

[100](#), AL350, AM1050, EC1300

City of Jefferson

[86](#), MT1000

City of Nebraska City

230, AL300, EC1200

231, DUP1000

City of Saint Louis

233, AL350, EC0100, EC2800, EC600, EC700, PN10000, RF1000

Coalition to Protect the Missouri River

27, AL250, AL300, AL450, AL550, AL600, AL650, EC1200, EC1500, EC1700, EC1800, EC2300, ON1000, PN10000

65, AL300, AL400, AL500, AL600, AL750, CC1000, EC1200, EC1500, EC1700, EC1800, EC2300, PN10000

150, DUP1000

228, AE1200, AE2300, AL100, AL200, AL300, AL600, AL700, AL750, AL800, AM1000, AMP1000, AMP1200, AMP4000, EC0100, EC1000, EC1100, EC1200, EC1500, EC1700, EC1800, EC2300, EC2700, EC2800, EC3000, EC600, EC700, HH1000, MT1000, ON1000, PN10000

Commercial Sand Dredging Interests

34, AL350, AL5000, AMP1000, AMP1200, AMP6000, EC2300, EC2700, EC2800, PN10000

Consolidated North County Levee District

85, EC1200

Defenders of Wildlife

238, AE100, AL300, AL4000, AL5000, AL700, AM1000, AMP1100, AMP3100, EC100, EC2800, EC3000, EC400, EC600, HH1000, MT1000, PN10000, PN3000, PN8000

Dorist Levee District and Augusta Levee

59, AL700, EC100

Earth City Levee District, Riverport Levee District, Howard Bend Levee District, Monarch Levee Distr

71, AL700

Engemann Bros. Farms

144, AL200, AL400, AL500, AL600, AL700, EC1200, EC1500, PN10000

Environmental Defense Fund

243, EC2500

244, EC2500

Friends of Lake Sakakawea

185, AL350, AMP1300, CC1000

Great Plains Tribal Water Alliance

232, AE3000, AE900, AL4000, EC1900, EC2500, EC2800, EC3000, EC900, MT1000, ON1000, OPP100, PN8000, TC1000, TC3500, TC4500

Great Rivers Habitat Alliance

72, AL200, AL250, MT1000

Halls Levee District

189, AL300, EC1200, PN3000

Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

187, AE3000, AL200, AL350, AL400, AL500, AL600, EC1100, MT1000, PN10000

Holt County Levee District No. 7

217, EC1200, MT1000

Husz Farm Corp

93, AL700, EC1200

Interdisciplinary Environmental Clinic - Washington University in St. Louis

223, AL200, AL300, AL400, AL500, AL4000, AL700, EC2700, EC3000, ON1000, PN3000, PN8000

240, AL200, AL700, CC1000, EC100, EC1100, EC1500, EC2200, EC2700, MT1000, OPP100, PN10000

Iowa Chapter of the American Fisheries Society

147, AE400, AE500, AL300, AL4000, AMP3100, MT1000, PN10000, PN3000, SUP100

Iowa Corn Growers Association

98, AL100, AL200, AL300, AL400, AL500, AL600, AL700, AM1000, AMP1200, EC3000, HH1000, ON1000

Iowa Farm Bureau Federation

161, AL100, AL700, EC2700, PN10000

Izaak Walton League of America (South Dakota, Nebraska, Iowa)

55, AL250, AL300, AL750, AM1050, EC1200, PN10000

(The) Izaak Walton League of America

241, AE3000, AL4000, AL700, AL850, MT1000, OPP100, PN3000, SUP100

242, AE100, AE1300, AE1500, AL250, AL300, AL350, AL400, AL4000, AL450, AL550, AL650, AL700, AL800, AM1000, AMP1100, AMP2000, AMP2100, AMP2200, AMP3000, AMP3100, AMP3200, AMP5000, CC1000, EC0100, EC100, EC1000, EC1200, EC1500, EC1600, EC200, EC2200, EC2400, EC2700, EC300, EC3000, EC400, ED1000, MT1000, ON1000, OPP100, PN10000, PN3000, PN8000

KCP&L

118, AL200, AL300, EC1700

Kansas City Water Services

204, AE600, AE700, AL100, AL150, AL300, AL350, AL550, AL700, EC1200, EC1800, EC3000, EC700, MT1000

Kansas City Water Services Department

39, AL350

Kansas Farm Bureau

109, EC3000, MT1000

Kansas Water office

207, AE100, AL300, AL350, EC2800, PN10000, PN3000

Lewis & Clark Natural Resources District

153, AL350, EC2600

(The) Little River Drainage District

196, AE3000, CC1000, EC2300

Mayor, City of Hamburg

16, AL750

MLM Farms, Inc.

175, AE1200, AL150, AL700, EC1200, PN10000

McNeall Farms Inc.

136, AL200, AL700, EC1500, EC2700, PN10000

MidAmerican Energy Company

164, AE3000, AL200, EC1700, MT1000

Midcontinent Office for the American Waterways Operator

33, AL100, AL300, AL350, AL400, AL500, AL600, AL750, AM1000, AMP1300, EC1500, EC2300

64, AL100, AL300, AL350, AL400, AL500, AL600, AL700, ON1000, PN10000

Mid-West Electric Consumers Association

172, AL300, AL350, AL5000, AM1000, AMP1100, EC1300, EC1700, EC3000, MT1000

Missouri and Associated Rivers Coalition (MOARC)

30, AL300

156, AE1500, AL350, AL4000, AL450, AL550, AL650, EC0100, EC1200, EC3000, EC600, EC700

209, DUP1000

Missouri Coalition for the Environment

62, PN10000, PN3000

63, AL200, AL300, AL350, AL400, AL4000, AL500, AL600, AL700, ON1000

Missouri Corn Growers Association

20, AL700

173, AL200, AL300, AL700, EC1200, EC1500, HH1000, ON1000, PN10000

Missouri Department of Conservation

177, AE3000, AE500, AMP1000, AMP1100, AMP3000, AMP3100, AMP3200, CC1000, EC1600, EC3000, EC400, MT1000, PN3000, PN10000

Missouri Department of Natural Resources

29, AL700, AMP1200, EC2300, PN10000

46, AE2300, AL700, AL750, CC1000, EC2700, PN10000

69, AL700, AMP1200, CC1000, EC1200, EC2700, EC3000, MT1000, PN10000

197, AL100, AL200, AL300, AMP1200, AMP1300, AMP4000, EC0100, EC1000, EC1100, EC1200, EC1500, EC1600, EC2300, EC2700, EC2800, EC3000, MT1000, PN10000, TC1000

Missouri Farm Bureau

12, AL150

66, AE3000, AL150, AL700, EC1000, MT1000, OPP100

154, AE2300, AL100, AL250, AL700, AL850, CC1000, EC1200, EC2700, HH1000, OPP100

Missouri Farm Bureau State Board of Directors

28, AL100, AL250, AL350, AL450, AL550, AL650, AL850, MT1000

Missouri Levee and Drainage District Association

35, AL700, MT1000

36, AE1200, AE3000, EC3000

139, PN3000

142, AL150, AL250, AL550, AL650, EC1200, EC3000

193, AL4000, AL5000

195, AL200, EC1500, EC700

218, EC1200

220, EC1000, EC2600, PN10000

221, AE1200, AL4000, EC1000, EC1200, EC1500, PN10000, PN3000

Missouri Parks Association

178, AL200, AL250, AL300, MT1000

Missouri Regional Advisory Committee

219, AL300, AL350, EC1000, EC600, EC700, PN10000

Missouri River Dredgers Group

222, AE0100, AL300, AL350, AL4000, AL5000, AL700, AL750, AL800, AM1050, AMP1000, BG100, EC1500, EC2300, EC2800, EC3000, HH1000, MT1000, PN10000, PN3000, PN8000

Missouri River Public Water Supplies Association

32, AL350, WSTR100

Missouri Valley Levee District

58, EC1200

Mo Levee & Drainage Dist. Assoc,

132, AL200, AL700, EC1200, EC1500, EC2700, EC3000, OPP100, PN10000

Montana-Dakota Utilities Co.

167, AE1700, AL200, AL300, AL400, AL500, EC1200, EC1700, EC700, HEC100, HH1000, ON1000, PN10000

Montana Fish, Wildlife & Parks

236, AE100, AL300, AM1000, AMP1000, AMP1100, AMP1200, CC1000, EC400, MT1000, ON1000, PN10000, PN3000

MRPWSA

216, EC0100, EC1200, EC1500, EC2700, EC2800, EC600, EC700, PN10000, RF1000

Mumm Law Firm

17, EC0100, EC1200, OPP100

(The) Nature Conservancy

148, AL300, AL5000, AL700, AMP2100, EC200, MT1000, ON1000, PN10000, PN3000
229, AL300, AL5000, AL700, AM1000, AMP3100, BG100, EC200, MT1000, ON1000, PN10000, PN3000

NE Chapter of the American Fisheries Society

149, AL200, AL250, AL300

NE Department of Natural Resources

160, AL300, AMP1300

NeDNR

4, ED1000

Nebraska Chapter Sierra Club

181, AL4000, MT1000, ON1000, OPP100, PN10000, PN8000

Nebraska Game and Parks

237, AE100, AE3000, AL200, AL4000, AL700, AM1000, AMP1200, EC100, EC2800, PN10000, PN3000

Nebraska Public Power District

106, DUP1000
107, AE300, AL100, AL200, AL250, AL300, AL350, AL400, AL4000, AL500, AL5000, AL600, AL700, AL800, AM1050, AMP1000, AMP1100, AMP1200, AMP1300, AMP2100, AMP2200, AMP3000, AMP3100, AMP6000, BG100, CC1000, EC100, EC1300, EC1700, EC200, EC2700, EC300, EC700, ED1000, HTR100, PN3000, PN8000

Nebraska Wildlife Federation

45, AL200, AL250, AL750
179, AE100, AE1200, AE400, AE500, AE3000, AL200, AL250, AL300, AL350, AL4000, AL5000, AL700, AL750, AL800, AMP3100, AMP3200, EC1600, EC2200, EC2700, EC3000, MT1000, ON1000, PN10000, PN3000

North Dakota State Water Commission

25, AMP1000, CC1000

Oglala Sioux Tribe Water Resource Department

57, TC1000, TC3500, TC4500

OLN Tribe

9, ON1000

Prairie Hills Audubon Society

180, AE3000, AL200, AL350, AL4000, AL5000, AL700, SUP100, TC1000

Responsible River Management

80, EC200, MT1000, OPP100, PN3000
135, AE1200, AE3000, AL200, AL700, EC1200, EC2700

Reveaux Levee District President

127, AE1200, AL350, AL550

129, DUP1000

River User

1, EC1200, OPP100

Sierra Club

48, AL200, PN3000

Sierra Club

131, AE2200, AE3000, AL200, AL300, AL400, AL4000, AL500, AL600, AL700, AMP3100, EC1000, EC2700, EC2800, EC600, MT1000, ON1000, PN10000, PN3000

Sierra Club/ Kansas City Area Transportation Authority

24, AL250

Sierra Club Iowa Chapter

190, AE700, AL250, AL350, AL750, AL4000, EC100, EC200, EC2800, EC300, EC400, MT1000, PN3000, SUP100

Sierra Club - Kansas Chapter

31, AL200, EC500, MT1000, PN10000

Sierra Club Missouri River Grassroots Network

73, AL250, EC2800, PN3000

76, EC100, EC1600, EC400, MT1000

166, AE600, AL100, AL200, AL300, AL400, AL4000, AL500, AL600, AM1000, AMP3100, CC1000, EC100, EC1000, EC1200, EC2200, EC2500, EC2700, EC2800, EC400, MT1000, ON1000, OT1000, PN10000, PN3000, RF1000

Sierra Club - Nebraska Chapter

14, AL250, EC400, EC500

Sierra Club, Audubon, Nature Conservancy

81, AL250, AL4000, AL5000, EC100, OPP100

SIMPCO

212, AL300, AL350, AL5000, AL700, AL750, AM1050, EC400, MT1000

Sioux City

205, AL100, AL300, AL4000, AL700, EC0100, EC100, EC1200, EC1500, EC2800, EC600, EC700, MT1000, ON1000, PN10000, PN3000, RF1000

South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

206, AE3000, AL200, AL300, AL500, AL4000, AL5000, AM1000, AM1050, AMP1000, AMP3100, AMP3200, AMP4000, EC1200, EC1300, EC1600, EC2800, EC3000, EC400, EC700, EC900, HH1000, MT1000, PN10000, PN3000, RTT100

South Sioux City, Nebraska

194, AL300, AL350, AL700, AL850, AL5000, AM1050, MT1000

Southwest Water Authority

213, EC3000, PN10000

Standing Rock Sioux Tribe

10, TC1000, TC4500
26, TC3500
94, AL5000, EC1900, MT1000, TC1000

Stanley County Commissioners

56, EC1200

State of Iowa

224, AE500, AL300, AL350, AM1000, AMP1000, AMP1200, AMP1300, AMP3100, EC1300, EC1700, EC3000, EC600, PN3000

State of North Dakota

96, AE0100, AL350, AL500, AMP1300, CC1000, EC0100, EC1000, EC1600, EC2700, EC600, EC700, ON1000, PN10000, PN8000
239, AE0100, AE1100, AE1400, AE1500, AE1600, AE2100, AE2300, AE600, AE700, AL100, AL300, AL5000, AL600, AL700, AL750, AM1000, AMP1200, AMP2000, CC1000, EC0100, EC100, EC1100, EC1200, EC1300, EC1400, EC1500, EC1600, EC1800, EC200, EC2500, EC2700, EC2800, EC300, EC3000, EC400, EC700, EC900, ED1000, ON1000, PN10000, PN3000, PN8000

State of Wyoming

158, AL350, AMP1000, CC1000

St. Joseph Regional Port Authority

11, AL150

Tri County Levee District

140, AL200, AL4000, AL700, EC1200, EC1500, EC2700, OPP100, PN10000

UMIMRA

145, AL200, AL350, AL700, AM1000, AMP1200, EC1200, EC1500, EC2300, ON1000, OPP100

WaterOne

37, AL200, AL300, EC700, PN10000
38, EC700, WSTR100
40, AL300, EC600, EC700, MT1000, WSTR100
122, AE3000, AL350, EC2700, EC2800, EC600, EC700, HH1000, MT1000, OPP100, PN10000
182, DUP1000

Waterways Council, Inc.

176, AE1500, AE2300, AE3000, AL200, AL300, AL350, AL700, AMP1100, CC1000, EC100, EC1200, EC1500, EC2300, EC2400, EC2700, EC3000, HH1000, MT1000, ON1000, PN10000

West Pottawattamie County Farm Bureau

19, EC0100, EC3000, OPP100

United States Department of the Interior

183, AL200, AL300, AL4000, AL5000, AL700, AL750, AM1000, AMP1000, AMP1200, AMP3000, AMP3100, AMP6000, CC1000, EC400, ED1000, MT1000, ON1000, PN10000, PN3000, PN8000, SUP100

United States Environmental Protection Agency Region 7

184, AL800, EC2700, EC3000, ON1000, PN10000, PN3000, SUP100

USDA/Natural Resources Conservation Service

186, AE1400, EC1000, EC1400, EC700, ED1000, MT1000, PN10000, SUP100

215, DUP1000

Unaffiliated Individual

2, MT1000

3, MT1000

5, AL550

6, MT1000, ON1000

8, OPP100

15, AL150, AL350, AM1000, EC1200, EC1300, EC3000, MT1000, ON1000

18, EC3000

21, AL4000

22, EC1200

23, AL200, AL350, AL850, EC2200, ON1000, PN3000

41, AL250, AL300

42, AL200, AL300, AL4000, AL700, ON1000, PN3000

43, MT1000

44, MT1000, PN10000

47, EC3000, OPP100

49, AE200, AE300, OPP100

50, AL200, AL300, AL650, EC400, PN10000, PN3000

51, AE0100

52, AL5000, AL850, EC200, EC300

53, AL850, MT1000, OPP100

54, EC1200, OPP100

60, AE3000, AL750, MT1000, PN10000

61, AL700

67, EC3000

68, AE1200, AE3000, AL4000, AL700, MT1000

70, EC3000, EC600, MT1000

74, AL250, AL450, AL550, AL650, MT1000

75, MT1000

77, AL200, AL250, AL350, EC2200, ON1000

78, AL200

79, AL350, EC3000

88, AL250

89, PN3000, PN8000

90, EC1200, EC3000, MT1000, ON1000, PN10000

91, AL350, AL650

92, EC1200

97, AL250, AL800, EC100

99, MT1000

101, AL200, EC1200, EC2700, PN10000

102, EC3000

103, AL300, AL4000

126, AL750, EC3000, PN10000

128, AE100, AL4000
130, AL200, AL700, EC1500, EC2700, EC3000, PN10000
133, AL750
138, AL700
141, AL200, AL250, AL350, SUP100
152, MT1000
157, AL250, AL4000, AL5000
162, AL200, AL4000, AL5000, AL700, MT1000, RF1000
188, EC1200
191, AL350, AL4000, AL5000, AL700, AM1000, AMP1100, AMP3100, AMP3200, EC100, MT1000, OPP100, PN3000
192, AL300, AL350, AL4000, AL5000, AL750, EC0100, EC1200, EC400, MT1000, ON1000, PN10000
203, AE3000, MT1000
214, AL350, SUP100
225, AE3000, AL4000, EC100, EC2700, MT1000, ON1000
227, AL750, EC1200, EC3000
234, EC1200
245, AL100, AL700, AL800, AM1000, AMP3100, AMP6000, EC100, MT1000
246, AL700, EC1200, EC3000
247, AL350, EC1200

Attachment 2: Correspondence Received on the Draft EIS

Correspondence: 1

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 01/13/2017	Date Received: 01/13/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

It is of grave concern for the entirety of the Missouri River Valley that I write this note regarding the Army Corps of Engineers proposed changes for the Missouri River to aid in the propagation of the pallid sturgeon and any other Endangered Species by increasing the length or intensity of flow events. ANY increase in the flood constraints by the corps will have lasting and compounding effects to all users of the great Missouri River. There should be no change in regards to the length or intensity of flow events or pulses by the Corps. If changes are made that could very well result in the reduction and/or elimination of thousands of acres of agriculture lands. In addition, some levee districts do not have the ability to pump water, increasing the flood constraints will increase the susceptibility to flooding that those areas will face. The river changes greatly with rainstorm events in very short periods of time as it is, if the length or intensity of flow events increases, and then a rainstorm event happens there will not be any where for the water to go but to flood communities and farm grounds in its path.

Correspondence: 2

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/13/2017	Date Received: 02/13/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

The river should be managed for these priorities:

- #1 Flood Control
- #2 Consumption; domestic use and irrigation
- #3 Navigation

Correspondence: 3

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/13/2017	Date Received: 02/13/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

The river should be managed for:
#1 Flood Control
#2 Consumption; domestic use and irrigation
#3 Recreation
#4 Navigation

Managing for endangered species should not supersede the other uses and commitments made when the dams were built.

Correspondence: 4

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/13/2017	Date Received: 02/13/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

In the Table 3-211 on Page 3-465, the four power plants located from river mile 532.6 to 645.9 should be moved up so they are listed under the "Gavins Point Dam to Rulo" heading for river reach.

Correspondence: 5

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/14/2017	Date Received: 02/14/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Sir, I would be interested in placing my support with Alternative 5, that increases autumn flows supporting migrating waterfowl. It is sad to have such a beautiful resource so close, but to be so short sighted about it's potential for recreational use. Thank you.

Correspondence: 6

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/17/2017	Date Received: 02/17/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Why don't you try having the public meeting on a day that people will come. Nice try having it on Valentines day! How stupid do you think people are? I am so sick of hearing about the piping plover. I don't care anymore about that then you people do for flooding peoples farms. Maybe you shouldn't be planning your next disaster until you go to court over the last one.

One thing that might help these animals you care about so much is cleaning up the Desoto refuge from all the debris that floated in during the flood. Our property sits next to it and we hauled 3 tons of metal salvage, 1 of aluminum, tons of trash and still cleaning up the dead trees. No one seems worried about the animals there. They were to busy suing an elderly man for growing a row of asparagus down by Boyer Chute. You people need to get your priorities straight and start thinking about how you impact human lives.

Below where it asks how I heard of this document you need to have pissed off people as one of your selection options.

Correspondence: 7

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/24/2017	Date Received: 02/24/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Good Afternoon,
I am Scott Albers and work for Nor-Am Cold Storage in St Joseph, MO. We are a Public Refrigerated Warehousing company and have facilities in the Stockyards Industrial area of St Joe. We want to voice our concern over the changing in priorities regarding the flows/levels of the Missouri River. We love wildlife, but not at the expense of our employees, customers and property. These are some of the facts for a small family owned company.
90 employees in St Joe
\$20m investment in facilities
In the flood of 2011 we incurred well over \$300k in flood fight costs and our employees lost wages. We also risk the Rosecrans Airport and the Air Guard wing that is housed there. The airbase has a significant economic impact \$160m annually for St Joe surrounding area. We can not afford to lose the base due to flooding and permanently moving. We need to protect this area and can not have endangered species trump human well being when we are talking the levels of the Missouri River.

If you wish to discuss further please don't hesitate to call me directly.
Thank you for your consideration.

Correspondence: 8

Correspondence Information


Status: Reviewed	Park Correspondence Log:
Date Sent: 03/01/2017	Date Received: 03/01/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I own property at Big Lake, Missouri and was negatively impacted by previous planned flooding of this area in 2011 and prior years. The intentional actions of the Corp. caused extreme economic hardship to many people in Holt County, Missouri. Therefore, I object to any actions by the Corp which would cause intentional flooding in this area.

Correspondence: 9

Author Information

Keep Private: No
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Correspondence Information


Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/08/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Park Form
Notes:

Correspondence Text

Acknowledge speakers and sign in today. Hearing on 2/8/17. Verbal written statements. Send second Tittle to all tribes.
You can not flood our lives! Or buy it.
You/we need more time than April 24th.
You need to come to community/reservation to discuss, etc.
You have money for travel. We don't!
What are you doing about Trump abolishing the NEIPA process?
Why isn't catastrophies includes, etc.
This is only a few questions.

Correspondence: 10

Author Information

Keep Private: No
Name: Bryanne Durkee
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Correspondence Information


Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/08/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Park Form
Notes:

Correspondence Text

- 1) More emphasis on Tribal Consultations. Tribal cultural property surveys need to be done as well as archeological surveys
- 2) "Rip-rapping" of Tribal areas to preserve 1620 line.
- 3) Actual consideration of Tribal interest. Not leading the tribes on like you are willing to work with us, then choosing to do nothing to help conserve our lands
- 4) Understanding that cultural interests are just as important as the 3 endangered species when it comes to the environment. The environment shapes the traditions of the people living within it. Remember this please.
- 5) Socio-economic is not just statistics, formulas, and numbers, it is people. How thoroughly have you considered impacts to people? Stop assuming. Go right to the source.
- 6) How will spring/fall pulse affect the intake systems with silt increases and inundation?
- 7) Who are the 29 stakeholders?
- 8) 29 tribes have a right to consultation. Please fix this.

Correspondence: 11

Author Information

Keep Private: No
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Correspondence Information


Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/15/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Park Form
Notes:

Correspondence Text

Leave the alt the same. Select #1.

Correspondence: 12

Author Information

Keep Private: No
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Organization: Missouri Farm Bureau ;  Member
Organization Type: O - Civic Groups
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USA
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Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/15/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Park Form
Notes:

Correspondence Text

After review of the alternatives presented, I can not support any option. I find the Fish and Wildlife Service is asking the USACE to abandon priorities of flood control, navigation, and water supply availability to do the management experimentation of the FWS.
USACE responsibility to not unnecessarily damage threatened species do not present the responsibility to save all endangered species at the peril to other responsibilities.
Thank you for this opportunity to comment.

Correspondence: 13**Author Information**

Keep Private: No

Name: Jon Graves

Organization: AgriVision Equipment Group, Hamburg Store Manager  Official Rep.

Organization Type: B - Business

Address: N/A
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USA

E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:

Date Sent: Date Received: 02/14/2017

Number of Signatures: 1 Form Letter: No

Contains Request(s): No Type: Letter

Notes:

Correspondence Text

Dear HQ, United States Army Corp of Engineers:

AgriVision Equipment Group, LLC is a John Deere agricultural dealership with 10 locations serving customers in Iowa, Nebraska, and Missouri. Two of these locations are in the Missouri River valley and are located along I-29 near Pacific Junction and Hamburg, Iowa. The history of AgriVision Equipment serving customers along the Missouri River dates back to more than 75 years when the Athen family purchased the John Deere franchise in Hamburg, Iowa. Today the two locations along the river have approximately 70 employees engaged in selling and servicing John Deere equipment to local farmer customers.


The proposed changes in the management of the Missouri River will have 2 key effects to our business, employees, and communities. First, higher river levels in the Spring will hinder the ability for farmers to plant crops in a timely manner and potentially prevent planting of many acres at all. Reduced yields and acreages will create less profitable farming operations ultimately reducing the needs of local farmers for equipment and services provided by AgriVision Equipment and its employees. The second effect of a higher Spring rise of the Missouri River is the risk of flooding. The Hamburg and Pacific Junction locations were forced to move out of their facilities in 2011 at an astounding financial burden. Flood protection needs to also be a consideration in the operation of the Missouri River.

The ability of farmers in the Missouri River valley to produce crops at a profitable level are paramount to the economies of all of the communities along the Missouri River. AgriVision Equipment would ask that when considering how to manage the Missouri River that economic impacts to farmers and communities and even the possibility of loss of human lives along the river be taken into serious account.

Sincerely,
Jon Graves

Correspondence: 14

Author Information

Keep Private: No
Name: Clyde L. Anderson
Organization: Sierra Club - Nebraska Chapter ;  Member
Organization Type: P - Conservation/Preservation
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E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/14/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Park Form
Notes:

Correspondence Text

I believe Alternative 2 because it best protects endangered species and their habitats. The Alternative 2 should also consider other species that are approaching endangerment because of MO River management as well as non-native species that are invading the MO River ecosystem like the Asian carp.

Correspondence: 15

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent:	Date Received: 02/14/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Park Form
Notes:	

Correspondence Text

Option #1 or Option #3 would be least offensive to those who live and farm close to the Missouri River. Why should a bird or fish be more important than the lives of people?
You must take into consideration how you may increase the cost of planting, harvesting, and the cost of utilities (mid-American Energy) costs (SIRE - Southwest Iowa Renewable Energy).
It has occurred to many that you are trying to put farmers out of business completely. These are families!
2 Rises which would put crops at risk do not take into consideration natural weather conditions. Please don't forget the human element!
How does the Corps prove that these Rises actually help? You are polluting the River by dumping soil back into the river. This also raises the river.
These birds and fish exist in other areas.
Navigation should be considered.
Valentine's Day!?
This site was very difficult to find. I am not familiar with UNO - signage was bad.
Please consider the people who live and make a living along the river.

Correspondence: 16

Author Information

Keep Private: No
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Correspondence Information


Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/14/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Park Form
Notes:

Correspondence Text

When developing these plans, I know USACE try to balance between environmental, recreation, and farming communities. What percent is each master given, regarding flood protection?

Correspondence: 17

Author Information

Keep Private: No
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Organization: Mumm Law Firm  Official Rep.
Organization Type: B - Business
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USA
E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/13/2017
Number of Signatures: 4 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

RE: Damage to recently repaired levees

To whom it may concern:

We, the Trustees, of the Pigeon Drainage District #2, Sub 1, Sub 2, and Sub 3 are writing this letter to serve as our written objection to the Army Corp of Engineer's plan to create an artificial rise of the Missouri River in Spring of the upcoming years. This is in a manner that is inconsistent with historical flooding of the Missouri River and in a manner, that will jeopardize the work the Drainage District has done since the unprecedented flooding of 2011.

Historically, when the Missouri River rose it would recede as quickly as it came up, however the Army Corp is proposing that the river raise at least nine (9) feet for more than thirty (30) days. In our opinion, as persons from farming families who have been in the area for multiple generations, this is not replicating historical flood data, rather simply allowing the Army Corp an opportunity to further their own agenda in repopulating birds.

The Drainage District has worked very hard, to the burden of the tax payers within the district, since 2011 in an effort to restore and repair the levee system that was damaged in 2011. Currently the data states that the levees would be able to withstand a rise to twenty-seven (27) feet. However, there is no question that extended flooding at that level would compromise the integrity of the recently repaired levees. Once again, forcing unnecessary burdens and risks on the people living and farming within the Drainage District.

Therefore, we as the Board of Trustees for the Pigeon Drainage District #2, Sub 1, Sub 2, and Sub 3 are sending this written objection to the Army Corp of Engineers prior to this disastrous decision making course being taken.

Very truly yours,

Ashley N. West
Frank Moran
Dale Rief
Roger Clark

Correspondence: 18

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent:	Date Received: 02/14/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

My answer to the possibility to the Spring rise and fall rise, is we don't know if it is going to do any good for the fish and wildlife. The only thing that we know is if it's going to cost the tax payers up and down the river a lot of money. Because they can't get crops planted or harvested.

If your employee calls you up and told you that you can only receive 30% of your money.

I am an environmentalist, I like fish and wildlife too, but we need to have a happy medium, it can't be all one way.

Several years ago we had a high fall rise, and it probably cost me \$100,000+ lost revenue and machinery repairs. I have supported the Corp but this is getting completely out of hand. We could have another 2011. I do hope you will consider this!

Thank you.

Max Peeler

Correspondence: 19

Author Information

Keep Private: No
Name: Mike Schropp
Organization: West Pottawattamie County Farm Bureau  Official Rep.
Organization Type: O - Civic Groups
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E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/13/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

The West Pottawattamie County Farm Bureau appreciates the opportunity to comments on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

The Missouri River serves as an important asset to farmers, landowners, businesses and communities along the river.

Altering the flow will have negative effects on drainage and infrastructure near and far from the river. This is clearly evident from the 2011 flood where the effects are still a problem from a fiscal and hardship issues. Several drainage and levy districts are concerned about the tax levy's that were added to property taxes on the repairs to levy's and drainage districts might happen again. Also, everyone is worried about structural integrity of levy's since the 2011 event. Many of the fish, birds, habitat and infrastructure that you were trying to save were devastated. We feel the management of the river for flood control and drainage should be upmost importance.

Farm Bureau policy opposes any plans by the U.S. Army Corps of Engineers or any federal or state agencies that would alter the flow levels of the Missouri or any river and would adversely affect domestic water supplies, drainage, irrigation and transportation, that would cause traffic bottlenecks on the Missouri or any navigable river and take private property without compensation. We also oppose the dumping or designed erosion of soil into waterways.


Farm Bureau will be reviewing the Draft Missouri River Recovery Management Plan and Environmental Impact Statement with respect to this policy. Farm Bureau will be coordinating this review and final comments with other agricultural organizations and state government.

Thanks again for the opportunity to provide these preliminary comments.

Sincerely,
Mike Schropp

Correspondence: 20

Author Information

Keep Private: No
Name: N/A N/A
Organization: Missouri Corn Growers Association  Official Rep.
Organization Type: O - Civic Groups
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Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/16/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

The Missouri Corn Growers Association (MCGA) represents the interests of corn farmers from across the state of Missouri. Many of those growers live and work in the Missouri River bottoms. Over the years, we have consistently advocated for the prioritization of flood control and navigation when it comes to Missouri River management.

The Draft Environmental Impact Statement out for comment contains six alternatives. Unfortunately, all six alternatives contain some level on increased flood risk via a spring rise. This runs directly contrary to the Corps flood control mission. In addition, there continues to be zero science that supports a spring rise and its benefit to pallid sturgeon.

MCGA has never wavered in its opposition to the spring rise as a management tool. Though alternative three has less commitment to the rise, it still unfortunately leaves the door open. As mentioned before, science has failed to support a spring rise and therefore it should not be a component of any of the alternatives. We must not increase the risk of flooding during this critical time of year, planting season.

MCGA is encouraged the comment period has been extended for the draft DEIS, and looks forward to submitting more extensive comments on the proposals.

Correspondence: 21

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent:	Date Received: 02/16/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Park Form
Notes:	

Correspondence Text

What are you doing to develop overall natural river, riparian habitat to help the pallid sturgeon? The IRC and spawning areas seem to require ongoing maintenance. What are you doing for ongoing natural habitat for adult pallid sturgeon?
Why are you not emphasizing acquiring more acres to restore the river?

Thank you.
Caroline Pufalt

Correspondence: 22

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 03/07/2017	Date Received: 03/07/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I own a house at Big Lake Mo. We were flooded in 2010 and 2011 by the corp of engineers. The river levels in the spring were too high (major release of water from Gavins dam). We only received a few inches of rain just north of us and then we were flooded.
I would think after 2011 when the corps caused so much damage that I would not see what is happening in 2017.
Down stream does matter. Flooded land in Missouri does matter.

Correspondence: 23

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 03/09/2017	Date Received: 03/09/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I favor Alternative 2 (even though flawed) and here's why:

1. Alternative 2 is best, but needs changes. It provides the best opportunities for recovery of the three species. It provides adaptive management over time. Alternative 2 includes recognition of the importance of connections to floodplains and includes the option of acquiring increased acres for habitat and mitigation. Alternative 2 is the best option to move toward a more natural river which is good for the three targeted species as well as other fish and wildlife species. The Corps incorrectly sets the cost of Alternative 2 as too high. The Corps has included too much mechanically created habitat in Alternative 2 which unnecessarily raises its cost. Also the Corps does not consider the environmental services that would be provided by additional habitat acres over the years. Those services include flood risk reduction and recreation.
2. The Corps' preferred alternative, Alternative 3, is the worst of the choices. It relies only on manual, artificially created habitat which would require indefinite work and maintenance. Alternative 3 would lock the Corps into a substandard, costly plan. The Corps wants to be a zookeeper along the river, instead of creating a more natural river.
3. The Corps should create a reasonable range of alternatives as required by law.
4. The DEIS document should be subject to independent scientific review.
5. We should protect endangered species by restoring a more natural river for all fish and wildlife.

Thank you.
Sarah

Correspondence: 24

Correspondence Information


Status: Reviewed	Park Correspondence Log:
Date Sent: 03/11/2017	Date Received: 03/11/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Alternative 2 is our best choice for our endangered species, the corp. Says it's too expensive, but only because they have included too much mechanically altered habitat. The extra land purchased would pay dividends for years to come through flood control, recreation, wildlife habitat,

Correspondence: 25

Author Information

Keep Private: No
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 Organization Type: S - State Government
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Correspondence Information

Status: Reviewed Park Correspondence Log:
 Date Sent: Date Received: 02/08/2017
 Number of Signatures: 1 Form Letter: No
 Contains Request(s): No Type: Transcript
 Notes: Transcript from the public meeting in Bismarck, ND (Bismarck State College) on 2/8/2017

Correspondence Text

Good evening. Welcome to North Dakota. My name is Garland Erbele. I'm the North Dakota State Engineer and Chief Engineer at the State Water Commission.

Thank you for coming to Bismarck to take comments on the Missouri River Recovery Management Plan and Environmental Impact Statement. The State Water Commission in coordination with other state agencies is in the process of reviewing the 500,000

- - 5,000 pages of EIS and supporting documents. Therefore, we appreciate the extension to the comment period as it will greatly aid in our providing thorough comment and review to the Corps.

At this point, I must stress its importance the Corps working with the state through the implementation of adaptive management of Missouri River Recovery Program. We have serious concerns with respect to potential changes in the Master Manual. The EIS includes alternatives with several flow-of-management actions that would deviate from the current Master Manual. The Adaptive Management Plan adds another layer of uncertainty due to its lack of sideboards and vagueness in how the states would be involved in the decision-making process if the Master Manual were to change.

For these high-consequence decisions, there needs to be an avenue for direct consultation with experts from various state agencies who understand their authorities and responsibilities, know what questions to ask, and can recognize concerns. This is necessary to ensure that the federal government complies with state regulations and does not do something that significantly, adversely impacts the states and their right to manage natural resources within their borders.


In order to alleviate these concerns, these need - - there needs to be a guarantee in the Adaptive Management Plan that if any actions are proposed to occur outside the conditions of the Master Manual, the Corps will consult with states before making any substantive modifications, apart from MRRIC, Fish and Wildlife Coordination Act, and the Annual Operating Plan process. State representatives on MRRIC are striving to reach consensus on language to be included in the Adaptive Management Plan that articulates this stipulation.

Also of significant importance is a continuation of annual consultation with the North Dakota Emergent - - Interagency Emergent Habitat Sandbar Team. This consultation has occurred for several years and allows discussion of recovery program management actions planned in North Dakota for the coming year. This annual meeting has greatly improved communication between the Corps and North Dakota. It is expected this annual consultation will continue during future implementations of adaptive management.

We look forward to working with the Corps to improve the Missouri River Recovery Management Plan and Environmental Impact Statement and appreciate your consideration of our comments. Thank you.

Correspondence: 26

Author Information

Keep Private: No
 Name: Shirley Marvin
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 Organization Type: Q - Tribal Government
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 USA
 E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
 Date Sent: Date Received: 02/08/2017
 Number of Signatures: 1 Form Letter: No
 Contains Request(s): No Type: Transcript
 Notes: Transcript from the public meeting in Bismarck, ND (Bismarck State College) on 2/8/2017

Correspondence Text

Okay. All right. I'm Shirley Marvin. I'm an enrolled member of the Standing Rock Sioux Tribe. And I'm also the chairperson for our commission on elderly people, and that amounts to about 400 people on the reservation.

I came up here intending to listen with a good heart to everything that was said. And right off the bat, this gentleman upset me because the Corps has no right to give away my water or my land. You are only here to manage that for us. You do not own it and you cannot give it away. If you don't believe me, this document says so; it's the Treaty of Fort Laramie.

And this document was signed by over 15 tribes. Then why is only Standing Rock here? The other tribes have something to say too, and they will be talking. I could let - - read off all the identifying names for the tribes that signed this treaty. And it's still in place. We live by this treaty. It's called a treaty of peace, because when we signed this, we intended to live in peace.

Except that made us wonder what happened here recently. People were shooting at us. You know what happened. You seen it on TV every night. So that really puts us in a dangerous position because within our treaty, it says, "From this day forward" - - and that is April 29, 1868, "From this day forward, all war between the parties to this agreement shall forever cease. The Government of the United States desires peace, and its honor is hereby pledged to keep it. The Indians desire peace, and they now pledge their honor to maintain it."

If bad men among the whites or among their people - - other people subject to the authority of the United States shall commit any wrongdoing upon the person or property of the Indians - - and that means our water and our land - - the United States shall, upon proof, made to the agent forwarded to the Commissioner of the United - - of the Indian Affairs at Washington City, proceed at once to cause the offender to be arrested and punished according to the laws of the United States, and also reimburse the injured person for the land - - for the land that was destroyed.

If bad men among the Indians shall commit a wrong or depredation upon the person or persons on any one white, black, or Indian, subject to the authority of the United States and at peace herewith, the Indians herein named solemnly agree that they will, upon proof, made to their agency and agent and notice by him deliver up the wrongdoing to the United States.

So here's a section of this treaty that provides us the peace that we were going to keep. It makes it pretty damn hard when you're shot at with rubber bullets that can kill a person. We went through it all. And now people are jumping in saying, Well, if it's in our border - - we signed this in peace. And if we're going to maintain our peace, then you have to maintain it too.

And just because we're in trouble with it right now doesn't mean that you're going to jump in and take it away from us because I want to remind you, there's between 17 and 18 tribes that signed this. And they all have a right to come in here and be heard. You said you have attorneys here. Do you believe that, that the other tribes should be here; or was this just for us? You know very well it belongs to all the tribes, and they will be here. And you're going to have to answer to them, not just me.

And you - - you talked about the pallid sturgeon and these other two birds for the last 20 years. I worked for Lower Brule 20 years ago. We talked with the Corps of Engineers about these birds and these fish. 20 years ago, we were worried about them; and you're still working on it, for heaven's sakes. It must have been more fish or more birds than you thought.

So I'm - - I'm angry because I remember what my parents went through, my grandparents. Some of you don't even know where you came from. You're still looking for your grandparents. You still want to know who they are. Every day on TV I see, Oh, I'm looking for my grandmother, and I just found out she comes from eastern Europe. And you people don't even know where you come from. And, yet, now you want to go out and take the rest of our land and our water. That's not going to happen.

And remember, we voted up here too. We voted up here in North Dakota. And there's a lot more tribes here than me, than Standing Rock. So you had better do some thinking because I'm not going to keep quiet, and I'm going to take more than three minutes because everybody else had more than three minutes. So I'm taking my three minutes the way I want to.

So you can tell yourselves that. Is she just an old woman? She doesn't know. Might be an old woman, but I know where I come from. I know who my people were and are.

COMMANDER HENDERSON: Ms. Marvin, I'm granting you the privilege and respect for using the extended time. I would ask that you reciprocate that respect by focusing on the topic here and being respectful for everybody in the audience.

MS. MARVIN: I have a right to - -


COMMANDER HENDERSON: You do.

MS. MARVIN: But when someone comes up here and talks about taking away my land and my water, he could have the respect to come to our tribes if he wanted to say something about it. So that works both ways.

Thank you.

Correspondence: 27

Author Information

Keep Private: No
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Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: Date Received: 02/15/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Transcript
Notes: Transcript taken from the public meeting in Kansas City, MO on 2/15/2017.

Correspondence Text

MR. ENGEMANN: Good evening. My name is Dan Engemann, D-A-N, E-N-G-E-M-A-N-N. I serve as executive director of the Coalition to Protect the Missouri River. The Coalition is made up of a variety of interests and supports the congressionally authorized purposes of flood control, navigation, water quality and water supply. We also support endangered species recovery.

We appreciate the opportunity to comment on the Draft Environmental Impact Statement of which several of our members and I have been heavily involved in as part of the MRRIC process.

Of the six alternatives presented to us for review and comment, the Coalition supports a mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to alternatives 2, 4, 5 and 6.

Low summer flow provisions in alternative 2 will cause great harm to the navigation industry by creating a split season on the Missouri River and adversely affecting navigation flows on the middle Mississippi River. It has the potential to negatively impact water and sewer treatment plants, as well as power plants, creating problems with intakes and increasing the risk of failure to comply with conditions of discharge permits.

Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Regarding alternative 6, our members do not support the implementation of a full bi-modal release because of the risks to flood control and impacts to interior drainage.

We believe the Corps' preferred alternative 3 strikes a better balance between the human interests and species recovery. However, our members are concerned about the potential for flooding and impacts to interior drainage as part of a one-time flow test included in this alternative.

The Coalition supports eliminating the current bi-modal spring rise from the preferred alternative because no science has been developed to prove its value.

We applaud the Corps for their commitment to study the linkage between tributary flows and pallid sturgeon recovery. However, we question how the Corps can keep such an option "on the shelf" for nine to ten years in the future as part of this alternative, knowing that river conditions can change during this time, making human consideration effects difficult to monitor. We're concerned that this one-time flow test could be part of a permanent flow regime.

Flow rises in other alternatives raise questions about implementations, as those actions require amending the Master Manual. We oppose such revision because the time involved, the risk to the species and the potential for litigation during which time the species could decline even further. Should the Corps choose something other than alternative 3, the process for creating flow changes needs to be clear to stakeholders and be aligned with the Master Manual.


For the same reasons, any adaptive management actions could cause concern. Whenever new actions are proposed or existing actions are modified, including those outside the Record of Decision, they must be subject to thorough review, including public comment and EIS impact assessments and be in compliance with the Master Manual.

The Coalition to Protect the Missouri River will be offering comprehensive comments in advance of the extended comment period deadline.

Thank you for your traveling to the basin to hear stakeholders' thoughts and concerns on this important matter.

Correspondence: 28

Author Information

Keep Private: No
 Name: Vern Hart
 Organization: Missouri Farm Bureau State Board of Directors ;  Member
 Organization Type: O - Civic Groups
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 Kansas City, MO 64153
 USA
 E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
 Date Sent: Date Received: 02/15/2017
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Correspondence Text

MR. HART: Okay. My name is Vern Hart, V-E-R-N, H-A-R-T. My family and I farm in Buchanan County, and I am a member of the Missouri Farm Bureau State Board of Directors.

Missouri Farm Bureau is the state's largest farm organization. Many of our members' livelihoods are tied to the Missouri River and, thus, we've been involved in the management issues for more than two decades.

Many Missourians continue to believe that common sense must be the foundation of our government's management decisions. We're hopeful the Trump administration will recognize the shortcomings of the current federal regulations and hit the reset button.

Missouri Congresswoman Vicky Hartzler recently gave the President her "Undo" list. This includes many offensive rules, regulations and mandates that have affected her constituents. What a great starting point.

Almost a quarter of our state counties border the Missouri River. A new study shows in those 25 counties, agriculture, forestry and related industries had an economic impact of \$34.6 billion in 2016. Agriculture's contribution includes \$21.2 billion in inputs, over 135,000 jobs and \$2.8 billion in federal, state and local taxes.

Our organization's resolve relative to the Missouri River issues has only been strengthened over time. We believe flood control and commercial navigation are priorities when considering authorized uses. Much as our state's drinking water comes from the Missouri River, and we support flows for power generation and continued close coordination with levee districts.

We will not support proposals that weaken flood control, initiate pulses or reduce flows in the summer. We do not support construction as chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil being deposited into the river.

Given past experience, we're skeptical of adaptive management and what we consider to be very expensive experiments.


For the reasons stated, several of the alternatives under consideration are nonstarters. Given the prescribed flow modifications, we do not support alternatives 2, 4, 5 and 6. Alternative 1 is a concern that it continues to allow for a bi-modal spring rise and the construction of shallow water habitat. While alternative 3 does not call for shallow water habitat, it does require Interception Rearing Complexes, which of those who know the Missouri River simply consider more hocus-pocus. Furthermore, alternative 3 does not rule out flow modifications.

There must also be consideration of cost. Every man, woman and child in the US currently owes over \$65,000 for their share of the \$19.9 trillion public debt. We have to be aware of expenses associated with each of the proposed alternatives.

We're not asking to give up any bird or fish, but common sense has to be a part of the equation. The Endangered Species Act must be updated. Consideration of human impacts must come first and no one should be held hostage by the views of personnel within the US Fish & Wildlife Service, Environmental Protection Agency or any other arm of the government. Thank you.

Correspondence: 29

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Correspondence Text

MS. ROUSE: Karen Rouse, K-A-R-E-N, R-O-U-S-E. I'm from Jefferson City, Missouri.

I am the Surface Water Chief for the Water Resources Center of the Missouri Department of Natural Resources. The Missouri DNR represents the State of Missouri on interstate water issues and I am Missouri's representative to the Missouri River Recovery Implementation Committee. Thank you for this opportunity to provide comments on the Missouri River Recovery Program Draft EIS.

Our message has been consistent. First, flood control and navigation are the primary purposes of the Missouri River System, and as such, the Corps must implement Recovery Program actions without preemption of fully accomplishing those critical and existing lawful uses of the system.

Secondly, several of the proposed alternatives would modify the flood control constraints of the system, which would require a change to the Master Manual. For example, under alternatives 4 and 5, the flood control constraints are increased by at least 30,000 cfs. This action would be contrary to flood control.

Third, if the Corps would consider changing the Master Manual, that would require a separate public process and cannot be embedded in any other process. Should the Corps pursue a deviation to the Master Manual for a one-time flow event, it is imperative that the Corps consult with the governors of the states before implementing this high consequence action.

Furthermore, the proposed flow events use water from the carryover storage pool, which is the pool we rely on during times of water shortage. The navigation flow support releases from the system benefit many uses on the lower river such as water supply, energy production, recreation and fish and wildlife. In Missouri, over 3 million people rely on the Missouri River or its alluvium as its water source. Reductions in navigation flow support have cascading impacts not only to uses on the Missouri River,

but also on the Mississippi River, which is 40% of the flow to the middle Mississippi during normal conditions, and peaked at more than 70% during the 2012 drought.

The department supports the Corps' intention to use natural flow events to improve our scientific understanding. In Missouri, the river is already highly variable where it's known to rise 15 feet within a 12-hour period from localized rain events. The 2011 Independent Science Advisory Panel noted that the natural rise had "...not been adequately or systematically assessed." Because of this, we believe there is no additional - - there is no need for additional water to be released from Gavins Point.

The State of Missouri supports the preferred alternative identified by the Corps in the Draft EIS with the exception of the potential one-time flow event. This one-time flow event was neither modeled nor were the impacts assessed in the Draft EIS 'because of uncertainty of the hydrologic conditions present'.


Given our high frequency of flood events in our state, we have always been very concerned about any proposed environmental flows from Gavins Point Dam that exceeded flood control constraints. Let me be clear: The State of Missouri cannot support any alternative that includes environmental flows that exceed current flood control constraints.

The State of Missouri would also like to reiterate to the Corps that decision-making within the Adaptive Management Plan needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governors' offices on matters of high consequence is imperative.

Thank you again for this opportunity to provide public comments. The State of Missouri looks forward to further dialogue on this issue as the EIS process continues.

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Correspondence Text

MR. POER: Good evening. My name is Tom Poer. I'm the - - currently serving as the President of the MOARC, the Missouri and Associated Rivers Coalition.

MOARC was established in 1952 in response to severe flooding that ravaged the Midwest in 1951. Since then, MOARC has advocated for flood control and water conservation in the Missouri River basin. MOARC works to educate, present and learn about current ideas on water resources management in partnership with the Corps of Engineers, and promotes responsible management of the Missouri River supporting all eight of its authorized purposes based on sound science.

The Draft EIS is a complex, technical and extremely long document with the potential to have adverse effects on many of our members' operations depending on the alternative chosen and the subsequent Record of Decision.


A thorough review will take a great deal time and effort. This is especially true for MOARC due to our extensive degree of member operations necessitating that we fully review all areas of the Plan and Draft EIS.

At this juncture, our review of - in our review, our executive board feels alternative 3 will have the least effects on the authorized purposes and our members, despite our concerns with a possible spawning cue flow regime in the out-years seven through nine. Full analysis of all alternatives by our board and committee members will be submitted later in the comment period.

We thank you for this opportunity to make these brief remarks.

Correspondence: 31

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Correspondence Text

MS. GIESSEL: All right. My name is Elaine Giessel. That's spelled G-I-E-S-S-E-L. I live in Overland Park, Kansas, and I'm representing the Sierra Club tonight, the Kansas Chapter, and particularly the Kanza Group of the Sierra Club.

I would like to thank the Corps first for extending the comment period so the public would have adequate time to review these lengthy documents. The Sierra Club will be submitting formal comments on the Missouri River DEIS at a later date.

At this time I would like to enter into the record several comments/questions on behalf of the Sierra Club.

The Sierra Club focuses on maintaining and working towards whole and healthy natural systems. If artificial improvements like dams, the armoring of banks and levees are the main cause of loss of habitat, then the preferred alternative should address the root cause of the problem, which may mean removing some of this structural implementation.

Alternative 2 appears to provide the best opportunities for recovery of the three federally listed species. It includes recognition of the importance of connections to the flood plains, the option of acquiring increased acreage for habitat and mitigation, and provides for adaptive management over time.


One of the questions we have is how the Bank Stabilization & Navigation Fish & Wildlife Mitigation Project will be impacted by this, whether it will be folded in, superseded, or continue its work. The land that is being put into habitat mitigation under that project also creates recreational opportunities for the public.

The jeopardy to the three federally listed species is clearly the driver for this Draft EIS, but given the amount of time and money invested in this recovery and management plan, the Sierra Club is

concerned that the impacts of the various alternatives on other species have not been considered. It is not an ecosystem-based management plan and does not include evaluation of state-listed species here in Kansas and other states, or species that are currently considered candidates for state and/or federal listing. Thank you.

Correspondence: 32

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Correspondence Text

MR. KLENDER: Good evening. My name Mike Klender, M-I-K-E, K-L-E-N-D-E-R.

I'd like to thank the Corps for allowing me to present comments to the Draft EIS rule. As President of the Missouri River Public Water Supplies Association, I represent 18 water supplies from Sioux City down to St. Louis on the Missouri River, and one on the Mississippi River. We will be formally submitting a written response before the April 24th deadline.

The water supplies of this association want to remind the Corps their obligation to meet all eight authorized purposes, which water supplies are one of the eight authorized purposes.


We had considered - - we have concerns about the information provided in the Water Supply technical memo. The information presented in this memo has a lot of the members in the association asking more questions as to where the Corps obtained their data. The information on the size of pumps and costs necessary to draw the water from the river seems to be underestimated. Trying to locate large pumps larger than 7,000 gallons a minute to rent would be a difficult task, especially if half the members of this association must find these large pumps. Some of the information presented seems to be grossly underestimating the impact if the water supplies are not able to have access to the river. The size of the pumps necessary to draw water and costs associated with finding large enough pumps to operate. The water supplies in this association service over 4 million customers, and billions in industrial commerce and services which depend on the water from the Missouri River.

We do not feel this technical memo allows for the seven recommended actions made by the MRRIC in 2012 to evaluate the effects analysis.

Consideration needs to be also included the degradation that is ongoing on portions of the Missouri River. Of the alternatives presented in this EIS, alternative 3 is the least impact to the eight authorized purposes. Again, thank you for allowing me to speak.

Correspondence: 33

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Correspondence Text

MR. HORGAN: Good evening. My name is Tom Horgan, H-O-R-G-A-N. I'm the Senior Manager of the Mid-continent Office for the American Waterways Operators, or AWO.

The American Waterways Operators is the national advocate for the US, tugboat, towboat and barge industry, which serves as the nations - which serves the nation as the safest, most environmentally friendly, and most economical mode of transportation.

On behalf of our members, I appreciate the opportunity to comment on the Draft Environmental Impact Statement for the Missouri River Recovery Management Plan. On behalf of AWO members, AWO staff has served as a member of MRRIC committee.

First of all, AWO supports the recovery of the endangered pallid sturgeon and the threatened least tern and piping plover, and believe that these species can be recovered without changes to the Master Manual or any other major flow modifications to the mainstem reservoir system.

Of the six alternatives presented to us for review and comment, the AWO supports mechanical sandbar habitat construction contained in each of the alternatives, including the preferred alternative number 3. However, AWO strongly opposes the various flow modifications common to alternatives 2, 4, 5 and 6. Low summer flow provisions in alternative 2 will cause irreparable harm to the navigation industry by creating a split navigation season on the Missouri River, virtually killing navigation on the river.

In addition to this, low summer flows in alternative 2 will have severe negative impacts on navigation on the Mississippi River from St. Louis all the way downstream to Cairo, Illinois. During severe drought on the - - during severe drought years, over 80% of the water flowing past the St. Louis Arch comes from the Mississippi - - from the Missouri River. These flows are necessary to keep this commercial

superhighway open.

Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Regarding alternative 6, AWO opposes the implementation of a full bi-modal spring release because of the risk to flood control and its negative impacts to navigation and the lack of science that confirms that these flows would facilitate the recovery of species.

We believe that the Corps' preferred alternative strikes - - alternative 3 strikes the best balance between species recovery and human considerations. This alternative meets the species targets for birds while causing the least amount of impacts to stakeholders.

Furthermore, we commend the Corps for their commitment to study the correlation between tributary flows and pallid sturgeon habitat. However, AWO members believe that any flow test is scientifically unjustified.


AWO supports eliminating the one-time flow test, or bi-modal spring pulse, from the preferred alternative virtually because there is no science that has been developed to prove its value.

AWO is very concerned about the implementation of any preferred alternative under an Adaptive Management Plan. Our members are particularly concerned with the section of the Adaptive Management Plan dealing with management actions outside the Record of Decision. Whenever new actions are proposed or existing actions modified, those changes must be subject to thorough review, including public comment and environmental impact statements under NEPA.

Thank you for your time tonight, and AWO will be submitting comments - - written comments on behalf of the record, and we thank you for extending the period of comment deadline.

Correspondence: 34

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Correspondence Text

MR. SHORR: Thank you, Colonel. My name is David Shorr, S-H-O-R-R. I'm from Jefferson City, Missouri. I'm an attorney with the law firm of Lathrop & Gage, and I represent the Commercial Sand Dredging Interests on the Missouri River. I'm also a member of the Missouri River Recovery Implementation Committee where I serve as a stakeholder representing waterway industries.

Tonight I would like to make a few comments regarding issues that are presented in the Draft EIS relating to the management plan. These represent interim comments and we will follow with formal comments during the comment period.

We support adaptive management as a method to expedite knowledge, generate scientific information and test hypotheses. We believe that adaptive management provides for a more nimble position for the Corps in making decisions for our protection of endangered species. However, we find no legal premise for the adaptive management scenario to exceed the guidelines and provisions of the Master Manual on its own accord. As such, we believe that this process does not allow or endorse changes to the manual without appropriate manual review, analysis, procedure and public hearings.

Modifications in flow as presented in alternatives 2, 4, 5 and 6 undermine the primary purposes of navigation and flood control and are, therefore, problematic.

Adaptive management's governance framework isolates stakeholders and relegates them to a lower status in the pyramid. The adaptive management process compromises the authority of the governors in the basin to a lower priority in the decision-making. These elected representatives of the various states should have some of the highest position with regard to this process.

While we have no objections - - while we have objections to the use of certain sediment-related models on the micro level, we recognize that the reduction in sediment as a result of a the five mainstem dams and the equilibrium that now exists with regards to the Bank Stabilization and

Navigation Project requires a true sediment analysis to be created. At the macro level, this analysis should determine the lack of material in the system, the failure to recognize sediment as an important component for the preservation of the pallid sturgeon continues to be a fundamental error in the alternatives.

Changes in flow without enhancing the sediment load have no value and are a waste of precious water in the system. It almost appears that the DEIS and other evaluations purposefully neglect the issue of material in the system and the dramatic reduction of material movement throughout.

We believe that all the hypotheses are incomplete with regard to the pallid sturgeon unless additional sediment load is put back into the system.

We appreciate that this DEIS acknowledges the existence of the middle Mississippi and that it is, in fact, integrated with the Missouri River. However, the impacts relating to middle Miss are direct and not cumulative. For all practical purposes, the relationship with the middle Miss and Missouri River, pallid is limited. Flow and lack thereof affect the performance of the middle Miss and have significant social and economic consequences to the users of the Missouri River.


The failure to directly examine impacts alternatives to the middle Miss in a direct fashion and to ignore science indicates the Pallid's potential gain would required greater examination.

Interception Rearing Complexes by both - - are by - - by both Fish & Wildlife in the course of experiments, we do not object to the advancement of hypotheticals provided there's graduated and there's adequate evaluation of channel integrity.

Of the alternatives presented, we support the preferred alternative. We wish to acknowledge the hard work that's been put in, the effort. While we may not agree on every element, we wish to acknowledge the actions of the Corps, of Fish & Wildlife, members of MRRIC on this significant undertaking. There is no way to deny the hard work of many individuals to create the opportunity for this review and dialogue. Thank you.

Correspondence: 35

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Correspondence Text

MR. WATERS: Good evening. My name is Tom Waters, W-A-T-E-R-S. I serve as Chairman of the Missouri Levee and Drainage District Association. Our association consists of levee districts, drainage districts, businesses and individuals affected by the Missouri River and its tributaries.

Colonel, I'm disappointed you had to be the person selected to moderate tonight's hearing. Major General Spellmon's decision not to attend these public hearings only highlights the lack of importance he and the Corps places on these hearings, and more importantly, the concerns of those attending the hearings. By not attending, there's no way for the General to understand the level of passion in the voices and comments presented by the public. The decision-maker in an effort this big that impacts so many lives should have to look these people in the eye and listen to their concerns.

I'm here tonight to remind the Corps of their flood control mission. The Draft Environmental Impact Statement contains six alternatives. I find it appalling each alternative increases the risk of flooding. It is clear the Corps and Fish & Wildlife Services turned their back on flood control. All the alternatives - - all the alternatives propose a spring or fall rise.

Alternatives 4 and 5 represent the most audacious lack of concern for the citizens impacted by Missouri River management. The 60,000 cfs release found in these two alternatives is an outrageous demonstration of the Corps' disregard for and the failure to pursue its flood control mission.

Alternative 1, 2 and 6 contain lesser rises, but still threaten those downstream with increased flows.

Alterative 3 contains a stipulation containing its own possible spring rise after a few years of monitoring. This caveat is an open door for those managing the river to dump more water on those downstream.

At what point will the United States Army Corps of Engineers understand it is wrong to intentionally

flood those they have been directed to protect?

Congress has directed the Corps to provide flood control for the citizens of our nation. Now it is apparent the Northwestern Division has no intention to follow the direction of Congress, and many of the people in this room will suffer for the Division's arrogance and lack of respect for Congress and those impacted by the Corps' poor decisions.

Our association as always and will continue to oppose using increased flows as management options. This type of management by the Corps - - by the Corps' own admission in federal court is designed to cause intentional flooding.

We believe the threatened and endangered species can be recovered while the Corps continues to provide flood control. The Corps and the US Fish & Wildlife Service should and can find ways to protect the species without harming our communities.


Finally, the 8th Circuit Court of Appeals in their 2005 decision clearly stated, quote, if due to extreme conditions the Corps is faced in the future with the unhappy choice of abandoning flood control and navigation on the one hand, and recreation, Fish & Wildlife on the other, that priorities established in the Flood Control Act would forbid the abandonment of flood control or navigation.

In the same document, the Court reiterated its earlier opinion that the Flood Control Act has been interpreted to hold flood control and navigation dominate and recreation and Fish & Wildlife secondary. The Northwestern Division would do well to follow the advice of the federal court.

The Corps of Engineers has a moral obligation, a duty and a mission outlined by Congress to provide flood control for the citizens of our country. The Northwestern Division should not turn its back on Congress and should find a way to protect these species while following through with their flood control mission. This is a charge of Congress and it's the desire of the people. However, this is not what the Draft Environmental Impact Statement sets out to do. There must be a better way, and the Division should continue to work to find it without implementing the alternatives in the Draft Environment Impact Statement. Thank you.

Correspondence: 36

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Correspondence Text

MR. FRAKES: My name is Lanny Frakes, L-A-N-N-Y, F-R-A-K-E-S. I'm Vice Chairman of the Missouri Levee and Drainage District Association. I'm involved with two local levee districts, one federal, one non-federal, in Buchanan and Platt counties, and I'm a farmer.

I didn't have a prepared statement tonight. I just planned to just make a written comment previous to April 24th.

In referring to the executive summary booklet that you passed out here tonight, I've had very little time to read that. Land ownership within the Missouri River floodplain includes federal, state and local government lands, tribal lands and private lands. Various land uses are practiced within the Missouri River floodplain, including developed lands, agriculture lands, open water and other types of use. Developed land refers to communities, towns and cities, including commercial, industrial and residential uses, as well as the lands developed to support transportation, highways, roads, bridges, railroads and other infrastructure. Agriculture is the dominant land use in the floodplain between Gavins Point and the mouth, accounting for between 63% to 72% of the floodplain land.

And then another paragraph, a main objective for the mainstem reservoir system is to regulate the reservoirs to reduce the risk the Missouri River flows from contributing to flood damage and the reaches downstream from dams. Regulation of individual reservoirs is coordinated to reduce flood risk from a particular reservoir.

And on the next page, levees also play a role in flood risk management along the Missouri River. Federal agriculture levee construction in accordance with the 1941 and 1944 Flood Control Acts began in 1947. Most existing federal levees are in the reach located between Omaha and Kansas City. The levees help to manage flood risks to these localities during the most severe flood events of record. Between Sioux City and the mouth of the Missouri River, local interests have built many miles of levees consisting of about 500 nonfederal units through this reach of the river. Most of these levees are inadequate to withstand major floods, but generally protect against floods smaller than a 5%

annual chance of exceedance event for 20 years.

Water surface elevations within the landward side of the federal levees are affected by the ability to drain interior runoff into the Missouri River. And I'll add this as existing in nonfederal units. High water can result in poor drainage, higher groundwater, blocked access and associated damage and inconvenience. Hundreds of individual gravity drainage structures, culverts with flapgates and pumping plants exist along levees near the Missouri River. The Kansas City and Omaha US Army Corps of Engineer districts have surveyed data on approximately 1,400 individual interior drainage structures. And the alternative evaluated include management action with potential to affect river flows.

On 2, 4, 5 and 6, these will affect these levees. This will affect what I've talked about, what I mentioned from your executive summary, and it will affect them in a negative way. Once these releases or pulses come from Gavins Point, they can't be taken back.

You're putting the livelihoods of many people, infrastructure, and what I mentioned in this executive summary that you printed, you put that in a negative perspective and put us in jeopardy.

I thank you for the time to be able to make those remarks.

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Correspondence Text

MR. ARMSTRONG: Thank you, Colonel. I'm Mike Armstrong, A-R-M-S-T-R-O-N-G. I'm General Manager of WaterOne. We are a public water utility located in Lenexa, Kansas. We provide drinking water for over 425,000 residents in Johnson County, Kansas. We operate surface water intakes on the Missouri and Kansas Rivers. I'm also a member of MRRIC, and since 2008 I have invested literally hundreds of hours working on this recovery process.

First of all, I want to remind the Corps that you're obligated to support the eight authorized purposes. Of those eight authorized purposes, we believe water supply is the most important to our communities. The Corps must do everything in your power to protect water supplies in the communities - - in the Missouri River basin. People should come first.

We support the preferred alternative number 3. It's not perfect, but it is the best of the six identified. One of the best things about alternative 3 is that it would abandon the 2000 and 2003 biological opinions which are - lack scientific basis and are both deeply flawed.

One area of the DEIS that we do have significant concern about is the method the Corps has used to model the impacts of the alternatives on water supply. The economists have used very theoretical and unrealistic assumptions. They have not considered real-world requirements, which are much higher than the minimums mentioned in the Master Manual, due to riverbed degradation, especially in the Kansas City, Leavenworth and St. Joe areas. This flaw was admitted several times in the DEIS, including 3-504 of the DEIS. I'll quote here that "...No Action Alternative does not reflect actual past or future conditions..." The economists use worst case scenarios of the Period of Record and then use hypothetical Master Manual minimum flows to create a baseline. This does not reflect reality. Because of riverbed degradation, the minimum flows mentioned in the Master Manual could not and would not support the water supply intakes in this stretch of the river.

As a result, the Corps has assumed that 33 of the 55 water intakes would experience 57 days below

operating thresholds, and 21 intakes would experience 14 days below shutdown elevations. These assumptions are totally unacceptable. The Corps should evaluate this approach and model realistic flow requirements to keep water supply intakes in operation at all times.

Finally, alternative 2 contemplates a low summer flow. There was absolutely no effort made to evaluate the impacts and cost associated with those low summer flows on water supply intakes. Although this is not the preferred alternative, it is important to document those impacts for the record. Thank you, sir.

Correspondence: 38

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Correspondence Text

MR. TOTZKE: Thank you, Colonel.
 My name is Greg Totzke, T-O-T-Z-K-E. I am the Water Quality Laboratory Manager for WaterOne.

As previously mentioned, we are a water utility that serves 430,000 residents, expanding 18 cities in the Kansas City Metropolitan area. The Missouri River flows and water quality are critical to meeting our customer needs for water. We appreciate the opportunity to comment on the DEIS and its technical reports.

Some of the key concerns we have are the Human Consideration Technical Report on the water supply is inconsistent in assessing risk, presuming the worst case for flows, but often the best case for water utility ability to respond. Not all low water conditions could be solved using submersible pumps. This is not a reasonable assumption. The idea that pumps could be rented by all utilities in a low water situation is unreasonable. Low water affects too many utilities at one time for all utilities to be able to rent pumps.

For larger utilities such as WaterOne, it is unlikely that large enough pumps could be rented to meet the supply needs available - could be - - to meet the supply needs will be available to us.

The assumption of the report is unrealistic and should be modified. The report failed to consider that at low water some utilities may have to lay miles of pipe just to reach the water supply. When the reservoirs get low, whole arms of the lake have dried up in the past. The river channel could also migrate away from the intake, and these costs should be considered in the report.


WaterOne spent \$2.4 million on permanent low water pumps for less than half of its intake capacity in 2003. The capital costs would be much greater than this today and the economic analysis should assume that those types of costs will have to be considered instead of renting pumps. The costs are severely understated. It is very likely that situations would occur that will leave some communities without water supply for days.

The report makes no estimated cost to those communities when they have no water supply. The cost impact to Cleveland in 2003 when a regional power outage left 1.5 million people in the city without water for two days was in the hundreds of millions of dollars when you consider the factories and businesses that were shut down. An outage would mean a loss in fire protection, the inability to cook, bathe or even flush toilets. A shutdown of critical facilities like hospitals and an increase in the risk of disease outbreaks without a water supply, a water supply outage becomes a state and federal disaster.

Thank you for your time.

Correspondence: 39

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Correspondence Text

MR. STEVENS: Thank you, Colonel.
 Charles Stevens, C-H-A-R-L-E-S, S-T-E-V-E-N-S.
 I'm speaking as a water utility officer. I'm speaking on behalf of Terry Leeds, our director.


Kansas City Water Services Department is responsible for providing water supply and waste water management not only for the citizens of Kansas City, but also to some 33 surrounding cities and utility districts. The department is also responsible for flood risk management in Kansas City through its management of pump stations and levees along the Missouri River.

The DEIS is a complex, technical and extremely long document with the potential to have adverse affects on many of our operations depending on the alternative chosen and the subsequent Record of Decision. A thorough review will take a great deal of time and effort. This is especially true for Kansas City due to our extensive operations involving the Missouri River necessitating that departmental staff fully review the impacts of all the alternatives.

At this juncture in our review, the department sees alterative 3 as the alternate that will have the least effects our operations and the authorized purposes, despite our concern with the possible spawning cue flow regime in out-years nine-plus. Full analysis of all alternatives by departmental staff will be submitted later in the comment period. We appreciate the opportunity to make these brief remarks.

Correspondence: 40

Author Information

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Correspondence Information

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Correspondence Text

MS. WIRTH: Good evening. I am Michelle Wirth, M-I-C-H-E-L-L-E, W-I-R-T-H, and I'm the Assistant Director of Production for WaterOne.

WaterOne, again, is a public water supply utility providing drinking water to over 425,000 residents of Johnson County, Kansas, including 18 cities. We have water supply intake on the Missouri, along with the collector well on the Missouri River, and we have an intake on the Kansas River.

As the largest water supply utility in Kansas, WaterOne has a responsibility to be a leader among its peers. We monitor and participate in advisory committees and interest groups involved with river policy, advocacy, preservation and water management, including participating in MRRIC.

I would like to reference the Human Considerations Technical Report- Water Supply, Section 3.1, Paragraph 2, which uses the Period of Record along with the minimum flow per the Master Manual as the flow condition. This worst case model scenario also does not include how often the scenario occurs. For example, does it include - - does it occur once every year or once every 25 years? The frequency of those occurrences and the associated costs should be included in the report.

Operational low flows in alternative 2 will negatively impact water quality parameters, which will require additional treatment techniques to be utilized by water suppliers to meet regulatory requirements. The costs for increased treatment and potential health risks were not addressed in the Human Considerations Technical Report- Water supply, and should be included in the report.

I, again, want to remind the Corps of the eight authorized purposes and that water supply is the most important to our communities. The Corps must protect water supply to ensure public health and safety.

The proposed strategies included in the Draft EIS included hypothesis with little to no scientific data to ensure with confidence that the strategies will make the direct impact on the species. We would not

support any development of hybrid alternatives.

WaterOne does continue to support alternative 3, which shows the least impact to water supply.

WaterOne will provide more detailed written comments and, again, appreciates the Corps that they have extended the comment period. Thank you for your time.

Correspondence: 41

Correspondence Information

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Contains Request(s): No	Type: Web Form
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Correspondence Text

Attn: CENWO-pm-ac Management Plan Comments

I am writing to say that I favor Alternative 2 as the best option of the DEIS plan to manage the Missouri River.

Alternative 2 provides the best opportunities for recovery of the three endangered species. It also provides adaptive management over time.

I favor restoring a more natural river for all fish and wildlife, restoring the entire ecosystem. Alternative 3 is the worst of the choices because it relies only on manual, artificially created habitat which would require indefinite work and maintenance.

Thank you.
Francine Glass

Correspondence: 42

Correspondence Information

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Notes: Transcript taken from public meeting in Omaha, Nebraska, on 2/14/2017	

Correspondence Text

JAMES BECIC: My name is Jim Becic.

I live at 5011 Parker Street in Omaha. I'm a biologist with a lifelong Missouri River interest. I've worked with the Corps and the Fish and Wildlife Service for over 35 years on projects for the river - - on the river.

I'm employed by the Papio-Missouri River Natural Resources District, and I am on the MRRIC committee, kind of redundant, but I'm not speaking for either of them.

My comments: I'd like to first compliment the Corps on their massive document/material, 6,000 pages, and also for extending the comment period for 30 days.

That being said, it's understood, at least by myself and a number of others, that "avoiding jeopardy" is the minimal that can be done for the three species that are fairly grossly shortsighted as far as the - - what we're trying to accomplish. I would prefer an ecosystem approach for restoration and strongly urge that.

I would like to link the bank stabilization navigation project (BSNP) mitigation requirements to this DEIS, as they would subsequently benefit all species, as opposed to just the three that are currently being considered as threatened or endangered.

It is viewed that the preferred alternative is wholly inadequate, that is Alternative No. 3 offered by the Corps. The most significant deficiency, in my opinion, is that there's an absence of acquiring additional floodplain acres and construction of shallow water habitat, as was pledged in the BSNP 2003 amended biological opinion.

It's understood that the Fish and Wildlife Service coordination act BiOp acquisition acreage requirements for the lower basin is currently deficient by approximately 100,000 acres. I'm going to get real close to my time.

It's feared and bears to be restated that while the authority for the amended BiOp remains, that there will likely be no priority for those once this DEIS is finalized. It's owed to the system.

Potential compromise would be to include Alternative No. 2 with the Alternative No. 3, if that's the preferred alternative. In saying that, if the science dictates a more aggressive approach, then this land habitat/acquisition could be accelerated and an adaptive management plan would be initiated.

Let's see. I have 30 seconds.

Very specifically, I would like to see IRCs that are proposed in the plan increased fourfold from two a year to eight a year. We have 750 miles of river to deal with.

Additional human considerations, if you would get these acres, you've got a floodplain, you've got wetlands, you have buffers, you have incubator areas for beneficial nutrients, all sorts of things.

And, again, I will submit my comments.

I ran out of time.

But, finally, there are numerous other issues that could be addressed easier with Alternative No. 2. A hybrid is suggested. But, most importantly, it would contribute most effectively to the health and heartbeat of the entire Missouri River ecosystem.

Thank you.

Correspondence: 43

Correspondence Information

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Contains Request(s): No	Type: Transcript
Notes: Transcript taken from public meeting in Omaha, Nebraska, on 2/14/2017	

Correspondence Text

BILL BEACUM: Yeah, my name is Bill Beacum. I live in Sioux City, Iowa. Retired towboat captain. Special appointment to pallid sturgeon recovery team in 2004. Published a small booklet on the birds, 2003. Active on both counts.

I would like to caveat this, I'm not blaming anybody for the situation that we have here. Some of it goes back several colonels and several generals. It all started with the endangered species act, which gives the Fish and Wildlife Service unfettered authority. The Corps has to do what the Fish and Wildlife Service tells them.

Those of you who are operating under the assumption that we're deciding an alternative action for these birds and fishes are in a delusional state. We are not. We are only deciding a method of an action that's already been chosen, and that method only involves construction or some kind of management action.

If we were actually involved in doing something that included an alternative action, we would be looking at other areas in the basin for recovery, but the Fish and Wildlife Service, because it was very prescriptive, gave the Corps a job to do, and they did it.

And it goes beyond common sense to think especially in the bird situation, that you can recovery a metapopulation that covers five states, two Canadian provinces, in the wintertime most of the Caribbean, and two more states in the South that you could change anything permanently that only covers a 40-mile stretch of the Missouri River.

And as fantastic as it sounds, it is that fantastic. There's no way you can do it. And the Fish and Wildlife will say that the reason that it is different from the pallid - - or the piping plover recovery plan, which came out last year, is because it's a jeopardy, not a recovery plan. But then they will say, "But it will recover the whole species," which is a contradiction in facts.

So if you're going to do this, remember that they have only given us a selfish choice. Selfish choice: Do you want your child to live, boy or girl? You make the choice.

Everybody has gone for the No. 3, but for the bird especially, No. 3 does it better than anything else. And the truth of the matter, there won't be any money for any of it, so it would have been who, the Fish and Wildlife Service, when they presented the problem to the Corps to give them one that they could solve within the confines of their monetary ability.

And if we don't get on track, we have a congress up there now that's looking very seriously about undoing the entire endangered species act, and I don't think I want that to happen, and I'm hoping that

most of the people in this room don't want it to happen. So we've got to get our heads on straight if we want to move forward.

Correspondence: 44

Correspondence Information

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Correspondence Text

DONETTE JACKSON: Hi, my name is
Donette Jackson, D-O-N-E-T-T-E, J-A-C-K-S-O-N.

We live about seven-and-a-half miles east of Tekamah on a second-generation farm of 305 acres, all grain farming, in Burt County - - Tekamah, Nebraska, in Burt County. Our home is a mile and a quarter from the Missouri River.

I inherited the ground back in 2007 - - '05 - - 2005. My dad established the ground in 1956. In the 49 years that my parents lived on this farm, they only had one time when the water had reached their home, and this was due to a large ice jam that they had broke up with dynamite, and it didn't last four months.

We endured the 2011 flood. We were displaced for four months. We came back to a farm that was totally altered. It's amazing that we're still there.

In July of '15, the Corps put a pallid sturgeon shoot right next to our property. And they bought 190 acres, and they dredged - - we watched the process, and it took a little over a month, and they dredged all the sand out into the Missouri River. So now we have a very, very shallow river below us.

I would like to have you not change the master manual from where it is now with one of your alternatives. The spring and fall pulses will flood us again. And this will also interfere with the planting and the harvesting time.

We feel the unlawful taking of our ground violates the fifth amendment. We can't - cannot afford another flood. And it diminishes our hopes of handing down our farm to future generations. Your priorities are all wrong by accelerating the habitat development, changing storage and release protocol for the mainstream - - mainstream system.

Thank you.

Correspondence: 45

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Correspondence Text

JAREL VINDUSKA: My name is Jarel Vinduska, J-A-R-E-L, V-I-N-D-U-S-K-A, from Gretna, Nebraska. I'm a board member of the Nebraska Wildlife Federation, so I'm speaking on behalf of our board.

Wildlife is our issue, so we want the alternative that best promotes wildlife, and it appears that none of the alternatives are really great in that regard. Two is probably the best, but we would prefer a more ecosystem-wide approach to it.

But speaking on behalf of myself, I understand that the human concerns, just like the last lady mentioned, about the flooding and people that farm the floodplain, that's an issue that must be taken into consideration.


My first thoughts on that, since my career was in excavation, if we're going to artificially create nesting habitats and sandbars, artificially made sandbars, I just know, from experience, that the cost per fledged bird will be just astronomical and just a terrible waste of taxpayer money.

And I think that money could be well - - spent better to use to buy habitat. Or, in my mind, when I see how many birds are produced on some of these sandbars along the lower Platte River, much less money could be spent creating habitat off the river, buying and creating habitat, put sand out there, put water out there, put an electric fence to prevent predators from coming in.

And as far as taxpayer dollars per bird that you'd spend on a fledged bird, it'd be a lot less, I'm very sure.
So that's my comment. Thank you.

Correspondence: 46

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Notes: Transcript taken from public meeting in Omaha, Nebraska, on 2/14/2017

Correspondence Text

KAREN ROUSE: Good evening. Karen, K-A-R-E-N, Rouse, R-O-U-S-E. I live and work in Jefferson City and live in Columbia, Missouri.

I am the surface water chief for the water resources center of the Missouri Department of Natural Resources. The Missouri DNR represents the State of Missouri on interstate water issues. And I am Missouri's representative to the MRRIC. Thank you for this opportunity to provide comments on the Missouri River recovery program draft EIS.

Our message has been consistent. First, flood control and navigation are the primary purposes of the Missouri River system, and as such, the Corps must implement recovery program actions without preemption of fully accomplishing those critical and existing lawful uses of the system.

Secondly, several of the proposed alternatives would modify the flood control constraints of the system, which would require a change to the master manual. For example, under Alternatives 4 and 5, the flood control constraints are increased by at least 30,000 CFS. This action would be contrary to flood control.

Third, if the Corps were to consider changing the master manual, that would require a separate public process and cannot be embedded in any other process.

Should the Corps pursue a deviation to the master manual or a one-time flow event, it is imperative that the Corps consult with the governors of the states before implementing this high-consequence action.

Furthermore, the proposed flow events use water from the carryover storage pool, which is the pool we rely on during times of water shortage. The navigation flow support releases from the system benefit many uses on the lower river, such as water supply, energy production, recreation, and fish and wildlife.

In Missouri, over 3 million people rely on the Missouri River, or its alluvium, as its water source. Reductions in navigation flow support have cascading impacts, not only to uses on the Missouri River, but also on the Mississippi River, which is 40 percent of the flow to the middle Mississippi during normal conditions and peaked at more than 70 percent during the 2012 drought.

The department supports the Corps' intention to use natural flow events to improve our scientific understanding. In Missouri, the river is already highly variable, where it is known to rise 15 feet within a 12-hour period from localized rain events.

The 2011 independent science advisory panel noted that the natural rises had not been adequately or systematically assessed. Because of this, we believe that there is no need for additional water to be released from Gavins Point.

The State of Missouri supports the preferred alternative identified by the Corps in the draft EIS, with the exception of the potential one-time flow event. This one-time flow event was neither modeled nor was - - were the impacts assessed in the draft EIS because of the uncertainty of the hydrologic conditions present.

Given our high frequency of flood events in our state, we have always been very concerned about any proposed environmental flows from Gavins Point Dam that exceed flood control constraints. Let me be clear, the State of Missouri cannot support any alternative that includes environmental flows that exceed current flood control constraints.

The State of Missouri would also like to reiterate to the Corps that decision-making within the adaptive management plan needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governor's offices on matters of high-consequence is imperative.

Thank you again for this opportunity to provide public comments. The State of Missouri looks forward to further dialogue on this issue as the EIS process continues.

Correspondence: 47

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Correspondence Text

SCOTT OLSON: Good evening. Scott Olson, S-C-O-T-T, O-L-S-O-N.

I'd like to first thank the Corps for putting this meeting on tonight with parking passes at 5:00 o'clock rush hour in the heart of Omaha on Valentine's Day. You'd think you didn't want us here. Lucky for you guys it didn't snow, right?

Anyway, how do we put into words in three minutes the fear and uncertainty of what is to come with any of the alternatives discussed tonight. How do we plan for our future? How do we plan for the future of our children of whom we hope to pass down our legacy and all that we've worked a lifetime for?

Each and every alternative leads to destruction of the Missouri River as we know it. The flow events will continue to create floods along the river. The destruction of the banks by the Corps of Engineers has added to the degradation of the river channel, making it more prone to flooding.

This degradation also affects the water table in the region and along with flow events will render thousands of acres of prime land useless. Homes, infrastructure, taxes, jobs, and revenue that this country so badly needs will be lost.


The Corps of Engineers have become merely puppets, the strings to be pulled by Fish and Wildlife to do their bidding. Let's try a different alternative, one where we can coexist in the - in the basin, one where we can help the Corps rid themselves of this terrible monkey riding their back.

None of the alternatives are acceptable. Do not change the manual for any reason whatsoever. Fish and Wildlife and the U.S. - - and the U.S. Corps of Engineers have become terrorists in the hearts and minds of the citizens and stakeholders in the basin.

Thank you.

Correspondence: 48

Author Information

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Correspondence Text

GEORGE CUNNINGHAM: Hello. My name is George Cunningham. I represent the Sierra Club. The Sierra Club is the nation's largest and most influential grassroots organization in the country with nearly two-and-a-half million members, and we have 25,000 members in the Missouri River basin.

The Missouri is one of the country's great rivers, indeed is the nation's longest river. The Missouri River was described by Lewis and Clark as a winding, meandering river teeming with fish and wildlife.

Today it has been altered by huge reservoirs and channelization that has removed the river from its floodplain. These changes have caused the loss of nearly half a million acres of fish and wildlife habitat, the listing of three species under the endangered species act, and made many native fishes, once common in the river, now rare.

Of the six alternatives presented in the EIS, we believe, that is the Sierra Club, the only environmentally sound option is Alternative 2, which will allow appropriate habitat types to be developed and move river management towards a more natural river that sustains wildlife and provides a more secure future for endangered species.

Also, Alternative 2 is the only alternative that links future management actions to the existing authority to carry out the bank stabilization and navigation mitigation program that restores over 165,000 acres of river habitat as the result of the modification to the Missouri River by the Pick-Sloan program.

Unlike some of the other alternatives presented in the EIS, Alternative 2 would not solely base habitat development on mechanically created restoration. Unfortunately, as currently written, Alternative 2 has proposed too many mechanically created sandbar acres thus inflating what we believe to be the true cost of Alternative 2.

Despite this overinflated cost, we support Alternative 2 with a reduction in the mechanically created

habitat, more in line with the other alternatives proposed by the Corps in the EIS.

One thing that we insist on is that the Corps link any proposed alternative to its existing authority carrying out the much needed mitigation of the past bank stabilization navigation activities. We believe the restoration of the nation's longest river should deserve the same attention and fiscal resources as the nation's other great restoration programs, such as the Florida everglades and the Chesapeake Bay.

Thank you.

Correspondence: 49

Correspondence Information

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Correspondence Text

MARK JONES: That's Mark, with a K, Jones. I'm from Rulo, Nebraska.

I'm here representing me, my family, and my family's future. We've been on the river since 1859. We've seen everything. We own approximately 1 mile of river front.

And so my dad 60 years ago was in front of a group like this fighting for the levee system, fighting for the Corps to make his life and generations after him better. I'm here trying to save it.

To the point, the six options, none of them work for me. Three of them will guarantee I'm done. Two of them, there's a 50/50 chance I can participate in farming that we've been doing for 150 years. One of them might work. I'm told that's the status quo, kind of what the last few years have been like, a couple years.

Two years ago, I lost half of everything - - no, two years, almost all of it, and last year half. And I've got the data to prove it, and that's not doing all this fancy stuff.

So it's not working, and nobody is asking us. The human side, those three little bullets up there, who's talking about us?

I could say a lot more. Three minutes is - - hey, I've done four briefings, and they don't work that way, sir.

So there should be a seventh one. At some point, nobody has ever asked me what do I think or what could I do about these three species that are endangered in this strip of ground.

And, yeah, I can't speak to the fish, because we used to catch them as kids; I don't do too much of that. But I'm out there all the time. I see the two birds. I grew up with those birds, chased them. Have you ever chased them, had your dog chase them?

They're not there anymore, and the reason they're not on our property, or north and south of me, is because the habitat is gone. And who took the habitat? I'm not going to say the Corps because, actually, I defend the Corps whenever I get into arguments.

The management system has taken away that habitat where we used to farm next to the river and all along the area, those birds were there, all kinds of them, going clear back when I was in first grade. They're not there now. That habitat is destroyed. It's gone. There's no place for them.

I run up and down that river. There aren't any sandbars there. Why? Because they're underwater for

months at a time. They never used to be when I was growing up. No birds were there. Now, hopefully the fish are there too.

So I'm saying let's have a seventh one. Let me have a chance. I hear it's about 50, 60 million we want to spend on one of these deals. Give me some of that. Let me clear that ground out. Let me put some places for those birds to be like they were when I was a kid.

The only place I see these birds now are inside my levee in ponds and pools that are created because the river is at the foot of our levees. They're there inside on farm ground that's been there for 100 years, but they're not outside where everybody thinks they ought to be because that habitat is destroyed.

So I wish you would consider a little more open approach to this and get the people that are there involved, rather than just giving us three minutes to express our feelings.
Thank you very much.

Correspondence: 50

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Correspondence Text

MARIAN MAAS: I'm Marian Maas, M-A-R-I-A-N, M-A-A-S, Bellevue, Nebraska. I am a retired biologist with focus in water quality and river and stream ecosystem restoration.

And I'm going to speak for the fish and the wildlife who, strangely enough, can't be here tonight. Quite understandably, they can't be here tonight nor can they submit comments anywhere along the line, so I'm going to speak for them.

First, I want to talk about Alternative No. 3. It is an all mechanical alternative, which means bulldozers and that type of thing will push sand around, and it is essentially the least sustainable and the worst alternative.

It has received a great deal of support by all the people who do not want flows in the river, who don't want to see anything change, and you have heard that tonight.

So instead of using flows on the river to produce sandbars, it'll be artificially done. The pallid sturgeon, the third of the three species, will have little benefit to be gained from this alternative, although they are creating what they call the IRCs, the interception - - oh, what is the - - rearing complexes.

And this is done on two wing dikes a year and over a span of about ten years, which is really, on the lower river, far too few and far too long of a time period.

Alternatives No. 4 and 5 probably don't get very much attention, but all the duck hunters and waterfowl hunters in the room or in the public should pay attention to these two because these provide a rise, either in the spring or in the fall, which increases the backwaters, increases roosting and feeding areas for migrating birds, eagles, waterfowl of all kinds, helps to bring in hunting, which is a huge revenue for towns and communities along the river.

And this is something that also is not mentioned. These rises help to replicate natural rises in the river and helps actually by filling these backwaters for other native species that are not being included in this, which is something that has been mentioned this evening, that we are only doing this whole plan for three species and all the others, such as the 67 native fish species which are declining or have gone, will not necessarily get any benefit. None of the plan is intended for other species.

Alternative 6 also should not be ignored. It is the old spring rise, and this duplicates what's been going on for eons. The river comes down out of the Rockies, there's snowmelt and spring rains, and the river rises. And this is true of all rivers to one degree or another.

So I know recent science that says that they may not get any spawning cue from that, but I think our science is not quite what we have yet to be able to test for that.

I would encourage Alternative 2. It is the amended biological opinion produced by the U.S. Fish and Wildlife Service, and I would like to see biologists in the Fish and Wildlife Service providing a description for what should be done, rather than - - please forgive me - - the Corps of Engineers.

I would also like to mention, as has been said this evening, that the BSNP mitigation needs to be in the final record of decision, and that it should be observed and acknowledged and plans clearly laid out for following it and getting it done in a timely basis.

Thank you.

Correspondence: 51

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Correspondence Text

DONETTE JACKSON: Oh, Donette Jackson, again.

I just would like to say that we have - - the river has been - - I mean, I can attest to this because I remember the '52 flood. Then I remember the channelizing of the river. It carried deep. It carried the water off.

Yeah, sure, we would have ice jams occur every once in a while, but they - - like I said, they would break them up with dynamite, and a sand - or an ice jam is far better than a four-month flood. You know, it - - I didn't think I'd ever live to see that along the Missouri River.

So I really hope that the Corps will listen to us and our concerns and that we can work together and try to - - just try to reach, you know, an agreeable solution to the problem.

The river has changed, and the notching of the dikes is a big - - a big thing because it's eating away the ground. And observing the one that was put right next to our property, it will - - before too long, it will be into our ag. property, our ground.

So hopefully they will listen and we can work together. Thank you.

Correspondence: 52

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Notes: Transcript taken from public meeting in Omaha, Nebraska, on 2/14/2017	

Correspondence Text

BILL BEACUM: This gives me a little time to flesh the science out on the birds, and I'm not going to deal with the fish.

The piping plover has many opportunities for recovery. The thing about it is, we have chosen what is designated as a sink. A sink is a place where the habitat is not stable. And, generally speaking, when you recover any species, you go to a source. The source is a subpopulation that is not a sink and doesn't threaten the bird, and it can use it regularly.

We have source populations up on the alkali flats of North Dakota, which the people up there say they can have again the number of birds up there and make it consistent for less than a million dollars a year.

And one person even said for probably less than 100,000, and yet we're presuming that somebody is going to give us 200 million to do the same thing and not do it as well. And at the end of the time, we just have a status quo, according to the figures that they give us, and they can give us recruitment.

We're completely ignoring the saline lakes in South Dakota. The thing that started this whole thing was that, oh, if these birds don't nest in that 40 miles below Gavins Point, they won't nest at all. But the truth of the matter, that's a failed hypotheses.

The number of birds that are there now and the number that were there at the 2011 flood is zero to 1,832. You can't go from zero to 1,832 in five years, no matter what you do, unless the birds are coming in from different locations.

And the white paper that the Corps had worked with said there's only a 200th of a percent chance that this dispersal will take place, so that's bad science.

And the truth of the matter is that even if it wasn't bad science, you lose 20 percent of the birds through attrition every year. And if you don't have nesting for three years, you've lost 60 percent of the birds, and 60 percent of zero is still zero, so where do you build from if they're not coming in from other places?

Most of this science fails. And three scientists, the top people in the basin on the piping plover, one with the Fish and Wildlife Service and two with the USGS, have changed jobs now because they can't get other people in the Fish and wildlife Service to listen to them. And I think it's past time that the Fish and Wildlife Service people that are making the decisions start listening.

Correspondence: 53

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Correspondence Text

SCOTT OLSON: Scott Olson, again.
You know, we live and work in the basin - - here in the basin, and we've grown up next to the river. We've seen the wildlife that is there, and we know what needs to be done. Something needs to be done in places.

The flood of 2011 has destroyed more wildlife habitat up and down the river than it has ever created. It'll take many, many, many years for this to come back together.

You know, like I said, we farm down there. We've seen deer, turkey, pheasants. You name it. It's down there. But they're not there now. They moved out, and they're not coming back for a while, not until this habitat regrows and makes habitat for them.

But, right now, all you have is sunflowers and cottonwood trees and just junk down there. I mean, there's no food value down there. There's - - you know, they always say that birds live in trees. They don't live in trees. They live in the bushes, you know.

The work we've been doing down there, removing sand over the years, you don't even see birds along the river. The piping plover and all this stuff, like the other gentleman said from Southern Iowa/Missouri area, that's all been destroyed by the flood of 2011.

I know they built some huge habitats not too long ago south of us along the river. All of that is gone because of 2011. And they have come back in, and they've put over 3 million cubic yards of sand and soil into the river to create the sandbars that are out there.

You know, they were supposed to build, what, 170 acres of habitat for sandbars in three years from now. Is that right? Is that correct? Anyway, you're not supposed to answer. Anyway, let's do something different with it. But, you know, we all work for wildlife. We all try to leave our land a little bit better than the way we received it. We're doing our part, but I think the Corps is kind of falling down on theirs.

Work with the people in the basin, as he said over here. Come ask us. You know, we know the river. You guys are all experts. I guess you guys all know it better than we do. Give us a chance to work and get something done.

But stop the landgrab that's going on up and down the river because that's basically all it is, in my opinion, is just landgrab. 166,000 acres they want.

The river was channelized. There was 170,000 square miles that was put into production when that was done, and they're going to tear almost half of it out. I realize they want the basin back bluff to bluff, but there's a lot of people - -

Thanks for the yellow light. - - there's a lot of people that are really going to have a lot of problems with that.

I think the pushback on this is going to be very, very great, and I hope it is very great. I hope everyone in this room passes this on to someone else, and I hope that it goes just as far down the line, up and down the river, as we can make it work.

But everybody across the state of Nebraska, across the entire state of Iowa, Missouri, Kansas, everyone should be updated for what's happening and should be aware of what's happening because of the taxes, the infrastructure, everything that's going to happen.

And another thing you folks have not spoke of yet tonight was 500 floodplain - - the 500-year floodplain. I don't know if that has anything to do with this tonight. But, you know, we go from 100-year and 500-year and start paying insurance on that, and it's going to be kind of tough. Crop insurance, anything else, any federal money into these areas will be affected.

We've got a lot to learn, folks. Let's slow down and learn something.

Correspondence: 54

Correspondence Information

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Correspondence Text

MARK JONES: If I can say one thing?
I kind of beat you up for three minutes.

In all fairness to the Corps, it's been mentioned several times about 2011. That was a significantly huge, emotional event for me, but 2010 was almost just as worse, 2008 economically was just as worse. 2009, I lost half of it, and I don't know what we were doing then, recovering and getting ready for another flood, I guess.

But I've looked at these plans. A couple of them are devastating. If you go back and with particularly '10 and '11, in Southeast Nebraska, if we'd have had one 4-inch rain...

The data, I was - - I kind of looked at it before. I really looked at it last summer. We had a 1-inch rain. The river came up a foot. A 3-inch rain, it came up 3 feet almost overnight.

In 2011, we had 17 inches of freeboard left on our levee, 30-foot levee on the north end, and it never hardly rained through the 4th of July or even in June. And at a 2- or 3-inch rain, I wouldn't be here because the Missouri would have moved.

And I'm saying that in that - - don't take this personally - - what is the Corps' ability to manage some of these plans, particularly the three that really scare me. If we go back and look at 2011 - - and I've got the leads on that, read the emails, all the talk between Mississippi and Missouri and in the scuttlebutt within the Corps itself, it doesn't build confidence, sir.

If you adopt at least three or four of these six plans and you have an event remotely close to 2011 or 2010, I mean, just remotely close, and then we have rain associated with a flood like '84 and '93 - - see, those were bad floods, but what made them really bad was all the five rivers that were trying to cram into them south of Omaha and north of Saint Joe.

If you want a perfect storm, you not only have a couple bridges shut down, but our new bridge in Rulo probably would be - - the pilings would be unstable. My house would be gone, and it's been there since 1863. It would be gone.

So the risk, just as you would take it off and you'd weigh out this stuff with the risk, what is the risk of what can go bad, and I haven't seen any of that in any of the data. And I haven't read all 6, 7,000 pages, but there needs to be a risk factor. There needs to be a Paragraph 6, and I haven't seen that.

And me and at least two or three other people in here, we're the ones that are going to pay the risk, because if you lose the birds, that's tragic, but it sounds to me like we got other birds, and we can figure out how to replace that. But you lose me, my kids probably aren't going to fight this fight for 150

years like my ancestors have.

So that's what I - - we need to have a real discussion as to the total risk applied to each and every one of these options, and I don't see that anywhere. All I see is an argument. Is it good enough?
Thank you.

Correspondence: 55

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Correspondence Text

MR. LEPISTO: Good evening. I'm Paul Lepisto. Last name is spelled L-E-P-I-S-T-O. I'm a Regional Conservation Coordinator representing the Izaak Walton League of America, specifically the Izaak Walton League members in the states of South Dakota, Nebraska, and Iowa.

The Izaak Walton League of America thanks you for this opportunity to provide initial comments and for holding public meetings on the Missouri River Recovery Management Plan's Draft Environmental Impact Statement. The League is deeply involved in Missouri River recovery and many other river-related events and activities.

We want to thank the Army Corps of Engineers for extending the public comment period on the DEIS until April 24th. The DEIS is a massive and complex document running over 4,900 pages. The recovery actions outlined in the plan are for the federally listed species. But we feel those actions will also benefit many other native fish and wildlife.

The League is still currently reviewing the DEIS, and we will be submitting our detailed comments prior to the deadline.

Thus far, though, we have concerns on the Corps' preferred Alternative No. 3. This one utilizes mechanical construction to create shallow water habitat, interception rearing complexes and emergent sandbar habitat.

Our concerns primarily focus on future funding for recovery efforts that are outlined in Alternative 3. We ask what happens if funding for mechanical construction is not available or zeroed out by Congress. This has happened with other Missouri River efforts and programs in the past. Is there a Plan B contained in Alternative 3? If so, we haven't seen it in the DEIS.

Another important component we feel is missing in the DEIS is the mitigation program for the Bank Stabilization and Navigation Project. Mitigation is authorized in several prior Water Resource Development Acts, or WRDAs, but is seldom mentioned. We wonder what will become of habitat restoration goals and objectives in the BSNP Mitigation Program in the future. Also, how will the new Recovery Management Plan and the BSNP Mitigation Program be integrated.

The League supports and welcomes the Adaptive Management component of the plan. Under AM, recovery actions would be adjusted much quicker to provide needed benefits to the species.

We urge the Corps to robustly fund and support comprehensive monitoring and research efforts of any management actions undertaken. We feel this will help ensure the actions are performing and getting the desired response from the species. Additional research will hopefully close some of the data gaps and the uncertainty that currently exists in recruitment, especially for the pallid sturgeon.

In our preliminary review of the DEIS we favor many aspects offered in Alternative 2. This alternative re-establishes the floodplain connectivity and provides habitat for species and native fish and wildlife. Reconnecting the river to the floodplain in certain areas will also reduce flood risk, improve water quality, and increase recreational opportunities for families along the river.

We again want to thank you for this opportunity and we ask that you keep us informed as this process moves forward.

Correspondence: 56

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Correspondence Text


MR. IVERSEN: I'm Dana Iversen. My last name is I-V-E-R-S-E-N. I'm a Representative of the Stanley County Commissioners. I'm here for the - - the habitat that you've created for the animals probably is a really good thing the way they're doing it. The water levels in the Missouri, the lowering of the Missouri would actually benefit all the species that you're wanting to help. And what concerns us directly now is the water level of the Missouri being as high as it is at this current moment.

The lowering of the water will help; more sandbars for the birds, more longer drainage area from the dams for that sturgeon. So the elevation of the silt in the basins of these dams has created less storage for flood control in the lower and upper basin, and also has created, you know, less room for the fish and other animals.

The main thing that we're concerned about is the flood control and keeping that in check along with the helping of the animals. Thank you.

Correspondence: 57

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Correspondence Text

MR. RED CLOUD: Good evening. My name is Reno Red Cloud. The last name is R-E-D C-L-O-U-D. And I'm with the Oglala Sioux Tribe Water Resource Department. And I'm here tonight to make some comment from my department, and I know I've sat on the MRRIC, too, with the committee, but I just wanted to outline a few comments that I have from the Tribal Interest Group, the Oglala Sioux Tribe. I know that the Draft EIS and the Missouri River Management Plan focus on flows and habitat, but then historically with the flows of the Missouri River, our tribe has tribal reserve water rights. I wanted to make sure that them - - they are acknowledged and recognized.

And our cultural resources, before the dams were built we had natural flows. There were sacred trees that we used for ashes and medicinal plants that was part of our culture. The cultural resource aspect, I know that's modeled off to the flows, but then there's a lot more to it with, you know, our plants and animals, too, that affect our tribes, too.

And then the water supply, we have the Mini Wiconi Water Project just right out here, out of Pierre here that has had a intake that supplies water to three reservations; the West River, Lyman, and Jones, but we have a concern with that with water supply to that, that the water quality stays at a high level and that, you know, that it would not be affected by sediment.

Then the Oglala Sioux Tribe does have its own ordinance for tribal consultations. So whenever the time - - when we get done with our review and comment, when the tribal consultation does come, we have our own process through our tribal ordinance. And I know there's going to be two types of consultation, government to government, 106 NEPA consultations. We're looking forward to that consultation.


And then the Endangered Species Act, I know the least tern and the piping plover and the pallid sturgeon, but the tribes also need to be acknowledged with their water rights and the treaties of the Great Sioux Nation. And I know there's 29 or 30 other tribes within this, you know, this DEIS and Missouri River Management Plan, too, that I hope that they're being acknowledged and fully, how would you say, notified of the process, too.

And we are working with our THPO office, our Water Resource Management, Tribal Water Resource Management Team Programs, and we do have a biologist that we are going to be reviewing the DEIS

with. I know that it's a 5,000-page document, but we'll be getting our consultation topics with - - whenever the time is right for consultation. Thank you.

Correspondence: 58

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Correspondence Text

(Speaker 1 - Mr. Al Jacob - Speaking as
Chairman of MO Valley Levee District)


MR. AL JACOB: Well, I don't know exactly where to start. I am concerned that in 2011 we had a major flood event on the upper Missouri. And at that time, all the states were going to work together to try to not let this happen again. Well, now here we are six years later talking about having a surge possibly twice a year.

We're seven to ten days below the dams on the Missouri River. There's no way they can forecast the weather that far out, knowing what the rainfall is going to be in that time. And I feel that it's just a very dangerous situation to put us in. In our district alone, we have state highways. A flood event would split our school districts. Our availability for a hospital would be almost nil because we couldn't get to it, the closest one. We'd have to drive a half-hour to get to one instead of ten minutes.

I just - - I'm not - - I don't know if there's anything that can be done to help the pallid sturgeon and the birds, but I think we need to take care of the people first, consider what's going to happen to them and how it's going to affect their lives. For the State of Missouri, we cannot handle any type of surge. It's just totally out of the question.

Correspondence: 59

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Correspondence Text

(Speaker 2 - Mr. Robert Struckhoff - Speaking
 on behalf of Dorist Levee District and Augusta Levee
 Association)

MR. ROBERT STRUCKHOFF: I know I don't like the pulses, the pulses in the river where they raise them. On the lower end where we are at, we're a week to ten days from - - what's the name of that dam up there, the last one, Gavins Point. And they can't forecast the weather that good. Say there's a pulse coming down the river and we get a big thunderstorm and everything goes bad.

I just can't understand why these people - I feel a lot of this stuff comes from Washington, DC. I was up there a couple weeks ago. And I don't know. I don't think they understand rural America. That's what it seems to me, they don't understand.

And a lot of these things with the pallid sturgeon, you know, it's not scientifically proven that that will help them even. It's a good idea maybe. But they are going to put a lot of people's economy and stuff in jeopardy with these great ideas they get, and also cost quite a bit of money.

They could much use that money for the infrastructure of the Mississippi River, getting their barge systems and their inland waterways working. Otherwise we've South America down there. You know, they've got horrible roads, but they are starting to get their infrastructure good so they can move their economy to ports. That's what we need to do. I think that's about all I've got.

Correspondence: 60

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Correspondence Text

MS. JOSIE ERFLING: We, Wilmer and Josie Erfling, are farmers in the Missouri River Bottom in the Hermann, Missouri area. We are the fifth generation to farm this land. We feel and certainly believe that the Corps of Engineers has a duty and a mission and a moral obligation outlined by congress to provide flood control for the citizens of not only that area, but our nation.

The northwest division cannot turn its back on congress, and it's got to find a way to protect the species and still follow the mission of flood control. This is the directive that congress and it's the desire of the people, but it's not what this draft environmental impact statement sets out to do. Having spent over three-fourths of a billion dollars on two birds and a fish, it's time that they start to think about the human impact.

We have an area on our land where the Corps cut a dike, causing tremendous erosion. We lost sandbar habitat that now they are so desperately trying to gain. We are losing land, soil. It's going down the Missouri River. And we have intense bank erosion. It's time that the Corps start listening to the landowners and not just accepting what Federal Fish and Wildlife and the different environmental agencies can just plunk down in front of them. The Corps needs to get out and meet with the people who own the land and work the land use the land to the best of their abilities.

It's easy to take information that these environmental agencies can present before them, where the farmers, we don't have the time or the resources to give them this in a form that is readily available. They need to get out there and meet with us and stand on the bank of that river and see what it's doing.

We appreciate everyone's time. We appreciate the opportunity to speak before the Corps. And if there are any questions, we would love to have them come stand on our levee, take a look at what the river is doing to our farmland. These artificial spring rises and fall rises just are not an alternative. Thank you.

Correspondence: 61

Correspondence Information


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Correspondence Text

MR. SCOTT JACOB: We do not need any more water released at any times. Our levee systems are getting tore up as is. We cannot handle what we are getting. This is a very bad idea. That's all I've got.

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Correspondence Text

MR. TIM BRISCOE: Thank you. Good evening. My name is Tim Briscoe, and I'm a law student with the Interdisciplinary Environmental Clinic at Washington University. The clinic is speaking on behalf of the Missouri Coalition for the Environment, and our comments today center on the statutory obligations of the Army Corps of Engineers under the Endangered Species Act and the National Environmental Policy Act, or NEPA. In a moment, my partner, Gabby Riek, will make some comments on the alternatives analysis.

But first I'll discuss the way that the EIS frames its goals. NEPA regulations require the Corps to utilize a statement that, quote, briefly specifies the underlying purpose and need to which the agency is responding and proposing the alternatives including the proposed action, end quote.

We believe the purpose and need statement of the EIS does not make its goals sufficiently clear and, as a consequence, does not provide the public with a concise and focused set of objectives for the evaluation of the project alternatives. The Corps provides multiple and potentially conflicting goals in different sections of the EIS. For example, the executive summary states, quote, the purpose of the EIS is to develop a suite of actions that meets Endangered Species Act responsibilities for the piping plover, the interior least tern, and the pallid sturgeon, end quote.

The statement effectively summarizes the Corp's obligation to ensure that the continued existence of the three species is not jeopardized by Missouri River operations. However, the Corps adds within the problem definition section of the first volume of the EIS, rather than the executive summary, that the plans should continue to, quote, serve the Missouri River authorized purposes and accounts for human considerations, end quote.

The original purpose specified in the Endangered Species Act becomes subordinate to the EIS's lengthy discussion of human considerations, which consists largely of the economic effects on certain special interests. We are concerned that those considerations, which are not identified within the purpose and need statement, become controlling factors in the ultimate selection of the preferred

alternative. What gets lost in translation is how effectively the selected alternatives will actually meet species' goals relative to the other alternatives, or at least a clear statement to that effect at the beginning of the EIS.


Of course, the science associated with the three threatened endangered species is extremely complicated and inevitably carries some degree of uncertainty. That uncertainty, however, should not be used to obfuscate the intent of congress as embodied in Section 7 of the Endangered Species Act.

For those reasons, we submit that the Corps reconsider and clarify for the public the formulation of this purpose and need statement. Thank you.

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Correspondence Text

MS. GABBY RIEK: Good evening. My name is Gabby Riek, and I'm also here from Washington University as a student consultant speaking on behalf of the Missouri Coalition for the Environment. I will speak to our concerns regarding the range of alternatives that are discussed in the EIS.

We believe the range is insufficient because a reasonable alternative could fall between Alternative 2 and Alternatives 3 through 6. The EIS analyzes in detail six alternatives to achieve project goals, including a no-action alternative, which is Alternative 1.

Alternatives 2 through 6 consist of other actions that will reduce the likelihood that the Corps' operation of the Missouri River system will jeopardize the continued existence of the interior least tern, piping plover and pallid sturgeon.

Alternatives 3 through 6 are very similar to each other, but very different from Alternative 2 which is based on the 2003 amended BiOp. Alternatives 3 through 6 differ slightly in the amount of mechanical emergent sandbar habitat, or ESH construction. They also differ slightly in the need for and timing of a flow release from upstream reservoirs.

But there are significant differences between Alternative 2 and the other alternatives. First, Alternative 2 requires far more mechanical ESH construction to benefit the interior least tern and piping plover. The goal from the 2003 amended BiOp is to create 11,886 acres of ESH. Alternative 2 achieves this by creating 3,546 acres of ESH per year at a significant cost. Alternatives 3 through 6 require only a fraction of this acreage, ranging from approximately one-tenth to one-fifteenth of that in Alternative 2. Unsurprisingly, Alternative 2 is significantly more costly than the other alternatives. It is also difficult to believe that the

Alternatives 3 through 6 would reach the goal of 11,886 acres of ESH on the Missouri River.

Under Alternative 3, the Corps would create ESH habitat only through mechanical means. But this is only a tenth of the acreage of Alternative 2. Alternatives 4 through 6 heavily depend on what are

described as annual flow releases to create ESH. But because the river must meet very specific conditions before a flow release occurs, the releases will be much less frequent.


The alternatives also dramatically differ in amounts of early life stage habitat construction. The BiOp outlines a restoration goal of 20 to 30 acres of shallow water habitat per river mile. Alternative 2 would achieve the upper end of this acreage target by creating a total of 10,758 acres of habitat. Alternatives 3 through 6 would create about a third of the habitat created in Alternative 2.

In addition, Alternative 2 includes unique management actions such as low summer flow and flood plain connectivity. On the other hand, Alternative 2 lacks the Level 1 and Level 2 studies' robust adaptive management and spawning habitat construction that are present in Alternatives 3 through 6.

For these reasons, we believe that the current proposed alternatives do not reach a wide enough range of feasible options to adequately protect the threatened and endangered animals. We believe that the Corps should include additional alternatives that fall between the endpoints of Alternative 2 and Alternatives 3 through 6. Thank you.

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Correspondence Text

MR. TOM HORGAN: Good evening. My name is Tom Horgan, H-o-r-g-a-n, Senior Manager of the Midcontinent Office for the American Waterways Operator, or AWO.

The American Waterways Operators is the national advocate for the U.S. tugboat, towboat, and barge industry, which serves the nation as the safest, most environmentally friendly, and most economic mode of freight transportation.

On behalf of our members, I appreciate the opportunity to comment on the Draft Environmental Impact Statement for the Missouri River Recovery Management Plan. On behalf of AWO members, AWO staff has served as a member of MRRIC.

First, AWO supports the recovery of the endangered pallid sturgeon and the threaten leased tern and piper plover, and we strongly believe that these species can be recovered without changes to the Master Manual or any other major flow modifications to the mainstem reservoir system, which our members strongly oppose.

Of the six alternatives presented to us for review and comment, AWO supports mechanical sandbar habitat construction contained in each of the alternatives included in preferred Alternative 3. However, AWO strongly opposes the various flow modifications common to Alternatives 2, 4, 5 and 6. Low summer flow provisions in Alternative 2 will cause irreparable harm to the navigation industry by creating a split season on the Missouri River virtually killing navigation on the river. In addition to this, the low summer flows in Alternative 2 will have severe negative impacts on navigation on the Mississippi River from St.~Louis all the way downstream to Cairo, Illinois. During drought years, over 80 percent of the water flowing by the St.~Louis Arch comes from the Missouri River. These flows are necessary to keep this commercial superhighway open.

Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing

downstream flood control constraints and doubling releases from Gavins Point for 35 days. Regarding Alternative 6, AWO opposes the implementation of a full bi-modal spring release because of the risks to flood control, its negative impacts to navigation, and the lack of science that confirms that these flows would necessarily facilitate the recovery of the species.

We believe the Corps' preferred Alternative 3 strikes the best balance between species recovery and human considerations. This alternative meets the species targets for birds while causing the least amount of impacts to stakeholders. Furthermore, we commend the Corps for their commitment to study the correlation between tributary flows and pallid sturgeon habitat.

However, AWO supports eliminating the one-time flow test or bimodal spring rise from the preferred alternative because virtually no science has been developed to prove its value. In fact, the Corps admits in the DEIS that no current scientific evidence indicates the greater magnitude bimodal spring releases would serve as a cue for aggregation and spawning of the pallid sturgeon in the lower Missouri River. AWO is also concerned that this one-time flow test could be part of a permanent flow regime in the future.


Finally, AWO is very concerned about the implementation of any preferred alternative under an Adaptive Management plan. Our members are particularly concerned with the section of the Adaptive Management plan dealing with management actions outside the Record of Decision. Whenever new actions are proposed or existing actions are modified, those changes must be subject to thorough review, including public comment and environmental impact statements under NEPA, and must be in compliance with the Master Manual.

AWO will be offering written comprehensive comments in advance of the extended comment period deadline, and we sincerely thank the Corps for extending the public comment for an additional 60 days.

Colonel, in closing, we thank you and the Corps staff for traveling the basin to hear stakeholders' thoughts and concerns on this important matter. Thank you.

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Correspondence Text

MR. DAN ENGEMANN: Good evening. Again, my name is Dan Engemann, E-n-g-e-m-a-n-n. I serve as Executive Director of the Coalition to Protect the Missouri River. The Coalition is made up of a variety of interests and supports the congressionally authorized purposes of flood control, navigation, water quality and water supply. We also support endangered species recovery.

We appreciate the opportunity to comment on the Draft Environmental Impact Statement of which several of our members and I personally have been involved in as part of the MRRIC process.

The Coalition supports mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to Alternatives 2, 4, 5 and 6.

We too are concerned with low summer flow provisions in Alternative 2. It would cause harm to our navigation industry, as Tom said, creating a split season on the Missouri River and adversely affecting navigation flows on the middle Mississippi River.

These low summer flows have the potential to negatively impact water and sewer treatment plants, as well as power plants, creating problems with intakes and increasing the risk of failure to comply with the conditions of discharge permits.

We too believe Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall to our farmers, increasing downstream flood control constraints and doubling releases from Gavins Point.

Regarding Alternatives 6, our members don't support the implementation of a full bi-modal release because of the risks to flood control, and the impacts to interior drainage are far too great.

The Corps' preferred Alternative 3 strikes a better balance, we believe, between human interests and species recovery. However, our members are concerned about the potential for flooding and impacts to interior drainage, as I just said, as part of a one-time flow test.

The Coalition supports eliminating the current bi-modal spring rise from the preferred alternative because, as Tom just mentioned, the lack of science that's been developed to prove its value. We applaud the Corps for their commitment to study the linkage between tributary flows and pallid sturgeon recovery.

That's a point that we've been making for quite some time. We appreciate that that is in Alternative 3. However, we question how the Corps can keep such an option on the shelf for nine to ten years in the future as part of this alternative knowing that river conditions can change during this time, making human consideration effects difficult to monitor.


Flow rises in other alternatives raise questions about how they will be implemented, and especially those actions that require amending the Master Manual. We oppose such revision because of the time involved, the risk to the species, and the potential for litigation during which time the species could decline even further. Should the Corps choose something other than Alternative 3, the process for creating flow changes needs to be clear to stakeholders and be aligned with the Master Manual.

And for the same reasons, any adaptive management actions could cause the same concerns, especially those outside the Record of Decision, and we urge those to be subject to thorough review, public comment, and be in compliance with the Master Manual.

The Coalition to Protect the Missouri River will be offering comprehensive comments in advance of the extended comment period deadline. We thank you for the extra time to review this lengthy document, and for traveling the entire basin to hear our concerns on this important matter. Thank you very much.

Correspondence: 66

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Correspondence Text

MR. ADAM JONES: Good evening. My name is Adam Jones. My family and I farm in St. Charles County, and I am here to represent Missouri Farm Bureau, the state's largest farm organization. Many of our members' livelihoods are tied to the Missouri River and, thus, we've been involved in management issues for more than two decades. We're grateful the Corps extended the comment period to April 24 and plan to submit more detailed written comments at a later date.

Many Missourians continue to believe common sense must be the foundation of our government's management decisions. We're hopeful the Trump Administration will recognize the shortcomings of current federal actions and hit reset button.

Almost a quarter of our state's counties border the Missouri River. A new study shows agriculture is vitally important in those 25 counties. Agriculture, forestry and related industries had an economic impact of \$34.6 billion in 2016. Agriculture's contribution includes \$21.2 billion in inputs, over 135,000 jobs, and \$2.8 billion in federal, state and local taxes.

We believe flood control and commercial navigation are priorities when considering authorized uses. Much of our state's drinking water comes from the Missouri River, and we support flows for power generation and continued close coordination with levee districts.

We will not support proposals that weaken flood control, initiate pulses, or reduce flows in the summer. We do not support the construction of chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil being deposited into the river. Given past experience, we're skeptical of adaptive management and what we consider to be very expensive experiments.

For the reasons stated, several of the alternatives under consideration are non-starters. Given the prescribed flow modifications, we do not support Alternatives 2, 4, 5 and 6. Alternative 1 is a concern that it continues to allow for a bimodal spring rise and the construction of shallow water habitat.

While Alternative 3 does not call for shallow water habitat, it does require Interception Rearing Complexes, which those who know the Missouri River simply consider more hocus pocus. At a minimum, it will be important to work with landowners who could be impacted by the IRCs. Furthermore, Alternative 3 does not rule out flow modifications in years nine and ten.

Every man, woman and child in the U.S. currently owes over \$65,000 for their share of \$19.9 trillion public debt. We have to be cognizant of expenses associated with each of the proposed alternatives.

We're not asking to give up on any bird or fish, but common sense has to be part of the equation. The Endangered Species Act must be updated. Consideration of human impacts must come first, and no one should be held hostage by the views of personnel within the U.S. Fish and Wildlife Service, Environmental Protection Agency, or any other arm of government. Thank you.

Correspondence: 67

Correspondence Information

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Correspondence Text

MR. DANNY KUENZEL: Good evening. My name is Danny Kuenzel. I am first and foremost a farmer, but I have been involved in Missouri River issues for a long time. I also serve as secretary treasurer for the Missouri Levee and Drainage District, so I am very familiar with the effects levee districts face when they have too much water.

Some people think of us as farmers, but we are also businessmen. We are also conservationists and environmentalists because if we have to be over applying chemicals and fertilizers which harms the environment, that doesn't make economical sense.

Alternatives 2, 4, 5 and 6 could very well end up having a very disastrous effect on the Missouri River basin agriculture if implemented. There are some people here saying our levees are not feasible. But let me remind you, they protect a lot of infrastructure, including interstates, two-lane roads, bridges, railroads and pipelines, just to name a few.

If Alternatives 2, 4, 5 and 6 were to be implemented, what if it starts to rain a significant amount of water after the water has been released? It can't be stopped. So what are some of the potential impacts? A major flood or a prolonged flooding event? Some of the flows I see mean possibly three to five feet of water in Washington, Missouri where I farm. An engineering friend in Cape Girardeau estimates 1.5 to 3 feet of extra water on the Mississippi.

So what happens in a prolonged flooding event? Interior drainage becomes a major problem, which leads to my next point. When drainage pipes are closed, water within our levee system is unable to leave, which means the longer it goes on, the worse it gets. That's not only bad for agriculture, but it's also bad for the environment. This means possible leaching of chemicals and fertilizer into our river system. And I think everyone here would agree that clean water is our goal. It seems like we are always coming to meetings to discuss the environment. What about the other seven authorized purposes of the Missouri River? According to my estimates, we've spent over three-quarters of a billion dollars on habitat recovery with very little to show for what we've done. I think it's high time the Fish and Wildlife Service start working with people and stakeholders for a common goal and good of everyone. It's not just their river. It's everyone's river. And environmental restoration needs to be done with existing uses of the river.

Correspondence: 68

Correspondence Information

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Correspondence Text

MR. MIKE GARVEY: It's Mike Garvey. It's spelled G-a-r-v-e-y. Thank you, guys, for allowing us to speak. I'm going to try to present a point that what's good for the endangered pallid sturgeon is actually good for the taxpayer.

Over millions of years, the basin of the masterful Missouri River pulsed in a meandering erosion zone, back and forth, creating the bluffs, rich soils and the expanse of a level floodplain. Additionally, glaciers periodically scoured the basin. These pulsing forces shaped a diverse, sustainable, biologically bountiful ecosystem which depended upon water boundaries regularly transversing its large flood plain. Floods then were not fast and destructive, but actually gradually rose and fell and recurrently inundated the entire flood plain.

This flood pulse nourished all manner of wildlife, amended the soils, gave the fish and wildlife breeding grounds, a much needed pulse of life, and wildlife breeding grounds. Although it took millions of years, actually billions, for this basin to form, it only took about a hundred years for man to alter the Missouri River into its fast flowing narrow ditch, devoid of life and barges. Actually, the Missouri River is not really being used for transportation and it should no longer be a congressionally approved use or authorized purpose.

To think that we can recover enough spawning to reduce jeopardy for the endangered pallid sturgeon by only flawed attempts to increase shallow water habitat within the narrow existing channel is ludicrous. We must stimulate a spring rise and fall. And without doing that, we are essentially trying to open a clogged artery without oxygen or a surgical stint. These few minimally added costly side channels sloughs and alterations of management structure has already been shown to later sediment in, a further waste of taxpayer money.

The sad fact is that very few barges use this costly boondoggle today we call the Missouri River, yet we pay to maintain it with transportation to the jeopardy of the pallid sturgeon and our own increasing flood risks. If only the Corps had listened to Charles Ellet and James Buchanan Eads instead of blindly following General Andrew Humphrey with his shortsighted levee only plan. If only they would listen today. Robert Criss just reported a paper that the floodwater levels are increasing and rising along areas that have been profoundly channelized, flood levels have become progressively higher, from 1.2 to 1.9 meters.

For too many years, our taxes moneys have been spent repeatedly padding the pockets of the levee districts, barge industry and a few farmers, who actually took the very land by accreditation that was considered to be unsuitable for agriculture from the river's edge to grow corn and beans, the same crops that the tax payers repeatedly replaces, along with the failed levees and sand removal each time a so-called natural disaster occurs. Only we have the created the problem and cannot blame God as if

it were His fault.


The Corps have incredible abilities. We need their expertise to take a second look at how they manage our rivers. They may actually find that needed changes maintains their workload. But it will take humility and acceptance of criticism, which is not their forte. The levee breaks and repeated failures are desperately trying to tell us something, and it's not to declare another emergency to replace the same levees time and time again. Some levees should be set back and some should have controlled release structures placed using LiDAR elevation and GIS imaging. The Corps has the ability, but they must consult and reason together with a listening ear to the various agencies.

To accomplish any reduction in flood risks and improve the shrinking population of the endangered sturgeon, only the Corps can do this. Landowners must also keep an open mind to understand potential benefits. Private marinas, hunting, birding and fishing clubs are some of the cost effective alternatives, and wind up of losing just a little bit of corn and beans from the sand damaged soil.

Destruction and alteration - - this is from U.S. Fish and Wildlife - - okay. I just want to say thank you, and I really do think that if we can just work together - - this is the time for the fish to speak. This is not a time for all these people who've always been heard. Thank you.

Correspondence: 69

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Correspondence Text

MS. KAREN ROUSE: My name is Karen Rouse, R-o-u-s-e. I am the Surface Water Chief for the Water Resources Center of the Missouri Department of Natural Resources. Missouri DNR represents the State of Missouri on interstate water issues and I am Missouri's representative to the Missouri River Recovery Implementation Committee. Thank you for this opportunity to provide comments on the Missouri River Recovery Program Draft EIS.

Our message has been consistent. First, flood control and navigation are the primary purposes of the Missouri River System and, as such, the Corps must implement Recovery Program actions without preemption of fully accomplishing those critical and existing lawful uses of the system.

Secondly, several of the proposed alternatives will modify the flood control constraints of the System, which would require a change to the Master Manual. For example, under Alternatives 4 and 5, the flood control constraints are increased by at least 30,000 cfs. This action would be contrary to flood control.

Third, if the Corps were to consider changing the Master Manual, that would require a separate public process and cannot be embedded in any other process. Should the Corps pursue a deviation to the Master Manual for a one-time flow event, it is imperative that the Corps consult with the governors of the states before implementing this high consequence action.

Furthermore, the proposed flow events use water from the carryover storage pool which is the pool we rely on during times of water shortage. The navigation flow support releases from the System benefit many uses on the lower river, such as water supply, energy production, recreation, and fish and wildlife. In Missouri, over 3 million people rely on the Missouri River or its alluvium as its water source. Reductions in navigation flow support have cascading impacts, not only to uses on the Missouri River, but also on the Mississippi River which is 40 percent of the flow to the middle Mississippi during normal conditions and peaked at more than 70 percent during the 2012 drought.

The department supports the Corps' intention to use natural flow events to improve our scientific understanding. In Missouri, the river is already highly variable where it is known to rise 15 feet within a 12-hour period from localized rain events. The 2011 Independent Science Advisory Panel noted that the natural rises had, and I quote, not been adequately or systematically assessed, unquote. Because of this, we believe there is no need for additional water to be released from Gavins Point.

The State the Missouri supports the Preferred Alternative identified in the Corps - - identified by the Corps in the Draft EIS, with the exception of the potential one-time flow event. This one-time flow event was neither modeled nor were the impacts assessed in the Draft EIS, and I quote again, because of uncertainty of the hydrologic conditions present, unquote.

Given our high frequency of flood events in our state, we have always been very concerned about any proposed environmental flows from Gavins Point Dam that exceed flood control restraints. Let me be clear, the State of Missouri cannot support any alternative that requires environmental flows that exceed current flood control restraints.

The State of Missouri would also like to reiterate to the Corps that decision-making within the Adaptive Management Plan needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governor's office on matters of high consequence is imperative.

Thank you again for this opportunity to provide public comments. The State of Missouri looks forward to further dialogue on this issue as the EIS process continues.

Correspondence: 70

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Correspondence Text

MR. BOB PERRY: Hello. I'm Bob Perry, Perry is P-e-r-r-y. I'm an agriculture biochemist that has a laboratory that works with farmers. We do a lot of soil testing and nutrient analysis. And I want to bring up - I certainly agree about the comments about the flow and it's very important. And I'll pick a little different part of the problem.

When building the shallow water habitats or the IRCs, mechanical constructions involves taking the soil from the banks and putting it into the river. This soil is high in nutrients. The study in Volume 2 of the pamphlets or the booklets it says that a study's been done that says adding more phosphorus and more soil to the Gulf of Mexico will not increase hypoxia. Well, the goal isn't to increase hypoxia. It's to decrease it. And the more soil we put into the river, the less likely it is that we're going to decrease hypoxia. The goals have been to reduce phosphorus and nitrogen going to the Gulf by 45 percent. And when these projects are putting in enormous amounts of phosphorus, that can't be accomplished.

Another thing about this soil on these banks is they contain antibiotic resistant microbes, and that hasn't been taken a look at. And that going into the river and the water systems that we have in Missouri taking water out of it is something that should be a concern.

Lastly, for people to think that taking away the levees is a wonderful thing to do for this world, you've got to keep in mind that behind those levees we have farm ground. And when you look at 100,000 acres of farm ground, we're able to produce enough kilocalories to feed 1 million people for one year. There's a lot more at stake than just some fish and two birds, and that's got to be considered. Thank you very much.

Correspondence: 71

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Correspondence Text


MR. DAVID HUMAN: Good evening. My name is David Human, H-u-m-a-n. I represent the Earth City Levee District, the Riverport Levee District, the Howard Bend Levee District, and the Monarch Chesterfield Levee District, all levee districts located here in St. Louis County. My clients are in the business of flood control. Using Corps vernacular and risk reduction, we are opposed to any alternative that poses any increased flood risk.

Understand that St. Louis County is a major, if not the major, economic generator for the State of Missouri. These districts protect property and businesses that are a major economic generator for St. Louis County as well as the State of Missouri. These districts protect over \$10 billion of property, over 1,800 businesses, over 45,000 jobs. These areas generate over \$140 million annually in real property and sales tax, including over \$55 million annually to education and over \$35 million in sales tax to the State of Missouri.

We are, once again, opposed to each of the alternatives that includes any increased flow modifications that inherently increases that flood risk. I want to remind the Corps of their flood control mission. Thank you for your time this evening.

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Correspondence Text


MR. DAVID STOKES: Hello, my name is David Stokes. I'm with Great Rivers Habitat Alliance, and I'm going to be revising and formally submitting my comments to you before the deadline. So I'll get that in. I appreciate the opportunity to speak very briefly tonight.

I primarily want to second the comments of the first two speakers from the Wash U Environmental Law Group who really requested and stressed a need for reconsideration of Alternative 2. I very much hope that there could be a modified Alternative 2 that can keep the very laudable goals of Alternative 2 in habitat construction and acquisition and flood plain connectivity.

I think that flood plain connectivity is so important. This river is not there to serve the interests of the barge industry and the levee districts. This river is there to serve all of us, to work for all of us, and for the animals and fish in it and around it. And a natural river is a healthy river. A natural river is a beneficial river for all of us, and we very much hope that Alternative 2 can be reconsidered by the Corps. And I'll be submitting these comments formally as well. Thank you very much.

Correspondence: 73

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Correspondence Text

MR. THOMAS BALL: My name is Thomas Ball, B-a-I-I, baseball, football, basketball. I'm a member of Sierra Club Missouri River Grassroots Network, and I'm here to comment on the Missouri River Management Plan, the size and the depth of the Management Plan Draft Environmental Impact Statement.

I'd like to thank the Corps for granting the additional 60 days for the comment period. It's 4,906 pages of the NEPA footprint and then 6,100 pages if you count the scientific stuff. We really needed the extra time to read it all.

Forty years ago, the Conservation Chair of the Dakota Chapter of the Sierra Club petitioned the Fish and Wildlife Service for an endangered species listing for the pallid sturgeon. At that point, natural reproduction of pallid sturgeon in the Missouri River was not occurring and had not been documented to have occurred in many years. That lack of naturally occurring reproduction and recruitment has not changed.

The petition called for a pallid sturgeon propagation program to capture and recover at least a portion of the genetic stock of this ancient species before it disappeared. The Pallid Sturgeon Conservation Augmentation Program, PSCAP, appears to be successful in maintaining the species' presence within the Missouri River basin. However, if supplementation efforts were decreased, the species would once again face local extirpation within several regions.

PSCAP has provided a source of hope that these fish may some day recover by increasing the numbers of pallids, but it's also revealed its own profound risks and vulnerabilities. This captive experimental population is completely dependent on continued federal and state appropriations in partnership.

Manually spawned fish from hatcheries sometimes exhibit fin curl, I won't go into the pronunciation of what it is, various viruses and parasites and a newly discovered virus that originated in the leopard

frog, but now also can infect the pallid sturgeon. While some of these disease risks are found in nature, others have an anthropogenic component. In some early cases, it appears the hatcheries may have mistakenly bred some hybrid species.

The current DEIS falls short of the expected mark in troublesome ways. First, the scope is, as we maintained during the scoping phase, too small. It appears to abandon pallid sturgeon, least tern and piping plover populations above Fort Peck and on the Yellowstone River. This abandonment occurs despite previous Corps environmental analysis and draft review documents that justified their work under the MRRP and spent moneys appropriated for BSNP mitigation in Montana. And I have the documentation for those EA's here.

Second, the scope of the DEIS appears to avoid the proximate causes of decline for these endangered species, continued operations, and maintenance through the bank stabilization and navigation program, and the reservoir dams that block pallid sturgeon mitigation to private downstream river settlement.

Further, the BSNP continues to cause harm to the ecosystems upon which these species depend. The creation of a self-scouring canal has promoted the degradation of the river bottom and caused diminishing waters to recede from previously connected backwater channels. While the previous mitigation plan for this continued destruction of the ecosystem is studied under Alternative 2, it is entirely absent from Alternatives 3 through 6, including the Corps' preferred Alternative 3.

Alternative 2 should be the selected alternative as it aims at creating greater improvements on the ecosystem upon which these species depend. It is clear from the decline of the 57 to 61 native species of fishes that the food web has been seriously impaired and the previous high rate production capacity of the river system has been cut off.

Reconnecting disconnected backwater channels should remain an MRRP program goal, and appropriations sought for this purpose under the EIS - - I see I'm out of time. I'll be using the park service to continue to submit comments, and also the Sierra Club will be submitting additional written comments. Thank you.

Correspondence: 74

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Correspondence Text

MR. RON HARDECKE: My name is Ron Hardecke. That's H-a-r-d-e-c-k-e. As a crop and livestock farmer in Gasconade County, I want to express the vital economic impact of the navigation and flood control in the management of the Missouri River. In addition, many Missouri communities rely on adequate flows in the river for drinking water and power generation.

The Bank Stabilization and Navigation Project created a reliable system to provide for navigation and a year-round water supply and, if operated properly, can provide adequate flood control.

However, over the last 15 to 20 years, we have spent nearly three-quarters of a billion dollars on the Missouri River Recovery Plan, which compromises the integrity of many of the intended uses of this system for the supposed benefit of a fish and two birds. It is still not known if these experiments have brought about the intended results. It is time that the needs of humans take precedence over these species. Before we spend any more money that we don't have, we need to reexamine our priorities.

Alternatives 2, 4, 5 and 6 are unacceptable due to the prescribed flow modifications. Alternative 1 still allows for spring pulses and shallow water habitat construction. Alternative 3 calls for yet another experiment for the pallid sturgeon and does not take out the flow modifications.

Again, I think it's time that we get back to the origin tended uses for the Bank Stabilization and Navigation Project. Thank you for opportunity to comment.

Correspondence: 75

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MS. NADINE BALL: Hello, I'm Nadine Ball, B-a-I-I, and I'm just myself. I'm here just as a citizen, I suppose. I'm calling - - I'm speaking - - I also haven't prepared things beyond what I've written while I've listened to the different stakeholders. And I thank you for the chance to open it up and allow this.

When I look through the Executive Summary, page 29, the chart of relative positive and negative impacts, I can understand fully well why the Corps would choose Alternative 3. It certainly makes sense given - - looking at each stakeholder including the environmental stakeholders in an overall picture.


That said, I think what I wanted to share is the idea that in the last 100 years it has been human considerations more than any understanding of the ecosystem benefits or an understanding of the impacts of human considerations that have always taken precedence.

I'm from St. Louis County. I've lived here my whole life. And I've seen in the last 25 years even development in the flood plains behind levees that did not exist when I was a child. This has - - this flies in the face of the most common sense understanding of how rivers work. So while I can understand the position of the stakeholders, the concerns for their livelihoods, I do think that we are at a point both in St.~Louis, both on the Missouri River, as well as very much in general that we need to begin to learn to work with the natural world rather than always considering technological solutions that benefit us to the exclusion.

The last part that I wanted to say was that this is far greater than two birds and a fish. This has to do with ecosystems, maintaining their integrity and maintaining the fact that they support us. So thank you very much again, and I appreciate the opportunity.

Correspondence: 76

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Correspondence Text

MR. TOM BALL: Tom Ball again. Thank you. I really appreciate it. I did have three more points to make, and I'll make them as quickly as I can.

In 2010, the Sierra Club - - well, let's see. There's continued harm to the ecosystem upon which these species depend. Okay, that was my second point.

Third, in 2010, the Sierra Club, national Water Sentinels, Missouri Coalition for the Environment, Great Rivers Environmental Law petitioned Fish and Wildlife Service for pallid sturgeon critical habitat designation on the Missouri River. This request was deferred by FWS based on a lack of resources and insufficient conservation priority number. I believe at this time it is time for the Fish and Wildlife Service and the Corps to reconsider and to designate a critical habitat and to incorporate it into the adaptive management plan.

Fourth, the economic analysis provided comparing the alternatives is deficient. It contains no commercial fishing data. This data would have been used to offset agricultural costs in replacing no crops with an agriculture equivalent. Regrettably, as fishing stocks have declined and crashed since the closing of the BSNP, the six lower states have made commercial catfishing illegal. Commercial fishermen have declined in number and their self-reported catches is smaller each year.

In 2012, the Corps estimated that the total expenditure on the Missouri River for the last 100 years was about \$38 billion in 2010 dollars for the last 100 years. 1 percent of that much amount is what we've spent to recover the species from the harms that that has caused.

Fifth, the skinny fish problem has been treated as a means by which the adaptive management deals with submission of new information. The pallid sturgeons are - - many of them are malnourished. They look anorexic. Sadly, this initial treatment shows that adaptive management as designed in the DEIS is not very adaptive. I'm concerned that other new information, even reasonably foreseeable information, will suffer the same slow grinding fate.

For instance, as the ecosystem continues to decline, additional species will be petitioned for ESA listing. The sturgeon chub and the sicklefin chub are endemic to the Missouri River and have been recently repetitioned for listing, the alligator snapping turtle, others are species of concern. Where in this DEIS is provision made for the addition of newly listed species to the consideration under adaptive management? I do not find it and it should be there. Thank you again for the extension.

Correspondence: 77

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 03/24/2017	Date Received: 03/24/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Alternative 2 is best, but needs critical changes implemented. It provides the best opportunities for recovery of the three species and adaptive management practices over time. This option also includes recognition of the importance of connections to floodplains and includes the option of acquiring increased acres for habitat and mitigation.

Alternative 2 is the best option to move toward a more natural river which is advantageous for the three targeted species as well as other fish and wildlife species. The Corps incorrectly sets the cost of Alternative 2 as too high. The Corps has included too much mechanically created habitat in Alternative 2 which unnecessarily raises its cost. Also the Corps does not consider the crucial environmental services that would be provided by additional habitat acres over the years. Those services include flood risk reduction and recreation opportunities that contribute to the local economy.

Alternative 3, the Corps choice, is the worst of the choices. It relies only on manual, artificially created habitat which would require indefinite work and maintenance. Alternative 3 would lock the Corps into a substandard, costly plan. This DEIS should be subjected to scientific review and allow more time for public review and input.

Correspondence: 78

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 03/29/2017	Date Received: 03/29/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

The Missouri is one of our country's great rivers, described by Lewis and Clark as a mighty, meandering river teeming with fish and wildlife. Today, it has been altered by huge reservoirs, by channeling its banks and by loss of floodplain connections. These changes have caused the loss of nearly half a million acres of fish and wildlife river and riparian habitat.

Amid all this damage the Army Corps of Engineers is required by the Endangered Species Act to manage the river in a way that does not risk the survival of the Least Tern, Piping Plover and Pallid Sturgeon.

Among the choices in the Draft Environmental Impact Statement, Alternative 2 is the best alternative. Alternative 2 allows habitat acres to be acquired and moves toward a more natural river that will sustain wildlife and provide a more secure future for endangered species. The Corps should reduce the number of mechanically created habitat acres in Alternative 2 to lower the cost.

I am asking you to choose alternative 2 and work in the coming years to save these three species and restore more natural fish and wildlife habitat along the Missouri River. Let's do it for future generations!

Thank you!

Correspondence: 79

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/03/2017	Date Received: 04/03/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Our names are Ivan & Sharan Woltemath and we live near Hamburg, Iowa. Our farm home is on the Missouri River bottom and farming is our source of income. The main stem dams were built for flood control and the levees are to protect our home and farmland, please remember this! We think alternative 3 would be the least harmful to us, but we do not support any spawning cue or ESH creating releases from Gavins Point Dam. We are opposed to any changes in the management of the Missouri River that would increase the chances of flooding or negatively affect the level of ground water and decrease or stop interior drainage.

Thank you,
Ivan Woltemath
Sharan Woltemath

Correspondence: 80**Correspondence Information**

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/06/2017	Date Received: 04/06/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

My comments relate to two areas: (1) the Piping Plover metapopulation issue, and (2) the efficacy of mechanically constructed Emergent Sandbar Habitat (ESH).

(1) Piping Plover Metapopulation

In the 2000 BiOp, USFWS concluded that operating the System, operating and maintaining the BSNP, and operating the Kansas River Reservoir System, as proposed, would jeopardize the continued existence of the federally listed pallid sturgeon, interior least tern, and piping plover. In the case of the Piping Plover, since channelization, instances of breeding on the Missouri River itself, other than in the Gavins Point reach, have been rare to non-existent. Following major flood events such as 1997 and 2011, plovers have utilized naturally-formed ESH, but only for relatively short periods until such habitats became unsuitable, usually because of natural inundation from varying river levels, reduction in fledging success due to overcrowding, natural re-vegetation, and/or increasing access to predators (Anteau 2017). Attempts to create artificial ESH have had mixed success and have not contributed in any significant way even to the limited population of Piping Plovers using the Gavins Point site; there was no change in number of fledged Piping Plovers there from summer 2000 through summer 2009 (Figure 3, Duberstein 2011).

The charge in the 2000 BiOp, that operating the System would jeopardize the listed species continued existence, has proven to be the case; indeed, a case can be made that operations intended to reduce jeopardy have had the opposite or no effect. The inordinate focus on attempts to reduce jeopardy in the Lower Missouri River (Lewis and Clark Lake down-river to the Mississippi River junction) is a direct consequence of the belief in the 2000 and 2003 BiOps that Piping Plovers consist of several essentially separate sub-populations and that extirpation of any of these must be avoided at all costs. Indeed, the level of interchange of Piping Plovers between the sub-populations was estimated in those BiOps at only 2%, based on an essentially best guess by experts. At that time there were little or no data to support this, or any, estimate of interchange between sub-populations; it is only recently that such estimates have become available. Recent estimates are based on actual data from the Alkali Lakes and Missouri River reservoirs in the northern USA and southern Canada collected by Michael Anteau and colleagues at Northern Prairie Wildlife Research Center, Jamestown, ND Canada, and in Nebraska away from the Missouri River collected by the Nebraska Tern and Plover Conservation Group, Lincoln, NE. Even though these locations are at opposite ends of the overall Piping Plover range, the interchange data are remarkably consistent despite differing habitats. These studies estimate subsequent-year return rates of successfully-breeding adults at 86.7% and 61% respectively, and 49.9% and 21% respectively. Thus there appears to be widespread dispersal, presumably each year, of 50-79% of the one-year-old potential breeding birds. Although re-sight data are few, they are indicative of movement between the formerly-constituted sub-populations, even to the extent of at least one Nebraska bird reaching the Alkali Lakes in Canada. Of course, Piping Plovers have evolved for some 10,000 years on the Great Plains to adapt rapidly to changing conditions, natural or man-made. Examples of this adaptability are numerous. Lake McConaughy, on the eastern North Platte River in Nebraska is a prime example; during periods of low lake water levels, studies counted as

many as 245 nests (Peyton and Wilson, 2007). In high water level years such as 2016, only 10 adults and 9 nests were found when the lake was near full pool (Zorn and Wilson 2016). Anteau (2017) noted that dispersing young Piping Plovers in the northern parts of the species range showed a preference for margins of Alkali Lakes and Missouri River reservoirs. Similarly, extensive use of off-channel habitats (definition below) by Piping Plovers throughout their breeding range also illustrates their impressive innate ability to rapidly colonize newly-formed habitat from one year to the next. Thus, to summarize, current data indicate that there is one interconnected breeding population of Piping Plovers, characterized by Anteau (2017) as being More like a single population with many breeding areas than a meta-population. The overall population is maintained by a marked amount of dispersal, especially by one-year-old potential breeders, in the range of 21-50%. Because of this adaptability, I strongly recommend that the DEIS adopt the one population concept, and cease so-called jeopardy avoidance operations on the lower Missouri River. The latter are a good example of high cost-low return use of taxpayer dollars, implemented solely because of a drastically underestimated degree of dispersal by young Piping Plovers in the 2000 and 2003 BiOps. Further, I strongly recommend that the delisting process be completed for this species.

Definition of Off-channel Piping Plover Nesting Habitats

These are habitats, either naturally occurring or man-made, that lie outside the main channel of the Missouri River, including, but not limited to, the following: constructed river shoreline, oxbow lakes, alkaline lakes, river chutes, sand and gravel mines, meander scars, deltas, splays, levees, point bars and cut-banks, transitional upland fringe, reservoir shorelines and islands, and Missouri River tributaries. Based on documented use or predicted use based on scientific data, these habitats have the potential to provide successful nesting by the Northern Great Plains population of Piping Plover in the Missouri River Basin. Not included in this definition is Emergent Sandbar Habitat within the main channel of the Missouri River that is created by water releases from the main-stem Missouri River dams or by mechanical construction.

(2) Efficacy of mechanically constructed ESH

It is a travesty that millions of dollars have been spent on mechanically-constructed but ephemeral ESH, based on flawed BiOps from USFWS in 2000 and 2003. These BiOps were written essentially without any scientific data, but nevertheless USACE charged ahead with ESH and chute construction. Both have both turned out to be ineffective in contributing to the long-term populations of the three listed species, especially in the case of the Piping Plover and Least Ter (Figure 3-29, Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS), Volume 2; Figure 3, Duberstein 2011), and undetectably so in the case of the Pallid Sturgeon.

Indeed, the proposed MRRMP-EIS states Risk and uncertainty are inherent with any model that is developed and used for water resource planning. & Unforeseen events such as climate change and weather patterns may cause river and reservoir conditions to change in the future. Although the EIS states The project team has attempted to address risk and uncertainty in the Management Plan by defining and evaluating a reasonable range of plan alternatives that include an array of management actions within an adaptive management framework for the Missouri River. All of the alternatives were modeled to estimate impacts to fish and wildlife, I believe the proposed plan alternatives cannot in any effective way counter the vagaries of variations in river flow that have been and will continue to be experienced in the Lower Missouri River Valley. These vagaries are reflected in the highly variable census data shown in Fig 3-29 of the MRRMP-EIS, Volume 2, and will mask any effects of the plan alternatives. Thus, in my opinion the less done on the river ostensibly in order to reduce jeopardy the better; the futures of Piping Plover and Least Tern are not dependent on conditions on the Lower Missouri River.

Correspondence: 81**Correspondence Information**

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/08/2017	Date Received: 04/08/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text**Managing the Missouri for Endangered and Threatened Species**

The Missouri River Reservoir System is the largest reservoir system in North America. Management of the system is complicated by multiple and diverse interest groups and applicable laws.

Interest groups represent irrigation, flood risk, hydropower, recreation, water supply, navigation, fish and wildlife, cultural resources, and commercial sand and gravel dredging.

One of the applicable laws is the Endangered Species Act of 1973, which provides for the conservation of threatened or endangered species and their habitats. The U.S. Fish and Wildlife Service maintains the official list of threatened and endangered species.

Three listed species live in the Missouri River basin: the endangered pallid sturgeon, the endangered least tern, and the threatened piping plover.

The Missouri River runs over 2,300 miles from Three Forks, Montana, where the Gallatin River, the Madison River, and the Jefferson River join as its headwaters. It drains into the Mississippi River north of St. Louis, Missouri.

It was once "the turbid, rapid stream - the Missouri." That is how John Jay Audubon described it in 1843.

Now the Missouri River is slowed at six major reservoirs behind dams. Fort Peck Lake and Fort Peck Dam are on the river in Montana. North Dakota has Lake Sakakawea behind Garrison Dam and Lake Oahe behind Oahe Dam. In South Dakota, there are Lake Sharpe at Big Bend Dam and Lake Francis Case at Fort Randall Dam. South Dakota and Nebraska share both Lewis and Clark Lake and Gavins Point Dam.

This large reservoir system affects the three listed species.

Maintained by the US Army Corps of Engineers, this reservoir system has the capacity to store 72.4 million acre-feet of water. An acre foot of water can cover one acre to a depth of one foot.

Precipitation, snowmelt, hydrology, basin and agriculture drainage, and resource uses influence decisions about the level of each reservoir.

How can the Corps of Engineers operate the reservoir system without jeopardizing the listed species?

To answer that, the Corps of Engineers, in cooperation with the Fish and Wildlife Service, has prepared a massive Draft Missouri River Recovery Management Plan and Environmental Impact Statement with supplemental materials.

The plan offers six alternatives intended to help the three species.

Alternative 1 is the congressionally mandated no-action alternative. This do-nothing option is not acceptable as the Corps of Engineers recognizes demonstrated needs for management plans "informed by the best available science," including new scientific information about the species and their habitats.

The remaining options provide for variable amounts of mechanical construction of emergent sandbar habitat for the plovers and terns. The different water flow releases of the alternatives account for the variable amounts of mechanical sandbar construction.

The five remaining alternatives also include managing reservoir releases during nesting season to

reduce the chances of rising water taking nests, eggs, or chicks of the plovers and terns.

Furthermore the five alternatives support hatchery propagation of the pallid sturgeon and monitoring sturgeon population, as well as construction of early-life stage habitat in the lower river.

These are good basic measures.

But beyond that, where are provisions for designation of critical habitat for the endangered pallid sturgeon; for unbalanced reservoirs to address the situation at a particular reservoir; for the application of the best science currently available?

Habitat loss, fishing and caviar harvesting, entrainment and watercraft propellers, contaminants, hybridization, invasive species, and iridovirus all threaten the endangered pallid sturgeon. None of the alternatives provide adequate response. The pallid sturgeon requires shallow-water habitat.

Designation of critical habitat is necessary! The Corps of Engineers seemingly acknowledges that with the phrase "avoid jeopardizing the continued existence of pallid sturgeon or its critical habitats" ^[1] in the accompanying Draft Science and Adaptive Management Plan.

Perhaps having unbalanced reservoirs as a management tool in the Missouri River Mainstem Reservoir System Master Water Control Manual is adequate, but perhaps not.

To say that Alternative 2 - following the U.S. Fish and Wildlife Service's 2003 Biological Opinion projected actions - is the best alternative presented, and it is clearly is, is not to say that Alternative 2 is adequate.

A lot of science has been done since 2003, and that science should inform policy and practice.

The final document should include an improved best alternative, with more fairness in estimating the costs of the various alternatives.

In other words, the best is still to come. I hope.

Correspondence: 82

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/09/2017	Date Received: 04/09/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	


Correspondence Text

Why oh why is it that you can't spell Ponganus without ANUS?

Why on Earth is the most incompetent sorry excuse of an SES (with the exception of his fellow NWD SES) allowed to drive this program?

Correspondence: 83

Author Information

Keep Private: No
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Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: 03/08/2017 Date Received: 04/05/2017
Number of Signatures: 1 Form Letter: Master
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Ave
Omaha, NE 68102

It has come to our attention that the U.S. Army Corps of Engineers, in cooperation with the U.S. Fish and Wildlife Service have developed the Missouri River Recovery Management Plan and Environmental Impact Statement. It is our understanding this plan would change the water levels and flows of the Missouri River. The Missouri River has been a staple in the past and more important than ever in moving large quantities of corn, soybeans, agriculture fertilizer, rock and gravel, sand, cement, fabricated steel, and large industrial equipment and machinery. Military equipment from National Guard facilities throughout the State of Missouri could also be moved by barge. This mode of transportation is by far the most cost effective and efficient method of moving these products long distances.

It is imperative the USACE reconsider the impact of the proposed plan and amend it so as to make real economic growth possible by having a minimum navigable draft level of nine feet for at least eight months, preferably nine months of each year. This is very important.

Relationships have been developed with both foreign and domestic business alliances. The newly widened Panama Canal offers us business opportunities we have never been able to pursue until now. Customers are wanting to buy products from our region of the country. We must be able to ship these large quantities cost effectively and in a timely manner. Barge transportation is the only viable solution to this new demand.

The Corps indicated in a recent meeting in Kansas City, they were ready and willing to assist in any way to make this a reality. Your commitment to making increased economic growth of barge


transportation the Missouri River a priority, is very important to our future.

Sincerely,

Gary Jungermann
Callaway County Presiding Commissioner
comish@callawaycounty.org

Correspondence: 84

Author Information

Keep Private: No
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 Organization: Callaway County  Official Rep.
 Organization Type: C - County Government
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 Fulton, MO 65251
 USA
 E-mail: rfischer@callawaycounty.org

Correspondence Information

Status: Reviewed Park Correspondence Log:
 Date Sent: 03/08/2017 Date Received: 04/05/2017
 Number of Signatures: 1 Form Letter: Yes ([Master](#))
 Contains Request(s): No Type: Letter
 Notes:

Correspondence Text

U.S. Army Corps of Engineers
 Omaha District
 ATTN: CENWO-PM-AC-MRRMP-EIS
 1616 Capitol Ave
 Omaha, NE 68102

It has come to our attention that the U.S. Army Corps of Engineers, in cooperation with the U.S. Fish and Wildlife Service have developed the Missouri River Recovery Management Plan and Environmental Impact Statement. It is our understanding this plan would change the water levels and flows of the Missouri River. The Missouri River has been a staple in the past and more important than ever in moving large quantities of corn, soybeans, agriculture fertilizer, rock and gravel, sand, cement, fabricated steel, and large industrial equipment and machinery. Military equipment from National Guard facilities throughout the State of Missouri could also be moved by barge. This mode of transportation is by far the most cost effective and efficient method of moving these products long distances.

It is imperative the USACE reconsider the impact of the proposed plan and amend it so as to make real economic growth possible by having a minimum navigable draft level of nine feet for at least eight months, preferably nine months of each year. This is very important.

Relationships have been developed with both foreign and domestic business alliances. The newly widened Panama Canal offers us business opportunities we have never been able to pursue until now. Customers are wanting to buy products from our region of the country. We must be able to ship these large quantities cost effectively and in a timely manner. Barge transportation is the only viable solution to this new demand.

The Corps indicated in a recent meeting in Kansas City, they were ready and willing to assist in any way to make this a reality. Your commitment to making increased economic growth of barge


transportation the Missouri River a priority, is very important to our future.

Sincerely,

Roger Fischer
Callaway County Western Commissioner
573-220-2958
rfischer@callawaycounty.org

Correspondence: 85

Author Information

Keep Private: No
Name: Kevin Machens
Organization: Consolidated North County Levee District  Official Rep.
Organization Type: C - County Government
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Portage Des Sioux, MO 63373
USA
E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: 02/27/2017 Date Received: 03/08/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

United States Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Consolidated North County Levee District
comments on the
Draft Missouri River Recovery Management Plan
and
Environmental Impact Statement
in follow-up to the
February 16, 2017 Chesterfield, Missouri, Public Meeting

On behalf of the Consolidated North County Levee District (CNCLD) Board of Directors, our extensive membership, and one of the largest levee districts on the Missouri River and the Mississippi River, the opportunity to provide comments in follow-up to the February 16, 2017, Chesterfield, Missouri, Public Hearing related to the Draft Environmental Impact Statement for the Missouri River Recovery Management Plan is greatly appreciated. A representative of the CNCLD attended the Public Meeting, heard the Corps presentation, heard all the input provided, and has reported back to the District, allowing for comments to be provided.

In short, the CNCLD supports Alternative 3 - With a no spring rise. During the Public Meeting, an array of issues were conveyed as to why Alternative 3 is the recommended option. Corps officials repeatedly heard these comments. The CNCLD, a P.L. 84-99 partner with the United States Army Corps of Engineers, further, is in support of eliminating the one time test spring rise from the preferred Alternative 3. The CNCLD is concerned that a one time flow test could potentially become part of a permanent future spring rise, a potential flood risk to the CNCLD (L-15), a Federal-aid levee.

Alternative 3, as was conveyed repeatedly during the Public Meeting, provides for a balance between human interest and species recovery. However, as already conveyed above, agriculture interest within the CNCLD is alarmed about potential flooding and interior drainage associated with a one time flow test included with Alternative 3.

Many thanks to the United States Army Corps of Engineers for traveling to the region, and providing an opportunity for stakeholders to provide input, comments, and concerns.

Sincerely,

Kevin Machens
President
Consolidated North County Levee District

Correspondence: 86

Author Information

Keep Private: No
Name: Carrie Tergin
Organization: City of Jefferson ☒ Official Rep.
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E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: 03/28/2017 Date Received: 04/03/2017
Number of Signatures: 4 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Ave
Omaha, NE 68102

It has come to our attention that the U.S. Army Corps of Engineers, in cooperation with the U.S. Fish and Wildlife Service have developed the Missouri River Recovery Management Plan and Environmental Impact Statement ("the Plan"). It is imperative the United States Corps of Engineers reconsider the impact of the proposed plan and amend it so as to make real economic growth possible by having a minimum navigable draft level of the Missouri River in the vicinity of Callaway and Cole Counties of nine feet for at least eight months, preferably nine months, of each year. This is very important.

It is our understanding this plan would change the water levels and flows of the Missouri River. The Missouri River has been a staple in the past and more important than ever in moving large quantities of corn, soybeans, agriculture fertilizer, rock and gravel, sand, cement, fabricated steel, and large industrial equipment and machinery. Military equipment from National Guard facilities throughout the State of Missouri could also be moved by barge. This mode of transportation is by far the most cost effective and efficient method of moving these products long distances.

Relationships have been developed with both foreign and domestic business alliances. The newly widened Panama Canal offers us business opportunities we have never been able to pursue until now. Customers are wanting to buy products from our region of the country. We must be able to ship these large quantities of products and materials cost effectively and in a timely manner. Barge transportation is the only viable solution to this new demand. Highly regarded captains, tugs, and barge providers are already in place to ensure these very sizeable business transactions are completed on time and with the highest degree of professionalism.

The Corps indicated in a recent meeting in Kansas City, they were ready and willing to assist in any way to make this a reality. Your commitment to making increased economic growth of barge transportation the Missouri River a priority is very encouraging.

The below signed entities are in agreement in our request that the Corps of Engineers continue to consider the importance of the Missouri River as a transportation opportunity by ensuring the United States Corps of Engineers reconsider the impact of the proposed Plan and amend it by having a minimum navigable draft level of the Missouri River in the vicinity of Callaway and Cole Counties of nine feet for at least eight months, and preferably nine months, of each year.

Sincerely,

Roger Fischer
Callaway County Western Commissioner
573-220-1958
rfischer@callawaycommissioner.org

Carrie Tergin
City of Jefferson Mayor
573-230-7645
ctergin@jeffcitymo.org

Randy Allen
Jefferson City Chamber of Commerce President/CEO
573-638-3580
randyallen@jcchamber.org

Sam Bushman
Cole County Presiding Commissioner
573-634-9113

Correspondence: 87

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/10/2017	Date Received: 04/10/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

All of the alternatives proposed by the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service regarding the Missouri River Recovery Management Plan are far too damaging to flood control of the Missouri River and far too risky for the ecosystem along the Missouri River. Two events in recent history have lead me to believe that statement.

First, in 2005 the Missouri River Recovery Program was initiated changing the management of the Missouri River. Second, the devastation of the flood in 2011. Since 2011, I no longer see fox and wild turkey in the Missouri River basin in Fremont County, IA. Deer populations in Fremont County, IA river basin were devastated by disease resulting from the 2011 flood. In a flawed attempt to save 3 species along and in the Missouri River, the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service have endangered the whole ecosystem of the river and the people who live and work near it. After a decade of attending public comment meetings similar to the one held on February 14, 2017 in Omaha, NE I have become more concerned that pleas for improved flood control are falling on deaf ears. All proposed alternatives will damage wildlife, infrastructure, cities, farms, and families along the Missouri River. The U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service can do better and provide flood control to all that live along the Missouri River.

Correspondence: 88

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/27/2017	Date Received: 02/27/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

Please implement Alternative 2 of the Missouri River Recovery Plan. It is imperative that habitat be provided for the pallid sturgeon, interior least tern, and Northern Great Plains piping plover.

The Wildlife of this river and of our country are one of its greatest assets. Creating and preserving habitat for these species will of course provide habitat for countless other species.

Thank you for your consideration. Generations after us will be grateful.

Brian Yochim

Correspondence: 89

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/27/2017	Date Received: 02/27/2017
Number of Signatures: 2	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

U.S.Army Corps of Engineers
Attn: CENOW-PM-AC Management Plan Comments
1616 Capitol Ave.
Omaha NE 68102

We are writing in regard to plans for the Missouri River recovery.

Our family has lived in this area long enough to remember the floods that created what we now refer to as "the bottom land". We have pictures of a small boat being launched from Highway 75 between Herman and Tekamah into the flood waters that were lapping against the roadway. It has always been our understanding that the changes that were made many years ago to the course of the Missouri River were designed to control this very thing and, over the years, the plan has been largely effective.

In 2011 we watched as floodwater consumed the farms located all along the river as a result of the Corps of Engineer's genius plan to save some endangered wildlife. The results of that flooding were catastrophic, as you well know. At that time, if someone wanted to start a verbal brawl, all they had to do was mention the Corps of Engineers. And now we learn that the Corps is at it again! Really!

We are not opposed to wildlife management. We are not opposed to reasonable efforts to protect endangered species, but is anyone taking into account that the American family farmer is an endangered species that could use some consideration as well? Does it make any sense at all to protect the shoreline nests and the water habitat of birds and fish when that protection comes at the expense of a human's livelihood? Is it right to let a farmer's land and home literally "go down the river" to save some birds and fish?

We admit to not knowing much about the manuals and rule books of the Corps of Engineers, but we do know that those rules and regulations ought to be subject to correction when they obviously are not working. Surely, among the powers that be there are some with common sense and the vision to see where priorities should lie. We appeal to you to listen to the voices of the people- -those who are struggling to stay solvent under the best of conditions and who should not be undermined by officials who, at least on the surface, seem determined to do so.

Thank you for your attention to our thoughts on the subject.

Sincerely,

John G. Potadle
Sharron G. Potadle
20668 U.S. Hwy 75
Herman, NE 68029

Correspondence: 90

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 02/22/2017	Date Received: 02/22/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

Attn: USACE and U.S. Fish and Wildlife Services

There is a lot going on along the Missouri River to do with the habitat mechanical construction regarding the Endangered Species Act of 1973. The Fish and Wildlife Services have billions of dollars to spend and the corps is doing the work. This is truly wasteful spending! This money could go a long way to pay down our deficit.

In the meantime the Missouri river is more flood prone ever since 2004. The corps is suppose to maintain the river by protecting the real endangered species (human beings) from flooding and the wonderful productive rich farm ground that borders the Missouri river. The birds have found another home on the Platte River.

In 2010, 2011, 2013, and 2014 our farm ground flooded. There is something drastically wrong when we endure frequent floodings such as this. The priorities of the corps are all wrong. We have lost a lot of crop to these flood events. This is our livelihood plus the clean-up and having the topsoil removed sets the farmer back. It takes years to gain back that production.

In 2009, the corps bought 190 acres from the Papio Missouri River NRD that adjoins our farm ground to the south called Little Sioux Bend. In August of 2015 a double looped pallid sturgeon chute was constructed. We watched the process and all the sand was dredged out into the river. We now have a higher water table which is up and down the river where these chutes were constructed. Along with this process the rock dike was notched and there is a great deal of bank erosion going on. This notching has been done by the corps up and down the river. The aerial view tells the whole story. Our farm ground is very close to this area. The corps need to come back ASAP to fill in the dike with rock. We lost 30 acres to the north of this area to the 2011 flood. This 30 acres is covered with 15 feet of sand, covered with trees, and weeds. This piece of ground will never be farmed again. We are still having to pay taxes on this wasteland. The corps can purchase ground and it is tax exempt. This is so wrong!

I don't see how you can sleep at night knowing the results from all the alterations you have made to the river. You have totally deviated from the main purpose of protecting us from flooding because of money. The dikes have worked for decades and would continue to keep the water out in the channel.

We are paying higher taxes and the corps can buy up ground along the river, tax exempt. Two years ago our taxes in Burt county took a 30 percent increase. This year it went up another 10 percent. Commodity prices are low. Now you want to flood us again?

The truth is that we can not endure another flood. Beside living on a second generation farm,

this is our livelihood. Because my dad bought this farm back in 1956, owned a construction business, cleared the 54 acres of trees down by the river, left 34 acres to wildlife planting switchgrass, leveled the upper acres, and built a home makes this family farm so special to me. I know how much time and money he put into establishing what he loved doing the best and that was farming. The people were told to clear the ground and farm it because the river was channelized and the dams were in place to protect them from flooding.

As I said before, this is our livelihood and by notching the dikes, that are causing bank erosion, you are unlawfully taking without compensation which is violating the 5th amendment.

I flew with a friend a couple days ago and took pictures. You get a whole different perspective from the sky. These pictures show what is happening with our river. Where the chutes were put in there are sandbars in the middle of the river. The river is much wider now. Where the dikes have been notched, the banks are eroding back toward the agland. All of this is bringing the river closer to our private property and not if, but when the next flood comes, it will come up so much quicker and cover more ground than it did in 2011. This scares the hell out of me!

I know that you have viewed your projects from above and can see what damages you are bringing to all the businesses, homesteads, towns, and agland. This Missouri river does not resemble what once was. You need to listen to us, we need to communicate, and work together for a better cause.

Because of the huge amounts of sand and debris in the river's stream our water table is higher on the lower river south of Gavins Point Dam. If you put any three out of the five alternatives in place using the spring and fall pulses, that could raise the river levels by as much as 5 feet or more in most places. This kind of raise will flood us again! This would also be the time of planting crops or harvest. We are still trying to recover from the 2011 flood so don't throw another one at us. If you had let water go in January, February, and March of 2011 making storage room in your reservoirs, we would not have suffered the huge destructive damages that incurred. I'm asking you not to change your master manual.

P.S. I would like to express my thoughts on the open house and hearing. Who has ever heard of not being allowed to ask questions in front of all who attended the hearing. The definition of hearing is: the ability to hear, chance to be heard, formal meeting to hear testimony. All present were there with the same concerns. Then stating that we only had three minutes to talk. Who, of any of us that spoke, pre-timed their talk?

Correspondence: 91

Correspondence Information

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Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Pallid sturgeon reproduction is poorly understood. Alternative 3 or 6 seem to provide the best chance for further Pallid sturgeon study with the least adverse effect on all parties using the Missouri River.

Correspondence: 92

Correspondence Information

Status: Reviewed	Park Correspondence Log:
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Correspondence Text

I do not care about endangered species. The river water level should be kept low, so that farmers can plant crops. Raising the water level can delay planting of crops and is criminal, and I wish that unnecessary and evil government interference could be prosecuted, even prosecuting senators, and congressmen for their evil laws.

Correspondence: 93

Correspondence Information

Status: Reviewed	Park Correspondence Log:
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Correspondence Text

My name is Del Husz, I live at 50411 Ashton Road, Glenwood, Iowa 51534.

I have been a farmer on the Missouri river bottom all my life. I have also served on the Pony Creek drainage district board and the M&P levee district 611-614 for many years. I have been to numerous meetings on levee safety and levee repairs throughout those years.

I am concerned with the situation that I see going on with the mitigation of endangered species on the Missouri River.

By proposing such a wide range of alternatives or options it appears to me that you are only guessing at what may save the endangered species. There should be proven science behind these options before implementing any of them. Any excess water stored behind the dams to implement your alternative or option is a flood risk. You are unnecessarily risking lives and property with these plans. I believe the most important consideration in this project should be flood control to protect the businesses, personal properties, farmland and human life that has flourished along the river for many generations. That was the number one reason the system was built in the first place and it should still be the number one reason to maintain it. If even one person were to lose his or her life due to unnecessary flooding of the river it would be too high a price to pay just to potentially save our endangered species.

As a farmer I rely on the Missouri River for my farm's water drainage! It is the main component of all our interior drainage systems which consists of field ditches, road ditches and creeks. Any slowing down of flow or restriction on the Missouri River affects all of the rest of this system. Your proposed flushes will create a high river event which will cause a situation where nothing else will drain or flow for miles inland from the river. This creates a situation where it is impossible to farm and raise a crop. Please consider these comments and remember your actions affect thousands of farmers, businesses and homeowners along the Missouri river bottoms.

Thank you.

Del Husz

Correspondence: 94

Author Information

Keep Private: No
Name: Diana Spotted Horse
Organization: Standing Rock Sioux Tribe ; ☒ Member
Organization Type: Q - Tribal Government
Address: N/A
N/A, UN N/A
USA
E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: 03/17/2017 Date Received: 03/17/2017
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Correspondence Text

Public Comment Letter to the USACE (Corps of Engineers)
In Regard to the Missouri River Draft Environmental Impact Statement
Released December 16, 2016

Dear Colonel:

I, Diana Spotted Horse, as an enrolled member of the Standing Rock Sioux Tribe would like to provide comment to the Draft Environmental Impact Statement (DEIS). As a tribal member of Standing Rock my family has been personally and economically impacted by the development on the Missouri River since the dams were first built. The water rights of the Tribe are being detrimentally impacted by the DEIS.

As a member of the tribe I am opposed to mechanical construction in the Oahe reservoir. I am also opposed to the type of development which would impact the water quality or quantity. The water rights and water supply issues directly impact me as a tribal member. The plants, including medicinal and those which are important to the spiritual and cultural lifeways of my people are at high risk due to the development and resulting pollution along the length of the river.

I would like to submit this statement to the Corps of Engineers as a record of my concerns about the Missouri River (Mni Sose). Please add a section called Tribal Concerns to the Adaptive Management Plan (ADMP) preferred alternatives. There should also be a dam removal alternative added to the DEIS.

Please accept my comments into the public record.

Thank you,
Diana Spotted Horse
3-17-17

Correspondence: 95

Correspondence Information

Status: Reviewed	Park Correspondence Log:
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Correspondence Text

The implementation of the alternatives proposed in the Draft Missouri River Recovery Plan and Environmental Impact Statement have the potential to be costly to not only the United States tax payers that provided the funding for such projects, but also to industries that rely on the Missouri River for transportation of commodities and oversized equipment and also of course to the species that these plans seek to protect.

As a representative of not only agriculture, but of the navigation industry it would be imprudent to not respond during a public comment period. Unfortunately, the technically report for just the navigation portion alone is 66 pages, with entire document coming in at over one thousand pages. As a result, those that actually respond during such comment period are those with the time to plow through such a data dump. The term data dump appears harsh at first blush but on closer inspection may be generous.

One would assume that the issues involved, that being the survival of a species such as the pallid sturgeon, the survival of an industry such as navigation that relies on appropriate management of the system or agriculture that has thrived and become one of our nations largest economic drivers behind levy systems at risk by proposed alternatives would be addressed with the utmost care a scrutiny. Yet if responses are not made to address the specifics in these piles of documents then the powers that be proceed at will, waving their massive documents as proof of theories and expertise.

I am not a scientist, Im an Agribusiness manager, so when I start working my way through the 66 pages of the Navigation Environmental Consequences Analysis Technical Report, I was only on page six before I realized that I may be only the second person to have ventured that far in a straight read through. Otherwise, how would you get sentences like this one that is pulled directly from page six. Please note I have made no changes to punctuation or capitalization.

While this it cannot list the assumptions used to generate the transportation savings function These transportation savings functions represent the transportation rate saving For additional material discussion on assumptions please review this document.

I then glanced to the bottom of the page and note that every single one of the 66 pages of the Navigation Environmental Consequences Analysis Technical Report is titled Irrigation Environmental Consequences Analysis Technical Report.

The last project proposed to act in support of the pallid sturgeon involved creating shallow water habitats. During the public comment period of this 80 million dollar project, I suggested that these shoots might want to be rethought, that while Im not an engineer, common sense would assume that water will take the shortest course. I was condescendingly explained to that they had models and research on their side. As it ended up all those dollars later, the shallow what habitat was running 35 deep and pushing silt into the main channel creating a 7 shipping channel. Those tax payer dollars did

nothing to serve navigation, agriculture or the pallid sturgeon.

What happens when you strive to get this type of mismanagement stopped? The property across from our dock has been purchased for inception rearing complexes. Im sure its coincidence.

In short, we would opt for Alternative #3 as proposing the least harm to all involved, including navigation, agriculture and the pallid sturgeon, but sincerely and respectfully would request that more care, expertise, good science and common sense be involved in make these decisions.

It seems approach for evaluating navigation consequences of the MO River Recovery Management Plan and the methodology and assumptions for the analysis on the impacts to navigation are flawed. The analysis of Water Compelled rates relies on very old data and is insufficient to say the least.

As an industry, we do want wish the harm or endangerment of any species on our back, but throwing money at unproven science and calling it adaptive management is less than prudent. Risking the loss of jobs in an area that is currently 10% over capacity according to MoDOT on rail capacity is not economically responsible. Nor is having the tax payers pay 3 times the going rate for land across from our dock to rub our nose in the next adaptive management project.

We would also request that when considering National Economic Development and impact that we remind ourselves that the waters from the Missouri River do not and have never stopped at the arch in St. Louis, nor do the tonnage coming off of our system, and that while a per ton mile is evaluated, those same tons go all the way to the gulf almost without exception. The water supplied by our system effects the nation as a whole impacting the Mississippi River and while that doesnt fit into the formula of the eight authorized purposes of the Missouri River, it is real and common sense should not have blinders.


Giving the appropriate priority to Flood Control and Navigation increases and support the economics of our country with in turn creates the tax basis that can then be used to support our environmental stewardship.

The eight authorized purposes are appropriate services for our system and should be each supportive of the other.

Thanks for the opportunity to participate.

Correspondence: 96

Author Information

Keep Private: No
Name: Doug Burgum
Organization: State of North Dakota  Official Rep.
Organization Type: S - State Government
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Bismarck, ND 58505-0001
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Correspondence Information

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Correspondence Text

Dear Brigadier General Spellmon:

The State of North Dakota agencies with Missouri River responsibilities have reviewed the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and submit the attached comments. The state looks forward to continuing to work with the U.S. Army Corps of Engineers (USACE) on further development of the MRRMP-EIS and implementation of adaptive management. This partnership is critical in ensuring that sound decisions are made for the good of all that rely on the Missouri River in North Dakota. To be a true partnership, the final EIS should provide for direct consultation with North Dakota, and other affected states, for consideration of flow modifications or deviations outside the bounds of the current Master Manual. It is also requested that the USACE incorporate their responses to comments submitted for the MRRMP-EIS in the final EIS. Thank you for the opportunity to review and provide input into the MRRMP-EIS.

Sincerely,
Doug Burgum
Governor

Missouri River Recovery Management Plan and EIS
State of North Dakota Comments

The following comments are strictly based on the State of North Dakota's evaluation of the draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS), and supporting documents. North Dakota reserves the right to submit additional comments on any future changes or additions to the MRRMP-EIS not disclosed in the draft documentation made available for comment at this time. It is also requested that the U.S. Army Corps of Engineers (USACE) incorporate their responses to comments submitted for the MRRMP-EIS in the final EIS.

The MRRMP-EIS contains a number of shortcomings that are of concern to the State of North Dakota. Among those are that it fails to consider a reasonable range of alternatives under the National Environmental Policy Act (NEPA): the only bird habitat management options evaluated in Alternatives

1 through 6 are really just "sub-alternative" variations in pursuing a singular approach of Emergent Sandbar Habitat (ESH) creation through mechanical and flow means, rather than being inclusive of other bona fide alternative habitat approaches for the birds. There is also confusion in the underlying purpose of the MRRMP-EIS. That purpose is stated to be the avoidance of jeopardy (executive summary, p. i); however, it is called a "Recovery Management Plan" and the species objectives appear to be recovery-oriented insofar as they support stable or improving trends. The MRRMP-EIS is also dependent on numerous models. Depending on the rigor of models, their output can give the appearance of objectivity and specificity where it does not necessarily exist. It is unclear from the document whether (and at what level) the various models have been subjected to scientific review, verification and refinement. The models have not been made available for review, nor were state experts who have local knowledge and experience the USACE lacks consulted regarding the models. However, even with these shortcomings, North Dakota tentatively supports the Preferred Alternative under the following conditions:

- (1) Reconvene consultation with the North Dakota Interagency ESH Team on annual activities related to the Missouri River Recovery Program;
- (2) The final EIS and Record of Decision (ROD) state that any flow modifications outside the bounds of the current Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) would require the preparation of an additional EIS, including consultation with affected states; and
- (3) The final EIS commits the USACE to obeying all applicable state laws, permit and regulatory requirements, and policies. Further explanation of these conditions is provided throughout these comments.

North Dakota's tentative support of the Preferred Alternative (Alternative 3) is based on the unacceptability of Alternatives 2, 4, 5, and 6 due to the adverse impacts those alternatives would cause. In addition, the potential model deficiencies are less likely to understate the impacts for Alternative 3 than for the other alternatives.

With respect to general comments, the State of North Dakota offers the following:

Master Manual-related Concerns

The State of North Dakota has serious concerns with respect to potential changes to or deviation from the Master Manual. The MRRMP-EIS includes alternatives with several flow management actions that would deviate from the current Master Manual. The Adaptive Management Plan (AMP) adds another layer of uncertainty due its lack of sideboards and vagueness in how the state would be involved in the decision-making process if the Master Manual were to change.

The last update to the Master Manual took over 15 years to complete and caused great discord in the basin. The current Master Manual incorporates flood control and drought conservation measures that are critical, not only for North Dakota, but for the entire basin. It was and still is important to the State of North Dakota that the Missouri River be operated in a manner that equitably shares the pain during periods of drought and equitably distributes the benefits of Missouri River operations. The State of North Dakota adamantly opposes any changes to the contrary. Accordingly, we request that the Final EIS and ROD contain express procedural protections that will govern future consideration of any proposed flow modifications or deviations outside the bounds of the current Master Manual. These should provide for a direct consultation opportunity with North Dakota (and other affected states) apart from the Missouri River Recovery Implementation Committee (MRRIC), Fish and Wildlife Coordination Act (FWCA), and Annual Operating Plan (AOP) processes, and for additional NEPA compliance prior to a decision to approve any such change.

Recreational Fishery-related Concerns

Concerning the recreational fishing industry, North Dakota's Missouri River System (MRS) supports an outstanding sport fishery that is extremely important to the local and regional economy. Annual angler expenditures on the entire MRS have approximated \$35 million in recent years.

North Dakota's Game and Fish Department (NDGFD) is fortunate to have long-term data for the various MRS fisheries within the state. Datasets for Sakakawea (60 years) and Oahe (49 years) have given fishery managers a very good understanding of what conditions are critical for sustaining healthy fish populations on these vitally important fisheries. Responsible water management has, and always will be, the most critical factor in maintaining these fisheries. The vast amounts of data collected over the last 60 years of sportfish management have pointed to two basic needs for our fisheries to flourish. First, reservoirs must maintain adequate water levels to provide quality habitat. Second, water levels must rise during the critical spring spawning and egg incubation period (Fryda et al. 2014, Fryda et al. 2010, Scarnecchia et al. 2008). Without these water conditions, the fisheries suffer greatly as they did during the drought of the early 2000s. Any alternatives in the MRRMP-EIS or actions identified in the AMP that increase the frequency of not meeting these basic water conditions are detrimental to the fishery, and are contrary to the management goals and responsibilities of NDGFD's Fisheries Management Division.

Although system operations as driven by the current Master Manual are often detrimental to the MRS fishery, the Preferred Alternative 3 - Mechanical Construction Only, would provide the least additional negative water management impacts. As a bleak reminder, we cannot forget that following the drought conditions experienced in the upper Missouri River Basin in the early 2000s, it took almost a decade to see the sport fisheries in both Sakakawea and Oahe recover to pre-drought levels.

The MRRMP and AMP provide a positive framework and path forward with the Preferred Alternative to address ongoing issues with recovery of pallid sturgeon. However, as previously mentioned, the uncertainty and lack of clarity on what actions can or will be taken through the AMP process causes significant concern.

Fryda, D., F. Ryckman, R. Kinzler and P. Bailey. 2014. Aquatic Investigations of the Missouri Mainstem in North Dakota. ND Game and Fish Dept., Div. Rpt. 90. 105 pp.

Fryda, D., F. Ryckman, P. Bailey, R. Kinzler and S. Gangl. 2010. Fisheries Management Plan: Missouri River System (2010-2015) N.D. Game and Fish Department., Internal report. 94pp.

Scarnecchia, D.L., L.F. Ryckman, B.J. Schmitz, S. Gangl, W. Wiedenheft, L.L. Leslie. 2008. Management Plan for the Paddlefish Stocks in the Yellowstone River, Upper Missouri River, and Lake Sakakawea

Water Quality-related Concerns

Any alternative implemented must not violate the Standards of Quality for Waters of the State (water quality standards), North Dakota Century Code (NDCC) Chapters 33-16-02.1, 61-28-04, and 23-33-05. A primary concern is the protection of existing beneficial uses and all aquatic life by ensuring that any direct or indirect action does not cause the release of trace elements or any other pollutant in acute or chronic concentrations into the state's rivers or streams and that any alterations in flow does not reduce the volume of cold water habitat in Lake Sakakawea below five hundred thousand acre-feet, cause a temperature rise of greater than 15° Celsius, or a dissolved oxygen concentration of less than 5 mg L⁻¹.

Ancillary concerns include possible impairment(s) to water intakes and outfall structures on Lake Sakakawea, and on the Fort Peck and Garrison reaches of the Missouri River. In brief, North Dakota's Department of Health (NDDOH) cannot support any alternative until a plan is developed that addresses likely pollutant discharges into the Missouri River from mechanical habitat construction. Also, a process must be developed that clearly defines state consultation and agreement prior to implementing any Level 2 testing or implementation (level 3 and 4) of the AMP.

Mechanical habitat construction has the potential to liberate pollutants into the Missouri River that exceed the state's acute and chronic water quality standards criteria. This potential for release has been demonstrated in historical sediment analysis in the Missouri River and Lake Sakakawea. The MRRMP-EIS does not identify any of the potential pollutants, or provide a solution to address them, as required by NEPA.

While previous elutriate work has identified elements of concern, NDDOH believes that the releases can be managed by pre-construction sampling to identify sites with acceptable levels of pollutants and the development of a series of sediment management practices that would reduce any water quality violation to an acceptable volume and distance as a percentage of the river system.

Sediment Load-related Concerns

On a related note pertaining to sediment, sediment load in the Missouri River is drastically less than during the pre-dam time period when the river was able to erode and deposit sediment with no net change in riverbanks, riverbed, sandbars, and floodplain. This decreases the ability of the river to create sandbar habitat with flows in a sustainable manner. The current riverine environment is still capable of creating sandbars, but the cumulative effects over time are still unknown.

The geomorphology of the Garrison Reach on the Missouri River is predominantly controlled by the interaction of Garrison Dam on the upstream end, and Lake Oahe on the downstream end (Skalak et al. 2013). Garrison Dam acts as a sediment trap and releases are essentially free of sediment. These releases have a high sediment carrying capacity and primarily erode the riverbanks and riverbed on the upstream end of the Garrison Reach. Further downstream, the sediment load of the flows increases. In addition, as flows move downstream, control of the geomorphology of the river channel transitions from Garrison Dam to Lake Oahe. The reservoir and its backwater effects decrease the sediment carrying capacity of the flows and causes aggradation. Therefore, the ability of the Garrison Reach, and the river in general to continuously create sandbar habitat with flows over the long term is questionable.

Skalak, K.J, Benthem, A.J., Schenk, E.R., Hupp, C.R., Galloway, J.M., Nustad, R.A., and Wiche, G.J., 2013, Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River: *Anthropocene* 2 (2013): 51-64.
<http://dx.doi.org/10.1016/j.ancene.2013.10.002>

Agricultural-related concerns

It is important to recognize that agriculture has been, and will continue to be, the driving force behind North Dakota's economy, contributing over \$32 billion in economic activity annually. That makes agriculture the largest sector of North Dakota's economy, supporting twenty-four percent of the state's workforce. North Dakota's farmers and ranchers own, operate and manage nearly forty million acres, rank number one in the nation in the production of ten commodities, and produce over fifty commodities in total. Because of North Dakota's vast global export markets, the removal of any agricultural land would affect production for North Dakota's farmers and ranchers, having a far

reaching detrimental impact on North Dakota, and its global partners.

As such, floodplain connectivity due to increased flows and the removal of agricultural land from production are of great concern to the North Dakota Department of Agriculture (NDDA). The removal of any amount of agricultural land from production leaves a tremendous effect to the overall economy of the state. It is an issue much greater than the suggested loss in property tax revenue. Farmers and ranchers must retain ownership and access to operate agricultural land to better support a balanced ecosystem. NDDA finds the encouragement of floodplain connectivity to be premature based on the lack of research available.

Included in the MRRMP-EIS are several references to the actual scientific accuracy and perceived benefit of the proposed alternatives. The level of uncertainty in the entire MRRMPEIS is cause for extreme concern. All actions implemented under the MRRMP-EIS, and future adaptive management, require firm scientific justification in order to avoid unnecessary adverse impacts.

Correspondence: 97

Correspondence Information

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Correspondence Text

As concerned conservationists who value our precious Missouri River ecosystem, we support a strengthened Alt. 2 in order to better comply with the ESA in regard to the pallid sturgeon, the No. Great Plains piping plover and the interior least tern. We believe that the EIS does not reflect the current state of science and that more work should be done in regards to the effects of the proposed management plan on these imperiled species.

We also believe that the cost estimates for the plan may not be accurate. The Missouri River ecosystem and its recovery are so important to our people and to our native wildlife that it makes sense to be sure you do it right.

Thank you for your hard work on this important project on behalf of the American people and our future.

Correspondence: 98

Correspondence Information

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Date Sent: 04/20/2017	Date Received: 04/20/2017
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Correspondence Text

April 20, 2017

Major General Scott A. Spellmon
Commander, Northwestern Division
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

I am writing today as President and on behalf of the Iowa Corn Growers Association. We appreciate the opportunity to offer comments on the Draft Environmental Impact Statement (DEIS) for the Missouri River Recovery Program and Management Plan. ICGA and its elected farmer board of directors from each crop reporting district, represent nearly 8,000 dues paying corn farmer members from across the state of Iowa. The Iowa Corn Growers Association works to build relationships with business and industry, support sound agricultural policy, and target everyday issues that directly affect the corn grower's livelihood. The ICGA's mission is to create opportunities for long-term Iowa corn grower profitability. We have long worked on issues in the MO River Basin because of the direct impact that US Army Corps decisions have on our farmers' ability to productively use their land.

We have concerns with each of the six alternatives in the DEIS. In general, with the exception of Alternative 1 (No Action), each of the alternatives relax current flood control constraints within the Missouri River Reservoir Mainstem Water Control Manual (Master Manual) in an effort to provide flow support to the pallid sturgeon. Not accounting for additional rainfall, this could equate to an increase in a river stage of nine feet at Omaha, NE or as much as six feet at St. Joseph, MO. We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we have long opposed. In 2015, twenty members of Congress from Missouri to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Our members who live, farm and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are extremely wary of any attempt to increase flows from the Gavins Point Dam because to date, no science has been developed to prove this boosts the pallid sturgeon population. This is the basis for our opposition to bimodal spring rise provisions in Alternatives 1, 2 and 6.

Further, we wholeheartedly oppose flow modifications of up to 60,000 cfs for 35 days in Alternatives 4

and 5. The Corps is effectively abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases. Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage.

Conversely, summer low provisions in Alternative 2 would cause extreme harm to the Missouri River's navigation industry; one that's been on the rise due to increased water supply and reliability. Further, the Missouri River can contribute up to 60 percent to the flow of the middle Mississippi River during times of drought, another key river for our agricultural navigation and exports. The harmful effects of low summer flow to our nation's economy must be taken into account and the Corps should remove this flow option from consideration. With net farm income on a steep decline, our ability to export goods via river navigation channels is as important as anytime in our history and we would oppose any plans that could harm flow for navigation.

We believe Alternative 3 (Preferred Alternative) strikes a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. We appreciate the Corps' cancellation of the current bimodal spring rise as outlined in this alternative. We also commend the Corps for its commitment to study the connection between tributary inflows and pallid sturgeon recovery.

In examining each of the DEIS alternatives, a concern common to each is the lack of hydrologic and economic modeling. We cannot even begin to understand the impacts to flood control and interior drainage because the DEIS only completed modeling for four levee sites in the entire floodplain. This is a severe flaw and we call on the Corps to complete hydrologic modeling and peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is implemented. Based upon the possible pallid sturgeon spawning cue release implementation in years 9-10 under the Preferred Alternative, we believe the Corps has adequate time to fully develop this essential modeling so our members can have a much clearer picture of how management plan actions may affect them.

Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full National Environmental Policy Act (NEPA) review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual. Further, we urge the Corps not to rush into construction of 12 Interception Rearing Complexes (IRCs) for pallid sturgeon during a six year timespan as specified in the DEIS. Instead, the Corps should rigorously study the effects of one such IRC to determine its effectiveness before committing to building the entirety.

As a longtime member of the Coalition to Protect the Missouri River, we would like to associate ourselves with the more substantive comments of that organization. We believe their comments more fully explain some of the issues highlighted above and we would respectfully ask that those comments receive full and substantive consideration.

On behalf of our members, but particularly those that farm along the MO river, we appreciate the opportunity to provide feedback on the DEIS and for the service you provide our nation. We stand ready and willing to work with you going forward to maintain the Missouri River for a variety of purposes. Navigation and flood control must be preserved in those purposes. Thank you for consideration of these comments.

Sincerely,

Kurt Hora
President, Iowa Corn Growers Association

Correspondence: 99

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/20/2017	Date Received: 04/20/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

This is a test message for your webform. We apologize for any inconvenience.

Correspondence: 100

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/20/2017	Date Received: 04/20/2017
Number of Signatures: 1	Form Letter: Master
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Barnesville Municipal Utility serves 2500 member/owners in Minnesota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Barnesville Municipal Utility supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Guy Swenson
TEC Manager
Barnesville Municipal Utility

Correspondence: 101

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/20/2017	Date Received: 04/20/2017
Number of Signatures: 1	Form Letter: Master
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Correspondence: 102

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/20/2017	Date Received: 04/20/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I am a state holder in MRRIC and represent the community of Akron, Iowa. I support the cost based, renewable hydroelectric power generated at the Corps of Engineers dams on the mainstream Missouri River. Hydropower is an essential part of our power supply and helps to not only fuel our economy but that of the upper Great Plains as well.

The significant loss of baseload generation could seriously impact the economy of the region as well as lead to higher carbon producing and less reliable forms of replacement energy.

Respectively submitted
Harold Higman

Correspondence: 103

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/20/2017	Date Received: 04/20/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

MRRMP and DEIS Comments

Background

I am a MRRIC Stakeholder member representing the 388 Conservation Districts and Natural Resource Districts in the Missouri River basin. I served on the MRRIC Charter Development Committee and am passionate in doing what is needed to recover the listed species in an ecologically and environmentally sustainable manner while protecting the safety and health of other species, including human beings.

Over my 43 years of working to promote and build awareness of the need to sustainably use and manage our God given natural resources of soil, water, air, plants, and animals, I have increased my knowledge and appreciation of the complexity and diverse natures of each of these resources. I believe the Missouri River was designed by our Creator to be a very complex and dynamic eco-system and, as a result of man's activities in modifying the natural flow of the river through mechanical construction, we have disrupted that eco-system and have created the endangerment of these species.

Concern

The Conservation District stakeholder group cannot support limiting the MRRMP and DEIS's preferred alternative recommendation to the Alternative 3 - Mechanical Construction Only option for recovering the Missouri River's threatened and endangered species as stated in Vol. 1, Executive Summary, page xxviii.

Basis for the Concern

As a result of our working with these natural resources for many years, we believe the Mechanical Construction Only alternative will not facilitate the reestablishment of most of the inner acting components that are needed to fully recover the Pallid Sturgeon, Piping Plover and Least Tern species and avoid jeopardizing or endangering other species that rely on the river for their needed habitat.

Significance of the Concern

By limiting our recovery actions to Mechanical Construction Only, we are not going to be able to rehabilitate the river's eco-system back to its pre-construction condition. We need to include the management practices that are included in Alternatives 4, 5, and 6 that will help mimic the pre-construction natural flows and habitat as best we can. Not only is Alternative 3 inadequate in repairing the natural eco-system, we believe it is not financially sustainable, either. As good stewards of our natural resources, we have to learn how to work in harmony with these natural resources as God created them and not as how man thinks they need to be manipulated.

Recommended Actions to Resolve

We believe that Alternatives 3, 4, 5, and 6 all need to be considered viable options to use in this

recovery effort. As stated by Mark Harberg in his MRRMP-EIS Public Meeting presentations, current science validates the river's eco-system needs a much broader and dynamic management plan than a mechanical construction only option. By including Alternatives 4, 5, and 6, when the conditions are right and needed, we will be able to work more harmoniously with the elements of this eco-system to recreate the needed habitat and food for all the species in the basin.

Correspondence: 104

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Marshall, MN. Municipal Utilities serves 13,719 member/owners in Minnesota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the main-stem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Marshall Municipal Utilities supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Brad Roos
General Manager
Marshall Municipal Utilities

Correspondence: 105

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Corn Belt Power Cooperative serves 100,000 member/owners in Iowa. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Corn Belt Power Cooperative supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment

Kenneth H. Kuyper

Correspondence: 107

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 20, 2017

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - MANAGEMENT PLANS COMMENTS
1616 Capital Avenue
Omaha, NE 68102

To Whom It Concerns:

RE: Draft Missouri River Recovery Management Plan and Environmental Impact Statement
Comments

Nebraska Public Power District (NPPD) appreciates the opportunity to provide comments on the December 2016 Draft Missouri River Recovery Plan and Environmental Impact Statement (DEIS). NPPD owns and operates the Cooper Nuclear Station just downstream of Brownville, Nebraska at river mile 532.6, and also partners in the Omaha Public Power Districts Nebraska City Plant located at river mile 556.3. Both power plants were sited along the Missouri River due to access to a reliable water source. These power generating plants are an important and critical asset to NPPDs generating mix and represent approximately 31% of NPPDs generating capability.

NPPD supports, with some modifications, the U.S. Army Corps of Engineers (USACOE) selection of Alternative 3 as the preferred alternative. NPPD would agree that of the 6 alternatives presented; Alternative 3 sets out the best plan to provide benefits for Pallid Sturgeon and Piping Plovers while providing for operations of the system and maintaining the authorized purposes as designated by Congress. The modifications we recommend be incorporated to Alternative 3 include: (1) removal of the management action of a one-time spring pulse test for pallid sturgeon (estimated in year 9) and placement into the Adaptive Management Plan (AMP) as a hypothesis that would be tested if supported by the science at that time; and (2) we recommend that the management actions for providing Piping Plover nesting habitat outside the active river channel be included in the management actions for this Alternative. NPPD does not support implementing Alternative 1, 2, 4, 5 or 6 for the reasons stated in the attached detailed comments.

NPPD supports implementation of the Adaptive Management (AM) approach as presented in the DEIS as a component of the Missouri River Recovery Plan. Adaptive management will enable the USACOE to better understand the needs of the species, reduce uncertainties and to implement science-based management actions to benefit the Piping Plover and Pallid Sturgeon. The Adaptive Management Plan (AMP) will help to direct the development of Piping Plover habitats (ESH and non-ESH), and aid in the reconciliation of the various hypothesis regarding the successful reproduction and recovery of the

Pallid Sturgeon. However, the AMP needs to include more definitive decision making criteria to enable timely decisions regarding management actions to be made.

NPPD has concerns with the DEIS contention that Alternative 1 is a baseline or reference case. We do not believe it serves such a purpose from a scientific perspective or as a tool for comparing impacts of alternatives for thermal power. This is because the Independent Science Advisory Panel (ISAP) has found that the spring pulse management action (as implemented to date) does not benefit to pallid sturgeon, the Shallow Water Habitat (SWH) development was determined to not benefit the Pallid Sturgeon, and it is not a viable alternative that would be implemented.

NPPD is concerned with the analysis of impacts to thermal power contained in the DEIS. The NED and RED analysis indicate significant financial impacts to thermal power generating facilities below Gavins Point Dam from an energy and capacity perspective. We also believe they are likely underestimated. Additionally, the results presented in the DEIS do not seem to be representative of the operational variations of the management actions described for the alternatives. This may be due to the limited years analyzed from a temperature and operational perspective, inappropriate modelling assumptions or both. We would recommend that in the Final Environmental Impact Statement the USACOE provide the impacts based on the type of impacts for the specific thermal power facilities.

We also note the impacts to hydropower for some alternatives are significant. NPPD is a purchaser of power from the Western Area Power Administration (WAPA) and is concerned about the impacts of reduced generation and the future cost of the power from WAPA. We urge you to seriously consider comments from WAPA, the Mid-West Electric Consumers Association and other WAPA customers in the basin.

Additionally, we would like to point out that the DEIS is inadequate in its analysis of the impacts to thermal power and hydropower cumulatively in the basin and in the region. Significant reductions in energy as a result of efficiencies and/or shutdowns of baseload thermal power plants by themselves and/or along with reductions in hydropower generation could lead to significant issues related to system reliability. The DEIS appears to analyze the impact from only a cost perspective while assuming offset energy is available. It appears no analysis has been conducted to determine if energy would be available from the market or the transmission facilities could deliver the needed replacement energy

In summary NPPD supports implementing Alternative 3 with the modifications noted above and contained in the attached set of detailed comments. We believe this provides necessary benefits to the species while maintaining authorized purposes and avoiding significant impacts to power generation in the basin.

Should you have any questions regarding these comments please contact me at (402) 563-5335 or John Shadle at (402) 563-5489.

Sincerely,

Brian L. Barels
Water Resources Manager

Attachment

cc: P.L. Pope
J. McClure

K.N. Higginbotham
J.J. Shadle

DEIS Volume 1

Section 1.1.1, Page 1-2, last paragraph - Points out the negative impacts of the mainstream dams. The paragraph should also include a statement of the benefits of the dams/reservoirs including to produce hydroelectric power (renewable), mitigate flooding, provide recreation, navigation, provides water for multiple human uses (drinking water, cooling water, wastewater treatment, etc.).

Section 1.3.2, Page 1-19&20, - Nesting habitat on or along the Missouri River is limiting plovers (see 11-13-15 USFWS PAL letter) based on modeling. However there needs to be recognition of the limitations, assumptions, and caveats associated with that modeling, including but not limited to: model of ESH deposition and erosion is new and based on a limited time frame, plover population models are parameterized using current condition with a limited time of 2005-2014 for riverine habitat. Model results are strongly affected by assumptions of fledgling productivity on reservoirs, does not consider metapopulations and differs from models used by the piping plover Recovery Team (See Modeling to Support the Development of Habitat Targets for piping plovers on the Missouri River May 2015).

Section 1.5.2, Page 1-24, Sub-Objective 2 - Concerning a 95% modeled probability that at least 50 birds will persist for 50 years (Northern and Southern Regions). Piping plover populations continue to exist on the river with fairly stable or increasing numbers (see 2015 Annual Report) despite the construction of dams on the Missouri River in the 1950s and little or no nesting in on the Missouri River or associated reservoirs in years like 1997 and 2011. Therefore modeling the Missouri as two separate populations that have little or no interaction and holding emigration and immigration as steady and equal in the models obviously does not take into account the reality of the bigger metapopulation influence and has some limitations. How those limitations affect the persistence probability needs to be explained. Likewise if acres of ESH are to be used as a surrogate there should be a simple graph or table that demonstrates the historical relationship of plover populations to acres of ESH in the past to justify the proposed methodology.

Section 2.3, Page 2-5, Table 2-1 - With approximately half of all Missouri River plover nesting occurring on reservoirs and reservoirs also accounting of most of the USACOE take of plover nests (see page 2-16) it seems like one of the most relevant management hypothesis would be to reduce incidental take through reservoir management or habitat management on the reservoirs. Specifically water level management to create and provide habitat as well as minimize take of nests on Lake Oahe and Lake Sakakawea needs to be done in much more robust manner than what appears to have been done (see page 2-44). There may be some fairly minor management actions (raising levels in Lake Sakakawea a few days later) that may result in much less take of nests and increased productivity of this significantly important nesting.

We recommend that the USACOE define plover habitat as all those habitat types known to be successfully used by piping plover for reproduction and not limit it to ESH. If a broader definition of habitat is adopted then expanding the General Management Action(s) column of Table 2-1 to include habitats such as oxbows, sand spoil areas, alkaline lakes, and reservoir management actions such as diking of bays making islands etc. greatly increases the like hood of meeting plover objectives and likely at a reduced cost that proposed in Alternative 3.

Section 2.3, Page 2-9, last paragraph - Given the all the unknowns regarding the reproductive and early life stages of the pallid sturgeon excluding the water quality hypothesis for in the lower river may

be an oversight. What is important in the AMP is determining the reason why pallid sturgeon are not recruiting to the population, then this can be dealt with through inter-agency agreements.

Section 2.4.3, Pages 2-12&13 - (Bird Habitat/Population Modeling) This section should include the caveats that are listed in (Modeling to support the Development of Habitat Targets for piping plovers on the Missouri River, May 2015) so that the reader understands the limitations of this modeling. It should also reflect the variability and uncertainty associated with the acres of ESH needed to meet the persistence targets.

Section 2.4.4, Page 2-13 - Regarding development of a 2-D hydrodynamic models for pallid sturgeon, a comment is made that Hamburg and Lisbon-Jameson bends are representative of the best conditions. Do we really know what the best conditions are for the pallid sturgeon in the lower river to make this statement? Additionally, the best conditions for pallid sturgeon larval growth and development may be in the Mississippi River. This should be a hypothesis investigated in the AMP.

Section 2.5.1.3, Page 2-16 - The USACOE needs to provide the data to show that managing vegetation and predators on reservoir habitat areas is more expensive than management of (or continued creation of) ESH. Similar statements have been made relative to sand pit habitat along the central Platte, however, when actually evaluated such action were much cheaper per fledgling produced and produced way more fledglings than did island construction.

Section 2.5.1.4, Pages 2-16&17 - The USACOE's 2015 Annual Report for the Biological Opinion indicates that 40-50% of all piping plovers nests and fledglings are on the shorelines of Lake Oahe and Lake Sakakawea. These reservoirs account for a large percentage of the plover recruitment despite the fact that 80% of all incidental take of plover eggs and chicks occurs on these same shorelines. Because the DEIS does not differentiate between nests on riverine and reservoir shorelines except to document that most incidental take occurs on reservoir shorelines it is misleading the public, and the science, as to the true role of the reservoirs. It is possible reservoirs and the increased shore line habitat would be a benefit to piping plover. NPPD does not believe that water level management utilizing all reservoirs to reduce the instance of incidental take on Lake Oahe and Lake Sakakawea has been adequately addressed in the DEIS or the Draft Adaptive Management Plan (AMP). Additionally, constructed habitats that are designed to consider this fluctuation would also significantly benefit the success of the nesting birds.

Section 2.5.3.1, Page 2-28 - 1) We support habitat enhancement studies which may potentially provide spawning and rearing habitat for pallid sturgeon, however the location of such habitats should be located to minimize impact to existing water intakes, 2) there has been considerable discussion regarding the placement of spawning and IRC habitats. Given the long distances pre-spawning pallid sometime travel, the potential for larval pallids to drift out of the Missouri River (and into the Mississippi River) should not deter development of such habitats in the very lower portion of the Missouri River or even the Mississippi River.

Section 2.7, beginning at Page 2-7 - Indicates USACOE engaged MRRIC on alternative development - this is not true to the full extent of the statement. USACOE received feedback on their proposed alternatives. USACOE never requested input from MRRIC on management actions that could be taken to benefit the species. In fact USACOE and MRRIC debunked MRRIC member recommendations on alternative habitats to ESH and the location of those habitats.

Section 2.7.2, Page 2-39- The relationships between flows and ESH are based on models developed in the effects analysis. More information needs to be provided to determine if models are reflective of habitat development since the model was develop (model verification).

Section 2.7.3, Page 2-40 - The DEIS should indicate whether these flow and duration parameters have been verified in the river?

Section 2.8.1.1, Page 2-49, last paragraph - The issue of erosion of ESH is discussed the continual need to have sediment available to construct new habitat needs to be evaluated for sustainability. All modeling is done for 50 years and assumes sediment suitable (and available in quantities needed) for ESH construction will always be available. The concept that ESH erodes also supports the development of nesting habitat for plovers which are located somewhere other than in the active channels of the river.

Section 2.8.3, Pages 2-60-66 - Describes the components of Alternative 2 much of which are no longer supported by the latest science and/or have been tried without success (ISAP Reports and EA Reports). It is time to move forward with an adaptive management (AM) approach and away from old ideas which are not supported by science.

Section 2.8.4.2, Page 2-67 - Of the alternatives listed, we support Alternative 3. However to include a one-time spawning cue release for pallid sturgeon is speculation (at best) based on the latest science and was not high on the list of recommendations of the Expert pallid sturgeon workshop. Including this as an alternative component at this time should not occur, it should not be included until the science and AMP indicate it is a need. This management action should be dropped in the final EIS as a component of Alternative 3 and become a hypothesis in the AMP.

Section 2.8.5, Page 2-69 -The water released from reservoirs to create ESH has the potential to impact multiple stakeholder groups throughout the basin, especially thermal power. The value for the water released from reservoirs for creating ESH should be determined and included, similar to the costs the USACOE is looking at for surplus water, then the total cost of the alternative and impacts to stakeholders can be assessed. The potential impacts to YOY and juvenile pallid sturgeon are not understood at this time and such releases should not be implemented until it can be proven that the ESH releases would not be detrimental to the early life stages of pallid sturgeon.

Section 2.8.6, Page 2-72 - Same comment as above.

Section 2.8.7, Page 2-73 - As previously stated, spawning cues are not supported by the science (ISAP report and pallid Expert Workshop) and should not be considered in this or any other alternative, but rather remain as a hypothesis in the AMP.

Section 2.9.2, beginning at Page 2-78 - Alternatives 3-5 all include a spring pulse for pallid sturgeon in years 9 or 10 based on the science. See related comments above and below.

Section 2.9.2.1, Page 2-78 - Alternative 1 is not an appropriate baseline case under NEPA and based on the science it does not benefit the species, with regard to pallid sturgeon spring pulses and SWH. Additionally spring sturgeon pulses which are carried through the 82 period records have in reality been implemented very infrequently. Additionally the SWH has not been developed to anywhere near the level of the no action alternative. As such it is not a reference or base case and really represents impacts of the alternatives that have not been realized. Additionally the impacts to thermal power, should not be compared to the impacts modelled for Alternative 1 in an incremental or comparative manner as done in the DEIS. The DEIS must present the NED and RED results for each alternative in a total and individual manner as is done in the hydropower section. The comparison of impacts of Alternatives 2-6 to Alternative 1 as presented makes the impacts appear less than as currently described in Alternative 1.

Section 2.9.2.4, Page 2-83 - Full release of Spring pulse flows occurred in 10 of 82 years (as modeled with set release parameters), but not during the 12 years evaluated for thermal power therefore resulting in impact estimates for thermal power being more than stated in DEIS.

Note also that these alternative descriptions, eg. Alternative 5 indicate the reservoir operations are similar to Alternative 1 plus the fall release. See also alternative description in Hydropower Report that indicates Alternative 5 is based on Alternative 1 plus a release in the fall. So does Alternative 5 results include the spring pallid sturgeon spawning releases (or not) plus the ESH releases? This is not clear and impacts analysis could be greatly impacted and/or misrepresented based on the actual Alternative modeling provisions.

Section 2.9.2.5, Page 2-86 - Indicates that a fall release for ESH would have negligible adverse impacts. It appears this statement is related to the mechanical construction component of ESH but not the pulse releases. The DEIS needs to include a thorough analysis of a fall pulse flows impacts on young-of-year and juvenile life history periods of pallid sturgeon.

Section 2.10.1, Page 2-90 - We support the pallid sturgeon propagation effort as well as studies to assess a proper stocking rate, size, and locations. We also support additional evaluation to determine the carrying capacity of the river, which needs to be determined based on forage based studies.

Section 2.10.1.2, Page 2-91 - It is our understanding that spawning and IRC habitats are currently being implemented for the lower river, prior to evaluation by this DEIS. Do we know enough about pallid sturgeon spawning and rearing habitat requirements to determine we need 3 spawning and 12 IRC habitats as indicated. Coordination between the USACOE and stakeholders regarding design, location, and implementation is important. Also, the final EIS should evaluate the potentially benefits, if any, of placing IRC habitats in the Mississippi River at appropriate locations below Missouri River spawning habitats.

DEIS Volume 2

Section 3.2.2.4, Page 3-45, Conclusions - Points out the impacts of the each alternative to channel geomorphology. This section also determines that localized aggradation in the lower river from low summer flows could require dredging would occur under Alternative 2. As such this is an additional cost that needs to be included for Alternative 2 and is another reason Alternative 2 should not be implemented. This section also identifies that, temporary, and long-term impacts to the geomorphology would occur from spawning cue releases in Alternative 3. As this could affect availability of materials for piping plover habitat, it is another reason not to implement the spawning cue releases.

Section 3.2.2.8, Page 3-54, 1st partial paragraph - Points out that Alternative 2 could require additional localized dredging to maintain the navigation channel, which in turn would have the potential to impact other intakes and cost to stakeholders that should be avoided. Are these costs included for the alternative? If not they should be.

Section 3.3.2.5, Page 3-73, paragraph 3 - Points out the high uncertainty of whether or not low summer flows would directly contribute to increased survival of age-0 pallid sturgeon. This reason, along with the impacts on authorized purposes and stakeholder impacts make Alternative 2 unacceptable and should not be considered.

Section 3.3.2.1.1, Pages 3-82&83 - Points out impacts resulting from the construction and operation of the BSNP but also points out stocking of non-native sport fish and introduction of invasive species which compete with pallid sturgeon as potential obstacles to recovery of pallid sturgeon. Competition

(direct or indirect) from non-native fish species has to be determined and must be included in the AMP.

Section 3.4.1.2, Page 3-90, First Paragraph - There is very little historic (pre dams) information on use of ESH on the Missouri by terns and plovers and in many years the timing of peak flows would not have been conducive to nesting. In all likelihood the historic habitat was quite varied and birds used other areas than channel habitat ESH. Such areas would have included out of channel sand deposits, islands in oxbows, large point bars, etc. In more modern times breeding birds have been documented in a wide range of conditions including but not limited to alkaline lakes, sand mines, ash pits, islands constructed in reservoirs etc. these habitats must be included as management actions in the alternative implemented by the USACOE. They are supported by the literature, the science and the ISAP and ISETER. To not include them as suitable habitats for the Alternative implemented is flawed.

Section 3.4.1.2, Page 3-91, last paragraph - If the DEIS is trying to show that reservoir development on the Missouri River has been bad for piping plovers (see page 3-93) but presents no evidence. The DEIS should show how many plovers were present prior to reservoir development. Also the DEIS should clearly indicate where based on the USACOE's own data, the adult plovers and nesting occurred. USACOE data indicates that during drought most plovers were on the reservoir shorelines but there is no data presented for the reader to be able to determine just what percentage is on reservoirs and what is on ESH. This is misleading and continues the utilization of perceptions over the science.

Section 3.4.1.2, Page 3-91, second paragraph. Why is ESH which has to be constantly rebuilt, or in any year can be overtopped, not considered an intermittent habitat but reservoir shorelines are?

Section 3.4.2.5, Page 3-100 - No significant, adverse impacts are anticipated under Alternative 1; however, it appears Alternative 1 would not meet the 95% chance of persistence over 50 years. Since the last dam on the Missouri system reached full capacity in 1967 (see page 3-14), which happens to be 57 years, and the plovers have maintained a population for the entire period should cause a re-evaluation of the modelling done for the DEIS to that determined that Alternative 1 (i.e. current management plus 107 acres of ESH created habitat) does not have a 95% chance of population persistence for the next 50 years. Again the plain facts do not support the modelling results. Since the first constructed island was completed in 2004 and the flood of 2011 washed out all constructed islands it is difficult for a reader to follow just how the construction of ESH would have changed the number of birds today or why it is necessary into the future.

Section 3.7.1.3, Page 3-190 - Tracks water quality at various river segments along the river, in the lower river detection of higher concentrations of different contaminants and pesticides may be contributing to poor pallid reproduction. This hypothesis must be made part of the active AMP to answer the question of impacts to pallid sturgeon spawning and young of the year survival in the lower river.

Section 3.7.2.4, Page 3-194, paragraph 1 - Notes a small temporary adverse impact to water quality to constructing ESH. If breeding habitat is done off-channel it would minimize such impacts. Same for other alternatives where ESH is being created.

DEIS Volume 3

Section 3.13.2.5, Page 3-340, 2nd paragraph - Indicates that Alternative 2 during summer months and low summer flow event years, would lead to exacerbated impacts on energy to the region. This makes Alternative 2 an unacceptable Alternative. This alternative also has significant impact on the energy from the hydropower facilities at the peak period. The coupling effect (hydro and thermal) could have

catastrophic effects to energy availability and reliability. The final EIS must evaluate whether this could lead to brown outs or worse black outs at a time of most significance to crops and human life.

Section 3.13.2.5, Page 3-341, last paragraph - Alternative 2 has the largest NED impact on Hydro, Hydro is a clean renewable energy resource as compared to a gas turbine, as such Alternative 2 is not an acceptable alternative for managing of habitats on the river going forward.

Section 3.13.2.6, Page 3-344, last paragraph - Alternative 3 has the smallest impact of all the alternatives on hydropower and results in a small increase in power generation, and a small decrease in dependable capacity. These are important benefits to a renewable resource as such we support Alternative 3.

Section 3.17.2.1, Page 3-468, 1st paragraph - The location of constructed spawning or IRC habitats needs a thorough siting evaluation to ensure constructed habitat avoids locations such as intakes where the benefits of the habitats can be reduced.

Section 3.17.2.1, Page 3-468, 3rd paragraph - A temperature model was developed using a 15-year period between 1995-2012 (excluding 2007, 2010 and 2011) and indicates river water temperature that have the potential to cause derating or shutdown of power plants on the Missouri River. It is unclear in the DEIS what if any model verification was conducted or if the impacts predicted to thermal power were actually incurred during the modelled years.

Section 3.17.2.4, Page 3-474 2nd paragraph and Table 3-215 - Addresses (Alternative 1) reduction in power generation due to river temperature which occurred during peak power demand and ties this back finding replacement power from MISO or SPP. Is the USACOE temperature model adequate? The DEIS is wholly inadequate when it comes to evaluating the potential impacts of these types of occurrence. Additionally there is no indication where the impacts are or which facilities are impacted. Shutdown of the power generation in the lower river as stated in DEIS could be catastrophic and even be life threatening. The DEIS analysis of these potential impacts is completely inadequate.

Section 3.17.2.5, Page 3-481, last paragraph - States that Alternative 2 has the potential to significantly affect capacity values; energy values; and reliability during low flow events. Alternative 2 is not an acceptable alternative for managing the river going forward.

Section 3.17.2.6, Page 3-484, 2nd paragraph - Notes slightly lower water temperatures in the lower river from construction of fewer acres of early pallid sturgeon life stage habitats. How much lower? Can the temperature model truly identify such small differences?

Thermal Power Environmental Consequences Analysis Technical Report

Section 1.3, page 9, 1st paragraph - Currently the NED evaluation is based on a 15-year of record, however the time period is being expanded from 1975-2012. We support the effort to better estimate potential impacts associated with water temperature; however the impacts already identified for Alternatives are already at an unacceptable level.

Section 2.1, Page 10, bullet 3rd bullet - Report needs to identify where on the river the 90 degree determinations were made, which facilities are impacted, and to what degree. The implications of this may be far greater than the assumptions requiring substantial physical modifications to facilities, which costs have been totally ignored by the DEIS. Ignoring these costs is inappropriate in a NEPA analysis.

Section 2.1, Page 10, 5th bullet 5 - Indicates physical modifications to address bed degradation were

not determined. This is a potentially significant impact that must be included in the economic impacts. Bed degradation from flow release Alternatives 4-6 are likely to occur and these costs must be included in the impact analysis.

Section 2.3.2, Page 13 - Is the ERDCs HEC-NSM Excel -based temperature model published and available? Is it a calibrated and verified model?

Section 2.4.3, page 18, 3rd paragraph - States that there were no instances when there were impacts to power generation from both river stage and flows and from temperature. How many instances where there from river temperature alone?

Section 2.4.5, page 21, 1st paragraph - Note that capacity values do not include plant decommissioning cost. Plant decommissioning is a cost to doing business and should be included where appropriate.

Section 3.1, Page 24 - Indicates the NED analysis includes changes in costs to replace energy, capacity and variable costs but missed potentially significant capital costs to plants based on impact of the flow release alternatives that must be mitigated, thus making the analysis incomplete.

Section 3.1 - Tables 6-7-8 - Needs to provide the results based on impacts due to elevation/flow or temperature (including the number of shutdown days) for each impacted plant. Also the tables showing adverse effects as positive numbers makes the table difficult to understand and analyze.

Section 3.1, Table 6, Page 25 - Indicates that Alternative 1 is a change in generation from a no adverse impacts case. This no impacts alternative or case needs to be fully described to understand the impacts of the alternatives and whether Alternative 1 is truly a base case or a reference case as stated in the DEIS. The impacts of Alternative 1 have not been realized, if anything Alternative 1 should just be another alternative and not used as reference case. These impacts are significant financially to the thermal power plants and largely unacceptable for alternatives that have no proven benefit to the species. Also, the report does not describe how Alternative 3 could have an average annual impact of \$52 million dollars when there is no flow component except for a potential one- time pallid pulse. Additionally by not identifying the source of the impacts (facilities impacted) it is impossible to understand the difference between the alternatives and what the difference represent.

Section 3.1, Page 27 - Indicates there beneficial impacts to thermal power from alternatives 3-6. Are these truly benefits or misguided conclusions from a false baseline/reference case or are they because of only a 15 year temperature analysis? The Tables need to ignore comparison to the reference case and just provide the impacts of each alternative. Comparing the impacts to a non-representative reference condition or base case misleads the impacts of the proposed alternatives.

Section 3.2, Table 9 - Indicates that the impacts are for a 15 year period, yet previous descriptions indicate that the 82 year period was used for evaluation of operations and flows. This makes understanding the data present almost undeterminable complete descriptions of each impact needs to be provided. Also, if just a 15 year period was used to determine impacts to thermal power many of the release years and resulting refilling impacts were not evaluated thereby potentially significantly underestimating the impacts to thermal power.

Section 3.4, Page 35 -What analysis did the USACOE conduct to determine the impacts of SWH and IRC are the same from a temperature perspective? Again comparing the differences to Alternative 1 is an inappropriate comparison because Alternative 1 does not represent the best available science and has only been minimally implemented. The comparison to Alternative 1 also greatly clouds and

confuses the analysis.

Section 3.4, Page 38, last paragraph of section - Indicates there were no difference in flow releases out of Gavins point dam for alternative 1 and 3. Is this a misstatement or has the USACOE not modelled alternatives with the same operational parameters, if so, Alternative 3 may have a pallid sturgeon release component.

Section 3.7, Page 46, 3rd paragraph, last sentence - Indicates higher river temperatures are a benefit to thermal power, which is usually never the case. When looking at the impacts of Alternative 6 especially when compared to Alternative 1, it appears the impacts are mostly in Alternative 1 which is likely true when operations are the same between the alternatives. However operation impacts resulting from Alternative 1 should not be the same as Alternative 6 based on the alternative descriptions. It appears the impacts to thermal power may be miss-modeled? Alternative 1 should not be used as a reference or base case as noted above.

Section 3.8, Page 49&50 - This section regarding the coupled effects or cumulative effects is woefully inadequate. The combined impacts to hydropower and thermal power shutdown is significant and not thoroughly evaluated in the DEIS. These impacts together could lead to critical conditions in the regional groups for some or many alternatives. The power pools should be further consulted to determine whether these impacts could result in power shortages in the power pools with potentially significant impact. See also descriptions of significant impacts from Alternative 2 in the 3rd paragraph on page 51. See also last paragraph of Section 4.3 regarding the potential for adverse impacts from coupled impacts with hydropower.

Section 4.1, page 49, last paragraph - Points out that a number of plants would have to shut down or de-rate as a result of low flow or river stages or increased river temperature. Any alternative or a component of an alternative that results in shut downs or re-rates should not be implemented.

Section 4.1, page 51, 2nd paragraphs - Points out the large and possibly significant adverse impacts that low summer flow events would have (Alternative 2 relative to Alternative 1). Alternative 2 is not an acceptable alternative for managing the river going forward.

Section 4.4, Page 54 - Indicates negligible impacts between alternative 1 and 3. This is really not believable with one having spring pulses and the other not, unless they are modeled incorrectly. As noted before Alternative 1 is inadequate as a reference case for other alternatives.

General Comments

The 15 year period of analysis seems to be carried through on both the temperature impact and hydrologic impact analyses, which likely misses significant period of refill and other conditions which could cause and impact. DEIS needs to be supplemented with appropriate 82 year period of analysis for thermal power.

The fact that there are not significant differences between Alternatives 1 and 3-6 also indicates there is likely errors in the analyses. Also it is hard to imagine that impacts occur from river warming between the alternatives. Please provide a detailed explanation as to how construction of ESH and IRC habitats cause increases in river temperature?

The RED impacts for Alternative 6 are likely without basis and reflective of the thermal power analysis that only considers incremental differences to Alternative 1. Each alternative needs to be evaluated based on its respective financial impacts which is significant and likely underestimated due to the

incomplete (15 year analyses) and likely inaccurate analysis (inappropriately using similar hydrology between alternatives - see previous comments).

When comparing the reductions in full-service navigation levels as provided in the Navigation Environmental Consequences Analysis Technical Report (based on the 82 years of hydrology) shortened navigation seasons, the actual impacts to thermal power over the 82 years has the potential to be significant from a dollar impact perspective to the customers and regionally generation perspective.

Thermal power section does not address the environmental impacts of a gas turbine replacement alternative from an air and water emissions perspective if it is nuclear power being replaced.

Hydropower Environmental Consequences Analysis Technical Report

Section 1.1, Pages 1&2 - Description of Alternatives indicate Alternatives 1, 4 and 5 uses the same operational base. This is not correct base on the alternative descriptions as Alternatives 3-6 do not include the spring sturgeon pulse. These likely results in an error in the descriptions or modeling of alternative s 3-6.

Section 5.1, page 34, Table 11 - The results reported for Alternative 6 seems odd/wrong compared to the other alternatives. Also, per previous comments, Alternative 1 may not be a reasonable reference alternative.

Section 6.0 - This section reports impacts in lbs. But what are the financial impacts to offset, control or mitigate the environmental consequences of using natural gas compared to hydropower?
Adaptive Management Plan (Version 6)

Section 1.1.3, page 8 - It needs to be recognized that the USACOE will be reinitiating Section 7 Consultation with the USFWS as the 2003 BiOp does not reflect the best available science. The AMP needs to be based on the best available science and not the 2003 BiOp.

Section 1.1.4, Page 9 - This section describes all of the models that have been assembled (Figure 4). Each and every model has a few to numerous assumptions built into the models. The USACOE needs to assemble those assumptions for each model and regularly review those assumptions and fields verify to ensure they reflect the latest knowledge related to each assumption.

Section 1.2.2, page 18, Figure 7 - This Figure would better depict the needed relationships to make AM successful if the Agency Management Team Box overlapped the Team levels. Interactions of the Management Team and Bird, Fish and HC teams are necessary to making AM and the AMP successful. This process will likely need to be adapted in the future because communication and decision making timelines will be imperative in implementation of the AMP.

Section 1.4.2, pages 35&36, Tables 4 and 5 - What are the alternative hypotheses to the Associated Hypotheses? The alternative hypothesis should be listed if not here somewhere in the AMP and a note provided as to where they can be found.

Section 1.4.5, page 41 -The first sentence of this section identifies uncertainties related to the lower Missouri River centered around pallid sturgeon use of the Mississippi River and references Table 5, but the relationship to the Mississippi is not one of the hypotheses in Table 5.

Section 1.4.5, Page 43, 2nd full paragraph -This description is missing a critical component of IRC development and that is where the habitat needs to be located. It states it will be in the lower Missouri

River but this may miss the location that benefits the species which could be in the Mississippi River. The location of the habitat based on the drift needs to be understood before habitats are built as described in this paragraph and Table 7.

Section 2.2.4, page 67, line 17 - Indicates that in some cases decision criteria cannot be developed until details of actions are known. What process does the AMP employ to ensure decision criteria are developed at the earliest time. Should there be an annual review or some other process?

Section 2.3, page 70, Figure 14 - see Figure 7 comment above. We would recommend that there can be MRRIC members on the Teams but it does not necessarily need to be a workgroup; however the workgroups would exist outside the teams but within MRRIC. MRRIC Team members then report back Work Groups who would make recommendations to MRRIC. The selection for the Team members would be as described but it would aid in the understanding of the commitment team members must make. It would also help with the existing understanding of MRRIC that work groups participation is broad, and commitment is more or less as available. Recommend the Technical Team be renamed to Technical Support. This group is different than the Bird, Fish and HC teams from a membership and participation perspective as well as roles and responsibilities and should not use the same Team name.

Section 2.3.1, page 73 - The last paragraph lists a number of roles for USFWS Regional Director including the role as the development of or changes to targets, criteria, hypothesis, etc. Seems like this level would approve those recommendations coming from the adaptive management plan, not initiate them?

Section 2.3.3.1, page 79, line 10 - Recommend removal of on the ground as it is old terminology and is misrepresentative in the rest of the sentence.

Section 2.3.3.2, - page 82, line 3 -. The HC Team will likely have a membership similar to MRRIC membership. We also believe the HC Work Group should be the full MRRIC (that is why MRRIC was formed in the first place). We would recommend the MRRIC meet at different times from the Fish and Bird teams to allow MRRIC members to participate on a species team and HC Team. We also believe the HC Workgroup should be the full MRRIC.

Section 2.3.4, page 83 - Recommend changing the name of this effort as Technical Support. This differentiates the individuals and their work efforts and membership to be different than the Bird, Fish and HC teams.

Section 2.3.4, page 83, lines 17-19 - Technical Support should not have the authority to unilaterally engage the ISAP or ISETER. The communication line to communicate with the ISAP needs to be through the appropriate Team and MRRIC as well as the USACOE as prescribed in panel documents.

Section 2.3.4, - page 84. The Technical Support group makes up and roles needs to be better defined. We assume the USACOE has the authority to determine who is on Technical Support group. The make-up and membership of this group should be developed by the USACOE, AM Process Manager, and provided to MRRIC for comment and any recommendations. The membership and roles of each Technical Support group member should be maintained on an active list. Changes to the list shall be provided to MRRIC as changes to the group occur.

Sections 2.3.2- 2.3.6 - We recommend the USACOE consider consolidating the roles and responsibilities for the AMP into fewer positions. This would greatly improve the process and reduce program costs (required taxpayer dollars).

Section 2.3.7, page 92, and Figure 15 (Also 2.3.7.2 line 15-17) - We recommend the SAM work group is not needed as the AMP is implemented. The Bird, Fish and HC Work Groups can bring appropriate information and recommendations to the MRRIC without going through SAM. This will save valuable time in the AMP process. Should other work efforts be needed they could be achieved through other work/task/Ad Hoc groups.

Section 2.2.7.2, page 94, line 29 Work Groups for MRRIC should have Co-POCs to help them manage the work load.

Section 2.3.7.2, page 95, lines 5-13 - The Fall Science Meeting, Annual AM Workshop and WP review scheduling needs to be flexible rather than at prescribed times. They need to occur when the data and analysis are available and time has been allocated for Team review (see also above recommendations that MRRIC members can participate on Teams, but the Work Groups are separate within MRRIC, eg. Replacing the SAM Work Group).

Section 2.3.7.2, pages 92-97- We recommend that to streamline the process, that MRRIC as a whole replace the HC WG. This also considers that MRRIC members can (and are willing), are participating in the Technical Teams (Bird, Fish and HC). In other words the Bird, Fish and HC teams would be open to MRRIC members who choose to participate. If there is a need for Bird and Fish Work Groups they should be in the MRRIC structure and be the vehicle for Team members to report to. As stated above we do not believe an HC Work Group is necessary, MRRIC can serve that role.

Section 2.3.7.3, page 97 - We strongly recommend that there be an ISAP and a Separate ISETER panel as recommended by MRRIC for the reasons stated in MRRIC's recommendation.

We recommend that MRRIC and the USACOE establish a rotational process for the Independent Panel. Bringing new members onto the Panel refreshes the review and provides new insights into hypotheses of the AMP.

We recommend that the Panel elect a chairperson to prepare all responses to questions posed by MRRIC/Agencies. The third party science neutral would be used to identify replacement candidates for the rotational process.

An alternative process for the Independent panels is to select the members who will participate in questions from MRRIC/Agencies as selected for each review task. For example if it is strictly a science question related to pallid sturgeon, it may not be necessary for the expert economist to participate, but they would be aware by being a panel member.

This section should be modified to address the two roles of the Panel, review and advisory. It is important that the Panel remain neutral which is difficult if they are directly engaged in development and implementation of the MRRP. As the AMP is implemented, while there is an advisory role for the Panel, it should be implemented in a manner to preserve the independent review capabilities of the panel as much as possible. This is different than has occurred through the development of the AMP in which the Panel has been used in many cases as an advisory group.

Section 2.3.7.4, page 98 - The TPSN role is coordination and facilitation of the Panel, it is important the TPSN represent the Panel from a coordination perspective, not as a review or opinion perspective.

Section 2.3.7.5, page 100, lines 4-38 - These potential interactions were utilized for the development of the AMP, but are likely not necessary for implementation of the AMP. The different levels of

communication will be determined by the MRRIC Team members and the WGs. We recommend eliminating this from the AMP.

Section 2.4.2.2, page 107 - Fall Science meeting should be for the Teams, likely not many results for WG or MRRIC - Results are likely in a Spring- Summer time frame, eg. Annual AM workshop.

Section 2.4.3, page 111, Figure 17 - This figure significantly ignores the role of the Teams in the process and what goes to the USACOE and MRRIC.

Section 2.4.3.1 and Figure 18- page 112 - These sections 2.4.3.1, etc. are far too prescriptive as to when the events are / have to occur.

Section 2.4.6.7, page 140 and 2.4.6.8, page 141 - Recommend that a step for decisions related to moving between pallid sturgeon implementation levels needs a NEPA check in addition to the workgroup flow.

Section 2.5.1, page 146, lines 33-36 - MRRIC Team members may also want to make WG and MRRIC aware of concerns so recommendation can be made as well.

General Comments

The Draft AMP overall is a good document and addresses issues other AM Programs struggle with such as certain decisions that need to be made. However, it is limited in its overall benefit to the species by having the fundamental species objective of: Avoid jeopardizing the continued existence of the piping plover on the Missouri River and then limiting management to creating very specific habitat (ESH). The following comments reflect on what is not in the AMP.

The draft AMP at the instance of the USFWS takes a very narrow view of piping plover habitat defining it as having to be hydrologically connected to the main stream river or reservoirs. This view is not based in biology or insuring the continued existence of the species. Plovers thrive - successfully nest and survive in many habitats not hydrologically connected to the Missouri River. This approach appears to be related to mitigating impacts to the river and the effort to benefit and recover of the species has become secondary. A plover produced from an alkali lake, a reservoir habitat or other off river habitat contributes to the piping plover population the same as one produced on a Missouri River sandbar. Increasing recruitment from habitats not hydrologically connected to the rivers has same effect as increasing recruitment from ESH.

Based on experience with AM on the Platte River NPPD believes that all habitat types should be considered and that if benefits to the species can be obtained by habitat creation, improvement or protection in areas within the Missouri River floodplain it should be in the list of potential management actions. Given the current data on movement between the alkali lakes in North Dakota and Lake Sakakawea and Oahe it would appear the alkali lakes provide a buffer for when conditions on the Missouri are bad such as in 2011 and hasten recovery when conditions improve. Likewise non-traditional habitats such as sand mines along the Platte River and ash pits near the Missouri River have documented successful plover reproduction. While creation of these habitat types may not be feasible at the scale that ESH is being contemplated they may provide opportunity for habitat where no other exists and actually increase the persistence of a population by expanding the occupied area. Experience on the Platte would indicate that anytime a statement is made about the longevity or cost of maintaining a certain habitat type is presented without data it should be scrutinized closely as it is often based on supposition and not fact.

The 2015 Annual Biological Opinion report indicates that 40-50% of all plover nests and fledglings are on the shorelines of Lake Sakakawea and Oahe. The DEIS indicates that 80% off all incidental take of piping plover eggs and chicks occurs on the shorelines of Lake Sakakawea and Oahe. The Draft AMP (page 220) indicates that limiting nest/chick take in riverine reaches is prioritized over reservoir management. Given that set of information there are two management actions that should be looked at through modeling to see if they warrant development into full blown management actions:

1) Prioritize nest/chick survival while meeting authorized purposes. It should be possible to go back in time and see if flooding nests on reservoirs to save nests in riverine sections results in an actual decline in potential recruitment. Understood there are all sorts of variables that can affect this analysis but by holding certain variables constant it will be possible to ascertain that prioritizing riverine reaches over reservoirs is actually the best for the birds.

2) Utilize all reservoirs in the system to minimize nest /chick take while meeting authorized purposes. This may mean moving water sooner or later, or alternating between Lake Sakakawea and Lake Oahe on some rotational basis to limit lake elevation increases prior to July 1.

In conclusion, when it comes time to implement the adaptive management plan, the document cannot be V.6 as it now exists with its massive volume and extensive appendices. The AM V.6 document should be archived and replaced with a concise and streamlined version laying out the hypothesis, and monitoring /evaluation to address those hypotheses. Additionally the goals and objectives will need to be stated and the plan must include decision making criteria in order to implement adaptive management.

Correspondence: 108

Correspondence Information

Status: Reviewed	Park Correspondence Log:
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Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Hill County Electric serves almost 4,000 meters in Central Montana. We rely upon the renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River. This is an essential part of our power supply and helps to fuel our economy. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Consumers Association; in particular:

Hill County Electric Cooperative supports alternative 3 - Mechanical Construction Only (the preferred alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers.

The actual impact on hydro-power of the various alternatives is likely understated;

The cumulative impact on reliability of reduced hydro-power and thermal generation resulting from the various alternatives needs to be studied; and

The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Craig Gates
CEO
Hill County Electric Cooperative

Correspondence: 109

Correspondence Information

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Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

U.S. Army Corps of Engineers Omaha District
Attn: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

As the state's largest general farm organization representing more than 30,000 farm and ranch families through our 105 county Farm Bureau associations, Kansas Farm Bureau appreciates the opportunity to submit comments on the draft Missouri River Recovery Program and Environmental Impact Statement (MRRP/EIS).

We share our member driven policy priorities and encourage you to protect these priorities as alternatives are evaluated and decisions are implemented:

- 1) We are supportive of the inland water transportation industry.
- 2) Tributary reservoirs in Kansas are utilized to provide public water supply, power generation, industrial use and recreation for much of the population in Kansas. Tributary releases should not compromise these critical instate uses of water.
- 3) Main-stem operational modifications should place primary emphasis on protecting agricultural land use, flood control and power generation when making operational decisions.
- 4) We support landowners creating voluntary habitats to address endangered species concerns.
- 5) Endangered Species Act rules and regulations which address listed threatened or endangered species must consider the concerns and livelihoods of private landowners, agricultural operators, sound science and common sense species management.

Thank you for your consideration in protecting these priorities in evaluating alternative operational and management strategies for the Missouri River system.

Correspondence: 110

Correspondence Information

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Correspondence Text

Watertown Municipal Utilities (WMU) serves 13,000 Electric Customers in South Dakota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- WMU supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Steve Lehner
General Manager WMU

Correspondence: 111

Correspondence Information

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Number of Signatures: 1	Form Letter: Yes (Master)
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Correspondence Text

Goldenwest Electric Coop serves 685 member/owners in Montana and North Dakota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Goldenwest Electric Coop supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

John L. Sokoloski, General Manager

Correspondence: 112

Correspondence Information

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Correspondence Text

The Sioux Center, Iowa, Municipal Utilities serving over 7,500 citizens in our community and some rural customers, is one of the fastest growing rural communities in Iowa. The cost-based, renewable hydroelectric power generated at the Corp of Engineers' dams on the main stem of the Missouri river are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the MRRMP DEIS.

We support the comments of Mid-west Electric Consumers Association on the DEIS.

- Sioux Center Municipal Utilities supports Alternative 3-Mechanical Construction Only (the Preferred Alternative) with additional off-channel , non-emergent sand bar habitat work for piping plovers.
- The actual impact on hydropower of the various alternatives is likely understated.
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for this opportunity to comment.

Harold Schiebout
Director of Government Relations
663 4th Ave SE
Sioux Center, Iowa 51250
712.441.1824

Correspondence: 113

Correspondence Information

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Notes:	

Correspondence Text

Flandreau Municipal Utilities serves just under 1,400 member/owners in South Dakota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- * Flandreau Municipal Utilities supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergency sandbar habitat work for piping plovers;
- * The actual impact on hydropower of the various alternatives is likely understated;
- * The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- * The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Correspondence: 114

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Moreau-Grand Electric Cooperative serves 3,929 member/owners in the western South Dakota counties of Corson, Dewey and Ziebach which are within the boundaries of both the Cheyenne River Sioux Tribe and the Standing Rock Sioux Tribe. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Moreau-Grand Electric Cooperative supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
 - The actual impact on hydropower of the various alternative is likely understated;
 - The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
 - The Adaptive Management Process needs a stronger "stop doing" function.
- The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Melissa Maher
General Manager
Moreau-Grand Electric Cooperative, Inc.

Correspondence: 115

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

NorVal Electric Cooperative, Inc. serves 1,934 member in Montana. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the main stem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- NorVal supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Craig Herbert
General Manager
NorVal Electric Cooperative, Inc.

Correspondence: 116

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Big Flat Electric serves 1100 member/owners in Montana. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Big Flat supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

Correspondence: 117

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Southwest Public Power District (SWPPD) serves 6,400 customers in Southwest Nebraska. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- SWPPD supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Curtis Kayton
General Manager

Correspondence: 118

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 21, 2017

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Project: U.S Army Corps of Engineers Missouri River Recovery Management Plan and Environmental Impact Statement (ID: 48574)

Document: Draft Missouri River Recovery Management Plan and Environmental Impact Statement (EIS). (ID: 76517)

Kansas City Power & Light Company (KCP&L) would like to express its support for the U.S. Army Corps of Engineers (USACE) preferred Alternative 3 identified in the Environmental Impact Statement (EIS). Alternative 3 is the least impactful on the operations of our power plants located along the lower Missouri River, as it is only proposing mechanical creation of shallow water habitats.

Additionally, KCP&L wants to reinforce its concerns regarding Alternative 2 and other alternatives. Alternative 2 currently proposes low summer flows under certain conditions. In the Draft Science and Adaptive Management Plan it outlines a low summer flow of 21,000 cubic feet per second (CFS) from Gavin's Point. Efficiency of power plant operations at KCP&L is threatened at that level of flow due to the shallow depth of water at the cooling water intakes. The plants would not be able to run at peak efficiency and would have to derate. This flow could also impact power production due to river temperature restrictions in plant operating permits. Low summer flow would mean the temperature of the lower Missouri River would more easily reach 90 degrees, limiting KCP&L's ability to produce power during high electrical usage times. Both of these scenarios impacts KCP&L's ability to interact in the Southwest Power Pool market and could mean higher costs of energy for our customers as well as increased maintenance costs.

Sincerely,

Paul M. Ling
KCP&L Senior Director of Compliance

Correspondence: 119

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Burt County Public Telephone (402) 374-2631 or
Power District Out of Area 1-888-835-1620 613 North 13th , P.O. Box 209 Fax (402) 374-1605
Tekamah, NE 68061 e-mail dray@abbnebraska.com
Richard Ray, Manager Organized Under the Laws of Nebraska

April 21, 2017

Burt County Public Power District serves 4100 member/owners in Nebraska. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Burt County Public Power District supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Richard E Ray
General Manager

Correspondence: 120

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Western Iowa Power Cooperative serves 3,500 member/owners in Iowa. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Western Iowa Power Cooperative supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.
Jeff Bean
General Manager

Correspondence: 121

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
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Correspondence Text

The City of Howard Municipal Electric serves 590 members in Howard, SD. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Plan and Environmental Impact Statement (DEIS). We support the comments of the Mid-West Electric Consumer Association (Mid-West) on the DEIS. In particular:

City of Howard Municipal Electric supports Alternative 3-Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers; The actual impact on hydropower of the various alternatives is likely understated; The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and The Adaptive Management Process needs a stronger "stop doing" function. The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.
Donna Klinkhammer
City of Howard Finance Officer

Correspondence: 122

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 21, 2017

Major General Scott A. Spellmon
Northwestern Division Commander, U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

WaterOne (Water District No. 1 of Johnson County, Kansas) appreciates the opportunity to offer comments on the Draft Missouri River Recovery Program and Management Plan (DEIS).

Background

WaterOne is an independent, public water supply utility that has been operating within the State of Kansas since 1957. The Kansas Legislature established WaterOne to serve the drinking water needs of the public in the suburban areas west of Kansas City. We currently serve over 425,000 Kansas residents, which is approximately 15% of the states population. This population will to grow to 600,000 residents by 2050. Many of WaterOnes staff members, including Mike Armstrong, Darci Meese, Tom Schrempp, Greg Totzke, Emily Wicoff and Michelle Wirth, have been actively involved with the US Army Corps of Engineers (Corps) projects and studies. This involvement includes, the Missouri River Bed Degradation Study, the Missouri River Recovery Implementation Committee (MRRIC), the Missouri River Authorized Purposes Study (MRAPS), the Missouri River Ecosystem Restoration Program Study (MRERPS), the Kansas Governors 50 Year Water Vision as well as many other studies over the years.

WaterOne supports the responsible management of the Missouri River resources and the maintenance of the eight congressionally authorized purposes of the river. Congress mandated the Corps to protect the lives and safety of the residents of the Missouri River Basin, and primary in that mandate is the responsibility to safeguard the Water Supply for stakeholders like WaterOne. Interrupting water supply for even one day would have catastrophic impacts on people who live and work in the Missouri River basin. The 425,000 residents served by WaterOne rely on the Missouri River for their daily water needs for domestic and sanitary use as well as for fire protection. WaterOne

serves 13,000 commercial accounts (businesses). While these commercial customers account for around 10 percent of our 145,000 customer accounts, they represent 30% of WaterOnes total demands. These commercial accounts also represent the economic engine of the State of Kansas. Interruptions of water supply can be troublesome to residential customers but can have catastrophic impacts to health care facilities and major economic impacts to education, businesses and industry. A 2017 report by the Value of Water Campaign entitled *The Economic Benefits of Investing in Water Infrastructure* documents that water service disruptions put \$43.5 billion in daily economic activity at risk. It is imperative that the Corps honor its mission to protect the Water Supply of the Missouri River as its foremost priority.

Large public water suppliers like WaterOne rely on permanent, fixed intake structures to divert water from the Missouri River and its major tributaries, such as the Kansas River. These intakes rely on the channel created and maintained by Corps Bank Stabilization and Navigation Project (BNSP) to operate. Most public water suppliers have limited or no access to alternative sources of water. It is extremely expensive or impossible to adjust these intakes to substantial changes in river levels. These intakes were designed and constructed with the advice, consent and approval of the Corps. It is imperative for the Corps to ensure that these intakes remain capable of continuous operation.

WaterOne began operating an intake on the Missouri River at river mile 379 on Popes Bend in the mid 1980s. We constructed this intake structure along the BNSP with the advice, consent and approval of the Corps with an operating sill set at an elevation of 718.5. The intake was constructed so low that it initially pumped sand off the bottom of the river channel for several years. Because of riverbed degradation over the past 25 years, the elevation of the Missouri river bed has dropped approximately 15 feet in the Kansas City area.

WaterOne began to recognize the potential impacts of degradation in 2000 when Kansas City, Kansas Board of Public Utilities (BPU) lost water supply to the Nearman Power Plant due to low river conditions. In 2003 and 2004, during the winter low flow periods, when navigation flows are not required, WaterOnes intake was not submerged adequately and we lost our water supply on the Missouri River. To address this problem, WaterOne purchased and installed auxiliary pumps to enable the intake to divert water during these low flow periods. The cost of these pumps and associated improvements was \$2.4 million. It should be noted that these auxiliary pumps could only supply about 50% of the 115 million gallons per day (MGD) design capacity of this intake. In addition to these capital costs, WaterOne incurs significant ongoing operational and maintenance costs. Other intakes in the Kansas City area experienced similar problems and costs, including Kansas City, Missouri; BPU; and Kansas City Power and Light.

In 2004, WaterOne began organizing a group of concerned stakeholders who worked with the Mid-America Regional Council to initiate a cost-share study of the riverbed degradation on the Missouri River in the Kansas City area. See <http://www.nwk.usace.army.mil/Missions/Civil-Works/Civil-Works-Programs-And-Projects/Missouri-River-Bed-Degradation/> and <http://www.marc.org/Environment/Water-Resources/Missouri-Riverbed-Degradation/About>. A final report on this study is due to be released in the next few weeks. The Corps and cooperating stakeholders have invested millions of dollars and countless hours on this issue. A significant amount of information and data was developed in this study, including the economic impacts that riverbed degradation has caused and will cause in the future. This information should be incorporated into the DEIS.

WaterOne operates a similar intake on the Kansas River at river mile 14.8. Like the Missouri River intake, WaterOnes Kansas River intake has experienced severe impacts from riverbed degradation because of a head cut up the Kansas River from the confluence with the Missouri River. Since this intake was constructed in the mid 1960s WaterOne has spent millions of dollars to keep it in operation.

Initially, a rock jetty structure was constructed to back up and direct water to the south bank where the WaterOne intake is located. In 2004, a high flow event damaged the rock jetty, which required construction of a cofferdam weir at a cost of \$14 million. The difference in elevation between the headwater and tail water of the weir is 15-20 feet.

The Corps is well aware that there have been isolated problems with Water Supply on the Missouri River over the past 25 years. The DEIS is the first public report documenting that communities throughout the Missouri River Basin may be in jeopardy of losing their water supply. Page 3-506 states that,

Modeling shows that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1.

This is an alarming statement and should serve as a wake-up call to the Corps that something must be done immediately to address what would be a catastrophic scenario for the residents and businesses who rely on the Missouri River daily.

Preferred Alternative

WaterOne supports Alternative 3 of the DEIS. This alternative appears to have the least impact to stakeholders - including Water Supply - and has the best potential to recover the protected species. It is not a perfect alternative and we have concerns about the pulse that may occur in year nine. We encourage the Corps to complete additional analysis and modeling before that time.

WaterOne objects to any alternative that would not recognize the constraints of the Master Manual. WaterOne also objects to any alternative that would include a low summer flow. Alternative 2 is the worst possible approach because it relies on the 2000 and 2003 Biological Opinions, which lack scientific basis and are deeply flawed. The science developed since that 2003 Bi Op contradicts the hypotheses relied upon by the 2003 Bi Op and disproves the effectiveness of most of the projects and actions mandated by the 2003 Bi Op. Alternative 3 applies the latest science findings while retaining compliance with the Master Manual.

Comments regarding the Water Supply elements of the DEIS

" Failure to recognize and address riverbed degradation - Throughout the DEIS, including section 3.18.2.4, the Corps has stated the fact that riverbed degradation is affecting the operation of intakes on the river. It appears the Corps is making these statements in the DEIS as a passive, disinterested bystander. The Missouri River is one of the most engineered and regulated rivers in the world. The Corps is in control of the Missouri River system. The Corps has the ability and responsibility to correct the riverbed degradation that has occurred on the Missouri River and its tributaries over the past 25 years. Section 3.18.2.4 under the NED analysis states that,

The project team did not attempt to evaluate the cost of intake modification that may occur due to bed degradation or prolonged drought conditions.

This information is readily available since the Corps Kansas City District has been working on a Missouri Riverbed Degradation Study for more than a decade. The Missouri River Management Plan purports to be a long-term, holistic solution to problems on the Missouri River, but it fails to address bed degradation, which is one of the most critical problems facing the Corps. Rather than passively

observing the problems with riverbed degradation, the Corps should take immediate, active steps to solve the problem.

" Failure to recognize the reality of current operations - The DEIS analysis of the baseline in Alternative 1 discussed in several sections, including section 3.18.2.4, is based upon a very theoretical operation of the river that does not recognize the real world flows required by the Water Management Center to keep intakes in operations. The Corps only modeled the 82-year period of record using very theoretical operations that the Master Manual might allow. Page 3-507 of the DEIS states,

&the impacts modeled do not account for the ability of water management to adapt to changing conditions on the system to serve authorized purposes, such as water supply. It also does not account for what activities may be implemented in the future relative to bed degradation which may be influencing model results.

This is a complete disconnect with reality because riverbed degradation already requires winter flows much higher than those theoretical Master Manual flows. Current, actual water releases should be used for this baseline analysis. For instance, it requires approximately 10,000 cfs of additional water releases at Gavins Point today to maintain the same stage/elevation at Kansas City than the release that was required when the Master Manual was drafted. Those lower flows were targets mentioned in the Master Manual, but do not reflect current reality. This approach undermines the accuracy and credibility of the DEIS as it fails to recognize simple reality and skews the modeled result in a way that makes it completely inaccurate and unreliable.

Additionally, it does not appear that the DEIS has identified the current, actual operating and shut-down elevations for the Missouri River Water Supply intakes. Some of the data used in the models appears to be inaccurate and/or incomplete. The Corps should undertake a more systematic process to collect and verify that data.

" Failure to quantify impacts to water supply operations - The DEIS assumes that if there are problems with access to water on the Missouri River that Water Supply intake operators can rent supplemental pumps on a temporary and reactive basis. Section 3.18.2.4 states that the NED analysis,

&focused on actions that water supply operators can adapt by&using different-sized portable submersible pumps.

To be blunt, this assumption is simply absurd. Operation of a Water Supply is a 24/7 mission critical business. The public is relying on Water Suppliers to provide them with water on a continuous and reliable basis. The calculations of costs for these portable submersible pumps were based upon a daily rental rate, see page 3-508. It would simply be unacceptable, as the DEIS implies, for Water Suppliers to wait until water levels drop to critical levels and then run out to rent some pumps. First, it assumes that there would be an adequate supply of pumps in the size and quantity needed to operate the 55 intakes on the Missouri River, which is not true. Next, it assumes that one could easily connect the pumps to Missouri River intakes, which is not accurate.

Intake operations on the Missouri River are very challenging with varying flows, debris and ice, which make attaching anything to an intake difficult at best, more often dangerous. The DEIS also assumes that all problems could be solved with pumps, which they cannot. It is common for the river channel to migrate away from intakes at periods of low flow, which would make it impossible to reach the water with a pump attached to an intake. Likewise, intakes on the reservoir areas may have to extend pipelines for miles to reach the water.

" Failure to estimate costs of the alternatives accurately - The Corps has assumed that 55 Water Suppliers could equip themselves with portable submersible pumps at a cost of \$376,000 per year, see page 3-508. This estimate is extremely low and does not seem to be based on reliable facts. The cost of complying with every alternative in the DEIS is much higher than estimated. For instance, WaterOne spent approximately \$2.4 million in 2004 to purchase and install auxiliary pumps to cover just 50% of the pumping capacity for its Missouri River Intake. Even if one assumes that pump rental is a viable option, daily pump rental would be impossible. For every year that a low flow event might occur, the utility would have to rent the pumps for the entire season or perhaps the entire year. In addition to the pumps, the water supplier would need to secure additional equipment such as barges to support the pumps. Alternative 2, with low summer flows, would have the worst impact requiring both summer and winter rental costs. Every alternative except Alternative 3, would consume storage, which would increase the likelihood that the pumps would need to be rented for multiple years. These costs are not accurately reflected in the EIS.

" Failure to define the duration and frequency of the events - Referring to Human Considerations Technical Report - Water Supply, Section 3.1 Paragraph 2 which describes using the period of record along with the minimum flow per the master manual as the flow condition. This worst case model scenario does not include how often the scenario occurs. For example, does it occur every year or once every 25 years? The shutdown frequency was not defined and therefore the costs associated with the shutdowns was not calculated or estimated. The EIS needs to quantify how many times the events will occur and during what period they occur. The frequency of the occurrences and associated costs should be included in the final report for each alternative.

" Failure to recognize the impact to communities if water supply is interrupted - Based upon the false assumption that all problems with Water Supply intakes could be solved with portable submersible pumps, the DEIS concluded that there are no instances with individual intakes where access is completely eliminated. Therefore, the DEIS concluded that the impacts under the Other Social Effects (OSE) would be negligible. This does not make any sense. It is equivalent to a head in the sand approach for dealing with inevitable water shortages.

There are numerous accounts of Water Supply intakes experiencing periods when access to water has been completely eliminated, including St. Joseph, MO in the early 1990s and WaterOne and BPU in the early 2000s. Even Alternative 3, which appears to be the best alternative available, states that it would result in 22 intakes experiencing an average of 14 days below shut-down elevations (Section 3.18.2.6). No water utility would have enough storage or alternative sources to sustain itself for 14 days without a water supply. The Corps should therefore quantify the impact of communities being without a water supply for even a single day and include the cost of that risk in each alternative. Consumers would not be able to drink, bathe, cook, clean, or flush toilets. Schools and day care centers would have to close. Hospitals, nursing homes and health care facilities would be highly impacted. Fire protection would be lost, so office building and businesses would have to close. State and Federal government operations - including the Corps of Engineers - would be impacted. There are several examples that could be evaluated to estimate the economic and other impacts caused by the loss of water supply to communities. Some specific examples include Toledo, Ohio (Do Not Use Order issued due to harmful algae), Charleston, WV (Do Not Use Order issued due to contamination), Corpus Christi, TX (Do Not Use Order issued due to contamination), Cleveland, Ohio (loss of water supply due to regional black out in 2003), as well as various utilities that lost water supply during Hurricane Sandy.

" Failure to evaluate the water quality problems with any summer low flow - Although the Corps is not recommending Alternative 2, the low summer flows associated with this alternative would be very harmful to Water Supply. Of particular concern is any flow with the potential to create conditions

optimal for cyanobacterial (blue-green algal) growth. With historical Missouri River operations falling within the defined constraints of the current Master Manual, there is little to no river water quality data for operations outside of those defined constraints. In the Water Quality Technical Report, limited observed temperature data was available, which caused inaccuracies in modeled temperature changes for all alternatives and a loss of confidence in the data generated. At the very least, treatment costs would increase because of additional chemicals needed to treat the water. It is known (and experienced with other source waters in Kansas) that periods of reduced low flows result in slower and warmer waters conducive to blue-green algal growth. Blue-green algae is difficult to treat. It can be costly for communities, affecting not only recreation, but also public health and safety. These low flow impacts and the associated costs must be included in the EIS. The Corps should include some consideration of this possibility in the Adaptive Management Plan. WaterOne has provided examples of sampling protocol on this issue during review of the AM plan.

Conclusion

WaterOne appreciates the opportunity to comment on the MRRP DEIS. While we support Alternative 3, serious flaws exist in the DEIS which should be reviewed and corrected to create an accurate public record. Water Supply is essential to every person. It is imperative that the Corp honor its mission to protect the Water Supply of the Missouri River as its foremost priority. The Corps should reexamine any modeling and eliminate any proposed operations that would cause Water Supply intakes to be without water for any period of time, even a single day - such is the importance to the economic vitality, health, and safety of the communities relying on the river and the Corps considerate and prudent management. Finally, WaterOne urges the Corps to recognize the problem with riverbed degradation and address this issue as part of the long-term management plan for the Missouri River.

Sincerely,

Michael J. Armstrong
General Manager

cc: WaterOne Board
Senator Jerry Moran
Senator Pat Roberts
Representative Kevin Yoder

Correspondence: 123

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Poudre Valley REA serves 41,000 meters in Colorado. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Poudre Valley REA supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Jeff

Jeffrey C. Wadsworth
President and CEO
Poudre Valley REA

Correspondence: 124

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

PRECorp serves 11,000 member/owners in Wyoming. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of the cooperative power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- PRECorp supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Mike Easley
CEO
PRECorp

Correspondence: 125

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

West River Electric Association serves approximately 12,800 member/owners in Western South Dakota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- West River Electric Association supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Richard Johnson, CEO/General Manager

Correspondence: 126

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

04-16-2017

Major General Scott A. Spellmon
Commander
U.S. Army Corps of Engineers Northwestern Division
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

Once again, the Corps of Engineers brings forth a number of unacceptable alternatives. Obviously we are to select the one that does the least damage to our families, our businesses, and we the people. The stated purpose of such change is the protection of one fish, and two of bird species, which have been designated as endangered. The question, which should be asked, is at what cost and to what lengths should we go to protect these creatures? Keeping in mind there is no actual proof the proposed alternatives will protect these creatures or stimulate breeding patterns.

Previously implemented preferred alternatives have often been unsuccessful and wasted millions of taxpayer dollars for the stated purpose of protecting the one fish and two birds. In the process the preferred alternatives implemented have damaged farms, businesses, and families, Families that work and live in the Missouri River basin.

In 2007 there was a rain event above Kansas City Missouri and below the Gavin's Point Dam. In less than 16 hours that water raised the river level above our levee height and began pouring over our levees in 6 places. Imagine what would have happened if the Corps was also releasing water for it's proposed spring pulse, which would have added an additional 6 feet of water over, and above our river levee height.

The resulting flood would do little to help the fish in the river but it would destroy farmland, levees, roads, bridges, and flood the homes and fields of people who have worked the land for more than a century. The people who work the land might also lose their land and be out of business, which is what happened to the people in Holt County, Missouri in 2011.

Many Holt County farmers lost their land, and their future in 2011 when unprecedented volumes of water were released from the flood control reservoirs on the Missouri River. This unprecedented release of water lasted for 3 months. It was not a slight miscalculation.

Holt County farmers were unable to recover from the flooding; they lost their farms and their futures. This tragedy might have been avoided if the Missouri River Master Manual had been followed as designed.

As the Corps, once again proposes changes to the Master Manual for the operation of the Missouri River, it might be wise to realize the system worked well for many years before changes were made. The Corps is offering 6 alternative plans for our consideration; one of these is labeled the preferred alternative. I'm sure we are expected to accept the preferred alternative. However, we have our own preferred alternative. The Corps should return to the original design and operation of the Missouri River and the reservoir system as stated in the Master Manual as it was originally created. Management of the Missouri River has strayed from the intent of the Master Manual, often with tragic results. It is time to return to what worked and stop implementing unproven science experiments, which only serve to waste tax dollars and damage the hardworking people of this nation. Surely there is a way to protect the endangered birds and fish without endangering families and their futures.

Max Hockemeier, President
Ray Lafayette Levee District

Correspondence: 127

Correspondence Information

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Notes:	

Correspondence Text

First being an engineer myself let me complement you in burying the actual data in a compendium of meaningless to me reports. Makes it hard to find real data. First Question is what is the impact inf the Pallid Sturgeon, Least tern and Piping Plover went away like dinosaurs? Secondly since that question has not been answered what is the economic impact of your alternatives? I for one can answer part of that question. Back in 2011 e=when you opened the dams and let wa=ter flow all summer we as a levee district went out bought a pump, a tractor to run it raised our levees to avoid a flood and we lucky to save most of our crops. But as a result we ended up spending about \$100,000 dollars to protect ourselves. That has amounted to about \$50/ acre of land protected. If you do dangerous releases then we have used 1/2 of our average annual income to protect our land. By the way that income includes no return on investment it assumes the land has been paid for. Fortunately in 2011 farm prices were up so we could "afford it" (crop prices allowed the Income to be closer to \$300/Acre then. However since that time our fortunes have dimmed and we may be lucky to maintain our \$100 / acre average. Those farmers that own money for the \$5000 /acre land are not likely to survive. We have also noticed that you pull back on DIke maintenance has thrown the river dangerously close to our levees and caused sever erosion. Strange that the Corp can cause major erosion with no consequences whereas as a landowner I can't even use a tracked vehicle to clean out a drainage ditch (now designated a stream)

All the above stated, I think the best alternatives are Alternate 3 (No Spring Rise) or alternative 5 (Fall Rise). A fall rise is unlikely to have a large economic impact on us because not much wheat is planted in the river bottoms and No Spring rise gets back to the rationale for funding the dams for flood control. AS a country we need to have a strong economy or we will not be in a position to protect even our most important resorces- the people.

Clarence Trachsel
President - REVEAUX LEVEE DISTRICT- Callaway County , Missouri

Correspondence: 128

Correspondence Information

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Correspondence Text

I will comment on only a few of the issues related to the Missouri River and the endangered pallid sturgeon

You don't have to go to the Gulf of Mexico to understand the Dead Zone. Hypoxic zone within Missouri River reservoirs is a major source of the decline and disappearance of the pallid sturgeon. Scientists from Montana have tested the deepest portions of the huge reservoirs and identified what has been killing this prehistoric fish. The measurement of dissolved oxygen reveals that so little oxygen can be found in the reservoirs, no measuring instruments can fathom the lack of oxygen in the lowest pools of these reservoirs.

Now, fisheries scientists with Montana State University, the U.S. Geological Survey and the U.S. Fish and Wildlife Service have shown why, detailing for the first time the biological mechanism that has caused the long decline of pallid sturgeon in the Missouri River and led to its being placed on the endangered species list 25 years ago.

In a paper published this week in the journal Fisheries, the scientists show that oxygen-depleted dead zones between dams in the upper Missouri River are directly linked with the failure of endangered pallid sturgeon hatched embryos to survive to adulthood.

"We certainly think this is a significant finding in the story of why pallid sturgeon are failing to recruit in the upper Missouri River," said Christopher Guy, the assistant unit leader with the USGS Montana Cooperative Fishery Research Unit and the MSU professor who was the lead author on the paper.

"We're basically talking about a living dinosaur that takes 20 years to reach sexual maturity and can live as long as the average American. After millions of years of success, the pallid sturgeon population stumbled and now we know why. From a conservation perspective, this is a major breakthrough."

I am not being unreasonable in my recommendations to the Corps and Fish and Wildlife Service; for example, I am not calling for dynamiting the dams and draining the reservoirs. There are sufficient river miles from far upstream on the Yellowstone and throughout the merged Missouri and Yellowstone basins. Removing the Intake dam near /Glendive seems like an issue that would relate to only a few hundred people in that area. The authorized purposes study would reveal that the people who would be affected who irrigate almost 58,000 acres would have to change, but not profoundly. There are only a few people near Glendive who really make a livelihood from irrigating crops. There could be sufficient federal funding that the citizens of the area might feel they had won the lottery.

The best way and the way to benefit the largest number of the human population is to designate a stretch of the rivers as national wild and scenic. Like the present one hundred miles of the Missouri National Recreational River, the National Park Service can manage and design more river miles that resemble the original Missouri. After the 2011 flood, it was pretty clear that a river connected to the floodplain is going to cause much less headache than the current constrained channel. While the flood waters spilled over and covered the floodplain, most of the Recreational River segment generated far less water over the banks. The channel designed by engineers ruined more farmland than the

floodplain

Floodplain connectivity

If we can't get the sturgeon to St. Louis, then we have to route the closest avenue possible. That means the small Intake near Glendive has to be removed and a sufficient stretch of river miles are left to the fish who once made the Yellowstone and Missouri basin the largest fishery on the North American continent.

Correspondence: 130

Correspondence Information

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Correspondence Text

April 22, 2017

Major General Scott A. Spellmon
Commander
U.S. Army Corps of Engineers Northwestern Division
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Carol Munson Ross

Correspondence: 131

Correspondence Information

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MRRMP -DEIS
U.S. Army Corps of Engineers
Missouri River Recovery Management Plan and Environmental Impact Statement (Draft)
Comments submitted on MRRMP DEIS

Range of Alternatives

The Corps' DEIS for recovery of the pallid sturgeon, least tern and piping plover has failed to provide a reasonable range of alternatives to meet the agency's responsibility under NEPA and under the Endangered Species Act.

The Corps' five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading. The range among alternatives 2 through 6 are inadequate in that there are significant differences between alternative 2 and between the group of 3 through 6. But among alternatives 3 through 6 the differences are minimal. Alternatives 3 through 6 overlap considerably. All include similar studies and pallid sturgeon habitat options and mechanical construction of ESH. The real differences among 3 and 6 are only in flow releases, two for ESH habitat one as a spawning cue. But even these differences are minor considering how infrequently the flow releases are likely to occur. For example, alternative 4 includes a spring ESH release, but that is anticipated to fully occur less than one in ten years. (MRRMP EIS at 2-70)

Alternatives 3 through 6 are too similar to contribute significantly to the Corps' requirement to provide a reasonable range of alternatives.

The most meaningful difference is between Alternative 2 and Alternatives 3-6. So the Corp has in essence provided only two alternatives, plus the no action alternative. Many reasonable options fall between Alternative 2 and the 3 through 6 group.

Several criteria vary between Alternative 2 and the 3-6 group. Among the most significant are the difference in time frame used to calculate actions and costs, the difference in strength of adaptive management approaches, floodplain connectivity, and options for pallid sturgeon habitat.

Alternative Two

Among the alternatives as written, Alternative 2 provides the best option for recovery of species.

However, Alternative 2 is limited unreasonably in several ways.

The Corps views Alternative two as implementation of the 2003 Biological Opinion. (MRRMP-EIS- ix)

There are clear, substantiated actions recommend in the 2003 BiOp that the Corp accepts. But beyond that the Corps' development of an alternative based on the 2003 Bi OP is distorted.

The Corps clearly states that new research and approaches developed since 2003 provide additional advantages in achieving recovery. For example, in its statement regarding "Need for the Plan" the agency states the need for more robust adaptive management (MRRMP-EIS-v). Yet it developed Alternative 2 excluding that interpretation of AM. Only Alternative 2 and the no action alternative exclude it. Thus the Corps created an alternative that up front does not meet its stated "Need for the Plan". This approach is not part of a good faith effort to create reasonable alternatives.

An argument can be made that the type of AM outlined in the 2003 BiOp (pages 24-28), which includes scientifically based assessments of essential conditions that contribute to survival of the endangered species, experimental actions and monitored results, is more robust than the Corps characterizes it in this DEIS. Regardless of how accurate it is, the Corps' evaluation of Alternative 2 carries weight in its evaluation of a preferred alternative.

Alternative 2 is scaled roughly on a 50 year time frame. That appears to be based on the 2003 Bi Op's estimate that it could take 20-50 years to acquire the target number of acres for mitigation in USFWS refuge projects. (2003 BiOp page 133, 220ff) But it also seems to impact the time and number of acres of mechanical habitat included. The difference between the Alternative 2 plan for 3,546 acres of ESH per year and the Alternative 3 plan for 391 acres per year only when needed is huge. (MRRMP EIS-3-100-101) The Corps admits that Alternative 2 provides a greater chance of survivability of piping plover and least tern survivability compared to Alternative 3. But it characterizes Alternative 3 as meeting bird targets while Alternative 2 exceeds the targets. (MRRMP EIS 2-77) This vast range of habitat acres and incomplete analysis fails to provide the public with a reasonable and understandable choice of alternatives.

Furthermore according to the DEIS the creation of this large number of acres per year would require creation of ESH in what is described as the "exclusionary areas". Exclusionary areas are defined as areas which should be off limits to ESH due to the significant negative impacts to other resources and or extreme cost in construction. (2011 PEIS 4-5) The Corps seems to assume that this is just what the writers of the 2003 Bi Op intended and it carries forward with an assessment of large human consideration and economic impacts from this rather absurd scenario. This would never happen and the public is not well served by the Corp including this calculus in what is supposed to be a reasonable alternative.

This further distorts the Corps evaluation when considering recreation impacts.

The Corps seems to view Alternative 2 as something stuck in time, tethered to a narrow interpretation of the 2003 Bi Op.

The Corps interprets the SWH component of Alternative 2 as an uncertain benefit, yet the same can be said of IRCs and spawning habitat creation all of which are experimental. Any reasonable alternative with adaptive management would include all these options.

A strength of Alternative 2 is anticipation of mitigation/restoration acres and inclusion of floodplain connectivity. (MRRMP EIS 2-65) The loss of a functioning floodplain and natural habitat along almost the entire Missouri River has led to many adverse impacts. That loss has increased flood risk and has harmed native fish and wildlife, including the three endangered species which are the subject of the DEIS. River systems are complex and dynamic. Our understanding of species needs, especially fish species, can be limited by the unknown interaction and dependencies among the many parts of a riverine system. But we do understand that restoring areas of the river to its natural state will have broad benefits.

Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS. But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

The Corps acknowledges the uncertainty of success of many of the actions and manufactured habitats included in this DEIS. The Corps should recognize that creation of a more natural river in flow and habitat is, in a broader and longer view, a better bet than some of its manufactured projects. Thus it is disappointing that the Corps puts little effort in trying to link restoration and recovery.

The Corps admits many unknowns in the life cycle of the pallid sturgeon. The recent phenomenon of "skinny fish" is one of those yet unexplained parts. Is part of the channelized Missouri river a "food desert" for the sturgeon? Is competition with native or invasive species a factor? Is lack of sediment reducing sturgeon's ability to catch prey? Is there another water quality issue? We may eventually learn details of these problematic dynamics, but we can be sure part of their resolution will be to recreate a more natural Missouri River.

At times the Corps has acknowledged and embraced the importance of acquired acres used to enhance a variety of riverine habitat and floodplain connectivity. For example in Final Environmental Impact Statement for the Missouri River Fish and Wildlife Mitigation Project, 2003 the Corps recognizes the importance of restoring riverine habitat and floodplain connectivity are missing elements in the Missouri river food chain. In that document the Corps recognizes those missing elements as having an impact on the dozens of riverine species in decline.

Although the Corps references acquired acres for mitigation could play a role in any of the alternatives, it is only in Alternative 2 that the real value of that process is grudgingly given any sanctioned role in recovery.

Mitigation, Restoration and Recovery

As just described, the Missouri river is missing much of its former fish and wildlife habitat due to the channelization of the river, the loss of floodplain connections to habitats such as bottom land forests, wetlands, backwaters, chutes, shifting sandbars, shallow water habitat, etc. These provided habitat and food sources. The reservoir system has altered sediment transfer, water temperature and natural flow regimens.

Declines in native species can be traced largely to these changes. When a species peril is so great it becomes endangered, it is right to look for those critical aspects of habitat it most needs. But it just as critical to look at the entire ecosystem that supports those aspects of habitat. If not we will always be fixing patches of habitat. And those patches will end up being fragile and unsustainable in the absence of a larger recovery. This sadly is the path the Corps has taken in this DEIS.

The Corps has a responsibility to mitigate for the BSNP (WRDA1986 and 1999). The Big Muddy Wildlife Refuge system and other areas represent progress in that responsibility. But funds have been stalled. Also the Corps has, in our experience, failed to express full support for this mitigation program. The Corps has failed to promote the need for this program. Within this DEIS it has failed to accurately measure and promote the value of achieving progress on both its mitigation responsibility and its recovery responsibilities with the same acres.

Ecosystem Services

The Corps fails to give adequate consideration of ecosystem services and that failure impacts their evaluation of alternatives. One example occurs in the Land Use and Ownership Environmental Consequences Analysis, Technical report pages 5-8. The Corps evaluates the impact of agriculture acres for federal acquisition. The Corps notes the loss of agriculture output if some acres are taken out of crop production and points to the loss of taxes to the county, or land in the local levee association. But no consideration is given to the likely reduction in flood risk to those same neighboring acres when, due to those acquired acres, levees are set back, wetlands created, a channel widened and or floodplain connection is formed.

Also the Corps fails to give adequate clean water services to those acquired acres, or any impacts on groundwater recharge.

Economic evaluations

On the same topic of acquired acres the Corps assumes that acres offered to the Corps from willing sellers will have been recently in crop production. Thus the Corps values their contribution to crop totals the same as other acres in the area. That is a reasonable assumption only to a point. It is likely that some, perhaps a majority, of willing sellers are willing to sell to the Corps because they have problems with productivity on their lands. Problems may be due to frequent flooding. If so removal of those acres from the agricultural base would save taxes in flood insurance and would have a lower proportional impact on regional crop productivity than other acres.

The Corps also mentions loss of tax base as an economic loss. Again if such acres from willing sellers are more prone to production problems, that would reduce their past contribution to the tax base. The Corps mentions PILT payments as a buffer against that loss but does not incorporate any formula or estimate to assess that. It does though give a Dept. of Interior reference and expects the reader to figure it out. (Land Use and Ownership Environmental Consequences Analysis Technical Report, footnote 1, page 5)

Many of the acres already acquired along the Missouri River have been incorporated in the Big Muddy Wildlife Refuge system. One can assume the same for future acres. The Corps has failed to evaluate whether proximity to a National Wildlife Refuge increases in value of neighboring lands or communities.

The Corps apparently has information on the number and character of acres offered to the Corps for sale under the BSNP mitigation or other programs in the Missouri Basin. One can assume it has assessed those acres in terms of their appropriateness for the mitigation and or recovery programs. The Corps should have included that information in this DEIS.

Flow Regimes

Research has shown that flood events, such as 2011, can create quality ESH in amounts that benefit successful piping plover nesting success that is superior to mechanically created habitat. Depending on such events is obviously not a strategy. And depending only on mechanically created habitat, largely the option for Alternative 3, leaves the species vulnerable to funding vagaries and creates a zoo like aura. And as the Corps points out the mechanical part of mechanically created habitat can be messy, noisy and disruptive. Has the Corps measured the cumulative, repetitive effects of these impacts?

Alternative 4 contains a fall release designed for ESH which is possibly the most effective flow option so targeted. Other concerns are low water levels which might be by design or as an after effect in drought years. The Corps mentions the adverse impact of low flows, or flow variations and their potential disruption to intake pipes. But a greater threat to water levels and intake pipes is the ongoing degradation of the river bottom due to the self-scouring channel, reservoirs and BSNP configuration. The significant impact of this process was clearly demonstrated at a MRRIC meeting. The Corps mentions this in passing in the DEIS but does not include it as a backdrop condition when considering alternative impacts. It is not included in comparison charts, so it may seem to the public that the alternatives represent a significant impact, when in fact, the ongoing background degradation is the force that will actually impact any use. This does not help the public make a meaningful comparison.

Human Considerations

Throughout the DEIS it often appears that human considerations are almost solely driving decision making. The DEIS is not forthright on the degree to which the Corps is placing what it has defined as human considerations in its determinations. The agency seems to operate on the assumption that the first priority for recovery actions is that they impinge little or none on any other consideration. Again this first principle keeps the Corps from considering longer term ecosystem restoration goals as a way to species recovery. In the long run, restored and mitigated acres with predictable flow modifications would do more for recovery. That approach also would have benefits of flood risk reduction and recreation enhancement on river stretches. And in the long run would cost less and limit the disruption of excessive ongoing mechanical habitat creation. It could eventually provide more

modest impact on other uses.

It is wholly proper to consider human impacts and seek to minimize them, but priority must at some points give way to species recovery. It is the long push of human considerations that have led us to the point we are, while it is also our appreciation of the importance of the whole of our own place that inspires us to require restraint and restoration. Thus in the broadest sense, the authorized purpose of "fish and wildlife" is our own recognition of a human consideration and the ESA is our guide to keep us from losing track of that value.

Ensuring Species Success

There is much experimentation regarding pallid sturgeon habitat in the preferred alternative 3. With the acknowledged uncertainty it would be more than prudent to include SWH, IRCs, and spawning habitat all in a preferred alternative.

Measuring success for species recovery needs to eventually include designation of critical habitat for the pallid sturgeon. The pallid sturgeon has been listed for nearly 30 years with no habitat designation yet. A petition for critical habitat designation was submitted to USFWS in 2010. The Service responded that it was unable to complete the designation due to workload. As this DEIS demonstrates identification of pallid sturgeon habitat for various life cycle stages is complicated and the subject of ongoing study. A part of all this effort should result in an understanding of population dynamics and location. We encourage the Corps to not overlook any tributary as well as the Missouri river itself. The work put into the DEIS would be incomplete if critical habitat designation remains unresolved.

Misleading comparisons

The DEIS is a long, complex document with many variables, uncertainties and hypotheses. It is a difficult task to present and explain it to the public. Even considering that the chart the Corps provided as a summary document is especially poorly presented and misleading. This chart is found in the executive summary page xxvii and in the glossy thirty one page document which served as the primary handout to the public. The chart uses different metrics for different impacts. This makes comparisons difficult. How to compare digits one and two to the dollar ratings in other categories. The fact that the chart rates all alternatives the same for ecosystem services is absurd. Costs and expenditures are totals, when in the text we know that ranges are available and all alternatives include great uncertainty is how much of several proposed actions will actually be performed. This was a point explained at MRRIC meetings, but is not reflected in the expenditure chart. And of course per our comments on Alternative 2, the large cost is largely based on an unrealistic projection.

A New Alternative

We recommend that the Corps develop a new range of alternatives. A reasonable alternative would include a commitment to using mitigation/restoration as a tool to meet recovery goals. It would also include some mechanical habitat creation to fill in where the river cannot due to human impacts. It would employ a flexible adaptive management approach. We recommend a new Biological Assessment before the final EIS.

Thank you for consideration of our comments.

Caroline Pufalt for
Missouri River Activist Network, Sierra Club
2818 Sutton Blvd
St Louis MO 63143 - 3010

Correspondence: 132**Correspondence Information**

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As a Registered Engineer in the state of Missouri with 48 years of experience work for levee and drainage districts, landowners, and Counties and Cities in the Missouri River flood plains from St. Louis to St. Joseph, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps will substantially increase the risk of direct flooding from the river and interior flooding due to no drainage.

In the month of April, 2107, I have seen the Missouri River rise approximately 12 feet in one week. On more occasions, I have have seen rises over 10 feet in less than 2.5 days. With existing river gauge stages near flood stage, such rises assure overtopping of levees. Due to the time lag for lower water levels to be realized from reduced discharges from Gavins Point, flood damage is assured. Providing flood control and effective interior drainage is of utmost importance to my clients.

All of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Within 5 feet above a water level that supports navigation, all of the flap gates on drainage pipes will be closed preventing natural drainage. This hinders farming operations as well adequate drainage for public infrastructure such has highways, airports, water treatment plants, etc.

The Corps hasn't completed their work on the DEIS. Because modeling has only been completed for four representative levee sites, I cannot be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance for my clients and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. My clients deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for crops and industrial products headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Other reasons for no low summer flows is inadequate water levels for water out takes for municipal potable water and thermal power water supplies. Of particular importance is sufficient flows to not jeopardize temperature requirements of cooling tower discharges into the river.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted particularly with respect to sills. I don't want the Corps to go down the same road of failed shallow water habitat chutes that now need modification. Additionally, there have been no studies to determine if larval pallid sturgeon can survive in such areas. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the Congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my and my clients' concerns in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Correspondence: 133

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Very simple, NO SPRING RISE IS ACCEPTABLE.

Correspondence: 134

Correspondence Information

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Comments on MRRMP & DEIS:

The members of the Central Montana Electric Power Cooperative (CMEPC) appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS) developed by the U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service regarding the three Endangered Species Act (ESA) - listed species on the Missouri River. CMEPC supports the MidWest Electric Consumers Association comments.

Summary of CMEPC Comments:

- CMEPC strongly support Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-Emergent Sandbar Habitat (ESH) work for piping plovers;
- Due to the areas changing power supply market with increasing variable generation percentages, actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be further studied; and
- The Adaptive Management Process needs a stronger stop doing function.

CMEPC Member Interests in the DEIS:

CMEPC represents the interests of 8 rural electric cooperative, member-owned, not for profit utilities serving over 25% of the geography area of Montana, an area the size of several New England States. With primarily residential service and with half of the CMEPC members having less than one member per mile of power line, affordable WAPA power supply is critical to keep power affordable in Montana. CMEPC relies heavily on the cost-based, renewable, non-carbon emitting hydroelectric power generated on the Missouri River and its tributaries for a significant portion of their power supplies. Any diminution in this renewable generation would be both costly to our Montana member cooperative utilities and the largely rural customers served by them. Any loss of this hydro resource would result in a significant increase in the output of carbon dioxide from replacement thermal resources.

This hydroelectric power is also tremendously valuable as part of the energy that fuels the economy of the Upper Great Plains. As is shown in the table of Environmental Consequences of the Action Alternatives Compared to No Action on page xxvii of the Executive Summary of the DEIS, hydroelectric generation on the mainstem Missouri River provides almost \$526,000,000 in National Economic Development benefits per year under the No Action alternative.

The Pick-Sloan customers are committed to maintaining the long-term value of have these hydroelectric projects. These customers, including CMEPC, have agreed to provide over \$1 billion in capital over the next twenty years to the Corps of Engineers to support repair and rehabilitation of the six mainstem Missouri River dams. A significant reduction in the amount of power generated by these

projects could result in these capital investments becoming uneconomic.

CMEPC has also actively participated the Missouri River Recovery Implementation Committee (MRRIC) with its general manager being a member of MRRIC, trying to help craft consensus positions among the various stakeholders.

CMEPC Supports the Corps Preferred Alternative:

CMEPC supports a slightly revised Corps Preferred Alternative. The one revision to the Preferred Alternative CMEPC proposes is the addition of more off-channel, non-ESH work for plovers. As the work highlighted in the recent MRRIC Annual Forum (Michael Anteau, U.S.G.S., Conservation of Piping Plovers on the Missouri River: Thinking Beyond the Banks) suggests, there are productive habitat opportunities beyond the banks of the Missouri River that could prove very useful to piping plover recovery. CMEPC believes that if the goal is to recover the species, it is imperative that for a societal economic as well as a species impact this work must be considered and implemented unless the science proves the benefits are not as robust as many believe they will be.

With the addition described above, CMEPC supports the Preferred Alternative for the following reasons. First, it provides the best balance of actions likely to result in recovery of the ESA-listed species versus the environmental and economic consequences of those actions. Second, it has the smallest environmental consequences of all the other alternatives in virtually every category, including the No Action alternative. Finally, the Preferred Alternatives embrace of Adaptive Management is entirely appropriate given the magnitude of the scientific uncertainty surrounding all three of the ESA-listed species. For these reasons, CMEPC believes the Preferred Alternative is the superior alternative for ESA-listed species recovery on the Missouri River.

Hydropower Impacts Are Likely Understated:

CMEPC appreciates the open and transparent way in which the Corps explained the processes for modeling the impacts on hydropower from the various alternatives. While the methodology employed by the Corps to estimate hydropower impacts is not unreasonable, CMEPC is concerned that the estimates of the hydropower impacts are likely understated.

There are several reasons for our concern. First, to calculate the value of lost energy future estimates of power prices were derived from the Southwest Power Pool (SPP) market, which the Western Area Power Administration (WAPA) Upper Great Plains Region only joined in October 2015. The long-term projection is then driven by an Energy Information Administration forecast applied to the historical SPP prices. Less than two years of SPP data is an extremely short period of time from which to derive long-term power price estimates. Also already announced significant increased wind and solar in the market increases the importance of hydro and will likely increase costs of other alternatives due to the seasonal timing changes of hydro generation into the market.

Second, if there were a real and sufficiently large reduction in the hydroelectric output of the Missouri River projects, WAPA could change its contracts with the purchasing utilities to reduce WAPA's delivery obligation by the size of the reduction. The purchasing utilities would ultimately construct new resources rather than continuing to rely on market purchases forever. While market purchases may serve as a good short-term proxy, utilities would have to build new resources rather than rely on market purchases to protect against severe market fluctuations. The Corps analysis appears to assume resource construction to replace the capacity of the reduced hydroelectric generation, but not for reduced energy output. Therefore, the long-term response to a significant reduction in the hydroelectric output of the Missouri River generating projects should be the construction of a new resource.

Finally, while the DEIS provides some discussion of the potential impacts of changes in hydroelectric output on the production of ancillary services, quantitative analysis is necessary to determine the true impact. Ancillary services have become more important aspects of generation as huge amounts of intermittent renewable resources have been added to the system and as a consequence of a growing concern about the reliability of the power grid.

While CMEPC believes that the Corps approach to estimating the economic impact of the management alternatives on hydroelectric output and cost is generally reasonable, that analysis also likely underestimates the actual impact for the reasons stated above.

Cumulative Reliability Impacts from Reduced Hydropower and Thermal Generation:

While the DEIS provides scant discussion on the impacts to reliability from either the reduced hydroelectric or thermal generation output, there seems to have been no consideration of the cumulative impacts to the reliability of the power grid from the loss of both hydroelectric and thermal generation under the various alternatives. As the DEIS analyses show, lower or altered Missouri River flows can significantly reduce the output or value of hydroelectric generation and at the same time reduce the amount of thermal generation available. What was apparently not considered was the cumulative impact of the loss of both types of generation and the consequent impact on system reliability.

The loss of significant amounts of baseload generation at the same time can seriously impact system reliability. It is not clear that sufficient transmission capacity exists to be able to purchase and import power from the market to replace the lost generation or that the market is liquid enough to absorb the necessary replacement power purchases without significant price increases.

It is imperative that the cumulative impact of changes in hydroelectric and thermal generation output on power system reliability be addressed in the final environmental impact statement to assess to what degree grid stability may be at risk under the various alternatives.

The Adaptive Management Process:

The Adaptive Management Process (AMP) proposed in the DEIS is a reasonable component of the recovery plan, especially for the pallid sturgeon, largely because so little scientific data is currently available. For example, recent research (Anthony Civiello, USACE, The Influence of Shallow-Water Habitat on Age-0 Shovelnose Sturgeon Diet and Condition) calls into question the efficacy of constructing interception and rearing complexes (IRCs). However, IRC construction is a significant component of the recovery plan for the pallid sturgeon contained in the DEIS. The AMP will help to reconcile new or conflicting data about different theories for recovery of the pallid.

While the proposed AMP is a rational approach to this uncertainty, there is one area where it needs to be strengthened. Theories purporting to aid in species recovery inevitably gain a constituency. These constituents passionately argue for the veracity of their theory and the need for research funding to test the theory. When faced with evidence contradicting their theory, these advocates then argue for slight adjustments to the theory followed by a request for additional research to support the newly-revised theory. The result can be a never-ending cycle of adjustment and additional research for a theory that should have been discarded but for the constituency supporting it.

The proposed AMP needs a much stronger stop doing function as part of its structure. The description on page 12 of the Draft Adaptive Management Plan suggests that a theory may be discarded after implementation, monitoring and evaluation show it is not workable. However, the primary path seems to be for the advocates to propose variations to their theory and additional research to see if the revised theory works any better. A weak stop doing function provides an endless do loop for theories

early and stifles innovation by preventing other theories from being considered due to limited research resources. The stop doing element of the AMP needs to be strengthened considerably to quickly eliminate theories that lack quantitative scientific support in order to make room to test other theories.

Correspondence: 135

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 22, 2017

Major General Scott A. Spellmon
Northwestern Division Commander
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At 14 feet river stage, which is four feet below flood stage, L575 levee district where I farm begins to have challenges with drainage. The reoccurring flooding, blocked drainage, over bank flooding etc. since 2004 has had a tremendous negative impact on our entire community. As self-employed small business owner/operators our retirement plan is our land. We rely on the income from our crops to take us through retirement and provide future generations the same lifestyle and business opportunities we have received from our land. However with the reoccurring flooding our land productivity and actual value has decreased.

In the Iowa County where I live, Fremont County, the Corp has purchased 6244 acres. The Federal Government pays no Real Estate taxes. The loss of R.E. tax as well as the loss of State Income Tax from crops produced on the land owned by the Corp has been very detrimental to this rural community. Our schools are really suffering. The PILT program is a Joke.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

The amount of sediment that will be deposited into the main channel with these ICR's using Dredge Discharge type of construction will be extremely detrimental to flood control. These are environmental projects, they should be done with environmentally sound practices. I find it disturbing for the Federal Regulatory Branch of the Government to intentionally dump nutrients into a major tributary. You should lead by example not dilute soil and water samples to make them legal. Maybe you can make it legal with elutriate testing, but you will never, ever, make it ethical.

We believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Leo Ettleman
707 Webster Street
Sidney, Iowa
51652

Correspondence: 136

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 23, 2017

Major General Scott A. Spellmon
Commander
U.S. Army Corps of Engineers Northwestern Division
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At the 25 foot river stage at Glasgow Missouri which is flood stage, the levee district to which I belong to begins to experience challenges with drainage. Our farm which is 8 miles from the Missouri River which consists of approximately 750 acres begins to have water problems. The flood gates are shut and unable to drain our farms. This causes us to pump the excess water from it which is very costly and time consuming.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low

flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Raymond L. McNeall

Correspondence: 137

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 23, 2017

Major General Scott A. Spellmon
Commander
U.S. Army Corps of Engineers Northwestern Division
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At the 25 foot river stage at Glasgow Missouri which is flood stage, the levee district to which I belong to begins to experience challenges with drainage. Our farm which is 5 miles from the Missouri River which consists of approximately 25 acres begins to have water problems.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to

be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Darin E. Byrd

Correspondence: 138

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I would encourage the Corp to go back to the drawing board and start over, none of the plans follow the Flood Control Purpose of the River. We need to follow the original plans. Thanks August Luther

Correspondence: 139

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 23, 2017

Re: Missouri River Recovery Management Plan and Environmental Impact Statement Project Scoping

Dear Sir/Madame:

We respectfully submit the following comments on the Missouri River Recovery Management Plan (Management Plan) and Environmental Impact Statement (EIS) Project Scoping on behalf of the Missouri Levee & Drainage District Association. Thank you for the opportunity to participate in shaping the scope of this most important study.

Toward the end of directing scarce resources to reasonable alternatives, we request that the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service expand the scope of the EIS and the amended biological opinion for the Management Plan to include the Middle Mississippi River. We believe that such an expanded scope is necessary to avoid alternatives whose implementation is remote and speculative and that have little chance of aiding the recovery of the pallid sturgeon.

Our request to ensure that the scope of the EIS includes the Middle Mississippi River mirrors the findings of the Missouri River Recovery Program Independent Science Advisory Panel (ISAP), in its Final Report on Spring Pulses and Adaptive Management, dated November 30, 2011 (11-STRI-1482), page 51:

Recovery of pallid sturgeon in the lower Missouri River ultimately might not depend on successful recruitment below Gavins Point Dam. Given the minimal extent of low-velocity habitat that exists downriver from Gavins Point Dam, pallid sturgeon larvae may be transported downstream at rates proportional to discharge, and exit the lower Missouri River. Such potential contributions of larval pallid sturgeon to the middle Mississippi River suggests that the importance of conservation efforts on the lower Missouri River may be realized in sustaining pallid sturgeon in a greater geographic context. Recruitment in areas where pallid sturgeon are known to spawn below Gavins Point Dam likely needs to be inferred from sampling an extensive area of the Missouri and Mississippi river basins.

In addition, at page 58, the Final Report on Spring Pulses and Adaptive Management goes on state that the three listed species (pallid sturgeon, interior least tern and piping plover) would benefit from review and integration of data and recovery efforts in an expanded geographic area:

The ISAP recognizes that the demographic units of the three listed species, located on the lower Missouri River below Gavins Point Dam, constitute a limited portion of the populations (or metapopulations) in the greater Missouri River system, and that each ecologically interact with conspecific individuals in other areas occupied by the species. For that reason, and to better facilitate

the recovery of the listed species, any adaptive management program that includes actions on the lower Missouri River should be integrated with conservation efforts elsewhere in the system, and supported by a synthetic program of data acquisition and analyses that takes advantage of information derived from studies undertaken beyond the focal area considered in this report.

This logic supports the expansion of the EIS for the Management Plan to include the Middle Mississippi River.

The data collected on pallid sturgeon in the Middle Mississippi is relevant to issues of recruitment for pallid sturgeon that utilize the Lower Missouri River. According to the U.S. Fish & Wildlife Service, Midwest Region, Endangered Species Section 7 Consultation on the Operation of the Upper Mississippi River 9-Foot Channel, there is evidence of natural reproduction: in 1998 a young-of-year pallid sturgeon was collected in the Middle Mississippi River; in 1999, larval pallid sturgeons were collected in the Lower Missouri River; and in 2000, larval pallid sturgeons were collected in the Middle and Lower Mississippi River. The Middle Mississippi River is indeed the core of the pallid sturgeon's range.

Respectfully submitted,

Tom Waters and
Robert J. Vincze

Correspondence: 140

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 24, 2017

Major General Scott A. Spellmon
Commander
U.S. Army Corps of Engineers Northwestern Division
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. The 1944 Flood Control Act makes clear the Mainstem Reservoir System on the Missouri River is to provide flood control and navigation. While there are additional benefits and uses for the system, Flood Control should remain the nation's top priority.

We believe the Corps of Engineers and US Fish and Wildlife Service can and should seek an alternative which allows the Corps to provide flood control and protect the species. The two objectives do not have to be mutually exclusive. A better balance needs to be reached and the Corps needs to fulfill their flood control mission.

At 18 ft Hermann, MO river stage, which is 3 feet below flood stage, the Tri County Levee District, of which I am a Director, and where I farm, begins to have challenges with drainage. This is quite serious and the financial risks to myself, my neighbors, and to the general economy of the state and nation are AT RISK! For what? And unproven method for saving a prehistoric fish that has survived for eons without these ridiculous costs to the economy and taxpayers!

The modification to the DEIS is premature. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I and THE

TAXPAYERS deserve better from the Corps!

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river and promotion by MODOT to lessen the strain on our crumbling, underfunded highway system. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more. This country can NO LONGER AFFORD legions of unproductive government employees who produce nothing but fat retirement plans for themselves!

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,
Dale A. Gloe
Director
Tri County Levee District

Correspondence: 141

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: Master
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I support an Environmental Impact Statement (EIS) for the Missouri River that is focused on species recovery, habitat restoration and a more naturalized river flow. Among the six alternatives as written, Alternative #2 (the US Fish and Wildlife Service's 2003 Amended Biological Opinion for the Missouri River) provides the best option for recovery of the threatened and endangered species, restoration of habitat in and near the river, and beneficial spring and fall flows and a lower late summer flow. It also indirectly benefits many other species as well. I support Alternative # 2 as the Preferred Alternative. This is especially important to the portion of the river between Iowa and Nebraska!

However, Alternative #2 has been unfairly written in a manner which limits it's broader acceptability, and I ask that the US Army Corps of Engineers (Corps) revise it by: 1.) moderating the number of land acres and price/acre, and 2.) incorporating the new Adaptive Management Plan into the Alternative, as has been done with the other alternatives.

Alternative #3 has been the Corps' choice for the Preferred Alternative, and it is the worst of the six alternatives. It is an artificial, mechanically-created and unsustainable approach to creating sandbar habitat and uses a one-time spawning-cue test flow release once every 10 years! No other flow releases or variations. Realistically, it will be too costly and will never be funded.

Thank you for this opportunity to comment. Hopefully, the Corps' due diligence in its responsibility to the law, the species, their habitat, and the river for a Recovery Program will not be diminished by the influence of economic special interests that have only their own selfish interests in mind.

Thank you, Preston Maas

Correspondence: 142

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

April 23, 2017

Dear Sir/Madame:

The Missouri Levee and Drainage District Association (MLDDA) respectfully submits the following additional comments on the Missouri River Recovery Management Plan and Draft Environmental Impact Statement (MRRMP DEIS). Thank you for the opportunity to participate in this process.

Major floods like those that occurred in 1993 in the downstream reaches of the Missouri River can be caused again by heavy local precipitation in the spring and fall. Since releases from the Gavins Point Dam take several days or more to reach downstream reaches of the river near cities such as St. Joseph, Kansas City, and Hermann, spring and fall rises are likely to cause flooding. For example, from the USGS data charts referenced below, one can see that flood waters can take up to three days to travel from St. Joseph to Hermann, Missouri.

Releases from the dam cannot be called back or diverted in the event of heavy rain, and our ability to forecast such heavy precipitation is not yet reliable enough to predict that a release from Gavins Point Dam will not exacerbate flooding downstream, especially if such releases continue for an extended period as in the draft alternatives summarized below. Therefore, given the paucity of scientific data supporting such spring and fall rises for the benefit of the pallid sturgeon, the MLDDA is opposed to such spring and fall rises in the draft alternatives in the MRRMP DEIS. See Missouri River Recovery Program Independent Science Advisory Panel (ISAP), Final Report on Spring Pulses and Adaptive Management, dated November 30, 2011.

Alternatives in the MRRMP DEIS

Alternative 1

Spawning cue release for the pallid sturgeon

Alternative 2

Run Unless Storage Check on March 1st Determines NO Service or Flood Control Constraints are Exceeded
2 Spring Rises
March 15th, 31,000cfs*
7 Day Rise - - - - - 7 Day Peak - - - - - 7 Day Fall

May 1st-May 15th 12,000cfs-20,000cfs*
Determined by March 1st Runoff Forecast
7-10 Day Rise - - - 14-35 Day Peak - - - 7 Day Fall
Flood Control Constraints Adjusted by Flow Increase
Includes Low Summer Flow
Looks like 2003 BiOp Projected Actions
Biological Opinion Alternative
*March and May Events Could be Higher Depending on Runoff Forecast

Alternative 3

Potential spring rise: . . . as part of the AM plan the potential for a one-time spawning cue test release, if studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important . . .

Alternative 4

ESH Spring Release
Release if Storage is 42MAF April 1st and 250 acres of Habitat Have Not Occurred in Previous 4 years and Downstream Flow is Below Flood Control Constraints (71kcfs at Omaha, 82 kcfs at Nebraska City, 126 kfs at KC)
Spring Rise
60,000 cfs Starting April 1 as Often as Every 4 Years
Duration Increases as Magnitude is Decreased
45 kcfs = 175 Days, 50 kcfs = 77 days, 55 kfs = 49 days, 60 kcfs = 35 days
Flood Control Constraints Adjusted by Flow Increase
If Flood Control Constraints are Exceeded, Reduce by 5 kcfs Until no Longer Exceeded. Terminated if Falls Below 45 kcfs
Fort Randall Similar to Gavins Point, Garrison Approximately 17.5 kcfs Less Than Gavins Point.

Alternative 5

ESH Fall Release
Release if Service Level is 35,000cfs (54.2 MAF in System) October 17th and 250 Acres of Habitat Have Not Occurred in Previous 4 Years and Downstream Flow is Below Flood Control Constraints (71kcfs at Omaha, 82 kcfs at Nebraska City, 126 kfs at KC)
Fall Rise
Up to 60,000 cfs October 17th as Often as Every 4 Years
Duration Increases as Magnitude is Decreased
45 kcfs = 175 Days, 50 kcfs = 77 days, 55 kfs = 49 days, 60 kcfs = 35 days
Flood Control Constraints Adjusted by Flow Increase
If Flood Control Constraints are Exceeded, Reduce by 5 kcfs Until no Longer Exceeded. Terminated if Falls Below 45 kcfs
Fort Randall Similar to Gavins Point, Garrison Approximately 17.5 kcfs Less Than Gavins Point.

Alternative 6

Bi-Modal Spawn Cues

Run Full Bi-Modal Spring Rise. Both Rises in Same Year Every 1 out of 3 Years.

2 Spring Rises

First Rise: First Day Flow to Target Navigation Flow is Reached

Release is 2X the First Day of Flow to Target Flow

Increase 2,200 cfs per Day, Peak = 2 Days,

Decrease 1,700 cfs per Day Until Back to Flow to Target

Second Rise: If 40MAF in System March 15th, Steady Releases Set and Run 3 Days

Start May 18th or Later Based on Water Temperature

Increase 2,200 cfs per Day, Peak = 2 Days,

Decrease 1,900 cfs per Day Until Back to Study Flow

Increase Flood Control Targets at Full Service by the Spring Rise Magnitude

Omaha Example: If Spring Rise is 31,600 cfs,

Then Normal Flow Target of 41,000cfs Goes to 72,600 cfs

USGS 06818000

Missouri River at St. Joseph, Missouri

May 24, 2016 to May 31, 2016

USGS 06893000

Missouri River at Kansas City, Missouri

May 7, 2016 to June 4, 2016

USGS 06934500

Missouri River at Hermann, Missouri

May 24, 2016 to May 31, 2016

Respectfully submitted,

MISSOURI LEVEE AND DRAINAGE DISTRICT ASSOCIATION

Tom Waters, Chairman

Robert J. Vincze, Attorney

Correspondence: 143

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I write to support an Environmental Impact Statement (EIS) for the Missouri River that is focused on species recovery, habitat restoration and a more naturalized river flow. Among the six alternatives as written, Alternative #2 (the US Fish and Wildlife Service's 2003 Amended Biological Opinion for the Missouri River) provides the best option for recovery of the threatened and endangered species, restoration of habitat in and near the river, and beneficial spring and fall flows and a lower late summer flow. It also indirectly benefits many other species as well. I support Alternative # 2 as the Preferred Alternative. This is especially important to the portion of the river between Iowa and Nebraska!

However, Alternative #2 has been unfairly written in a manner which limits it's broader acceptability, and I ask that the US Army Corps of Engineers (Corps) revise it by: 1.) moderating the number of land acres and price/acre, and 2.) incorporating the new Adaptive Management Plan into the Alternative, as has been done with the other alternatives.

Alternative #3 has been the Corps' choice for the Preferred Alternative, and it is the worst of the six alternatives. It is an artificial, mechanically-created and unsustainable approach to creating sandbar habitat and uses a one-time spawning-cue test flow release once every 10 years! No other flow releases or variations. Realistically, it will be too costly and will never be funded.

Thank you for this opportunity to comment. Hopefully, the Corps' due diligence in its responsibility to the law, the species, their habitat, and the river for a Recovery Program will not be diminished by the influence of economic special interests that have only their own selfish interests in mind.

Correspondence: 144

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Correspondence Text

April 23, 2017

Major General Scott A. Spellmon
Northwestern Division Commander
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. In the past, I have seen the Missouri River rise 10 feet overnight. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation.

I'm concerned that all of the alternatives besides Alternative 1 (no action) would relax the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

I farm in the Tri-County Levee District which spans Gasconade, Montgomery and Warren Counties in Missouri. At a river stage of 14 feet on the Hermann gauge - which is seven feet below flood stage - our levee district begins to have challenges with interior drainage. Alternatives 2, 4, 5, and 6 which raise flows, some for considerable amounts of time, are absolutely deal-breakers for my farming operation.

The Corps hasn't completed their homework in the DEIS. Because impact studies have only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved

conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Denis Engemann
Engemann Bros. Farms
Rhineland, Missouri

Correspondence: 145

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Correspondence Text

April 18, 2017

Major General Scott A. Spellmon
Commander, Northwestern Division U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue Omaha, Nebraska 68102

Dear Major General Spellmon:

The Upper Mississippi, Illinois and Missouri Rivers Association (UMIMRA) speaks with one voice for those living, working and investing in the Upper Mississippi River Basin. Our membership includes levee and drainage districts, businesses and local governments north of Cairo, Illinois and was founded in 1954 to promote better flood protection for the Upper Valley.

We appreciate the opportunity to offer comments on the Draft Missouri River Recovery Program and Management Plan (DEIS). We work to promote flood management in the Midwest including along the Missouri River.

We have concerns with each of the six alternatives in the DEIS. To begin, with the exception of Alternative 1 (No Action), each of the alternatives relax current flood control constraints within the Missouri River Reservoir Mainstem Water Control Manual (Master Manual) in an effort to provide flow support to the pallid sturgeon. Not accounting for additional rainfall, this could equate to an increase in river stage of nine feet at Omaha or as much as six feet at St. Joseph. We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we opposed. In 2015, 20 members of Congress from Missouri to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Our members who live and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are wary of any attempt to boost pallid sturgeon population by increasing flows from Gavins Point Dam because no science has been developed to prove this linkage. This is the basis for our opposition to bimodal spring rise provisions in Alternatives 1, 2 and 6.

Further, flow modifications of up to 60,000 cfs for 35 days in Alternatives 4 and 5 are an absolute deal-breaker. The Corps is effectively abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases. Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage.

Conversely, summer low provisions in Alternative 2 would cause extreme harm to the Missouri River's

navigation industry; one that's been on the rise due to increased water supply and reliability. Further, the Missouri River can contribute up to 60 percent to the flow of the middle Mississippi River during times of drought. The harmful effects of low summer flow to our nation's economy must be taken into account and the Corps should remove this flow option from consideration.

We believe Alternative 3 (Preferred Alternative) strikes a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. We appreciate the Corps' cancellation of the current bimodal spring rise as outlined in this alternative. We also commend the Corps for its commitment to study the connection between tributary inflows and pallid sturgeon recovery.

In examining each of the DEIS alternatives, a concern common to each is the lack of hydrologic and economic modeling. We cannot even begin to understand the impacts to flood control and interior drainage because the DEIS only completed modeling for four levee sites in the entire floodplain. This is a severe flaw and we call on the Corps to complete hydrologic modeling and peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is implemented. Based upon the possible pallid sturgeon spawning cue release implementation in years 9-10 under the Preferred Alternative, we believe the Corps has adequate time to fully develop this essential modeling so our members can have a much clearer picture of how management plan actions may affect them.

Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full NEPA review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual. Further, we urge the Corps not to rush into construction of 12 Interception Rearing Complexes (IRCs) for pallid sturgeon during a six year timespan as specified in the DEIS. Instead, the Corps should rigorously study effects of one such IRC to determine its effectiveness before committing to building the entirety.

Once again, on behalf of our members, we appreciate the opportunity to provide feedback on the DEIS and for the service you provide our nation. We are a willing partner in your efforts to maintain the Missouri River for a variety of purposes. If we can be of additional assistance, I hope that you will not hesitate to contact us.

Respectfully,

Aaron Baker
Executive Director
1251 NW Briarcliff Parkway #85, Kansas City, MO 64116 - 1780
aaron@umimra.org | 660.281.7777

Correspondence: 146

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Douglas Electric Cooperative serves 611 member/owners in South Dakota. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstream Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- Douglas Electric Cooperative supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydro-power of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydro-power and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Jay Spaans

Correspondence: 147

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Correspondence Text

To whom it may concern, April 24, 2017

The Iowa Chapter of the American Fisheries Society review of the draft Missouri River recovery management plan and environmental impact statement has generated a number comments and concerns. While we are in support of the Army Corps of Engineers efforts to avoid a finding of jeopardy of the listed endangered species, we believe this management plan and impact statement is narrowly focused on listed species. On page v, lines 34-36: It states, "The purpose is to develop a suite of actions that meets Endangered Species Act responsibilities for already listed species." We believe this document should take a more holistic approach as to prevent additional species listings and not focus solely on endangered species.

Throughout this entire report, there is a lot of focus on age-0 Pallid Sturgeon and the specific management actions (e.g., spawning cues, food and forage, spawning habitat temperature manipulation, etc.) that may help increase recruitment to age-1. We believe there should be a summary of how all of these factors are likely interrelated and how accomplishing only one or a few of these actions may not result in sought after results due to the specific needs of fishes at different life stages. Focusing on only young of year Pallid Sturgeon is narrowly focused because recent evidence from Steffensen and Mestl (2016) determined adult Pallid Sturgeon body condition has decreased in the Lower Missouri River. These body condition decreases have the potential to lead to changes in periodicity of spawning, spawning success, and egg/larvae survival. Additionally, considering other species beyond Scaphirhynchus sturgeon may be important. There have been documented declines of numerous other species, including a potential listing of Sturgeon and Sicklefin Chubs. The National Research Council (2002) reported that 51 of 67 native main-stem fish species are rare, uncommon, or decreasing in all or part of their range. Because of additional species declining, other species such as Sturgeon Chub, Sicklefin Chub, Shoal Chub, Paddlefish, etc. that have the potential to decline further should be considered in order to avoid additional listings. For example, if we are creating habitat for young of year sturgeon does this same habitat meet the needs for chub species, or do they have different habitat requirements? Can we make the most out of these habitat rehabilitation projects and create habitats that will benefit numerous species and types of wildlife while also providing benefits to local landowners?

On page v, lines 5-18: It states, "Land acquisition priorities has focused on areas that were most conducive to the creation or enhancement of shallow and backwater areas, off-channel chutes, and flats for foraging." On page v, lines 9-11 it states, "The Bank Stabilization and Navigation Project Mitigation Project is considered still relevant and remains unchanged." Despite still being relevant, and unchanged, mitigation efforts have been reduced in recent years. Additionally, in Section 2.9.2.3, page 2-81, lines 7-11: it states, preferred alternative 3 would reduce the need to purchase as much land as alternative 1. How does this relate to the Mitigation Project? Further, mitigation efforts seem to be solely focused on listed species while the USACE's responsibility within the Mitigation Project was to

be dedicated to all native species. Not only could mitigation efforts be used for habitat rehabilitation for fish and wildlife, but would provide benefits considering flood risk management and nutrient reductions entering the Missouri River (Sparks 1995). With multiple flood events occurring on the Missouri River in recent years, obtaining mitigation lands in the floodplain will provide benefits to landowners and tax payers by reducing the extensive damage and costs caused by these recurring flood events. Having mitigation acres within the floodplain will also increase the hydraulic capacity, thus reducing the magnitude of floods, and reducing the amount of nutrients that run off the landscape and into our river systems; all while benefiting fish and wildlife at the same time (Sparks 1995).

In Section 2.5.3.1, it states that channel reconfiguration is a management action considered with multiple types of practices that could be implemented (e.g., bank notches, dike notches, revetment notches, placement of new structures, side channels, chutes, and channel widening/top-width widening). In the Upper Mississippi River Habitat Rehabilitation Program (HREP), they have successfully conducted multiple large scale projects that include the creation of islands, backwater areas, etc. and return the river to a more natural state. We believe these much larger scale practices should be considered in the Missouri River in the future so meaningful restoration can be accomplished. There is also evidence to support that young-of-year *Scaphirhynchus* spp., Paddlefish, and Channel Catfish utilize these large scale island habitats in the Middle Mississippi River (Phelps et al; 2009; Phelps et al. 2010; Phelps et al. 2011, Love et al. 2016). Larger projects such as those completed in the Upper Mississippi River that includes numerous varieties of habitats may be more likely to support multiple life stages of Sturgeon spp. These large scale habitat improvements are also likely to benefit other fish species, least turns (nesting site documented on Deer Island top widening project), piping plovers, waterfowl, invertebrates, vegetation, and recreation that smaller scale projects (e.g., dike notches, revetment notches, etc.) will not likely be able to provide. Connecting multiple habitat complexes together may be beneficial as well to help reduce fragmentation and increase the chances of young of year fishes to utilize these resources. Large scale habitat rehabilitation projects that include a variety of habitats will not only provide benefits to fish and wildlife, but could also create habitats in the floodplain (e.g., emergent wetlands, woodlands, grasslands, etc.) and backwater areas. These new variety of floodplain habitats would increase the hydraulic capacity of the river and associated floodplain, as well as reduce the amount of nutrients entering the river through the uptake of terrestrial and aquatic vegetation that could be created. The preferred alternative 3 consists of constructing interception and rearing complexes, largely through small scale projects (e.g., dyke notching, top widening, etc.) in the state of Missouri. Projects that include structure modifications and channel widening projects, while a step in the right direction, are largely small scale projects that have not, and will not likely reach anticipated results. We believe the Upper Mississippi River HREP program could be used as a good example of all agencies and stakeholders working together to make an ecologically relevant difference while meeting all needs and authorized purposes.

Currently, the EIS is somewhat narrowly focused on the Endangered Species Act, and within that on age-0 Pallid Sturgeon. The EIS may need to take a broader focus on an ecosystem level to provide benefits to all fish and wildlife and all users in the landscape. There are numerous other species that have documented declines with potential listings in the very near future due to habitat degradation and changes to the river system. Instead of chasing listings, the EIS should take a proactive approach to prevent these declines and future listings from occurring. This ecosystem level approach would likely need to take on much larger and more impactful projects in the watershed that will not only provide benefits to Pallid Sturgeon and fish and wildlife, but also to the users and landowners within the landscape. Many of Iowa streams have impaired water quality and have had increased floods in recent years due to changes in the Missouri River and its landscape, thus creating habitats that will mitigate these negative effects are necessary.

The majority of citizens of Iowa support improvements aimed at improving water quality, enhancing

wildlife and fisheries habitat, protecting soil, and increasing recreational opportunities throughout Iowa. The Missouri River is one of those very important resources for the citizens of Iowa that needs protection and enhancement. Enhancing this important resource should be made through science-based decisions that can benefit all stakeholders and interests involved (e.g., agriculture, economic development, fish and wildlife, etc.). Thank you for the opportunity to comment on the Missouri River recovery management plan and environmental impact statement.

Sincerely,
Iowa Chapter of the American Fisheries Society
Email: iowachapterafs@gmail.com

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<http://dx.doi.org/10.1080/02705060.2016.1196465>

Correspondence: 148

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Correspondence Text

April 24, 2017
U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102
RE: Comments on the draft Missouri River Management Plan and Environmental Impact Statement (MRRMP-EIS)

The Nature Conservancy (TNC) would like to thank the U.S. Army Corps of Engineers (USACE) for the opportunity to comment on the draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS).

TNC is a global non-profit organization whose mission is to conserve the lands and water upon which all life depends. We have chapters and programs doing on-the-ground conservation work in all 50 U.S. states and have approximately 85,000 members residing in the Missouri River basin states. We pride ourselves on being science-based and in seeking practical solutions that meet the needs of people and nature. TNC believes the Missouri River Recovery Implementation Committee (MRRIC) is an important example of a collaborative, consensus-based, natural resource forum that can embody this approach. Its potential to achieve science-based, practical solutions that meet the needs of people and nature is why TNC has had its staff participate on MRRIC since its inception.

On MRRIC, TNC has represented the stakeholder interest category of Fish and Wildlife and logically most of the comments below reflect that interest category. This focus is not intended to diminish the needs of people in association with the draft MRRMP-EIS and we encourage and trust USACE to fully consider the comments and needs of the tribes, states and other stakeholder interests in this comment process.

TNC appreciates the efforts by USACE and its contractors in creating the draft MRRMP-EIS. A

tremendous amount of important and high-quality work was completed over the last three years. TNC strongly supports the process and involvement that could be termed non-standard for USACE in EIS efforts. TNC believes the high stakeholder involvement through MRRIC and use of an Effects Analysis (EA) as the best available science and the basis of the Adaptive Management Plan (AMP) coupled with the Independent Science Advisory Panel's (ISAP) and Independent Social Economic Technical Review Panel's (ISETR) independent review of the science applied is a model of what a federal decision making process at this scale should include. TNC encourages USACE to apply this model to its other large scale water resource planning efforts nationwide. TNC is very supportive of the contents and structure of the AMP and agrees with the tiered approach to some management actions given some of the current uncertainty surrounding their effectiveness. This draft MRRMP-EIS marks a significant advancement in USACE Missouri River Recovery Program and U.S. Fish and Wildlife Service endangered species planning for the Missouri River. However, TNC does have an overarching concern and some more specific concerns with the draft MRRMP-EIS.

Overarching Concern:

USACE is selecting what it believes to be possible and not what it has been directed to do previously by Congress and what needs to be done for the Missouri River.

Section 5018 of Water Resources Development Act of 2007 states USACE shall conduct a study in consultation with MRRIC: "to mitigate the losses of aquatic and terrestrial habitat; to recover the federally list species under the Endangered Species Act; to restore the ecosystem to prevent further declines among other native species."

To contrast, the draft MRRMP-EIS is a document to only provide:

"a programmatic assessment of 1. major federal actions necessary to avoid a finding of jeopardy to the pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sterna antillarum athalassos*), and the Northern Great Plains piping plover (*Charadrius melodus*) caused by operation of the Missouri River Mainstem and Kansas River Reservoir System and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP) in accordance with the Endangered Species Act (ESA) of 1973, as amended; and 2. the Missouri River BSNP fish and wildlife mitigation plan described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Act (WRDA) of 1986".

A directive to assess how to mitigate losses of habitat, recover the listed species and restore the ecosystem was selectively narrowed to identify actions to only avoid jeopardy and evaluate an already established plan. The draft MRRMP-EIS cannot and should not be viewed as fulfilling the study directive detailed in Section 5018.

TNC acknowledges the Missouri River Ecosystem Restoration Plan effort was stopped by factors largely outside of USACE's control, but it does not eliminate the directive or the need for a broader plan. The draft MRRMP-EIS's focus on the currently listed species is warranted and should advance their recovery if the AMP is diligently followed, but this sole focus will also come at a cost.

If USACE does not identify and implement actions to restore the ecosystem to prevent further declines among other native species, it will ensure further declines and eventually other federally listed species. TNC requests that USACE - in consultation with MRRIC - begin a broader Missouri River ecosystem assessment. Ideally this assessment would fulfill the directive of Section 5018 and evaluate how different levels of restoration of the ecological structure (e.g. riverine/floodplain ecosystem, flow regimes, sediment regimes) can also address and modernize dated aspects of infrastructure and operations associated with the authorized purposes.

For example, TNC has long been a proponent of coupling river/floodplain restorations at the known lower river "pinch points". These areas are where at high flows infrastructure located too close to the river increases local river stages. Levees with repetitive failures due to placement over historic river channels are also areas where both ecological and infrastructure restoration could take place. These are just two examples of science-based, practical solutions that meet the needs of people and nature a broader assessment could identify.

Specific Concerns with the drafts MRRMP-EIS:

TNC is concerned "Implementation of Preferred Alternative Under Adaptive Management" is too narrow to allow for cost-effective, efficient, and effective Adaptive Management Program.

TNC recommends USACE capture the current full contents of the AMP (it attachments and appendices) in the final MRRMP-EIS and the approval of their contents in the Record of Decision (ROD).

The creation and use of an EA as the basis of the Adaptive Management Plan (AMP), involvement of the Missouri River Recovery Implementation Committee (MRRIC) and its ISAP and ISETR have greatly enhanced the draft MRRMP-EIS. Given these enhancements, and the quality content and effort put into the EA and AMP it is imperative to capture the complete contents of the USACE-authored AMP in the final MRRMP-EIS and the approval of its contents in the Record of Decision (ROD).

Volume Four of the draft MRRMP-EIS is titled "Implementation of Preferred Alternative under Adaptive Management" and contains only select components of the larger AMP. Volume 4 also labels the AMP as a "companion document" to the MRRMP-EIS. The AMP is much more than a companion document; it is integral and its full contents should be recognized and its acceptance documented by the ROD. The ROD should also acknowledge the living nature of these documents as Volume 4 does. The ability to draw readily from the other alternatives fully analyzed in this NEPA process and the entire AM Plan should not be hindered by a limited ROD.

TNC is concerned by the lack of environmental flows contained in the current Preferred Alternative in the draft MRRMP-EIS.

The inclusion of an "Experimental Flow Release - if required" in 2025 as identified in the Preferred Alternative is a small step in the right direction, but hardly reflects Fish and Wildlife as an authorized purpose in the operation of the Missouri River mainstem system. TNC has a long history of working on environmental flows and over a decade of it with USACE through the Sustainable Rivers Project. To supplement these comments, we are attaching a 2014 letter and report by the Chief of Engineers Environmental Advisory Board and the 2015 response by the Chief of Engineers. TNC understands the challenges and constraints USACE faces on the Missouri River in terms of implementing environmental flows, but TNC does not believe they are insurmountable and would propose two approaches for inclusion in a MRRMP-EIS preferred alternative:

1. To enhance the research surrounding "Big Question 1: Spawning Cues" TNC recommends inclusion of Level 2 Experimental Flow Decreases from Gavins Point Dam in addition to (not replacing) the proposed release. These decreases would be timed to coincide with high flow events at appropriate water temperatures (spawning) occurring on the tributaries near Gavins Point Dam to attempt to enhance localized temperature and turbidity - known factors impacting pallid spawning behaviors. These managed decreases would appear to be already within the Master Manual, should be complementary to the other authorized purposes given timing with increased tributary inflows, and could benefit the research already identified in the Preferred Alternative.

2. Given long known negative environmental impacts and a recent publication in Bioscience (Kennedy et al. 2016) further documenting them, TNC recommends USACE alter (not eliminate) hydropeaking

practices on the Missouri River mainstem system. TNC believes this directly applies to the primary biotic response of food availability in both the upper and lower river pallid sturgeon exogenously-feeding larvae conceptual ecological models. And the ecological response of area of suitable foraging habitat in the piping plover conceptual ecological models. TNC offers no specific flow prescription at this time, only that USACE begin evaluating and implementing low stable flows during known periods of peak aquatic-insect laying. TNC believes this can and should be done in ways that minimally affect hydroelectricity generation while still obtaining the goal of improving aquatic-insect egg laying and rearing. TNC also believes evaluation of the impacts on these same insects by "harassment flows" to discourage bird nesting a low sandbar elevations should be considered.

TNC believes these minor water management adjustments could bring important ecological and informational benefits, be acceptable to a broad range of stakeholders, and thus, make important additions to the MRRMP- EIS preferred alternative. TNC also wants to emphasize it recommends these adjustments because it trusts USACE to implement these water operations safely.

TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study.

TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region. TNC acknowledges USACE lacks the authority to directly act on the alkali lakes region, but the information being presented at the 2017 Missouri River Natural Resources Conference and in other forums related to the metapopulation study for piping plovers appears compelling enough to be captured or caveated in the AMP. Robust exchange and use by plovers between the alkali lakes, reservoirs, and river segments could have significant management implications impacting not only bird actions, but added budgetary and management flexibility in regards to the pallid sturgeon.

TNC is concerned with the lack of specific actions related to acquiring and developing lands associated with the Bank Stabilization and Navigation Project (BSNP) Mitigation Project authorities in the draft MRRMP-EIS and current Preferred Alternative.

Although the Preferred Alternative does note the inclusion of "riparian habitat development on any acquired land", the MRRMP-EIS seems to lack any detail on the amount of acquired land would occur or the types of habitat development. TNC has been and remains supportive of the acquisition and development of lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986 and modified by Section 334(a) of WRDA 1999 and agrees with the USACE characterization in Volume 1 of these authorities being obligations of the Fish and Wildlife Coordination Act. TNC observed at the public comment meeting held in Omaha on the draft MRRMP-EIS two out of the three self-identified agricultural based landowners who provided public oral comments described how they wanted and were willing to participate in restoration activities along the river.

Accompanying this MRRMP-EIS, TNC recommends USACE request MRRIC revise their May 2013 recommendation (also considering the MRRIC August 2014 response) on "Options for Easements". TNC believes a revised recommendation making clear and focusing the easement recommendation to only MRRP policy and not national USACE policy would aid further consideration by USACE and help any acquisition activities in the future by enabling landowners to retain fee title ownership of their lands while at the same time participating in restoration activities along the Missouri River.

TNC is concerned at the characterization of the Alternative Development process throughout the draft MRRMP-EIS.

As stated at the beginning our comments, TNC has been and is supportive of this unique EIS process and its products, and believes USACE should apply the process in other appropriate areas. TNC believes it is important to accurately capture the alternative development process as it pertains to MRRIC involvement in the MRRMP-EIS and requests USACE do this by addressing inadequacies parts of Section 2.1 - Overview of Alternative Development Process and the Pallid Sturgeon and Bird Alternative Development sections. Instead of detailing the inaccuracies, TNC believes a basic and accurate overview of the alternative development process involving MRRIC would contain: An initial set of alternatives were developed by the MRRMP-EIS Product Development Team (PDT) and the Effects Analysis Teams. This initial set of alternatives was shared with MRRIC members through a series of Human Consideration Proxy Webinars. After the webinars, the initial set of alternatives was revised by MRRMP-EIS PDT and presented and discussed to MRRIC at the May 2015 Plenary meeting. At this meeting MRRIC members could share their initial reactions verbally and could provide written feedback and ranking of alternatives if they chose to. No specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the May 2015 meeting the MRRMP-EIS PDT revised the initial and developed a second set of alternatives which were presented and discussed at the August 2015 MRRIC Plenary meeting. Again, no specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the August 2015 Plenary meeting, the MRRMP-EIS PDT analyzed the second set of alternatives and forwarded six "plan" alternatives (including a No Action alternative) for detailed evaluation in the draft MRRMP-EIS. All determinations for inclusion of the six alternatives were made by USACE as was the designation of Alternative Three as the Preferred Alternative in the draft MRRMP-EIS.

TNC does not find the use of "collaboration" or "ProACT process" or "ProACT discussions" accurate in describing alternative development involving MRRIC. As Section 1.2 states "USACE and USFWS collaboratively have tailored the generic ProACT approach to meet the needs of this MRRMP-EIS planning process." USACE and USFWS may have applied an approach fully internally, just not with MRRIC.

Thank you for taking these comments under consideration.

Sincerely,

Todd Strole
Associate Director, Floodplain Management
Mississippi River Basin Project
The Nature Conservancy
*MRRIC Stakeholder Member representing Fish and Wildlife

Jason Skold
Director of Land Protection - Nebraska
The Nature Conservancy
*MRRIC Alternate Stakeholder Member representing Fish and Wildlife

CC: USFWS Region 6 Ecological Services
Encl: 2014 EAB Letter and Report
2015 Chief of Engineers Letter Response

References

Theodore A. Kennedy, Jeffery D. Muehbauer, Charles B. Yackulic, David A. Lytle, Scott W. Miller, Kimberly L. Dibble, Eric W. Kortenhoeven, Anya N. Metcalfe, Colden V. Baxter; Flow Management for

Hydropower Extirpates Aquatic Insects, Undermining River Food Webs. *BioScience* 2016; 66(7): 561-575. doi: 10.1093/biosci/biw059

Correspondence: 149

Correspondence Information

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Correspondence Text

April 19, 2017

U.S. Army Corps of Engineers Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Reference: Draft Missouri River Recovery Management Plan and Environmental Impact Statement released in December 2016

Dear MRRP- EIS Committee,

The American Fisheries Society (AFS) is the largest and oldest professional society representing fisheries scientists in North America. The Nebraska Chapter AFS is made up of aquatic resource professionals from federal, state, and public agencies, as well as university educators and students throughout Nebraska. The AFS promotes scientific research and broad-minded management of aquatic resources for optimum sustainable use and enjoyment by the general public.

The independent National Academy of Science (2002) explicitly stated that: "the Missouri River ecosystem is in a marked state of decline that is causing a reduction of goods and services and the potential loss of species" (Source: National Research Council. 2002. The Missouri River Ecosystem, Exploring the Prospects for Recovery). On page 3 of this book, it states that of 67 native fish species living along the mainstem, 51 are now listed as rare, uncommon, and/or decreasing across all or part of their ranges. One of these fishes (pallid sturgeon) and two avian species (least tern and piping plover) are on the federal Endangered Species List.

The US Army Corps has recommended Alternative 3 labeled as "Mechanical Construction Only". This alternative does not do enough to conserve and protect the natural resources of the Missouri River such as the prey base for pallid sturgeon. We agree that large scale experimentation as proposed by level-2 experiments would be beneficial, but the scope of such experiments seem extremely limited to just flow pulses. A one-time flow pulse does not constitute a natural flow regime. Establishing a more natural flow regime in combination with habitat construction through an adaptive management plan is a more prudent approach which tries to work with mother nature.

We recommend Alternative 2 as mechanical construction alone would not be sufficient to restore the ecological integrity of the Missouri River or avoid jeopardy to pallid sturgeon. Systematically implementing Alternative 2 and the new Science and Adaptive Management Plan that has been

developed based on the Effects Analysis facilitates a more comprehensive understanding of the system and provides the opportunity for research and monitoring to better guide the USCOE in engineering the system to benefit fish and wildlife, particularly the pallid sturgeon and listed bird species.

We understand that there are multiple user groups on the Missouri River with many different interests. However, we as a chapter want the best alternative that benefits native fish populations and communities, including the listed species of concern. We feel that Alternative 2 and the new Adaptive Management Plan based on the Effects Analysis would assist in avoiding jeopardy because it focuses on "Listening to the River".

Sincerely,

Michael Archer - President
Nebraska Chapter of the American Fisheries Society
9601 Yellow Pine Rd
Lincoln, NE 68505
402-617-2166 mike.archer@nebraska.gov

Correspondence: 151

Correspondence Information

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Correspondence Text

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation.

I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

I can't support any of these alternatives until BASIC Maintenance is brought up to original construction specifications!!

Thank you,
Mark

Correspondence: 152

Correspondence Information

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Correspondence Text

I believe it is imperative for the NPS to continue to protect the natural resources of the Missouri river. Good strides have been made in publicizing the dynamic environmental resources of the river and I'd like to see continued preservation efforts. I believe there are multiple beneficiaries from continued development of the river system. The resource of the river is obviously benefited, but also the economic impact on the surrounding communities. The urbanization of our country will cause smaller towns to get smaller and the natural resources around these communities are often their only hope. Having this National Recreational River at Yankton's doorstep has only been positive. People need to stay in touch with the ecology and have access to the environment- -otherwise they lose touch and become apathetic to environmental concerns. Continued access through land acquisition and easements is very important.

Correspondence: 153

Correspondence Information

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Correspondence Text

April 20, 2017

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

RE: Docket ID No. COE 2009-0024-0002

Thank you for the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and the accompanying Adaptive Management Plan (AM Plan). Best management of the Missouri River is important on many fronts and we appreciate the Corps' process of developing MRRIMP-EIS using the best science available and a structured decision making process.

Upon review of the six alternatives evaluated in the draft MRRMP-EIS, the Lewis and Clark Natural Resources District (LCNRD) supports the Corps' preferred alternative - Alternative 3, All Mechanical. This alternative does not require changes to the reservoir operation as described in the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) and has the least impacts on Missouri River water users while meeting the objective of avoiding jeopardy to the listed species: interior least tern, piping plover and pallid sturgeon.

The LCNRD oversees operation of the Cedar-Knox Rural Water Project (CKRWP) which has an intake in Lewis and Clark Lake above Gavin's Point Dam. The CKRWP treats water from the lake and serves 4 communities and 870 rural hook-ups in Cedar and Knox Counties of Northeast Nebraska. It is of our utmost concern that flow rates and lake levels be maintained in a way that will not impact the CKRWP intake's ability to provide what ultimately becomes the drinking water for up to 3,400 consumers

The LCNRD supports efforts to maintain a healthy environment for endangered species, however; we wish to emphasize the need to maintain a healthy water source for the human populations that rely on the Missouri River and its reservoirs for drinking water.

Sincerely,

Annette Sudbeck

General Manager
Lewis and Clark Natural Resources District

Correspondence: 154**Correspondence Information**

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Correspondence Text

The following comments on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS) are submitted on behalf of Missouri Farm Bureau (MFB), the state's largest general farm organization. Our organization has been involved in issues related to the Missouri River for decades as management issues affect not only those who live and work along the river but farms and rural communities throughout the state.

Representatives of MFB provided oral and written remarks at DEIS public meetings held in Kansas City and St. Louis earlier this year. In addition, MFB is a founding member of the Coalition to Protect the Missouri River (CPR) and associates itself with their comprehensive written comments regarding the DEIS.

Our comments on the six alternatives are predicated on background gained from those who live and work along the Missouri River. We can attest to their ongoing frustration with the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (Corps) over the continued uncertainty of river management. Many believe Adaptive Management is a synonym for experimenting on private property. Ongoing disagreements over the construction of shallow water habitat (chutes) in Missouri have called into question the agencies' desire to find commonsense ways to enhance habitat for the pallid sturgeon. To put it succinctly, it is difficult to point to progress despite spending \$825 million on the recovery program since 1992.

Aside from Alternative #1 (No Action) each of the alternatives relax flood control constraints within the current Missouri River Mainstem Reservoir System Water Control Master Manual (Master Manual). In the month of April, we have witnessed the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to Missouri farmers, thus it will come as no surprise that MFB, and many other Missouri organizations, vehemently oppose any change in river flow that increases the likelihood of flooding during any time of year. This is non-negotiable.

Production agriculture is at best difficult under normal conditions; farmers do not need to contend with man-made floods that prevent/delay planting, lower yields or require additional costs for levee reinforcement, sandbagging or pumping.

While Alternative 3 (Corps Preferred Alternative) is less objectionable than Alternatives 2, 4, 5 and 6 it still includes the possibility of flow modifications in the future. This is especially disappointing as neither economic nor hydrologic modeling has been completed for the entire floodplain.

Additionally, any alternative that includes low summer flow provisions should be removed from the Corps' consideration due to its impacts on navigation and public utility operations. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river.

Commercial navigation is dependent upon flow certainty and there are numerous advantages to increasing utilization of our inland waterway system. The combination of water-compelled rates and the importance of flows from the Missouri River to the Middle Mississippi River should spell doom for any serious consideration of summer low flows. The Missouri River's role as a marine highway will only become more important as U.S. farmers continue seeking new markets for their products.

While pleased the Corps and USFWS are moving away from the construction of chutes, concern remains about Interception Rearing Complexes (IRC) or Shallow Water Habitat 2.0. Little is known about the impacts of IRCs, yet plans call for 12 to be constructed over a six year period. It would make sense to construct one pilot IRC and conduct research to determine its effectiveness before spending the time and money on a dozen.

Other comments of interest include:

- MFB strongly opposes Alternatives 2, 4, 5 and 6. Each of the alternatives has detrimental impacts for Missourians. Specific concerns are listed in CPR's written comments.
- Hydrologic and economic modeling must be done before any flow management plan is implemented.
- Flood risk management and interior drainage models must be completed for the entire floodplain rather than studying only four levee sites along the lower Missouri River.
- The Corps needs to better study the linkage between the Missouri and Mississippi Rivers.
- The Corps should release the estimated cost of the six alternatives.

MFB believes species recovery can and should be done in a responsible way that does not cause economic hardship to those associated with the Missouri River. This entails a continued working relationship with stakeholders throughout the Missouri River Basin and adoption of management practices that reflect the importance of flood control and navigation as well as the other uses authorized by Congress.

Thank you for the opportunity to comment on the DEIS.

Correspondence: 155

Correspondence Information

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Correspondence Text

McCone Electric Co-op, Inc. serves 2,492 member/owners in eastern Montana. The cost-based, renewable hydroelectric power generated at the Corps of Engineers' dams on the mainstem Missouri River are an essential part of our power supply and helps to fuel the economy of the Upper Great Plains. We appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS).

We support the comments of the Mid-West Electric Consumers Association (Mid-West) on the DEIS. In particular:

- McCone Electric Co-op, Inc. supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

The details supporting these comments can be found in Mid-West's comments.

Thank you for the opportunity to comment.

Michael E. Hoy
General Manager
McCone Electric Co-op, Inc.
Circle, Montana

Correspondence: 156

Correspondence Information

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Correspondence Text

April 24, 2017
Major General Scott A. Spellmon Commander, Northwestern Division
U.S. Army Corps of Engineers
P.O. Box 2870
Portland, Oregon 97208-2870

RE: Missouri River Management Plan and Draft Environmental Impact Statement Comments

Dear General Spellmon:

The Missouri and Associated Rivers Coalition (MOARC) was established in 1952 in response to severe flooding that ravaged the Midwest in 1951. Since then, MOARC has advocated for better water and related land resources management in the Missouri River basin, and for the past 35 years we have advocated an integrated water resources management approach. We support responsible management of the Missouri River for all eight of its authorized purposes based on sound science and in keeping with the Circuit Courts ruling that flood control and navigation are primary. While we support all purposes, our membership is largely focused on the three areas around which our committees are formed and our comments are framed: Flood Control & Risk Management; Navigation, Shipping & Trade; and Water, Power & Permitting

MOARC welcomes opportunity for stakeholder involvement and input into Missouri River management, evidenced by several of our Board members serving on the Missouri River Recovery Implementation Committee (MRRIC). The Missouri River Management Plan - Draft Environmental Impact Statement (DEIS) is a complex, technical, and extremely long document with the potential to have adverse effects on many of our members operations depending on the alternative chosen and the subsequent record of decision (ROD). The attached comments are submitted to illustrate concerns and inform a responsible decision-making process.

We were very involved in the extensive process undertaken to revise the Missouri River Master Water Control manual and remain supportive of its use (i.e., No Action Alternative), but without the problematical bimodal spring pulse. With regard to the Action Alternatives in the DEIS, our review leads us to determine that Alternate 3 will have the least effects on the authorized purposes and our members, despite concern with a possible out year spawning cue flow regime. Alternatives 2, 4, 5 and 6 all have unacceptable significant adverse impacts on the rivers primary purposes and critical water supply function. More detailed information is contained in the attachments. Lastly, we also wish to acknowledge the detailed comments of the Coalition to Protect the Missouri River, and for those we express our general support.

We thank you for this opportunity to make comments on this very important issue.

Very Truly Yours,

Tom Poer, P.E., PMP, ENV SP

CC: U.S. Army Corps of Engineers, Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments 1616 Capitol Avenue
Omaha, NE 68102

Flood Control & Risk Management

Upon review of the identified alternatives for the Missouri River Management Plan and Draft Environmental Impact Statement (DEIS) MOARC respectfully requests the following comments be taken into consideration when determining the best alternative so as to have the least effect on flood control and risk management in the lower reach of the Missouri River (downstream of Gavins Point), particularly in the greater St. Joseph and greater Kansas City metropolitan areas.

" All alternatives presented in the DEIS indicate actual likely potential of increases of river stages in the downstream reach which will, to one degree or another, cause the following:

- o Beginning flood action stage to occur more often
- o River to advance to higher flood fight action levels (Minor, Moderate & Major)
- o Duration of elevated river stages to be extended, thus increasing the saturation levels of levees, which research shows will adversely affect the functioning of levees over time and repeated saturation events
- " The St. Joseph and Kansas City metropolitan areas each have several units that function together as a flood protection system for those respective communities. Some units are separated only by an invisible boundary and are thus affected by bordering levee units. Coordination of operations and flood fighting activity becomes increasingly critical and costly as river stages increase due to increased manpower, pump station operation, stop log and sandbag gap closure, levee patrolling, etc.
- " Levee systems in the lower Missouri reach are already and still subject to flood risks, as evidenced by impacts in 2011 and several other significant events in recent years, including the overtopping of the levees in St. Joseph in 1993. A similar failure today would result in more than \$2 Billion in damages and potential loss or dislocation of 6,000 jobs. As such, and considering the many uncertainties associated with the proposed alternatives, we would not recommend giving up factors of safety or margins of risk to areas protected by levees.
- " Another concern are long-lasting peak flows or sustained high-water events, as these type of flood events create even more issues for levee protection, due to seepage and continued weakening of levees during these longer duration inundations.

" Furthermore, specific to each of the Alternatives, we ask you take into account:

- o The No Action Alternative already subjects levee systems in downstream reach of the Missouri River

to bi-modal spring rises. In the Kansas City area this has some moderate impacts on the local levee operations due to the fact that some units begin closing sluice gates and activating pump stations as early as Stage 19.5 ft., and in other areas with lesser levels of protection has greater impact. Without the spring rises local levee districts would not need to take action as often or for as long, thus conserving operational cost, flood fight activity and risk.

o Alternative 3, even with the provision for a potential one-time spawning cue test release after year nine (9), stands to have the least adverse effect on levee district operations. This could be supported with the anticipation that the one-time test release will not significantly impact levee integrity or district operations, or otherwise impose increased risk to Missouri River levees in the reach downstream from Gavins Point.

o Alternatives 2, 4, 5 & 6 would all have significant adverse effects on the local levee districts due to the projected increased discharges ranging from 87 Kcfs to 126 Kcfs which corresponds to increases in river stages of up to 8 ft. in the Kansas City reach. Such radical flow increases would increase the annual cost of local levee districts as they must implement more frequent and higher flood protection management. Such high flows will unnecessarily increase flood risk in the lower Missouri reach, especially so when considering that regional and local precipitation events occurring after any Gavins Point releases are uncontrolled.

The naturally occurring peak with the Gavins Point release can, and will, combine to increase the already unacceptable river stage that would be produced by the proposed Gavins Point releases in each of these alternatives.

" Interior drainage is a critically important aspect of flood control and risk management for levee systems, and we draw your attention to the extensive comments on this issue prepared by the Coalition to Protect the Missouri River, which we hereby endorse.

Navigation, Shipping & Trade

Upon review of the identified alternatives for the Missouri River Management Plan and Draft Environmental Impact Statement (DEIS) MOARC hereby expresses our preference is the No Action alternative, with no changes or modifications except for elimination of the bi-modal spring pulse. There are several ports within the MOARC region, including Port KC and the St. Joseph Port, both on the Missouri River. MOARC understands that uncertainties associated with the Master Manual review process resulted in the loss of much of the Missouri River navigation network, including some shippers, terminals and ports. Nonetheless, by law, navigation remains a primary purpose for which the Missouri River is to be operated. That was confirmed by the 8th Circuit Court during the extended Master Manual review process. In recognition of that fact, efforts to revitalize Missouri River navigation began several years ago and, having achieved some success, were increased in recent years. Despite uncertainty being introduced through the current effort to again revise the Missouri River operations, and to do so without due consideration to the operating parameters previously established in the Master Manual, navigation is increasing.

The Port Authority of St. Joseph has been making steady investments in their facilities, with shipping of grain and other commodities increasing. It is of utmost importance that a viable navigation environment be preserved and enhanced to secure the sustained viability of the water- shipping mode in addition to road and rail services. Navigation is a primary authorized purpose on the Missouri River,

and whatever option is selected needs to keep that paramount.

As previously stated, the MOARC preference is the No Action alternative, with no changes or modifications with the exception of eliminating the bi-modal spring pulse.

The trade analysis was based on 2014 data with little or no research in changing trade flows from the gulf ports, emergence of regional agricultural export markets to Asia, increased movement of petrochemicals and petroleum products by water and the effects of an expanded Panama Canal on shipping volumes. These updated factors should be evaluated. Within the past few weeks a major carrier announced a direct New Orleans to Asia service, a first of any major steamship line to offering a direct service from the Gulf to Asia. This will enable central U.S. shippers alternative access to U.S./Asia routes and will definitely influence freight rates in favor of agricultural products from the Midwest.

Certainly, the navigation industry has had some hard times but, with rail capacity becoming less and an over-the-road driver shortage showing no abatement, one can see the evidence that inland waterways are becoming critical in the movement of freight. The first full year of operating Port KC (the Kansas City port facility) was tremendously successful. KC Port had a throughput of 45K tons, but this also generated an additional 60K tons of freight moved from private terminals in the KC area. Therefore, over a 100K tons of freight moved, up from zero in 2014. This has a positive impact on the local economy. Not only did shippers enjoy competitive rates but the elimination of approximately 1 million truck miles impacted road transportation as this freight originally was routed through Tulsa, Oklahoma instead of Kansas City.

KC Port expects to replicate its success in 2017 with a modest increase of at least 20%, the port is presently constructing an additional 12K tons of storage capacity that is committed to bulk fertilizer and salt storage. This will give them the ability to increase their throughput to 100K tons for 2018 for fertilizer only. They are also looking to expand and diversify other commodities to include scrap, steel and other bulk commodities such as mill scale, sand, gravel and composted tree bark. There is also a strong interest in transporting empty containers to the lower Mississippi to load resin & chemicals. KC Ports business plan for the near-term looks positive as other KC terminals are looking to load empty barges the port generates with grain, aggregate and cement. Agri-Services of Brunswick Missouri moved in excess of 250K tons in 2016 as well as freight moving from private terminals in Nebraska City and Lexington Missouri. These regional advances in navigation should be acknowledged, discussed and studied in the DEIS.

As stated earlier, our preference is for no change to the current operation, but if we had to choose one of the alternatives that would be #3. Any of the other alternatives would have serious adverse impacts to navigation, perhaps so much as to eliminate it altogether but, without navigation having been given due consideration in the study of alternatives, the full impact remains unclear. The shippers in the MOARC region can and will greatly benefit from using the Missouri River as an alternative transportation mode. The environmental discussion in the DEIS makes it abundantly clear that the environmental and safety aspect of waterway transportation should be embraced whenever possible. The adoption of any new management practice, particularly those in Alternatives 2, 4, 5 and 6, would nullify these environmental advantages by reducing navigation options.

Water, Power & Permitting

Of the proposed action alternatives in the DEIS, MOARC sees Alternative 3 as having the least impact to stakeholders, including water supply, power generation and permitting, with the most likely potential to recover the protected species. As previously noted, there are concerns with an out-year pulse and we encourage further study with completion of additional analysis prior to its implementation to determine both its real value to the species as well as its associated costs imposed on others. There are several water and power utilities within the MOARC region, and these industries are heavily regulated and permitted. MOARC's membership includes utilities operating on the Missouri River, including: the City of Kansas City, Missouri; WaterOne of Johnson County, Kansas; and the Kansas City, Kansas, Board of Public Utilities, the City of St. Joseph, Missouri; among others. Reliable water supply is essential to these utilities and the communities they serve.

Water supply entities on the Missouri River provide customers water for drinking, sanitation, firefighting, recreation, and industrial uses. Their Missouri River intakes have been designed based on anticipated flows from the Missouri River based on the Pick-Sloan dam and reservoir construction and its anticipated operation as outlined at the time. Many million dollars of intake modifications have been made to accommodate flow releases from Gavins Point due to changes in Master Manual operation guidelines and reduced flow due to drought conservation measures. The access to water at lower flows has been exacerbated by several feet of channel degradation in many reaches over the last 15 years. This degradation has resulted in a regionally supported study by the Corps of Engineers, which must be taken into consideration when evaluating flow effects on intakes.

The fixed intake structures relied upon by large water suppliers to divert water from the Missouri River and its major tributaries are dependent on the on the channel created and maintained by Corps Bank Stabilization and Navigation Project (BSNP). Most public water suppliers have limited or no access to alternative sources of water. It is extremely expensive or impossible to adjust these intakes to substantial changes in river levels. These intakes were designed and constructed with the advice, consent and approval of the Corps and it is imperative that the Corps ensure these intakes remain capable of continuous operation. Interrupting water supply for even one day would have catastrophic impacts on people who live and work in the Missouri River basin. Interruptions of water supply can be troublesome to residential customers but can have catastrophic impacts to health care facilities and major economic impacts to education, businesses and industry. A 2017 report by the Value of Water Campaign entitled *The Economic Benefits of Investing in Water Infrastructure* documents that water service disruptions put \$43.5 billion in daily economic activity at risk.

In analyzing flow regime effects, Alternatives 4, 5, and 6 would appear to offer the least impacts on water intake operation during the release periods. However, there are concerns of these releases creating a cause for low flows in the later winter periods of the year if the system does not receive enough inflow to replenish reservoir levels. The No Action Alternative (current operation) has created situations coupled with drought and channel degradation such that several utilities have spent extensive amounts for intake pump alterations and the ability to install low water stage auxiliary pumps to address short term low stages. These units are not designed for continuous operation over long periods of time and cannot provide ample flow under extensive circumstances. Notably, per the MRRIC Independent Science Advisory Panel (ISAP) current operation is not effective for the species, thus its continuation seems unlikely.

Alternative 2 poses the most concerns for intake operations. Included in this regime is a summer low flow., iv. Beginning on or about June 15, 2006 but no later than July 1, 2006 the Corps shall begin reducing flows to provide a minimum 30-day summer low flow release of no greater than 25 Kcfs. Op. cit. 2003 BiOp. If tributary input is low, stages at many intakes will also be low thus reducing pumping capacity when consumer demand may be the highest. As alternative 2 contemplates these low

summer flows, there has been no effort made to evaluate the impacts and cost associated with those low summer flows on the Water Supply intakes. Although this is not the preferred alternative; we feel it is important to document these impacts for the record. In addition, there are concerns with the method the Corps used to model the impacts of the alternatives on Water Supply. Flow requirements, which are much higher than the minimums mentioned in Master Manual due to riverbed degradation, especially in the Kansas City, Leavenworth and St. Joseph areas, should be considered. This was identified several times in the DEIS, including page 3-504 of the DEIS, wherein it states, &the No Action Alternative does not reflect actual past or future conditions& Worst case scenarios of the Period of Record were used and hypothetical Master Manual minimum flows to create a baseline. Because of bed degradation, the minimum flows mentioned in the Master Manual could not and would not support the Water Supply Intakes on this stretch of the River. As a result, the Corps has assumed that the 33 of the 55 water intakes would experience 57 days below operating thresholds and 21 intakes would experience 14 days below shutdown elevations. This assumption is not reasonable to correctly estimate the impacts and costs. The Corps should reevaluate its approach and model realistic flow requirements to keep water supply intakes in operations at all times. Additionally, the Corps analysis of rental pumping submersible pump costs and sizes are unrealistic for a major utility intake.

Water Quality

Inherent in Water Supply is continuously supplying a high-quality product meeting Safe Drinking Water Act (SDWA) requirements. This task is dependent to an extent on the quality of the source water. The DEIS addresses this issue in Vol 2; 3.7.1-3.7.2.9. We must take issue with statements in 3.7.1.3 concerning other pollutants. This paragraph addresses substances as pesticides. It states&at Rulo, the pesticides&atrazine& were present but not at levels that exceeded water quality criteria. Some utilities routinely treat for atrazine removal to meet the potable water contaminate level of a maximum of 3 ppb. Of further consideration is the use of average temperatures for the lower River. Utilities routinely experience high water temperatures during low flow periods coinciding with warm summer season. These high temperatures along with low turbidity normally associated with low summer flows create the condition for the potential formation of cyanotoxins. Although no firm maximum contaminant level has been established by EPA, Health Advisories have been issued by EPA. In accordance with EPA, Health Advisories, Missouri is one of the states, reviewing or developing an approach to address cyanotoxins in water, with others in various stages of development. (JAWWA Vol. 109 p. 42.) Anecdotaly, some utilities have experienced Algae like blooms characteristic of cyanotoxin formation during previous low flow summer periods. At that time, no attempt was made to analyze for toxins as methods are just being developed and no EPA requirements were in place. This is no longer the situation. We are concerned that any Alternative with low summer flows may create river conditions requiring, at the least, extensive treatment. Again Alternative 3 appears to offer the least problems for water quality as it enables the most reliable source of water supply at the appropriate times to assure water quality.

Correspondence: 157**Correspondence Information**

Status: Reviewed	Park Correspondence Log:
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Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

In many respects this plan doesn't change much from the way the Missouri River (MR) is managed currently. The acreage of mechanical sandbar construction does vary considerably, though, and among the alternatives I favor Alt. 2, which has the highest targets for that acreage. My reasoning is that any number set in a plan is a target which may or may not be attained in any year, with unpredictable factors like weather and funding in play. So the target may as well be set fairly high, which is what Alt. 2 does.

The inevitable and ongoing channel degradation below dams means there will be ever-less production of natural sandbars into the near future. That is, unless the navigation channel below Sioux City is modified to have a more natural cross-section. This should also have significant benefit for pallid sturgeon. If that is a solution for a separate EIS, I urge you to get on it. As everyone should know by now, the System isn't designed, nor does it function, to provide absolute flood control, esp. farther down the river. Between System high-year flows and tributary inflows, the lower river will always be subject to flooding that devastates human lives and infrastructure in the river valley. The channel and flow modifications that are good for native wildlife along the river and good for reduction of flood damage, as well.

Regarding terns and plovers in particular, the EIS discusses their nesting on reservoir (rsvr) shorelines, notably the issue of the rsrvs serving as ecological traps in some years. Yet I can't find where the alternatives address this problem directly, esp. by trying to prevent it. Rsvr unbalancing is the management technique that comes closest. Recent history shows it's been challenging for the Corps to carry out effectual unbalancing. I think they could try harder, and hope that the final plan will direct them to do so.

Unbalancing would have a better chance for success, I believe, if March 1 storage targets were lower and navigation service levels were reduced. Commercial navigation has so little value on the river it's hardly missed now in drought years. Reduced navigation service will give the Corps more flexibility in storage and flow targets. It will allow more "conservation" of water in the rsrvs if releases aren't wasted for a few barges.

Lowering pools, on average- -the March 1 target- -is practically a taboo idea in the MR basin, even in the wake of the truly frightening flood of 2011. I believe that lower pools will give you more flexibility in storage and releases that will permit real rsvr unbalancing in more years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that have too often flooded tern and plover nests on sandbars below the dams.

Lower pools also produce lower river flood damage reductions, and I hope you will consider an alternative that incorporates a lower storage target and navigation service levels, better unbalancing, and overall better management of pools for terns and plovers and other wildlife benefits. The Corps

manages hundreds of miles of reservoir shoreline via water levels, and it's a shame to be overlooking opportunities for creative habitat enhancements over that long shoreline.

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Correspondence Text

State Engineer's Office

HERSCHLER BUILDING CHEYENNE, WYOMING 82002
(307) 777-6150 FAX (307) 777-5451

MATTHEW H. MEAD
GOVERNOR

PATRICK T. TYRRELL
STATE ENGINEER

April 24, 2017
Brigadier General, Scott A. Spellmon, Commanding
Department of the Army
Corps of Engineers, Omaha District
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Ave, Omaha, NE 68102
Submitted online via: <http://parkplanning.nps.gov/MRRMP>

Dear Brigadier General Spellmon:

On behalf of the State of Wyoming and as the primary administrative body for the general supervision of the waters of the state, the Wyoming State Engineer's Office (SEO) appreciates the opportunity to comment on the Missouri River Recovery Management Program (MRRMP) draft Environmental Impact Statement (EIS).

Although Wyoming is not located on the Missouri River mainstem, the state currently holds Cooperating Agency status in support of MRRMP efforts. We have participated in the Missouri River Recovery Implementation Committee (MRRIC) since its inception. Additionally, our long-standing participation in Endangered Species Act (ESA)-related recovery efforts in the Missouri, Snake and Colorado River basins presents an informed perspective to help guide the long-range plans for the restoration of the Missouri River via the MRRMP. Our MRRMP draft EIS commentary centers on two key issues:

1) Adaptive Management

Wyoming currently partakes in the Colorado River Endangered Fish Recovery Program, the Glen Canyon Dam Adaptive Management Program and the Platte River Recovery Implementation Program.

All of these programs rely on Adaptive Management (AM) as a core function of their ESA recovery and related resource management strategies.

From our experience, AM affords flexibility to recovery program management actions that weave improving science into the decision making process. We applaud the U.S. Army Corps of Engineers (Corps) and U.S. Fish and Wildlife Service (USFWS) for incorporating AM into Alternatives #3 (agency preferred alternative), #4, #5 and #6 of the draft EIS. We highly encourage the selection of an alternative that utilizes AM as an implementation component.

2) State/federal consultation under Adaptive Management

Draft Version 6 of the Science and Adaptive Management Plan as part of the draft EIS outlines a governance structure that offers four federal/state consultation opportunities during MRRMP implementation. Starting on page 102, they are: 1) standard review and commentary regarding the Corps' Annual Operating Plan (AOP) public review period, 2) consultation with the USFWS as required under the Fish and Wildlife Coordination Act for site-specific projects, 3) commentary via MRRIC, and 4) formal written commentary to the Corps/USFWS at any point during AM Plan implementation.

Unfortunately, the current AM Plan language fails to outline options for notification to states if or when any of the potential MRRMP implementation actions may occur outside of the Corps' Missouri River Reservoir System Master Water Control Manual (i.e. - the one-time spring pulse test release under the current agency-preferred Alternative #3). Consultation with states at specified trigger points - or at least under high consequence circumstances - that are in addition to the standard legally-required AOP process is a crucial step toward effective federal/state coordination. We request that the Corps add provisions to the AM Plan that address this concern.

Specific language that addresses federal/state consultation outside of the standard AOP process is articulated in the Bureau of Reclamation's "2007 Colorado River Interim Guidelines Record of Decision." The 2007 Interim Guidelines explicitly state that the Secretary of Interior shall consult with Colorado River Basin states in circumstances where any substantive modification to the Guidelines may occur in respect to Reclamation-operated Colorado River basin reservoirs. We highly recommend that the Corps use this framework as a benchmark for federal/state consultation.

We can provide two examples to reference for AM Plan revision language: 1) Redline edits to Draft Version 6 of the AM Plan, as agreed to by the MRRIC state representatives of Wyoming, North Dakota, South Dakota, Nebraska, Missouri, Iowa and Montana. 2) Sample highlighted language from the 2007 Interim Guidelines. Beth Callaway (Wyoming's MRRIC representative) provided input on these federal/state consultation topics at the January 2017 MRRIC plenary session in Omaha and supplied the 2007 Interim Guidelines language to Corps legal staff after that meeting. [Unfortunately, due to the formatting requirements of this comment form, the AM Plan redline edits and 2007 Interim Guidelines cannot be attached. Please get in touch with Beth Callaway (contact info below) and she can provide copies of this language.]

We acknowledge the complexities associated with developing a recovery management program as large and diverse as this on the Missouri River. The Corps and USFWS staff have tackled a monumental effort to generate the draft EIS of this magnitude. We appreciate the opportunity to provide these comments.

If you have any questions or need clarification, please feel free to contact Beth Callaway at (307) 777-7803 or beth.callaway@wyo.gov.

Sincerely,

Patrick T. Tyrrell
Wyoming State Engineer

CC:

Nephi Cole, Policy Advisor, Office of Governor Matthew H. Mead

David Willms, Policy Advisor, Office of Governor Matthew H. Mead

Beth Callaway, Wyoming MRRIC representative, Wyoming State Engineer's Office

Correspondence: 159

Correspondence Information

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Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

ORIGINAL ON AMEREN LETTERHEAD {TO BE SUBMITTED VIA U.S. MAIL}

April 24, 2017

Major General Scott Spellmon
U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Major General Spellmon:

On behalf of Ameren, I thank you for the opportunity to submit comments regarding the Missouri River Recovery Management Plan and Draft Environmental Impact Statement (EIS), developed by the Kansas City and Omaha U.S. Army Corps of Engineers Districts (Corps), in cooperation with the U.S. Fish and Wildlife Service (FWS). We believe the Missouri River Recovery Implementation Committee (MRRIC) has served a critical role in advising the Corps and FWS, and believe the draft has directly benefited from this relationship. Ameren has been represented on MRRIC and continuously served as a Water Quality stakeholder from its inception in 2008. We urge you to continue working with MRRIC to ensure this critical dialog endures, as you revise and finalize plans for management of this important resource.

Ameren Corporation, headquartered in St. Louis, Missouri, through its subsidiaries owns and operates electric generation, transmission, and distribution facilities, and provides gas utility services in Illinois and Missouri. Ameren is the parent company of Union Electric Company ("Ameren Missouri"), Ameren Illinois Company ("Ameren Illinois"), Ameren Services Company ("Services") and Ameren Transmission Company of Illinois ("ATXI"), and jointly with Ameren Missouri, Ameren Illinois, and Services, "Ameren". Together, Ameren and its subsidiaries generate and distribute electricity to approximately 2.4 million customers and distribute natural gas to nearly a million customers. Ameren employs over 8,500 people across its service territories and at its headquarters in St. Louis and its 2016 operating revenue was nearly \$6.1 billion. Amerens mission is to provide safe, reliable and cost effective power and its operations are critical and essential components to expanding the regions manufacturing sector.

Ameren Missouri is a vertically integrated utility operating in a traditionally regulated state and serves 1.2 million electric and 0.1 million gas customers. Ameren Missouri has approximately 10,200 MW of

electrical generating capacity, nearly 52% of which is coal fired, and 12% is nuclear. The company's electric generating capacity includes seventeen coal, oil, natural gas, nuclear, hydroelectric, and renewable energy facilities. The availability of these facilities is essential in order to serve our customers, both to meet power demand and maintain electrical reliability.

Ameren Missouri owns and operates the Callaway and Labadie Energy Centers (located at approximately River Miles 115 and 58 respectively) which utilize the Missouri River as their cooling water supplies and as the receiving stream for cooling water and other effluents in accordance with our National Pollution Discharge Elimination Permits. The availability of water at our intakes is essential to our operations and the reliability of these two facilities with their combined capacity of approximately 3,600 Megawatts. These two Missouri River facilities comprise approximately 35% of our net capacity and produced approximately 62% (over 24.2 million Megawatt hours) of all the energy generated by our facilities in 2016. Our foremost concern with the EIS is with downstream flow support, as it is critical to these vital generating assets.

Support of Downstream Flows

Maintenance of adequate downstream flows are critical to Ameren, to avoid impacts on our Energy Centers. As noted in the EIS, impacts can result from flows that cause river elevations that restrict or prevent intake operations, and can challenge compliance with thermal water quality standards. Releases from Gavins Point Dam essential to Ameren also benefit many other authorized uses in the lower river.

We have concerns regarding the cost to the public of the Preferred Alternatives Mechanical Construction Only approach. While strategic flow releases hold promise for creating critical habitat, the costs in any given year are uncertain and unpredictable. Without extremely cautious planning, once seasonally stored volumes are released, there is no assurance that downstream flows can be maintained to avoid critically low elevations at power generating and public water intakes later in the year.

We oppose actions to create low summer flows such as those proposed in Alternative 2. Such low flow conditions have the greatest potential to impact our ability to generate power and occur during a seasonal period of peak demand. Our experience with historic droughts is directly relevant and reinforces our concerns regarding the challenges we would need to overcome to maintain operations with inadequate low flow conditions, potentially during periods of peak consumer demand for electricity.

Acceptance of the Preferred Alternative, With Reservations

We understand the need for implementation of feasible and effective measures to avoid jeopardy and ensure recovery of the listed species. At the same time, the Corps must do so in a responsible manner without costly and burdensome impacts on the communities and economies throughout the Missouri River corridor. We have been engaged with the Corps and the development of the Missouri River Mainstem Reservoir System Master Water Control Manual for over twenty years, so our perspectives are well documented. Still, we believe several key issues and the implications raised by the current draft EIS deserve emphasis.

Of the six alternatives presented in the EIS, we concur with the Corps assessment for the preferred Alternative 3 - Mechanical Construction Only. We believe it best balances effective measures to address the jeopardy of the three species while collectively minimizing the costs and impacts to human

considerations. As noted below, we remain skeptical of the value of, and concerned with the potential risk posed by, the one-time spawning cue test included in Alternative 3. By contrast, none of the other alternatives are acceptable to Ameren as they threaten to diminish Missouri River flows at vital facilities and at critical times.

Alternative 3 promises both economic and operational benefits compared to other options. Impacts on Thermal Power plants were assessed based on the Corps evaluation of twenty one facilities. Based on the Corps modelling, the National Economic Development impacts for the affected power generating facilities are reduced (annually) under Alternative 3 by an estimated \$1.4 million over the No Action alternative. Others by contrast, such as Alternative 2 are estimated to cost over \$28 million more (annually).

Nonetheless, Ameren reserves the right to provide additional comments on the selected alternative as the EIS is finalized. And if warranted in order to protect our Missouri River energy centers and maintain essential reliability, we may challenge the Corps positions and the resulting management decisions.

Support of a Science-Based Approach

We believe the Adaptive Management process provides a sound and scientifically defensible mechanism to adjust the recovery methods in response to actual data on both the status of the species and the efficacy of the strategies being implemented. The integration of the proposed Adaptive Management Plan (AMP) with MRRIC, as provided in the Governance Structure assures that the Corps decisions will reflect both stakeholder input and independent expertise. While extensive modelling was used to develop management alternatives, predictive estimates must be reconciled with actual conditions and the AMP defines the process to adjust accordingly. We believe this approach is essential in order to best utilize science to both understand the species needs and human consideration implications.

Concern Regarding the Validity of Modelled Elevations due to Dynamic River Conditions

We appreciate the scope and quality of the Corps modelling work to estimate flows and resulting elevations at thermal power and other intakes and believe this methodology has provided a valid predictive tool. However, we fully recognize that the river and its channel is a very dynamic system, constantly changing with the subsurface topography potentially subject to substantial shifts over a period of just a few years. Thus, the possible use of the one-time spawning test under Alternative 3, must be carefully re-evaluated, using updated topography and modelling, as would be expected under the AMP. It would clearly be inappropriate to assume impacts up to nine years from finalization of the EIS, based on the assessment contained in this draft, with its use of 2012 channel geometry. Comprehensive reviews, updates, and re-evaluations conducted on a more frequent periodic basis are essential.

Summary

We are well aware of the magnitude and complexity of the task before the Corps and FWS, as you update the extensive efforts undertaken to protect the Missouri River. We trust that you will continue to manage the river system by balancing all of the Congressionally-authorized uses. While remaining concerned with the potential risk posed by the one time spawning cue test, among the options presented we believe Alternative 3 best meets this mandate. We implore you to achieve a genuine balance, one which fully protects the infrastructure and operation of Amerens Missouri River Energy

Centers and our substantial customer base in the communities we serve along its corridor throughout middle and eastern Missouri.

Sincerely,

ORIGINAL SIGNED BY:

Steve C. Whitworth
Senior Director
Environmental Policy and Analysis
Ameren Services

Correspondence: 160**Correspondence Information**

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/24/2017	Date Received: 04/24/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Thank you for the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and the accompanying Adaptive Management Plan (AM Plan). I also appreciate the U.S. Army Corps of Engineers (the Corps) Northwestern Division Commander, Major General Scott Spellmon, Programs Director, Mr. Dave Ponganis, and other program managers for briefing my representatives on the MRRMP-EIS before the Corps release to the public for comments. As you know, the basin states play a unique, key and important role with the Corps processes for all matters related to the Missouri River system. Nebraska's representatives serving on the Missouri River Recovery Implementation Committee (MRRIC) have participated in and contributed to the Corps' process of developing MRRIMP-EIS using the best science available and a structured decision-making process.

After reviewing the six alternatives evaluated in the draft MRRMP-EIS, Nebraska would provide support to the Corps' preferred alternative - Alternative 3, All Mechanical. This alternative does not require changes to the reservoir operation as described in the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) and has the least impacts on Missouri River water users while meeting the objective of avoiding jeopardy to the listed species: interior least tern, piping plover, and pallid sturgeon. Other flow related management actions evaluated in other alternatives could cause the river stage in the Omaha area to increase more than seven feet, which may increase flood risks there and elsewhere along the river in Nebraska. After experiencing the 2011 flooding, the seven basin states' consensus was that flood control must be the highest priority in operation of the Missouri River Mainstem system.

If at any time during AM Plan implementation, the Basin States or the Corps determine the actions proposed to occur are outside of the conditions of the Master Manual, I strongly urge the Corps to first consult with Nebraska and other basin States, through their designated representatives before making any substantive modifications. Additionally, we retain the right to comment or request consultation on any issue related to the Management Plan or ongoing AM process via official letter at any time. I look forward to continuing to work with you and all the stakeholders towards a successful Missouri River recovery program.

Sincerely,
Gordon W. "Jeff" Fassett
Director
Nebraska Department of Natural Resources

Correspondence: 161

Correspondence Information

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Date Sent: 04/24/2017	Date Received: 04/24/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
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Correspondence Text

The Iowa Farm Bureau Federation, the state's largest general farm organization with more than 159,000 members, appreciates the opportunity to share with the U.S. Corps of Engineers and the U.S. Fish & Wildlife Service these comments regarding its recent Missouri River Recovery Management Plan & Environmental Impact Statement.

Farm Bureau policy opposes any plans by the U.S. Army Corps of Engineers or any federal or state agencies that would alter the flow levels of the Missouri or any river and would adversely affect domestic water supplies, drainage, irrigation and transportation, that would cause traffic bottlenecks on the Missouri or any navigable river and take private property without compensation. In addition, any alternative must also be consistent with the eight authorized purposes of the 1944 Flood Control Act.

We also oppose the dumping or designed erosion of soil into waterways. Iowa farmers are working hard to reduce off-farm movement of phosphorus and nitrogen through the Iowa Nutrient Reduction Strategy. Alternatives that utilize Shallow Water Habitat practices need to reduce their sediment impacts downstream. The use of Shallow Water Habitat practices is contrary to the goals of the strategy.

With our policy and concerns in mind, and because the Corps' hydrologic and economic modeling is incomplete, Farm Bureau does not support any of the six alternatives proposed by the Corps, except Alternative 1 - No Action (Current System Operation and Current MRRP Implementation).

While Alternative 3 seems to suggest an opportunity for a balance between agricultural, navigation, economic and power generation needs, and those of species recovery, the Corps' hydrologic and economic modeling must first be completed to make a final determination. This alternative deserves more study.

There is great concern among our members impacted by these alternatives that any of them could lead to an imbalance in current river uses and navigation, and result in spring rises that are disruptive to agriculture drainage, crop production and Mississippi River barge traffic. The other alternatives are unacceptable to their possible flooding impacts, altered flows that may impact navigation and agricultural trade, negative impacts on corridor economic development, and western Iowa power generation, are unacceptable.

Thank you for the opportunity to comment on the draft EIS. We look forward to a more complete, robust analysis very soon.

Correspondence: 162

Correspondence Information

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Correspondence Text

Regarding the Missouri River Reservoir System draft plan and eis, I favor

- 1) Strengthening the second alternative, which is far the best - as explained in this Billings Gazette piece that the Associated Press picked up and distributed, http://billingsgazette.com/news/opinion/guest/guest-opinion-managing-the-missouri/article_102d3b0e-cb78-5113-89a5-5e0000e53f73.html/
- 2) Designating critical habitat for the pallid sturgeon. Hoping for the best is not adequate. The legal mechanism of designated critical habitat has proven its effectiveness with other species, and given the numerous threats to the sturgeon population in the Missouri River Basin, critical habitat designation is necessary for the sturgeon.
- 3) Managing the releases to encourage more natural gravel bars, both more natural and more bars that are natural. Studies have shown that the natural habitats help bird populations thrive more than mechanical habitats; for one example, "Management and Mother Nature: Piping Plover Demography and Condition in Response to Flooding on the Missouri River," thesis by Kelsi Layne Hunt, VPI, 2016, https://vtechworks.lib.vt.edu/bitstream/handle/10919/73480/Hunt_KL_T_2016.pdf?sequence=1&isAllo wed=y/
- 4) Using the best science, the current science. The 2003 Fish and Wildlife text is great, but a lot of good science has been done since then, and continues to be done. Incorporating the ongoing nature of scientific research and results would enhance the management and credibility of any plan.
- 5) Considering in full the sage advice in the below comments of Michael Melius of Hermosa, SD

In many respects this plan doesn't change much from the way the Missouri River (MR) is managed currently. The acreage of mechanical sandbar construction does vary considerably, though, and among the alternatives I favor Alt. 2, which has the highest targets for that acreage. My reasoning is that any number set in a plan is a target which may or may not be attained in any year, with unpredictable factors like weather and funding in play. So the target may as well be set fairly high, which is what Alt. 2 does.

The inevitable and ongoing channel degradation below dams means there will be ever-less production of natural sandbars into the near future. That is, unless the navigation channel below Sioux City is modified to have a more natural cross-section. This should also have significant benefit for pallid sturgeon. If that is a solution for a separate EIS, I urge you to get on it. As everyone should know by now, the System isn't designed, nor does it function, to provide absolute flood control, esp. farther down the river. Between System high-year flows and tributary inflows, the lower river will always be subject to flooding that devastates human lives and infrastructure in the river valley. The channel and

flow modifications that are good for native wildlife along the river and good for reduction of flood damage, as well.

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Lowering pools, on average- -the March 1 target- -is practically a taboo idea in the MR basin, even in the wake of the truly frightening flood of 2011. I believe that lower pools will give you more flexibility in storage and releases that will permit real rsvr unbalancing in more years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that have too often flooded tern and plover nests on sandbars below the dams.

Lower pools also produce lower river flood damage reductions, and I hope you will consider an alternative that incorporates a lower storage target and navigation service levels, better unbalancing, and overall better management of pools for terns and plovers and other wildlife benefits. The Corps manages hundreds of miles of reservoir shoreline via water levels, and it's a shame to be overlooking opportunities for creative habitat enhancements over that long shoreline. [end of Michael Melius's comments]

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Correspondence Text

Audubon Missouri would like to thank the U.S. Army Corps of Engineers for holding six informative public meetings in conjunction with the release of the draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and providing an extension of the public comment period to April 24, 2017. As a partner with the Corps at the Audubon Center at Riverlands, on the Mississippi River near its confluence with the Missouri River, we in Audubon Missouri appreciate the opportunity to offer the following comments and support for science-based ecosystem management on the Missouri River.

Audubon Missouri is a division of the National Audubon Society (NAS), which places significant conservation emphasis on large river ecosystems in Missouri and other states. We congratulate the Corps for its wetland habitat management successes at the Riverlands Migratory Bird Sanctuary and encourage the Corps to continue with a similar approach to restoration of hydrologic function of the Missouri River ecosystem. Incorporation of the best scientific research and monitoring driven by adaptive management methodologies will help ensure that the piping plover, least tern, pallid sturgeon and other species will benefit from ecosystem recovery activities.

We prefer Alternative Number Two as the most holistic, ecologically driven alternative with the greatest potential for habitat restoration. We encourage the continuation of mitigation for habitat losses caused by prior bank stabilization and navigation activities, including lands purchased and restored for the Big Muddy National Fish and Wildlife Refuge with its 186,000-acre acquisition target, a target that must be met. Alternative Number Two provides for more extensive construction of emergent sandbar habitat to benefit the meta-populations of the piping plover and least tern, rather than focusing on just a small area of the Missouri River. On an annual basis some areas will fail and others will be successful in production of young, so actions need to be taken in multiple regions to support the meta-populations.

As Missouri citizens, we know that our state has far more people and infrastructure at risk from flooding and also more risks to drinking water supplies and to navigation on the Mississippi River below the confluence from low flows than any other state in the basin. We acknowledge the constraints under which the Corps must operate to reduce these risks. We would point out, however, that these risks have been heightened by the Corps' construction and maintenance of the Bank Stabilization and Navigation Project and failure to enforce the 3,000 to 5,000-foot-wide floodway mandated in the 1944 Flood Control Act. Hence we believe the Corps must pursue every opportunity to acquire available lands in the floodway and to remove or set back the levees in order to reduce flood risks.

The Corps has ample sources of authority to increase significantly its habitat restoration projects and to provide efficacy and effectiveness to the restoration process for ecological and hydrological function activities that will also provide more room for the river and thereby reduce flood risk. These include the Fish and Wildlife Coordination Act of 1958 and the Water Resources Development Acts of 1986, 1999,

and 2007. And of course the Corps must also comply with the Endangered Species Act of 1973 and the 2000 Biological Opinion as amended in 2003.

Audubon Missouri thanks the Corps for its commitment in all of the plan's alternatives to scientific research, monitoring, and iterative management actions through the adaptive management process, which we believe is the only viable approach. Clearly, the budget needs to be adequate to support the required research and monitoring as well as the land acquisition, construction, and management required for hydrologic and ecosystem restoration and endangered species recovery. We would be pleased to support you in these efforts.

Thank you for your consideration.

Correspondence: 164

Correspondence Information

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Number of Signatures: 1	Form Letter: No
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Correspondence Text

April 24, 2017 Submitted electronically to <http://parkplanning.nps.gov/MRRMP>

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, NE 68102

Re: Comments of MidAmerican Energy Company on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS)

To Whom It May Concern:

MidAmerican Energy Company (MidAmerican), is an Iowa-based utility providing service to 752,000 electric customers and 733,000 natural gas customers in a 10,600-square mile area in Iowa, Illinois, South Dakota and Nebraska. MidAmericans steam electric generating units subject to U.S. Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Service (USFWS) regulations on the lower Missouri River reach include Neal North Energy Center and Neal South Energy Center, both located near Sioux City, Iowa; and Walter Scott Jr. Energy Center, located in Council Bluffs, Iowa.

MidAmerican appreciates the opportunity to provide comments to the USACE on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS). MidAmerican requests that USACE not perceive the absence of comments by MidAmerican on any specific issue or other matter as a conclusive indication of MidAmericans implied consent or indifference with respect thereto.

MidAmerican facilities have been managing and continue to manage Missouri River water use in a safe and environmentally sound manner, and in accordance with the policies and procedures prescribed in the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) and current national pollutant discharge elimination system (NPDES) permits. Additionally, MidAmerican has worked with the USFWS in protecting interior least tern and piping plover breeding habitat at the Walter Scott Jr. Energy Center in Council, Bluffs, Iowa. MidAmerican provides the following comments on USACEs Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

I. Alternative 3 and Adaptive Management

MidAmerican supports the implementation of Alternative 3 because it reduces the impacts to thermal power generation and increases efforts to meet species objectives. Under Alternative 3, the cost of power generation is expected to be reduced by 3.3%, while also continuing actions that have benefitted the piping plover and least tern and proposing actions that continue to fill the data gaps necessary for the recovery for the pallid sturgeon. As the owner and operator of three thermal power generating plants that depend on the current flow patterns of the Missouri River prescribed in the Master Manual to provide safe, reliable power, MidAmerican supports the USACE's preferred Alternative 3. Implementation of Alternative 3 within ISAP's recommended Adaptive Management Plan (AM Plan) will allow the USACE to meet the Endangered Species Act (ESA) requirements while limiting the impacts to thermal power stakeholders and other human considerations. Alternative 3 proposes an initial suite of actions that avoid a finding of jeopardy and advance the knowledge base that is necessary to understand the limiting factors associated with recovery of the pallid sturgeon. Specifically, the Level 1 studies proposed are conducted under laboratory or ambient river conditions to control for uncertainty created by unpredictable hydrologic conditions. The knowledge gained from Level 1 studies allows Level 2 studies to measure the direct effectiveness of artificial hydrologic actions, such as spawning cues, on the natural reproduction success of the pallid sturgeon.

MidAmerican does not support separate implementation of Alternatives 4, 5 or 6, each of which proposes a variety of initial management actions in combination with Alternative 3 in an effort to fill data gaps concerning the pallid sturgeon life cycle, spawning, and early life stage habitat needs identified in the Effects Analysis. As discussed in the Effects Analysis, the management actions in each of these alternatives can be implemented through a robust adaptive management plan. MidAmerican supports the recommendation of the Independent Science Advisory Panel (ISAP) and the Missouri River Recovery Implementation Committee (MRRIC) to develop an AM Plan that is based on best available scientific information and that provides the foundation for addressing lingering uncertainties. Adaptive management is a systematic approach to natural resource management that accounts for uncertainty and incorporates information learned over time into the decision-making processes. A scientifically robust adaptive management plan, such as the one recommended by ISAP, would allow USACE to tailor river management decisions for protected species while also minimizing impacts to river intake operators. By following the AM Plan, no alternative will become stagnate in its implementation. Any initial actions proposed will be continually evaluated and adjusted as new information is acquired. Selecting the preferred alternative does not prevent the implementation of any actions specified in other alternatives as long as they are scientifically justified through the adaptive management process.

II. Alternative 2 - USFWS 2003 Biological Opinion Projected Actions

MidAmerican does not support adoption of Alternative 2 due to higher electricity costs related to lower river flows and incalculable additional costs from restricted intake maintenance, which have a disproportionate impact on MidAmerican customers. Alternative 2 represents the USFWS interpretation of the management actions that would be implemented as part of the 2003 Amended Biological Opinion (BiOp) Reasonable and Prudent Alternative (USFWS, 2003). Alternative 2 includes additional iterative actions and expected actions that the USFWS anticipates would ultimately be implemented through adaptive management. Alternative 2, however, does not incorporate the substantial amount of new knowledge about the pallid sturgeon that has been acquired between the 2000 BiOp, the 2003 Amended BiOp and the report issued by the ISAP in 2011.

The ISAP, established by the Missouri River Recovery Implementation Committee (MRRIC) to develop scientifically sound adaptive management actions, issued a report in 2011 that recommended development of an overarching adaptive management plan that would implement a combination of flow management actions and mechanical habitat construction, which are the primary proposed

actions in all alternatives. ISAPs recommended AM Plan recognizes the urgency of action for the pallid sturgeon, as the number of natural born mating specimens is dwindling, and allows for anticipated implementation actions, but these actions are based on the effects analysis, which incorporates new knowledge learned about the species since the BiOp was last amended in 2003. For example, as highlighted in ISAPs 2011 report, the spring pulse spawning cue management action as implemented in Alternative 1 by the 2000 BiOp was not effective in achieving pallid sturgeon objectives. The proposed AM Plan would take this result into account and tailor adaptive management responses for the pallid sturgeon.

Based on the ISAP 2011 report, MRRIC recommend seven actions to the USACE and USFWS in August 2012. One of the recommended actions called for the development of conceptual ecological models (CEMs) for each of the three listed species that articulate the effects of stressors and mitigation actions. Mitigation actions included flow management, habitat restoration actions, and artificial propagation. Many of the flow management actions related to the pallid sturgeon are intended to cue spawning; however, to date, a spring pulse spawning cue has not been effective. The continued practice of artificial propagation (included in all Alternatives) is adequate in providing a continuous population set to study the effectiveness of habitat restoration and pallid sturgeon recruitment. The USFWS provided two sub-objectives to meet the fundamental objective of not jeopardizing the continued existence of the pallid sturgeon from USACE actions that stress the recruitment of young sturgeons.

" Pallid Sub-Objective 1: Increase pallid sturgeon recruitment to age 1.

" Pallid Sub-Objective 2: Maintain or increase numbers of pallid sturgeon recruitment to age 2 and older until sufficient and sustained natural recruitment occurs.

Both of these objectives are dependent on habitat construction, but a river flow management plan to fulfill the objective of natural recruitment has not been proven effective for implementation in Alternative 2. Instead, Alternative 2 proposes the continuation of a spring spawning cue pulse and low summer flows. The spawning cue has proven to be ineffective and the low summer flows are speculative actions that will have a negative impact on thermal power plants in the lower reach of the river.

In the USACEs Thermal Power Environmental Consequences Analysis Technical Report, the average annual costs for thermal power plants under Alternative 2 would be \$22 million due to river temperature increases from proposed low summer flows. Approximately 81% of these costs would occur at power plants in the lower river where MidAmerican has 2,659 megawatts of nameplate capacity. In addition to the costs of decreased generation capacity due to low summer flows, the report also assumed there would be a small increase in maintenance costs for cleaning debris and sediment from Missouri River intakes due to increased aggradation from proposed seasonal flow pulses in Alternatives 1, 2, 4, 5, and 6. This assumption does not recognize the limitations of maintenance activities set forth in the Special Conditions of the Department of the Army Nationwide Permit No. 3b found in the February 21, 2012 Federal Register (77 FR 10184). These Special Conditions for MidAmerican facilities include the restriction that no work shall occur below the ordinary high watermark from March 1 to June 30 to avoid impacts to Pallid Sturgeon (USACE Permit No: 2013-00165-WEH). MidAmerican schedules intake structure maintenance outside this protective period to ensure that sediment aggradation during the protective period does not require a derate or complete shutdown of the intake structure and operating unit. The assumptions concerning increased aggradation from proposed seasonal flow pulses should be revised to account for potential derate or shutdown impacts should significant aggradation occur during the pallid sturgeon protective period identified in the special conditions to nationwide permit 3.

MidAmerican appreciates your consideration of these comments on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement. If you have any questions or require additional information, please contact me at 712-352-5434 or jmcivor@midamerican.com.

Sincerely,

Jenny McIvor
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Correspondence Information

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Correspondence Text

24 April, 2017

To: US Army Corps of Engineers Omaha District ATTN: CENWO-PM-AC - Management Plan
Comments 1616 Capitol Avenue Omaha, NE 68102
From: Thomas A. Ball, on behalf of Sierra Club Missouri River Grassroots Network
Subject: Missouri River Recovery Program Draft Environmental Impact Statement

More than thirty years ago, the conservation chair of the Dakotah Chapter of the Sierra Club petitioned the Fish and Wildlife Service for an endangered species listing of the Pallid Sturgeon. At that point, natural reproduction of pallid sturgeon in the Missouri River was not occurring and had not been documented to have occurred in many years. That lack of naturally occurring reproduction and recruitment has not changed. We are still here.

The petition called for a pallid sturgeon propagation program, to capture and recover, at least, a portion of the genetic stock of this ancient species before it disappeared. The Pallid Sturgeon Conservation Augmentation Program (PSCAP) appears to be successful in maintaining the species presence within the Missouri River basin. However, if supplementation efforts were to cease, the species would once again face local extirpation within several reaches.

PSCAP has provided a source of hope that these fish may, some day, recover by increasing the number of pallids- - low n is a dominant, self-evident and circular hypothesis- -; but it has also revealed its own profound risks and vulnerabilities. This captive, experimental population is completely dependent on continued federal and state appropriations in a partnership. Manually spawned fish from hatcheries, sometimes exhibit fin curl, ick (Ichthyophthirius multifiliis), various iridoviruses, a metazoan parasite Polypodium hydriforme and a newly discovered ranavirus that originated in the leopard frog but now, also, can infect pallid sturgeon. While some of these disease risks are found in nature, others have an anthropogenic component. In some early cases, prior to a consistent genetic analysis program, it appears the hatcheries may have mistakenly bred some hybrid species. Hybridization is, itself, a jeopardizing risk. Natural reproduction and recruitment capacities must be restored and demonstrated as sustainable outcomes as quickly as possible.

The current DEIS falls short of the expected mark in troublesome ways.

First,
the scope is- - as we maintained during the scoping phase- - too small. The scope of the document is limited to small portions of the complete project and does not identify the related effects from the entire project segment. The geographic scope should include the full range of the endemic species, not just that part of the range over which the Corps, asserts for itself, capacity for operational management actions.

"The geographic scope of the federal action includes the Missouri River within its meander belt

from Fort Peck Dam in Montana to its confluence with the Mississippi River near St. Louis, Missouri, and the Yellowstone River from Intake Dam at Intake, Montana to the confluence with the Missouri River." (Exec Summary, top pg vii).

Recent science papers (Guy CS, Treanor HB, Kappenman KM, Scholl EA, Ilgen JE, Webb MA. 2015. Broadening the regulated-river management paradigm: a case study of the forgotten dead zone hindering Pallid Sturgeon recovery. *Fisheries* 40(1): 6-14. DOI:10.1080/03632415.2014.987236) have identified anoxic, lethal conditions in the reservoirs below, and above, Fort Peck dam. The full geographic range of jeopardizing conditions for all three species should be included and studied as part of a comprehensive, scientific evaluation; not just the downstream effects. Operations and management at Fort Peck could increase larval drift distances and may even improve, or at least move, the anoxic zones in that reservoir. The Corps should not ignore this proximate cause of jeopardy to pallid sturgeons identified.

Likewise, the full and extended range of new spawning habitat afforded by fish passage at the Yellowstone Intake Project should be included as part of the current DEIS.

It is ironic that the Corps' solution to partial fish impassability at Intake, MT is to build a taller dam. The Corps and Bureau of Reclamation should share full responsibility for the success, or failure, of this project in its final form. That shared responsibility should have been considered within the geographic footprint of this DEIS, as it is not. The purpose and need statements do not reflect the full geographic range where the Corps has both authority and current management actions.

Toward this end, the Sierra Club Missouri River Grassroots Network calls upon the Fish & Wildlife Service, the Corps and the scientific community actively working these endangered species problems to consider - within this DEIS, and within an Adaptive Management context - that the pallid sturgeon's full extant range is critical habitat for its continued survival and persistence. Such a designation would give pallid sturgeon additional protections prohibiting the destruction of its habitat, without consultation and permitting.

This call is for renewed attention and resources in response to a petition submitted to the US Fish & Wildlife Service by the Missouri Coalition for the Environment, the Sierra Club National Water Sentinels Clean Water Campaign, and Great Rivers Environmental Law Center in 2010.

In 2010, the Sierra Club (National Water Sentinels), the Missouri Coalition for the Environment and Great Rivers Environmental Law petitioned FWS for Pallid Sturgeon Critical Habitat designation on the Missouri River. The request was deferred by FWS based on a lack of resources and insufficient conservation priority. It is time for the Fish & Wildlife Service to reconsider and to designate Critical Habitat and the Corps should incorporate critical habitat into the Adaptive Management Plan. At present, critical habitat is described and considered only for the Terns and Plovers in Appendix section G.3

Readers may find a .pdf text of the petition for pallid sturgeon critical habitat via a link at: <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E06X#petitions>

By promoting Alternative 3 as "preferred", the DEIS appears to abandon pallid sturgeon, least tern and piping plover populations above Fort Peck and on the Yellowstone River, above Intake MT. This abandonment occurs despite previous Corps environmental analysis and draft review documents that justified their work under the MRRP and spent monies appropriated for BSNP Mitigation*. If Alt 3a_mech (6.1.3) is retained as the selected alternative in the FoNSI & RoD, then most of the Big Questions for the Upper Missouri River (Table 4, SAMP draft 6 pg 35) become operationally untestable, and even if retaining scientific validity at levels 1 & 2, are bereft of operational

management actions at levels 3 & 4.

(*see "REVIEW PLAN Missouri River Recovery Program Study to Identify Missouri River ReservoirHabitat Opportunities for the Interior Population of Least Terns and the NorthernPopulation of Great Plains Piping Plover", Omaha District MSC Approval Date: 18 July 2013 Last Revision Date: 18 July 2013

and

"Fort Peck Dam/Fort Peck Lake Master Plan with Integrated Programmatic Environmental Assessment Missouri River, Montana Update of Design Memorandum" MFP-105D August 2008)

The scope received another major curtailment or contraction in the Corps decision to tailor this DEIS, and restrict it to the sole aim of "avoiding jeopardy". The effect has been to move from a "greatest benefits" utilitarian model for the 8 authorized purposes, to a "least cost" model. When combined with the metaphysical regulatory language found in the 1983 Planning & Guidance documents, the net effect is to move from maximizing utilitarian benefits to minimizing or avoiding costs.

" The intent of the Pick-Sloan Plan was to secure the maximum benefits for flood control, irrigation, navigation, power, domestic, industrial and sanitary water supply, wildlife, and recreation (Senate Document 247, quoted in Weeks et al. 2005). The results of the Pick-Sloan Plan represent the most important and lasting alteration of the Missouri River ecosystem (Weeks et al. 2005)."
(Stark, et al. - - Stark, K.J., L.J. Danzinger, M.R. Komp, A.J. Nadeau, S. Amberg, E. Iverson, D. Kadlec, and B. Draskowski. 2011. Missouri National Recreational River: Natural Resource Condition Assessment. Natural Resource Report NPS/MNRR/NRR-2011/476. National Park Service, Fort Collins, Colorado.)

A major deficiency created by this policy decision to restrict considerations to "avoiding jeopardy" is to move from multivariate science questions (the Big questions) to causative assign-ability or liability questions while deferring some testable hypotheses (aka the "Reserve Hypotheses") based on jurisdictional or appropriational authorities. Whether any, or which, of these hypotheses might have survived a structured decision making process to enter the pool of "dominant hypotheses" is a topic of irrelevant speculation in hypothetical counterfactuals. The Reserve Hypotheses are off the table for consideration until such time as all policy-accepted hypotheses have been exhausted. Thinking within this smaller scope creates new and different kinds of "jeopardy" for the three species, if it should emerge that some reserve hypothesis turns out to be the critical, scientific issue that might have been considered during a time-critical window. These endangered species deserve our collective best and effective effort. They may not survive the 15 year calendar timelines, or 50 year period of analysis, contained in the DEIS.

It is extremely unlikely that Big Questions 1 through 4 (SAMP-draft 6- Sect 4.2.4, table 43; and elsewhere) which refer to, and study, "naturalized flows" can be efficiently or definitively answered by passively monitoring existing, or historical record, Corps operated flows. Of the five hypotheses deemed, by the Corps, to meet or exceed criteria stipulated by the Effects Analysis documents for "avoiding jeopardy", only Alternative 2 aims at approximating "naturalized flows". Alternatives 4 through 6 aim at remediating interventions for the attenuation of naturally occurring flow regimes; but these interventions for attenuations caused by the dams, reservoirs and BSNP channelization are not, in and of themselves, natural.

Moreover, even as some of the corollary hypotheses already benefit from Level 1 reflection on past operations data, these hypotheses become bootless and cannot be tested by falsification if they cannot ascend the stepwise decision process through levels 2, 3 and 4- - which is the implicit effect, if

Alternative 3 is retained as preferred to become the selected alternative. Level 2 lab studies would have no effect on pallid sturgeons living in the river and insufficient statistical power to overcome what is, essentially, a policy decision preference for an intervention (Alt 3) that may not work.

The selected alternative management actions described in sect 5.3 are entirely insufficient to avoiding jeopardy for the pallid sturgeon, and mostly insufficient for the terns and plovers. It is difficult to conceive how a reasonable mind could read the details found in the effects analysis and integrated report for the pallid sturgeon, conduct the analysis described in this DEIS, and yet,,, and yet, STILL, arrive at Alternative 3 as suggested preferred, much less, the selected alternative. If the Corps is to construct an entire programmatic EIS for the purpose of 'avoiding jeopardy' then the end product MUST avoid jeopardy, and- - by preferring Alt 3, and for other reasons- - this DEIS does NOT avoid jeopardy. It creates jeopardy, even after considering and describing many- - though, not all- - of the things it should do to avoid jeopardy.

First, the restrictions in scoping are the subsequent product, as interpreted through Regulation by the Agencies, of the Congressional decision not to appropriate resources for the study authorized in WRDA 1986, . 1850 ss. A. This DEIS does not contain any semblance of an "ecosystem restoration" study (MRERP), neither does it valuate or reconsider any of the 8 Authorized Purposes (MoRAP)- - those studies might have led to different results in avoiding jeopardy for the three species. As importantly, the Human Considerations elements would likely have had different outcomes if either, or both, of those studies were before us now for comment. They are not. As such, it remains for future reconsideration whether an ecosystem restoration or landscape conservation approach will be required to recover the species, rather than just avoiding jeopardy, as the Agencies have asserted in past documents.

A second force at work in developing this DEIS would seem to have been the, somewhat noisy (in the sense of Signal to Noise) litigation involving assertions that the Corps had already engaged in "intentional flooding" of private properties- - specifically, on behalf of its fish and wildlife authorized purpose- - without NEPA covered documentation or authorization. At this writing, the Idecker lawsuit has been heard by a court, but a decision has not yet been released. The Sierra Club has expressed the belief that the lawsuit is without merit, and that we see no evidence that the Corps has ever, intentionally, flooded anyone in the Missouri River basin for any reason; though, we find it extremely probable that the existence of this kind of litigious assertion influenced the formation of certain passages within this DEIS.

A third force that has influenced the creation of this DEIS is, also, not part of the stated purpose and intent. The Missouri River Recovery Implementation Committee (MRRIC) is, now, the most competent institutional forum for discussing Missouri River issues within the basin- - whether, or not, those issues are part of its authorization charge and charter. The ongoing discussion of "surplus water"- - who owns it, who has the right to sell it, etc- - have permeated discussions between states, municipalities, the tribes (in government to government consultation, and in plenary) and the Corps and remain, again, a noisy background influencing some of the writing in this DEIS. The states (ND & MO , in particular), maintain the Corps does not possess jurisdictional authority to regulate flows for all authorized purposes equally. We can see no declarative evidence, either way, and are agnostic in this issue. However, it seems fair that if the Corps has authority to provide, or withhold, water for any of the 8 authorized purposes, then it has authority to provide, or withhold, waters in proportion for each purpose.

The fourth and fifth forces that influence the creation of this DEIS have to do with assessments of the Corps' skills in being able to competently predict and manage operations and risks for extreme weather events. Both, the 2011 flood and the 2012 Great Plains drought were "extreme events" with

relatively little warning.

The 2011 flood has been described as a "500 year" flood event where large Snow Water Equivalent snow packs in the Rocky Mountains and in the Great Plains were compounded by heavy precipitation spring rains. Coupled with extreme precipitation in the Ohio Valley, and flooding on the lower Mississippi, these meteorological conditions were, and remain, a huge challenge.

The 2012 Summer Great Plains drought was also an extreme event, described by NOAA and NASA analysts as the worst since record keeping began in 1879. It began in May, with no previous drought prediction published. By July, crop losses in 6 states were estimated at \$12 billion. " The 1895-2012 time series of May-August rainfall departures averaged over the multi-state region (WY, CO, NE, KS, MO, IA) that experienced the most severe drought conditions in 2012. The deficit in rainfall in 2012 was -34.2 mm, which was about 53% of the regions long-term mean rainfall (73.5 mm). This deficit broke the record of -28.4 mm observed in 1934, and corresponds to a departure of 2.7 standard deviations."

Hoerling, M., Eischeid, J., Kumar, A., Leung, R., Mariotti, A., Mo, K., Schubert, S., Seager, R., 2014. Causes and predictability of the 2012 Great Plains drought. *Bull. Am. Meteorol. Soc.* 95, 269-282.

In general, examination of extreme drought management (over a period of multiple drought years) is not well discussed in the DEIS; neither are the implications of upstream diversions as an interagency result, upon the existing POR hydrograph or operations and management. If multiple, foreseeable and planned diversions (Garrison Diversion, and/or two of the eight BoR "Secure Water" plans for diverting Mo River water to the Colorado River, and/or some other diversion), were to eventuate in 10-30% reductions in Run of River flows, that eventuality is unstudied in this DEIS. The plans are there, why not study them?

Only Alternative 2 retains any element of "low summer flows" analysis, with other alternatives having been discussed and dismissed during Phase 1 & 2 bird trial & human considerations risk discussions. Low summer flows condition is responsible for the majority of the red (negative) indicators found in the table of the Executive Summary on page xxvii. Nevertheless, low summer flows are held to be within the Corps' authority under the Master Manual.

Low summer flows are, periodically, a reality of "run of river" physical conditions and describe a "naturalized stream flow". The human costs to hydroelectric generation, thermal power, water supply and recreation, it seems, outweigh whatever species benefits might- - more vaguely, as written- - be attained. Providing full navigation service during a drought sequence of years becomes problematic, on its own and as a natural condition, with reference to the other authorized purposes- - not just fish and wildlife. In some years, it is prudent for the Corps to provide water for only a "split navigation season". The human costs to navigation, thermal power, municipal and industrial water supply are, now, well and extensively documented to the point of bias. Plover habitat on southern reaches obtained some benefit, at the expense of plover habitat in the reservoirs. Pallid sturgeon SWH showed some improvement for foraging and slower velocities for larval drift, but at the expense of floodplain connectivity to backwater channels. Other potential species effects were referenced but not elaborated, that we could find.

We were surprised not to find "Dam Safety" discussed as one of the primary risk categories. During the summer of 2012, the Corps completely shut off Missouri River flows at Gavins Point dam in order to study possible damages done to the dam by the 2011 flood flow rates. There was little notice, and no public comment. Risks became observed realities for cultural resources. Mussel populations downstream were left stranded out of water for a couple of days. It would have been a good time to look for these mussel populations, and study the effects; but no study was done that we can see reported in peer reviewed journals. More importantly, dam safety at Fort Peck and each of the downstream dams is seen as a Corps' primary critical mission. Yet, budget and time constraints did not allow sufficient resources to do the Monte Carlo simulations necessary for this critical mission in this

DEIS.

"The Missouri River System as currently operated provides substantial flood damage reduction and benefits to the entire basin. The current ResSim and RAS analysis, which employs an 82 year period of record simulation, shows the potential for negative impacts to flood damage reduction and dam safety for alternatives that include changes in reservoir flow releases. However, the current study methodology does not simulate a sufficient number of events and possible runoff combinations within the large Missouri River basin to allow quantification of flood risk change. Risk analysis would evaluate changes in reservoir pool levels, downstream flood risk, impacts to flood risk management projects (e.g. levees and floodwalls), and possible implications for dam safety."

and,

"Scoping efforts were conducted to determine a Monte Carlo risk analysis methodology capable of assessing impacts to dam safety and flood risk as a result of flow release changes. The risk analysis primary components include further development of the period of record flow data set, ResSim and RAS model modifications, development of levee fragility curves, assignment of uncertainty, assembly and debugging of models, Monte Carlo simulation, analysis of results, and reporting. The Monte Carlo methodology better assesses the effects of the alternative operation changes because it increases the sample size of flow data and number of combinations of flow periods that may occur in the future so that impacts can be characterized with greater confidence. Without such analysis, the impacts of operational changes will only be known for events and combinations of events that have already occurred.

The Monte Carlo risk analysis procedures are in accordance with risk based plan formulation and evaluation regulations described in USACE guidance materials, in particular ER 1105-2-101 (Risk Analysis for Flood Damage Reduction Studies, USACE, 2006) and ER 1105-2-100 (Planning Guidance Notebook, USACE, 2000). Risk evaluation principles employed in scope development follow procedures further explained within EM 1110-2-1619 (Risk Analysis for Flood Risk Management Studies, USACE, 2012).

" The conducted hydrologic and HC evaluation is suitable for alternative comparison but does not allow quantification of change in flood risk

" Potential impacts to flood risk management were identified by evaluation of the outputs from the ResSim and RAS analysis

" A Monte Carlo based risk analysis, that could estimate the magnitude of potential changes to flood risk management and associated uncertainties, was deferred and not included within hydrologic modeling conducted for the Draft EIS ".

(USACE 2016f. Missouri River Recovery Program Management Plan Environmental Impact Statement, Summary of Hydrologic Engineering Analysis. U.S. Army Corps of Engineers, Northwestern Division, Omaha and Kansas City Districts.

" "Assume future habitat construction of each alternative can be represented by adding it instantaneously to the RAS model geometry without correction for future aggradation or degradation.

" Assume flood risks can be adequately described between alternatives using the developed, stationary, 82 year period of record. A Monte Carlo based risk analysis to quantify uncertainty with future flows downstream of the reservoir system was scoped, but deferred at this time. Additional uncertainty analysis may be required if alternatives with flood pulses are considered for implementation. "

(MRRMPEIS Summary of Hydrologic Engineering Analysis DRAFT, pg 9)

We learned, during Phase 1 risk explorations that future aggradation / degradation realities were

responsible for the majority of negative effects to the thermal power water cooling inlets in the Labadie power station example. Those impacts were considered for a fifty year duration, and essentially showed that- - if nothing is done to slow the river down, or to correct the degradation that is occurring due to the self-scouring channel, then incising will continue and many water intake ports would need to be redesigned and/or relocated. These effects were not significantly contributed to by Alternatives 2 through 6, but must be considered as a central feature of the comparison Alternative 1.

It is, indeed, our expectation that future habitat construction projects will, or may, require large changes to river geometry, to both avoid jeopardies created by the existing geometry and to reduce the negative human considerations outcomes for future operation and management of the river. Further, to have assumed at this stage in the NEPA process that flood pulse alternatives would not be selected is an error that preordains the outcome and shorts the NEPA process.

The Climate Change assessment contains within it the following passage:

"Many of the sites within the study area are impacted by upstream regulation. The impacts of regulation can cause nonstationarities in an annual peak streamflow record. For this reason, it is preferable to use a naturalized flow record to assess nonstationarities caused by other drivers like distributed land use changes or anthropogenic climate change. At this time, the Nonstationarity Detection tool is only setup to analyze gaged streamflow records and is unable to evaluate time series input by the user. Experts within the USACE Climate Change Community of Practice have the ability to apply the statistical tests applied by the Nonstationarity Detection tool using the R statistical software package. Unfortunately, the time and funding provided for this climate change assessment did not allow for sending datasets out to be analyzed in the tools externally by another party. The tools were used with the available datasets provided within them. Various locations covering mainstem and tributary gages throughout the Missouri River basin were selected to provide a broad-scale summary of the entire basin. Locations were selected from the upper, middle, and lower portions of the Missouri River basin. Tributaries examined included the Niobrara, Nishnabotna, James, Platte, Yellowstone, and Kansas Rivers. Results from the locations are summarized and presented in the following sections."

A purpose, perhaps the major purpose, of including climate change analysis in Environmental Impact Statements is to describe and account for future climate risks as considered as an interacting force, among many others (both anthropogenic and naturally occurring), with the intended management actions. We were both surprised and thankful to see this study conducted and included at all. The literature review and table 6.2 stand on their own as valuable reading.

We were not surprised with the outcomes, as these are rather the expected results and more or less substantiate or affirm some of the results found in other climate change studies. Note, for instance, the discussion of climate change in Hoerling, M., Eischeid, J., Kumar, A., Leung, R., Mariotti, A., Mo, K., Schubert, S., Seager, R., 2014. Causes and predictability of the 2012 Great Plains drought. Bull. Am. Meteorol. Soc. 95, 269-282.

The "U.S. Climate Change Science Program Synthesis and Assessment Products (SAP 1.3, 2008)... assessed that it is unlikely that a systematic change has occurred in either the frequency or area-coverage of drought over the contiguous US from the mid-20th century to the present. Subsequently, in 2012, the Special Report of the Intergovernmental Panel on Climate Change (IPCC) regarding extreme events expressed only medium confidence in a projected increase in drought in some 26 regions by end of the 21st Century, including the southern Great Plains and Mexico, but not the northern Plains and Midwest regions."

Nevertheless, even small changes in climate variables, if detected and included in models, can cause large differences in outcomes for experimental model runs such as the models included in this DEIS. Hydrogeomorphic, particle tracing, Monte Carlo simulations with tens of thousands of simulation runs are an example; as are time-series risk calculations for the potential of regional extirpation for terns or plovers at < 5% probability over 50 years.

For the most part, that statistically significant stationarities cannot be detected in most of the USGS gaging station / watershed data studied ought to give us some confidence that the various POR datasets are sufficient data sources for detailing risk where studied at the watershed level. The main drivers- - precipitation frequency and magnitude, air temperature and evapotranspiration, surface and subsurface geology- - groundwater storage, porosity and runoff seem, more or less, unchanged by climate change or other anthropogenic changes we know have occurred. Wetland losses, land cover changes from short grasslands to agricultural tiled field crops, increases in impervious surface by encroaching and expanding urban development (too name a few of many) are all, apparently, not detected as statistically significant trends in stream gage data. at a watershed level, if we understand the Climate Change study correctly.

Within this DEIS, or rather the Management Plan outcomes, citizens of the Missouri River basin need for the operations to be based on tools with higher, and faster, predictive power since many reservoir decisions are made at watershed levels on monthly, weekly and daily bases. Whether such toolsets are available, or ready for use... yet, is for scientists and experts to decide; but we recommend a close look at : Reager, J. T., Thomas, A. C., Sproles, E. A., Rodell, M., Beaudoin, H. K., Li, B., & Famiglietti, J. S. (2015). Assimilation of GRACE terrestrial water storage observations into a land surface model for the assessment of regional flood potential. *Remote Sensing*, 7(11), 14663-14679.

If the newer technologies and datasets could be incorporated into existing operational analysis, then many of the highly negative, human considerations costs (2011 flood, 2012 drought, projected as exemplary of future events) could be avoided. Moreover, operational decisions by rules aimed at reducing endangered species "take" for the birds above and below the reservoirs could be improved. Bimodal flood pulse experiments and frequency probability could be increased if such events were planned for times when no one experienced flooding as a result.

There are time series data sets available from various sources (USGS, USDA, EPA and NASA) documenting land use / land cover changes for the entire US- - and, those land use changes are a very significant driver of ecosystem value changes that do, themselves have profound, but unstudied (in this DEIS) effects on fish and fauna declines throughout the Missouri River basin. Over the period of record, urban and rural development have filled in and covered wetlands with impervious surface, including the connected floodplain and the riparian buffer that could be described as the floodway.

Agriculture, for a time during the active Conservation Reserve Program, actually increased the size of wetland acreage, but replaced the active and dynamic primary production (from an ecosystems perspective) of short grass prairie lands with monotonic row crops. On some reaches of the river, this conversion of grassland to cropland represented about a five fold shift in acreage, with magnified declines in ecosystem values for endangered and other species. Changes to the CRP, or to Flood Insurance Rate Maps can yield large changes, over time, to land use classification. And these changes appear not to be calculated for effects on floodplain connectivity or fish and wildlife habitat classes. or we have misread and misunderstood the text. All of these land use changes are studiable as GIS rasters and shapefiles, available to the public for download and transparent. Within the DEIS, we find no graphic descriptions for any of these changes, nor for the fish and wildlife habitat categories. The EPA- ICLUS v2 raster files project land use changes in a time-series to 2100. On the other hand, HEC-Ras modeled output was not used to create similarly comparative graphic products.

Time-series analysis is appropriate for a programmatic DEIS anticipating future effects over 5, 15 and 50 year spans of operation. Instead, we seem to have a fixed reference point in time represented by the Missouri River baseline assessment (USACE 2013).

It is not at all clear, from the description of analysis in the MRRMP&EIS Fish and Wildlife Environmental Consequences Analysis Technical Report, that the computer modeling can detect basic differences of land cover and land use by spatial location; or that the models generated have had any ground truth validity performed. If the HEC-Ras system utilized cannot distinguish urban impervious surfaces from wetlands or agricultural croplands, but only assesses inundation based on flow and depth, then it is not possible to disambiguate or assess the ecosystem values (either as human or other species consideration) assigned by a 20% chance of inundation referenced in the 2003 BiOp.

If spatial location output is available, then make it public and show us the maps- preferably, in a form that can be compared with other datasets. We hope for this kind of transparency to emerge from the MRRMP and AM plans.

While Shallow Water Habitat classes rise, fall and follow managed water levels, floodplain and backwater connectivity DO NOT. Sometimes, it seems, even SWH projects have become isolated and cut off from the water source. An example is found in recent emergency expenditures for repairs needed to habitat projects above Ponca State Park a year or so ago.

Moreover, USACE. 1944. Missouri River Basin, Letter from the Secretary of War transmitting A Letter From the Chief of Engineers, United States Army, dated December 31, 1943, Submitting a Report, Together with Accompanying Papers and Illustrations, on a Review of Reports on the Missouri River, for Flood Control, along the Main Stem from Sioux City, Iowa, to the Mouth, Requested by a Resolution of the Committee on Flood Control, House of Representatives, Adopted on May 13, 1943. 78th Congress, 2nd Session, House Document No. 475. United States Government Printing Office, Washington: 1944. Page 27, paragraph 36 states- Proposed floodway widths between levees would vary from a minimum of 3,000 feet from Sioux City, Iowa to Kansas City, and 5,000 feet from Kansas City, MO to the mouth. We submit that this is an appropriate geometry for floodway analysis.

It is clear, from recent flood history, that nature does provide an astonishing rate of floodplain connectivity- - probably, exceeding the minimum 20% chance of inundation for the minimum acreage specified in the USFWS planning guidance paper and the 2003 Biological Opinion targets. Many acres within the floodway that were flooded in 2011 were also flooded in 2010 and 2007, probably exceeding a 20% chance ACE or 5-year frequency. However, these targets are only analyzed for Alternative 2, and seem to be disregarded for Alternatives 3-6. Moreover, the geographic footprint for analyzing floodplain connectivity probably should be the HUC 6 watersheds contiguous to the Missouri River. But, we leave it to various agency scientists to ascertain whether the footprints used in this DEIS are appropriate and sufficient for the risks entailed. We are not experts in land use change or habitat classes. The number of habitat classes provided by the Missouri River baseline assessment (USACE 2013), seemed too small relative to the FWS National Wetland Inventory Cowardin classifications that the environmental fish & wildlife group asked for. Adding terrestrial classifications of land use introduces a granular resolution that, we think, avoids some assumptions and error we think are present in three of the hydrological analysis sections. But, we also must admit that- - despite the 60 day extension in public comment period- - we have been unable to read through the entire 6,099 pages of documents available in this DEIS.

There are multiple lines of evidence that ecosystems in various reaches continue to show stress and declines in food webs essential to the survival of pallid sturgeon. The DEIS refers to many of these

lines of evidence. And, it is our hope that Adaptive Management- - as adopted in the Record of Decision and implemented- - would be aggressively adaptive enough to ascertain ecosystem signals of distress against a background noise of degraded values and constant extraction and exploitation in time to prevent further endangered species listings. While that is our hope, the current DEIS gives the indication that scientific rigor and validity will be deferred to, primarily, budget constraints and budgetary efficiencies. That concerns us greatly.

Also, Alternative 2 is rendered weaker by the mandate of "passive" rather than "active" Adaptive Management. We can find no support for this decision in the description of Adaptive Management called for in the 2003 amended Biological Opinion. Active Adaptive Management should be pursued for all of the considered alternatives rather than depriving one unfairly.

The lower 600 miles of river should have been modeled with multi dimensional models run to determine, by the current geomorphic configuration the locations for the first Interception Rearing Complex sites (IRCs). Instead, the entire river was not surveyed or modeled for this; but rather only the existing SWH sites were considered, with an end to maximizing previous investment and minimizing potential new land acquisition costs. While we applaud the Corps for aggressively pursuing an hypothesized management action, we worry that the Adaptive Management process is being shorted. The entire concept of IRCs is so new that Best Management Practices do not exist, as yet; and will have to be developed through the processes laid out in the DEIS.

If efficiency of budgetary appropriations and expenditures is to be the guiding influence determining this DEIS, then the purpose and needs statements should reflect that. Additionally, alternative financing sections could be written with headings like "Mitigation Banking", "title fee easements", "collaborative cost share" or some others.

We are concerned by the absence of sufficient study of benthic macroinvertebrate food sources in the planned IRC projects at Baltimore Bend and Searcy Bend (Tadpole Island). The BACI (Before-After-Control-Impact) study designs specified in the DEIS have utilized benthic trawls to describe fish community assemblages, according to posters presented at the Missouri River Natural Resources 2017 conference (MRNRC Conference and BiOp Forum 2017 Habitat: The Pathway to Recovery Poster Abstracts,: Interception-Rearing Complexes: Age-0 Sturgeon Baseline Monitoring during 2016 Author(s): Nathan J.C. Gosch, Todd R. Gemeinhardt, Marcus L. Miller, and Joseph L. Bonneau) and (same conference, Title: Pre-Treatment Fish Communities of Two Missouri River Bends, Prior to IRC Construction Author(s): Thomas C. Boersig, Jacob N. McQuaid, and Kyle W. Winders)

Since a major hypothesis concerns Age-0 pallid sturgeon ability to forage and feed in these habitats, we believe benthic macroinvertebrate community assemblages should be described and studied rather than assuming that prey food, generally, will be present. Macroinvertebrate Bray-Curtis Similarity Indexes and or dissimilarity indexes should be created in all phases of the BACI for IRC sites and their control comparatives. These same macroinvertebrate prey may, also, be part of the food web for the fish community assemblages already studied and cited above. This kind of data would seem essential if additional bioenergetics analysis is to be accomplished for these, or additionally planned future sites.

If this data is already being collected, please cite the study design in response to this comment. We could not find it, either in the present DEIS or in the EA project reports for Baltimore Bend or Searcy Bend public noticed in July 2016.

Attention to the food webs that sustain pallid sturgeon, least terns and piping plovers are a subject of ongoing interest to the public. The Endangered Species Act was, primarily, created as an expression of Human Considerations.

Nebraska Game and Parks identified condition decline (Kn), weight loss, and shrinkage (reduced fork length in capture/ recapture of the same individuals); as well as a lack of reproductive maturity in some fish of a sufficient age that sexual maturity was expected.

(Steffensen, K. D., & Mestl, G. E. (2016). Assessment of pallid sturgeon relative condition in the upper channelized Missouri River. *Journal of Freshwater Ecology*, 31(4), 583-595.)

While the "skinny fish" problem has been, and is being, addressed as "new information" within the Adaptive Management context, we are concerned that the Adaptive Management design does not have an "on ramp" or design specification for inclusion of new endangered species listings to occur in the future. In particular, Sturgeon Chub and Sicklefing Chub have a new petition for listing, pending review by the Fish & Wildlife Service. A hypothesis might be generated that recovery of pallid sturgeon is dependent on recovery of one or more of these fish.

The renewed petition to list Sturgeon Chub and Sicklefing Chub as endangered (dated Aug 2016) can be found here:

http://www.wildearthguardians.org/site/DocServer/Sturgeon_SicklefinChubPetition8_11_16.pdf?docID=17346

The EPA maintains a list of indicators for river and stream health. One such indicator is a quantitative measure of native fish species diversity decline for HUC 6 watersheds.

(<https://cfpub.epa.gov/roe/indicator.cfm?i=84#1>)

"Percent reduction is based on the number of native species determined to be present as of 2015, compared with historical numbers documented prior to 1970. Data are displayed by 6-digit hydrologic unit code (HUC-6) watershed. A species is considered present if there is at least one record of its presence in any 8-digit HUC within the 6-digit HUC. This indicator presents a summary of data available from the NatureServe Explorer database (<http://www.natureserve.org/conservation-tools/data-maps-tools/natureserve-explorer>). The identity and status (current vs. historical) of all native fish species recorded in each 8-digit HUC are available from this database, along with species-by-species distribution maps at the 8-digit HUC level. Analyses based on these data have previously been reported in Master et al. (1998, 2003) and Stein et al. (2000). Data were provided by NatureServe."

The Missouri-Little Sioux watershed, HUC code: 102300. shows a 12.63% reduction in native fish species diversity relative to pre-1970 historical conditions. In 1970, there were 95 fish species identified as "present". 12 native species have been lost, and are no longer present (Abs_loss1=12). This is, also, one of the reaches where Nebraska Game & Parks identified, and proved, extreme decline in condition (Kn) for some pallid sturgeons. The state of Iowa was in the process of creating Total Maximum Daily Load (TMDL) documents for Arsenic contamination in this vicinity. "Arsenic was found in samples of water discharged from Gavins Point Dam; the highest measured concentration was 4 g/L (USACE 2016a)."

Searching the DEIS, we find that there are few references and little analysis for TMDL documents for the Missouri River. There is a reference to North Dakota Dept of Public Health's ongoing TMDL program. That documentation shows Lake Sakakawea and Lake Oahe with a number of TMDLs, and Missouri River TMDLs have their own table.. For the most part, states link TMDL creation with identification and publication of health risks related to fish consumption. Missouri has had TMDLs for chlordane, PCBs and mercury since about 2002, and fish consumption advisories warn against eating sturgeon roe.

A tabular listing of TMDLs, by state would provide the public with an awareness of environmental conditions on the Missouri River that may be contributing or competing sources of jeopardy for the

endangered species. Benthic macroinvertebrates should be chemically monitored as bioaccumulating amplifiers of heavy metals and other pollutants.

During the time it took the Corps to craft and write this DEIS, there were several publications of new science that render many of the Alternative discussions questionable, moot, or at least, less optimal than they appeared before. One description of the 2011 flood was that this high flow event created more sand bar island habitat in one year, than the Corps could have mechanically created in 50 years. If the 2011 flood described something like a new normal for climate change, then it would make some economic sense to, at least, investigate how that new state effects habitat creation and planning. The 2011 flood was several magnitudes beyond what the Corps would, could should, or did ever attempt for any reason other than that nature and coincidence of weather events compels it in the protection of human safety.

Some the new science publications we are aware of are:

- Catlin, D. H., Zeigler, S. L., Brown, M. B., Dinan, L. R., Fraser, J. D., Hunt, K. L., & Jorgensen, J. G. (2016). Metapopulation viability of an endangered shorebird depends on dispersal and human-created habitats: piping plovers (*Charadrius melodus*) and prairie rivers. *Movement ecology*, 4(1), 6.
- Eder, B. L., Neely, B. C., Haas, J. D., & Adams, J. D. (2016). Resource selection by juvenile pallid sturgeon *Scaphirhynchus albus* (Forbes and Richardson, 1905) in the channelized Missouri River, Nebraska, USA. *Journal of Applied Ichthyology*, 32(4), 629-635.
- Heitmeyer, M. E., J. L. Bartletti, and J. D. Eash. 2015. Hydrogeomorphic evaluation of ecosystem restoration options for the Missouri River Floodplain from River Mile (RM) 670 south of Decatur, Nebraska to RM 0 at St. Louis, Missouri. Prepared for U. S. Fish and Wildlife Service Region 3, Minneapolis, MN. Greenbrier Wetland Services Report 15-02, Blue Heron Conservation Design and Printing LLC, Bloomfield, MO.
- Hunt, K. L. (2016). Management and Mother Nature: piping plover demography and condition in response to flooding on the Missouri River (Doctoral dissertation, Virginia Tech).
- Roche, E. A., Shaffer, T. L., Dovichin, C. M., Sherfy, M. H., Anteau, M. J., & Wiltermuth, M. T. (2016). Synchrony of Piping Plover breeding populations in the US Northern Great Plains. *The Condor*, 118(3), 558-570.
- Skalak, K., Benthem, A., Hupp, C., Schenk, E., Galloway, J., & Nustad, R. (2016). Flood Effects Provide Evidence of an Alternate Stable State from Dam Management on the Upper Missouri River. *River Research and Applications*.
- Starks, T. A., Miller, M. L., & Long, J. M. (2016). Early life history of three pelagic spawning minnows *Macrhybopsis* spp. in the lower Missouri River. *Journal of fish biology*.
- Kelli M. Walters, Meghna Babbar-Sebens. Using climate change scenarios to evaluate future effectiveness of potential wetlands in mitigating high flows in a Midwestern U.S. watershed. *Ecological Engineering*, 2016; 89: 80 DOI: 10.1016/j.ecoleng.2016.01.014

Wildhaber, M. L., Yang, W. H., & Arab, A. (2016). Population Trends, Bend Use Relative to Available Habitat and Within River Bend Habitat Use of Eight Indicator Species of Missouri and Lower Kansas River Benthic Fishes: 15 Years After Baseline Assessment. *River Research and Applications*, 32(1), 36-65.

Wildhaber, M. L., Dey, R., Wickle, C. K., Moran, E. H., Anderson, C. J., & Franz, K. J. (2017). A stochastic bioenergetics model-based approach to translating large river flow and temperature into fish population responses: the pallid sturgeon example. *Geological Society, London, Special Publications*, 408(1), 101-118.

Range of Alternatives

The Corps DEIS for recovery of the pallid sturgeon, least tern and piping plover has failed to provide a reasonable range of alternatives to meet the agency's responsibility under the Endangered Species Act.

The Corps' five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery and with reference to any other relevant factors the Corps identifies. The DEIS fails to do this.

Alternative 1 is called the "no action" alternative; but it is not. On the one hand, it is meant to describe the history of ongoing operational management actions the Corps is currently, or has in the past, engaged in for the purpose of avoiding jeopardy. On further examination, we are told, within the DEIS, that Alt 1 is not those actions; but rather, that it describes the actions the Corps would do, or would like to have done, if only it had been given the resources to comply with the existing 2003 amended biological opinion, and the Reasonable and Prudent Actions (RPAs) from the 2000 biological opinion. It describes a 'what if' world, previously unattained; and stipulates that this world- - used for comparison to the other alternatives- - does not avoid jeopardy.

Previous attempts at Alternative 1 have succeeded in producing increases in Shallow Water Habitat. There are those who say that this production of Shallow Water Habitat by creation of chutes and backwaters, is an inefficient expenditure of resources when considering just the purpose of 'avoiding jeopardy' for pallid sturgeons. Somewhat vague allusions are made to new science information that renders previous classification by depth as obsolete, in favor of "Pallid Sturgeon Habitat" classified by depth and velocity.

To date, only 8 juvenile pallid sturgeon have been netted on the Lower Mo River (LMR), as proof that spawning is successfully occurring somewhere on the river, or its tributaries.

We say,

- -that those 8 pallid sturgeon would very likely not have been produced without the creation of those previous and extant habitat projects;
- -that those 8 Pallid Sturgeon juveniles represent an unknown, larger number of uncaptured individuals still living and growing in the Missouri River;
- -that there would have been more captured if more SWH had been created; (in a speculative world of hypothetical counterfactuals, this seems a reasonable inference; even if untestable as a hypothesis) ;
- -that, if "insufficient drift distance for age 0 PS larva" is a jeopardizing condition, then the Corps still has a lot of miles of SWH to recreate in mitigation for the 207 km it removed by cutting off bends on the LMR.

The Corps DEIS for recovery of the pallid sturgeon, least tern and piping plover has failed to provide a reasonable range of alternatives to meet the agency's responsibility under NEPA and under the Endangered Species Act.

The Corps five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading. The range among alternatives 2 through 6 are inadequate in that there are significant differences between alternative 2 and between the group of 3 through 6. But among alternatives 3 through 6 the differences are minimal. Alternatives 3 through 6 overlap considerably. All include similar studies and

pallid sturgeon habitat options and mechanical construction of ESH. The real differences among 3 and 6 are only in flow releases, two for ESH habitat one as a spawning cue. But even these differences are minor considering how infrequently the flow releases are likely to occur. For example, alternative 4 includes a spring ESH release, but that is anticipated to fully occur less than one in ten years. (MRRMP EIS at 2-70)

Alternatives 3 through 6 are too similar to contribute significantly to the Corps requirement to provide a reasonable range of alternatives.

The most meaningful difference is between Alternative 2 and Alternatives 3-6. So the Corp has in essence provided only two alternatives, plus the no action alternative. Many reasonable options fall between Alternative 2 and the 3 through 6 group.

Several criteria vary between Alternative 2 and the 3-6 group. Among the most significant are the difference in time frame used to calculate actions and costs, the difference in strength of adaptive management approaches, floodplain connectivity, and options for pallid sturgeon habitat.

Alternative Two

Among the alternatives as written, Alternative 2 provides the best option for recovery of species.

However, Alternative 2 is limited unreasonably in several ways.

The Corps views Alternative two as implementation of the 2003 Biological Opinion. (MRRMP-EIS- ix)

There are clear, substantiated actions recommend in the 2003 BiOp that the Corp accepts. But beyond that the Corps development of an alternative based on the 2003 Bi OP is distorted.

The Corps clearly states that new research and approaches developed since 2003 provide additional advantages in achieving recovery. For example, in its statement regarding Need for the Plan the agency states the need for more robust adaptive management (MRRMP-EIS-v). Yet it developed Alternative 2 excluding that interpretation of AM. Only Alternative 2 and the no action alternative exclude it. Thus the Corps created an alternative that up front does not meet its stated Need for the Plan. This approach is not part of a good faith effort to create reasonable alternatives.

An argument can be made that the type of AM outlined in the 2003 BiOp (pages 24-28), which includes scientifically based assessments of essential conditions that contribute to survival of the endangered species, experimental actions and monitored results, is more robust than the Corps characterizes it in this DEIS. Regardless of how accurate it is, the Corps evaluation of Alternative 2 carries weight in its evaluation of a preferred alternative.

Alternative 2 is scaled roughly on a 50 year time frame. That appears to be based on the 2003 BiOps estimate that it could take 20-50 years to acquire the target number of acres for mitigation in USFWS refuge projects. (2003 BiOp page 133, 220ff) But it also seems to impact the time and number of acres of mechanical habitat included. The difference between the Alternative 2 plan for 3,546 acres of ESH per year and the Alternative 3 plan for 391 acres per year only when needed is huge. (MRRMP EIS-3-100-101) The Corps admits that Alternative 2 provides a greater chance of survivability of piping plover and least tern survivability compared to Alternative 3. But it characterizes Alternative 3 as meeting bird targets while Alternative 2 exceeds the targets. (MRRMP EIS 2-77) This vast range of habitat acres and incomplete analysis fails to provide the public with a reasonable and understandable choice of alternatives.

Furthermore according to the DEIS the creation of this large number of acres per year would require creation of ESH in what is described as the exclusionary areas. Exclusionary areas are defined as areas which should be off limits to ESH due to the significant negative impacts to other resources and or extreme cost in construction. (2011 PEIS 4-5) The Corps seems to assume that this is just what the writers of the 2003 Bi Op intended and it carries forward with an assessment of large human consideration and economic impacts from this rather absurd scenario. This would never happen and the public is not well served by the Corp including this calculus in what is supposed to be a reasonable alternative.

This further distorts the Corps evaluation when considering recreation impacts.

The Corps seems to view Alternative 2 as something stuck in time, tethered to a narrow interpretation

of the 2003 Bi Op.

The Corps interprets the SWH component of Alternative 2 as an uncertain benefit, yet the same can be said of IRCs and spawning habitat creation all of which are experimental. Any reasonable alternative with adaptive management would include all these options.

A strength of Alternative 2 is anticipation of mitigation/restoration acres and inclusion of floodplain connectivity. (MRRMP EIS 2-65) The loss of a functioning floodplain and natural habitat along almost the entire Missouri River has led to many adverse impacts. That loss has increased flood risk and has harmed native fish and wildlife, including the three endangered species which are the subject of the DEIS. River systems are complex and dynamic. Our understanding of species needs, especially fish species, can be limited by the unknown interaction and dependencies among the many parts of a riverine system. But we do understand that restoring areas of the river to its natural state will have broad benefits.

Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS. But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

The Corps acknowledges the uncertainty of success of many of the actions and manufactured habitats included in this DEIS. The Corps should recognize that creation of a more natural river in flow and habitat is, in a broader and longer view, a better bet than some of its manufactured projects. Thus it is disappointing that the Corps puts little effort in trying to link restoration and recovery.

The Corps admits many unknowns in the life cycle of the pallid sturgeon. The recent phenomenon of skinny fish is one of those yet unexplained parts. Is part of the channelized Missouri river a food desert for the sturgeon? Is competition with native or invasive species a factor? Is lack of sediment reducing sturgeons ability to catch prey? Is there another water quality issue? We may eventually learn details of these problematic dynamics, but we can be sure part of their resolution will be to recreate a more natural Missouri River.

At times the Corps has acknowledged and embraced the importance of acquired acres used to enhance a variety of riverine habitat and floodplain connectivity. For example in Final Environmental Impact Statement for the Missouri River Fish and Wildlife Mitigation Project, 2003 the Corps recognizes the importance of restoring riverine habitat and floodplain connectivity are missing elements in the Missouri river food chain. In that document the Corps recognizes those missing elements as having an impact on the dozens of riverine species in decline.

Although the Corps references acquired acres for mitigation could play a role in any of the alternatives, it is only in Alternative 2 that the real value of that process is grudgingly given any sanctioned role in recovery. Moreover, this failure to include "mitigation" schedules and requirements expressed in Alt 2 harms the legal meaning of "mitigation" as a construct in ways that- - if left unchanged- - will require clarification in other forums. While the Corps makes clear that the BSNP Mitigation Plan stands on its own authority, it is difficult to see how the Corps will be able to ask the President or congress for budgetary appropriations for this purpose if Alt 2 is not, in some variation, a part of the selected alternative. The reduction of value and function of habitat diversity that necessitated the BSNP Mitigation language in 1986 and 1999 has partly contributed to the decline of pallid sturgeon, terns and plovers on the lower Missouri River, as the Corps indicates many times in this DEIS. Moreover, if Alternative 3 is retained as the selected alternative, and congress does not provide appropriations for this purpose, what authorities will the Corps use make up this jeopardizing deficit?

Mitigation, Restoration and Recovery

As just described, the Missouri river is missing much of its former fish and wildlife habitat due to the channelization of the river, the loss of floodplain connections to habitats such as bottom land forests, wetlands, backwaters, chutes, shifting sandbars, shallow water habitat, etc. These provided habitat and food sources. The reservoir system has altered sediment transfer, water temperature and natural flow regimens.

Declines in native species can be traced largely to these changes. When a species peril is so great it becomes endangered, it is right to look for those critical aspects of habitat it most needs. But it just as critical to look at the entire ecosystem that supports those aspects of habitat. If not we will always be fixing patches of habitat. And those patches will end up being fragile and unsustainable in the absence of a larger recovery. This sadly is the path the Corps has taken in this DEIS.

The Corps has a responsibility to mitigate for the BSNP (WRDA1986 and 1999). The Big Muddy Wildlife Refuge system and other areas represent progress in that responsibility. But funds have been stalled. Also the Corps has, in our experience, failed to express full support for this mitigation program. The Corps has failed to promote the need for this program. Within this DEIS it has failed to accurately measure and promote the value of achieving progress on both its mitigation responsibility and its recovery responsibilities with the same acres.

Ecosystem Services

The Corps fails to give adequate consideration of ecosystem services and that failure impacts their evaluation of alternatives. One example occurs in the Land Use and Ownership Environmental Consequences Analysis, Technical report pages 5-8. The Corps evaluates the impact of agriculture acres for federal acquisition. The Corps notes the loss of agriculture output if some acres are taken out of crop production and points to the loss of taxes to the county, or land in the local levee association. But no consideration is given to the likely reduction in flood risk to those same neighboring acres when, due to those acquired acres, levees are set back, wetlands created, a channel widened and or floodplain connection is formed.

Also the Corps fails to give adequate clean water services to those acquired acres, or any impacts on groundwater recharge. Carbon storage in habitat acreage could be calculated, both for species benefits (bioenergetics modeling) and to assess NED & RED values in established carbon trading markets.

In any case, it is inconceivable and unbelievable that all Alternatives have the same 1 ecosystem services benefit as represented in the table, page xxvii of the Executive Summary. Uncounted carbon storage, alone, would show Alternative 2 to be superior in this regard.

Economic evaluations

On the same topic of acquired acres the Corps assumes that acres offered to the Corps from willing sellers will have been recently in crop production. Thus the Corp values their contribution to crop totals the same as other acres in the area. That is a reasonable assumption only to a point. It is likely that some, perhaps a majority, of willing sellers are willing to sell to the Corps because they have problems with productivity on their lands. Problems may be due to frequent flooding. If so removal of those acres from the agricultural base would save taxes in flood insurance and would have a lower proportional impact on regional crop productivity than other acres.

The Corps also mentions loss of tax base as an economic loss. Again if such acres from willing sellers are more prone to production problems, that would reduce their past contribution to the tax base. The Corps mentions PILT payments as a buffer against that loss but does not incorporate any formula or estimate to assess that. It does though give a Dept. of Interior reference and expects the reader to figure it out. (Land Use and Ownership Environmental Consequences Analysis Technical Report, footnote 1, page 5)

Many of the acres already acquired along the Missouri River have been incorporated in the Big Muddy Wildlife Refuge system. One can assume the same for future acres. The Corps has failed to evaluate whether proximity to a National Wildlife Refuge increases in value of neighboring lands or communities.

The Corps apparently has information on the number and character of acres offered to the Corps for sale under the BSNP mitigation or other programs in the Missouri Basin. One can assume it has

assessed those acres in terms of their appropriateness for the mitigation and or recovery programs. The Corps should have included that information in this DEIS.

Flow Regimes

Research has shown that flood events, such as 2011, can create quality ESH in amounts that benefit successful piping plover nesting success that is superior to mechanically created habitat. Depending on such events is obviously not a strategy. And depending only on mechanically created habitat, largely the option for Alternative 3, leaves the species vulnerable to funding vagaries and creates a zoo like aura. And as the Corps points out the mechanical part of mechanically created habitat can be messy, noisy and disruptive. Has the Corps measured the cumulative, repetitive effects of these impacts?

Alternative 4 contains a fall release designed for ESH which is possibly the most effective flow option so targeted. Other concerns are low water levels which might be by design or as an after effect in drought years. The Corps mentions the adverse impact of low flows, or flow variations and their potential disruption to intake pipes. But a greater threat to water levels and intake pipes is the ongoing degradation of the river bottom due to the self-scouring channel, reservoirs and BSNP configuration. The significant impact of this process was clearly demonstrated at a MRRIC meeting. The Corps mentions this in passing in the DEIS but does not include it as a backdrop condition when considering alternative impacts. It is not included in comparison charts, so it may seem to the public that the alternatives represent a significant impact, when in fact, the ongoing background degradation is the force that will actually impact any use. This does not help the public make a meaningful comparison.

Moreover, Alternative 4 is a variation of flows that the Corps already engages in for a different purpose- - evacuating reservoir water in the fall to increase spring flood storage capacity. Therefore, Alternative 4 is included as a subcomponent of Alternative 1 which does not exceed criteria in the EAs necessary to avoid jeopardy. If some variation of Alternative 4 is not included in the selected alternative, we must ask will the Corps, thereby, be prohibited from evacuating water in the fall to increase flood capacity, even if the rates of that evacuation exceed the described flow rate calculated to create habitat? Will the Corps be prohibited from engaging in this practice, even if it can be included within limits demonstrated not to flood anyone.

In MRRIC plenary, we were told several times that it is the range of alternatives that would be available to the Adaptive Management Plan for study and potential use as management actions. By preferring an alternative in this DEIS, the Corps seems to have changed that condition. Some variant of Alternative 4 probably should be included in the selected alternative.

A past-practices look at the Period of Record should be made, with an eye to seeing whether "take" rates for terns and plovers increased, decreased or stayed the same in the year following fall releases that have already occurred. It may be that this practice is part of the "ecological trap" the reservoirs currently present for nesting terns and plovers. (DEIS, pdf pg 288- - Anteau et al. 2012a; Espie et al. 1998). The 2016 incidental take count for terns and plovers suggests there is not enough resiliency or redundancy built in to the decision process to avoid this jeopardizing condition. Much more needs to be known and, perhaps, Master Manual rules need to be changed.

Human Considerations

Throughout the DEIS it often appears that human considerations are almost solely driving decision making. The DEIS is not forthright on the degree to which the Corps is placing what it has defined as human considerations in its determinations. The agency seems to operate on the assumption that the first priority for recovery actions is that they impinge little or none on any other consideration. Again this first principle keeps the Corps from considering longer term ecosystem restoration goals as a way to species recovery. In the long run, restored and mitigated acres with predictable flow modifications would do more for recovery. That approach also would have benefits of flood risk reduction and recreation enhancement on river stretches. And in the long run would cost less and limit the disruption of excessive ongoing mechanical habitat creation. It could eventually provide more

modest impact on other uses.

It is wholly proper to consider human impacts and seek to minimize them, but priority must at some points give way to species recovery. It is the long push of human considerations that have led us to the point we are, while it is also our appreciation of the importance of the whole of our own place that inspires us to require restraint and restoration. Thus in the broadest sense, the authorized purpose of fish and wildlife is our own recognition of a human consideration and the ESA is our guide to keep us from losing track of that value.

Ensuring Species Success

There is much experimentation regarding pallid sturgeon habitat in the preferred alternative 3. With the acknowledged uncertainty it would be more than prudent to include SWH, IRCs, and spawning habitat all in a preferred alternative.

Measuring success for species recovery needs to eventually include designation of critical habitat for the pallid sturgeon. The pallid sturgeon has been listed for nearly 30 years with no habitat designation yet. A petition for critical habitat designation was submitted to USFWS in 2010. The Service responded that it was unable to complete the designation due to workload. As this DEIS demonstrates identification of pallid sturgeon habitat for various life cycle stages is complicated and the subject of ongoing study. A part of all this effort should result in an understanding of population dynamics and location. We encourage the Corps to not overlook any tributary as well as the Missouri river itself. The work put into the DEIS would be incomplete if critical habitat designation remains unresolved.

Misleading comparisons

The DEIS is a long, complex document with many variables, uncertainties and hypotheses. It is a difficult task to present and explain it to the public. Even considering that the chart the Corps provided as a summary document is especially poorly presented and misleading. This chart is found in the executive summary page xxvii and in the glossy thirty one page document which served as the primary handout to the public. The chart uses different metrics for different impacts. This makes comparisons difficult. How to compare digits one and two to the dollar ratings in other categories. The fact that the chart rates all alternatives the same for ecosystem services is absurd. Costs and expenditures are totals, when in the text we know that ranges are available and all alternatives include great uncertainty is how much of several proposed actions will actually be performed. This was a point explained at MRRIC meetings, but is not reflected in the expenditure chart. And of course per our comments on Alternative 2, the large cost is largely based on an unrealistic projection.

A New Alternative

We recommend that the Corps develop a new range of alternatives. A reasonable alternative would include a commitment to using mitigation/restoration as a tool to meet recovery goals. It would also include some mechanical habitat creation to fill in where the river cannot due to human impacts. It would employ a flexible adaptive management approach. We recommend a new Biological Assessment before the final EIS.

This DEIS appears to avoid, in it's content, some of the proximate causes of decline and jeopardy for the endangered species-continued operations and maintenance of the Bank Stabilization & Navigation Program; continued incising by channelization and degradation of the river bottom; and the reservoir dams that block pallid sturgeon migration and deprive the down stream river of sediment and species required turbidity..

This DEIS should have considered alternatives that would remove or mitigate these proximate causes. Instead, this DEIS restricts the range of potential agency action to the mechanical creation of various sorts of habitat- - mainly, Interception Rearing Complex (IRC)s and spawning habitat . These actions are well considered within the documents, and we hope the outcome will be agency actions that avoid jeopardy; but we do not agree that the Corps has exhausted its supply of full authority in approaching these described alternatives.

Removal of the rip rap armoring of banks downstream of Sioux City may be required for persistence of

the pallid sturgeon. Removing Gavin's Point dam would open additional spawning habitat, and recover important sediment loading to downstream waters. The recreational value of Lake Francis Case (LFC), as a Human Consideration, is dependent upon solving the sediment transport problem caused by the dam. One sedimentation study estimated that LFC would be half full of sediment by 2045. This sedimentation of the lake decreases capacity volumes for all authorized purposes for which water volumes are assigned. Deconstruction of the dam would remove the impediment to upstream migration currently jeopardizing the pallid sturgeon, increasing potential available spawning habitat and drift distances by an unstudied amount, and restore recreational, environmental, fish and wildlife values to local communities. At some point, it should be studied as alternative, as it was not considered in this DEIS.

The BSNP continues to cause harm to the ecosystems upon which these species depend. The creation of a self-scouring canal has accelerated all flows, promoted the degradation of the river bottom and caused diminishing waters to recede from previously connected backwater channels. While the previous mitigation plan for this continued destruction of the ecosystem is studied under Alternative 2, it is entirely absent from Alternatives 3 through 6-including the Corps preferred Alternative 3. Alternative 2 should be the selected Alternative as it aims at creating greater improvements on the ecosystem upon which the species depend and aims at avoiding jeopardy in ways that Alternatives 3-6 do not. It is clear from the decline of 57 of the 61 native species of fishes that the food web has been seriously impaired and that the previous primary production capacity of the river system has been cut off. Reconnecting disconnected backwater channels should remain an MRRP program goal, and appropriations sought for this purpose under this EIS.

The economic analysis provided comparing the alternatives is deficient. It contains no Commercial Fishing data. There is a sole reference to Missouri commercial fishing data referenced in section 3.5.1.8 as summarized by Tripp et al, 2012. Previous publications from the Mo Dept of Conservation indicate that approximately 300 commercial fisherman took more than 900,000 pounds of fish meat from the Missouri River in 1986. This number sets a scale for decline of both commercial fish in pounds of meat, and commercial fishermen in number of licenses. Similar data should be available from all Missouri River contiguous states.

This data could have been used to offset agricultural 'costs in replacing row crops with an aquaculture equivalent. As fishing stocks have declined and crashed since the closing of the BSNP, the six lower states have made commercial catfishing illegal. Commercial fishermen have declined in number, and their self reported catches are smaller each year.

By one anonymous estimate, pallid sturgeon caviar may have a black market value of \$30 to \$40 per ounce. The RED cost to states of lost revenues from the caviar market should be calculated- - possibly, this amount alone is several million dollars per year, lost to state revenues because we have not yet recovered the species. Due to the Similarity of Appearance ruling, shovelnose sturgeon roe should also be included.

Thank you, for the opportunity to make public comment. We greatly appreciate the energies and combined effort of the many public servants who worked so hard to create this DEIS. They all deserve raises and paid vacations, as they have given us something useful to talk about and comment on.

Tom Ball, 24 April 2017

Correspondence: 167

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April 24, 2017

Submitted via NPS site at <http://parkplanning.nps.gov/MRRMP>

Mark Harberg, Project Manager
United States Army Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, Nebraska 68102

RE: Comments on the draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) December 2016

Dear Mr. Harberg:

Montana-Dakota Utilities Co., a division of MDU Resources Group, Inc. (Montana-Dakota) submits these comments on the environmental impact statement for the Missouri River Recovery Management Plan (MRRMP-EIS). The purpose of the MRRMP-EIS is to develop a suite of actions that meets United States Army Corps of Engineers (USACE) Endangered Species Act (ESA) responsibilities for the pallid sturgeon, piping plover, and interior least tern. Montana-Dakota recognizes the importance of protecting these endangered species and offers these comments in consideration of Montana-Dakota company operations. Montana-Dakota understands the USACE is tasked with implementing an operations alternative for USACE activities than minimizes harm to these species and avoids jeopardizing their recovery.

Background:

Montana-Dakota is an investor-owned utility company that generates, transmits and distributes electricity to more than 140,000 customers in 179 communities and adjacent rural areas in North Dakota, South Dakota, Montana and Wyoming. Montana-Dakota owns and operates, as well as co-owns, electric generation facilities in these same states in order to provide electricity to customers. Montana-Dakota's R.M. Heskett Station (Heskett) is located adjacent to the Missouri River north of Mandan, ND and could be impacted significantly from the implementation of the MRRMP depending

on the alternative chosen by the USACE.

Heskett consists of three electric generating units, two coal-fired units of an approximate 100 megawatt total capacity and one 88 megawatt natural gas-fired simple cycle combustion turbine. Each unit utilizes river water for process needs. The coal-fired units utilize the Missouri River for once-through cooling, process water, and fire protection purposes while the natural gas-fired unit is a peaking plant which uses the Missouri River predominantly for evaporative cooling during high ambient temperatures. This peaking unit operates during times of higher electricity demand. All the units operate as needed for transmission grid stability and reliability.

Montana-Dakota's main concerns are that Heskett would encounter significant operational impacts, including limitations in providing fire protection safety for the facility, and shutdowns if there was not sufficient river flow provided by the Alternatives and could not obtain water for station needs at the station's river intake. There is a possibility for more severe impacts resulting from implementation of USACE proposed Alternatives 2, 4 and 5 due to lower river flows anticipated near Heskett with these alternatives. Although there is also a potential that Alternative 3 could result in some operational impacts, it is projected to be less than the other proposals. Montana-Dakota views Alternative 3 as the least disruptive alternative considering lower projected impacts for Heskett. Montana-Dakota has concerns with the USACE assumptions under all alternatives and recommends the USACE conduct further evaluation according to our comment details.

Montana-Dakota provides the following detailed comment and recommendations to address concerns of the USACE's assumed impacts, as well as concerns with the proposed Alternatives.

Recommendations for Further Evaluation of Assumptions

1. Assumed Equivalent Replacement of Dispatchable Generation with Renewable Generation

Montana-Dakota does not agree with the USACE's assumption that renewable electric generation resources would be able to replace the lost capacity of thermal fossil-fired electric generation resource if an Alternative results in curtailment or shutdown of the resource. Under each of the alternatives, the USACE uses a similar argument that renewable generation offsets the generation from shutdown or curtailment of fossil-fired electric generation. This is not quite accurate.

The electric load balancing services from dispatchable fossil-fired electric generating units provide a reliable, low-cost and stable transmission grid that intermittent renewable electric generation resources are not able to provide. Renewable electric generation resources such as hydropower and wind-powered generation resources should not be represented as equals when considering offsets and costs since these resources must be backed up by dispatchable electric generation resources. The USACE's support must also consider transmission grid upgrades when representing the "Other Social Effects" associated with the alternatives. More value should be applied to dispatchable electric generation resources where the USACE considers benefits from emissions reductions and uses the social cost of carbon when crafting financial statements in the draft. Also, please consider that the president has required Review of Estimates of the Social Cost of Carbon in Executive Order "Promoting Energy Independence and Economic Growth" released on March 28, 2017 and is expected to change.

2. Clarifications Recommended for Section 3.17.1 Thermal Power - Affected Environment

The USACE includes the following statement at the end of paragraph four on page 3-464 of this section.

"...power plant representatives have updated or confirmed the intake elevations during outreach with plants in 2015."

Montana-Dakota provided updates to the USACE on intake elevations for Heskett. However, through discussions with the USACE as the EIS was being drafted, we do not believe the updated elevations were physically confirmed with the model inputs. Montana-Dakota recommends USACE confirm the low flow elevations the model is projecting are accurate when compared with the elevations provided by facility owners for low flow event impacts.

Montana-Dakota would like to clarify how thermal unit operation has evolved over the past ten years in consideration of the following statement in section 3.17.1 Affected Environment

". . . Although coal-fired plants may be cycled over a 24-hour period to meet fluctuations in demand, it is most economical if they are operated at constant production levels. . . ."

While it is typically true that baseline operation of coal-fired units has been most economical at baseload operation, these units have increased in flexibility to operate at different loads as the electric market would call upon them to operate. The increase in flexibility at coal-fired units has been necessary due to new additions of natural gas-fired generation resources and intermittent renewable electric generation resources. The USACE should acknowledge that a significant amount of thermal power generation is essential in providing electric transmission reliability services and this type of dispatchable generation is not replaced by renewables.

3. Update for Heskett Station in Table 3-211. Gross Capacity of Missouri River Power Plants

Montana-Dakota notes that although the 2014 Nameplate Capacity for Heskett is correct, additional generation was added to the facility in 2014. The nameplate capacity for Heskett is now approximately 203 MW based on reporting to EIA.

4. Disagreement with Use of 2012 Geometry and Model Predictive Accuracy Based on Heskett Observations

Montana-Dakota would like to emphasize that we do not agree with the use of the Management Plan and EIS using the 2012 channel geometry model to evaluate the impacts of the alternatives if the model has not been proven to be accurate at low flows (those under 15,000 cfs) at Heskett's intake since it appears the only model comparison was done with 2012 observations. The concern extends to USACE's assumptions of the impacts projected from low releases using this modeling. It appears that the USACE model associated with this project uses historical flows and the 2012 river geometry survey to predict the impact to the Heskett intake and whether the station would be able to withdraw from the river (based on the intake elevations and modeled results). It appears that the model does not take into account channel changes since the survey was conducted, as well as Oahe Lake effects within the river reach near Heskett and channel siltation. In our experience, the channel changes yearly as winter ice freezes over the river and re-directs flows differently each year underneath the ice until ice breakup occurs. We are also concerned that actual elevations at Heskett's intake were not confirmed at the time of the 2012 survey. Due to the changes that occur yearly in the stretch between Bismarck and Garrison Dam, we feel the 2012 survey is not accurately representing the flow impacts near Heskett. Montana-Dakota requests that the USACE confirm whether the model corresponds to flow and elevations outside of the 2012 survey timeframe and make model adjustments accordingly to demonstrate accurate predictions. Additionally, we recommend the USACE consider evaluating this for all affected water users.

Montana-Dakota recommends the USACE also review the model accuracy to consider the consequences of multiple stations along the Missouri River being affected by low releases. The effect of the loss of generation from multiple facilities in a single period is much more significant than the loss of generation from one facility. Loss of generation from multiple regional or local generation resources may have the potential for a larger impact to transmission grid reliability. This subject requires more than the limited amount of discussion found on page 3-475 of the MRRMP-EIS. Further, Montana-Dakota believes that a reliability impact from implementing the alternatives is beyond what is considered as a loss of revenue if multiple generation resources would be offline, and we recommend USACE include reliability consideration in the impact analysis of the alternatives.

5. Heskett Minimum Flow Compared to Model Flow Prediction

Montana-Dakota is unsure whether the USACE's model projection of cfs river flow at Heskett's intake represents the flow level at which the unit would expect to encounter a shutdown. Based on previous discussions with the USACE's consultant, Montana-Dakota was informed that the model indicated Heskett would not shut down until a river flow of 5,000 cfs. We told the USACE's consultant that the 5,000 cfs low flow was inaccurate. We are unaware if any adjustments were made to the model. Based on recent observations, it is Montana-Dakota's belief that flows as low as 10,000 cfs would create a shutdown condition. In the past, flows as low as 12,000 cfs have created a shutdown condition. Montana-Dakota would appreciate the USACE taking a close evaluation of the model in Heskett's reach and review actual elevation measurements to ensure the model is accurately predicting low flows for facilities. If shutdown events occur with higher flows than currently described by the model, the impacts should be reflected in the alternatives.

6. Historical Minimum Flow Consideration

Further support for keeping the minimum flows at least above 10,000 cfs (to avoid shutdown at Heskett Station) is in Section 2.3.1.5.3 Minimum Releases of the Mainstem Missouri River reservoir Simulation report that states:

". . . Minimum daily releases at Fort Peck, Garrison, Fort Randall, and Gavins Point are established as those necessary to supply water quality control and downstream water intake requirements, which generally also furnish more than an adequate quantity of water for irrigation withdrawals below the reservoirs. At Garrison a minimum average daily release of 9,000 cfs has been established as a guide to provide for downstream intakes. Access problems have been experienced at municipal, industrial, powerplant, and irrigation intakes along the length of the river due to channel degradation, inadequate intake screens, sandbar formation, winter ice formation, or relatively high elevation of the intakes. Temporary increases above the open- water minimum release rates may be made to the extent reasonably possible to allow intake owners to take remedial action."

These USACE statements show the history of established flow levels considered for operation impacts and support that the EIS model predicted impacts have a relatively high degree of uncertainty. Montana-Dakota recommends the USACE apply a more conservative approach when incorporating minimum daily releases and impacts at intakes. Additional discussion is provided in the following comment.

7. Daily Flow Swings

Montana-Dakota understands that daily average flows can be the culmination of large discharge swings (1.5 to 3 feet as noted in the report) within a 24 hour period caused by the hydroelectric

generation fluctuating to follow electric loads. Due to the swings within a 24 hour period, Montana-Dakota believes it appropriate for the USACE to consider the hourly minimum flows and not an average across a day when evaluating impacts to downstream water users. These swings within a 24 hour period can be observed by river gauges. Montana-Dakota suggests the USACE review the hourly flows, or possibly watch how the river recedes after a load change is made, to determine how conservative they should be. As noted below, it appears this swing is taken into account when the USACE is considering bird nesting, but the agency should also consider the swing when determining impacts on other water uses and users to more accurately reflect increased facility shutdown occurrences.

2.3.1.5.4 of the Mainstem Missouri River Reservoir Simulation Report states:

". . . At all projects except Gavins Point, hourly release rates may vary widely as necessary to meet fluctuating power loads. Changes in release rates at Gavins Point are subject to limitations to restrict stage fluctuations downstream. Minimum hourly release restrictions are applicable at Fort Peck and Garrison due to downstream intakes. A uniform peaking release pattern has been established during the summer months at Garrison and Fort Randall for endangered birds nesting along the river below the projects, and may be reinstated at Fort Peck if nesting patterns deem it necessary."

Montana-Dakota recommends the USACE provide further review of hourly flows, incorporate discussion on these potentially impacting low flows and consider the impacts in the evaluations of the alternatives. This review should be considered in addition to the model's attempt at taking the swings into consideration. The Heskett intake utilizes continuous operation and may not allow for the low end of a daily swing that is masked in a daily average flow value. In this case, the model would not identify the shorter period of time as a possible shutdown event.

8. Reliability/Certification

Although many of the comments above have a reliability component, Montana-Dakota provides some additional thought on concerns with reliability and the USACE's proposed alternatives. If Heskett Station was not able to run due to low water at our intake, this could impact Montana-Dakota's ability to accredit all the Heskett units' output capacity in MISO and possibly impact system reliability in the area. The loss of capacity accreditation at Heskett could require Montana-Dakota to construct a replacement unit (which may need water from the river also) or enter into a contract for replacement capacity or purchased power to make up the generation. Heskett Station generation is also positioned strategically to support Montana-Dakota's customer load in the Bismarck/Mandan area and a loss of Heskett generation could directly impact local system reliability and the need for additional transmission upgrades. Montana-Dakota would incur significant costs to replace the loss of generation and there may not even be an available replacement, or it may take multiple years to construct a new resource. Permitting new generation would take a significant amount of time, and but for the USACE low flows, that generation may not have been warranted.

As described earlier, if Heskett was receiving flows that were low enough to create shutdown conditions, then other electric generation facilities upstream (and downstream of Garrison Dam) may also be at risk of a shutdown, resulting in no generation from multiple facilities at the same time. If this type of event would coincide with a period of high demand, the impact to the grid system could result in significant regional transmission impacts. Further study of the likelihood of this occurrence in consideration of the USACE's implementation of an alternative should be completed to ensure this scenario does not occur. These generating units along the Missouri River are modeled to be available to run by the regional transmission organizations. Detailed studies are required to determine the impacts to the transmission system if these generating units along the Missouri River are not available

to run during a portion of the year and the impacts on system reliability.

Comment on USACE Preferred Alternative

The following comments are Montana-Dakota's evaluation of the proposed alternatives and may change depending upon the USACE's further evaluation of issues and implementation of recommendations Montana-Dakota provided above. If no changes to the overall results occur after consideration of our recommendations, we believe that the Alternative 3 (identified as the preferred alternative in this MRRMP-EIS) would be the least disruptive Alternative to Heskett's current operation and is preferred. Alternative 3 is described as:

"2.9.2.3 Alternative 3 - Mechanical Construction Only

Summary of Characteristics and Features. Hydrologically, the effects of this alternative would be very close to those for Alternative 1 but without the specification for spawning cue releases in March and May. Hydrological differences would be reduced flows relative to Alternative 1 in approximately 30 to 50 percent of years in late March and late April/early May, and corresponding increased flows relative to Alternative 1 during one or two weeks in October or November. The differences in magnitude of these flows would be small compared to those associated with the other alternatives. Alternative 3 would have less channel reconfiguration for pallid sturgeon early life stage habitat relative to Alternative 1, and this would have implications on flow routing and assumed stage- discharge relationships at certain locations.

Therefore, Alternative 3 has been identified as the preferred alternative in this MRRMP-EIS."

Comments on Other Alternatives

Alternative 2 appears to be minimally beneficial to upstream sources. We believe this alternative, as well as Alternative 5, would have a degree of uncertainty in impacts in certain years depending on USACE holding back flows to maintain volume in upstream reservoirs. As such, Alternatives 2 and 5 would pose unacceptable risk to Heskett operations.

Alternative 4 would be the most disruptive to Heskett's operations and we firmly oppose this alternative. This alternative also appears to favor downstream interests while penalizing upstream sources. Underlined portions of the report summary describing this inequity are as follows:

"Alternative 4 would result in benefits to power generation and energy values in the lower river and adverse impacts to power generation and energy values in the upper river when compared to No Action, with negligible changes on average across all locations. The benefits in the lower river would occur from slightly lower summer river temperatures from the construction of fewer acres of early life stage habitat for the pallid sturgeon. Adverse impacts to power generation and energy values in the upper river would be temporary and range from small to large, stemming from relatively lower river flows in the fall while reservoirs rebalance following a spring release. There would be negligible impacts to variable costs and capacity values compared to No Action. RED impacts to household and business spending and associated regional economic conditions as a result of changes to consumer electricity rates would be the same as those described under No Action because reductions in power generation under Alternative 4 in the upper river would not occur during peak periods. The OSE impacts would be the same as described under No Action. Alternative 4 would result in uncertain effects on air quality because many of the affected plants are coal-fired plants and the fuel types for the replacement source include fossil fuels. Alternative 4 is not anticipated to have potential significant impacts on thermal power because adverse impacts to power generation to power plants in the upper river would occur during offpeak seasons and there would be beneficial impacts to power plants in the

lower river."

Montana-Dakota agrees that Alternative 4 is not the preferred alternative and appreciates that the USACE has made this distinction and has not chosen to implement this alternative.

Conclusion:

Montana-Dakota recommends that the USACE consider and, if needed, alter the draft MRRMP-EIS to address each of the concerns above, especially regarding confirming modeling low flow elevations with actuals and evaluating additional impacts considering potential model inaccuracies. There could be greater impacts than initially projected by USACE which could increase the costs in the MRRMP-EIS and possibly compromise transmission grid reliability. We also recommend that the revisions be available for review and comment.

Further, Montana-Dakota would appreciate the opportunity to review any future changes to the proposed Missouri River system operations that would result from implementation of the new system of adaptive management process. The proper notification and review of the adaptive changes, as well as potential impacts, by all parties should occur early to allow for meaningful review and comment.

Montana-Dakota appreciates the opportunity to comment on the MRRMP-EIS. Please contact me at 701-222-7844 if you have any questions or would like to discuss our comments.

Sincerely,

Abbie Krebsbach
Environmental Director

cc: Samantha Marshall - Environmental Scientist
Mark Dihle - Senior Environmental Scientist
Jay Skabo - Vice President Electric Supply
Alan Welte - Director of Generation
Cory Fong - MDU Resources Group, Inc. - Director of Communication and Public Affairs
Tony Stroh - R.M. Heskett Station Manager

Correspondence: 168

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Correspondence Text

April 24, 2017

MG Scott A. Spellmon
Northwestern Division Commander
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, Nebraska 68102

RE: Missouri River Recovery
Management Plan Draft
Environmental Impact Statement

Dear Major General Spellmon:

On behalf of the American Waterways Operators (AWO), the national trade association for the tugboat, towboat and barge industry, thank you for the opportunity to comment on the Missouri River Recovery Management Plan (MRRMP) Draft Environmental Impact Statement (DEIS). The U.S. tugboat, towboat and barge industry is a vital segment of Americas transportation system. The industry safely and efficiently moves 763 million tons of cargo each year, including more than 60 percent of U.S. export grain, energy sources such as coal and petroleum and other bulk commodities that are the building blocks of the U.S. economy. The fleet consists of nearly 5,500 tugboats and towboats, and over 31,000 barges. These vessels transit 25,000 miles of inland and intracoastal waterways, the Great Lakes and the Atlantic, Pacific and Gulf coasts.

The tugboat, towboat and barge industry is not only an integral part of the U.S. intermodal transportation system, but also the safest, most affordable and most fuel-efficient, with the smallest carbon footprint of any surface transportation mode. Actions that adversely impact the efficiency of waterborne commerce, or that result in the diversion of cargo to other modes of transportation negatively impact the U.S. economy, public safety and the environment.

AWO has represented navigation stakeholders on the Missouri River Recovery Implementation Committee (MRRIC) since its inception in the fall of 2008. Authorized by Congress in Section 5018 of the 2007 Water Resources Development Act, MRRIC is comprised of nearly 70 representatives of tribes, stakeholder groups, states, and federal agencies. The Committee has the following purposes:

- " Providing guidance to federal agencies on the existing Missouri River recovery plan, including

priorities for recovery work and implementing changes based on the results of adaptive management. " Developing recommendations that recognize the social, economic and cultural interests of stakeholders, mitigate the impacts on those interests and advance the multiple uses of the river.

Two panels were created by MRRIC to peer review the work of the Corps and other federal agencies and advise MRRIC on the agencies products, The Independent Science Advisory Panel (ISAP) and the Independent Social Economic Technical Review (ISETR) Panel evaluated the agencies work on science and technical matters related to the recovery of the endangered pallid sturgeon and the threatened least tern and piping plover and on the social and economic impacts of species recovery actions on stakeholders, respectively. The work of ISAP and ISETR are heavily relied upon in the following comments.

AWO cautiously supports mechanical emergent sandbar habitat construction in the preferred alternative, Alternative 3. AWO does not support any flow changes including the potential one-time test flow in Alternative 3. Draconian flow changes in alternatives 2, 4, 5, and 6 are not acceptable options. There is no credible science that supports flow changes for the recovery of the threatened and endangered species. And, the flow changes would negatively impact the economy of the entire Missouri River Basin. In alignment with the bi-partisan, basin-wide Congressional letter sent to the Corps on December 17, 2015, AWO strongly opposes any flow changes. Under current law, any alternative including 2,4,5, and 6 that would change the Master Manual for the recovery of the species cannot be considered without a separate NEPA process. Finally, AWO has concerns with the described Adaptive Management (AM) plan.

Importance of Inland Waterways to the Nation

The Missouri River is part of the economically vital 12,000-mile marine highway system that efficiently delivers agricultural and petroleum products, coal, sand, gravel, chemicals, cement, steel, mulch, and other basic materials. The list of barge cargo is extensive, and includes the building blocks of the nation. Over 600 million tons of waterborne cargo, valued at nearly \$232 billion, transited the inland waterways in 2014.

Moving goods on the water is the safest, most efficient and most environmentally responsible mode of transportation. A typical inland barge has a capacity fifteen times greater than one rail car and sixty times greater than one tractor trailer truck, and one 15-barge tow can move the equivalent of 216 rail cars or 1,050 tractor trailer trucks. Inland barge transportation not only provides significant savings to consumers, but also has a significantly smaller carbon footprint than rail or truck. In a study conducted by the Texas A&M Transportation Institute, researchers calculated that transport by truck emits 371% more carbon dioxide per ton-mile than transport by inland barge. The same study also found that for every barge-related fatality, there are 21.9 fatalities on the railways and 79 fatalities caused by trucks.

According to the Missouri Department of Natural Resources, the Missouri River supplies over 40% of the flows to the middle Mississippi River during normal conditions and provided more than 70% during the 2012 drought. During severe drought years, such as the late 1980s, more than 80% of the water flowing by the St. Louis Arch comes from the Missouri River. These flows are critical to keep the Mississippi River, Americas commercial superhighway and third coast, open for business.

The Western River system has and continues to improve the economic prosperity of the nation. In 2014, 718 million short tons of freight were transported on the Mississippi River by barge. According to Corps data, there are nearly 600 manufacturing facilities, docks, terminals, and grain elevators that ship and receive tonnage from and to the Upper Mississippi River alone. Approximately 60 percent of all agricultural products and 20 percent of coal and petroleum products are moved on the Mississippi River annually. The Mississippi River transports between 40 and 60 percent of total corn exports and

30 to 45 percent of total soybean exports, a major U.S. export markets. Without the world-class transportation system, the country would not be competitive in the world grain market. Agricultural exports are one of the few sectors that provides the country with a positive trade balance. The system supports more than \$200 billion in economic output annually and more than one million jobs.

The 2012-13 severe drought in both the Missouri and Upper Mississippi rivers seriously threatened the continuity of waterborne commerce, especially once the Missouri River navigation flows were severely decreased after December 1. Due to the critical impacts that Missouri River flows have on the Mississippi River, any future flow change would negatively impact the commerce on the nations marine superhighway and the nations economy.

Before flows were severely disrupted in the late 1990s and early 2000s, towing companies working exclusively on the Missouri River signed five-year contracts with shippers. The disastrous and unreliable flow changes devastated the towing industry, putting all line haul companies working exclusively on the Missouri River out of business.

According to the Missouri Department of Transportation, barge traffic on the Missouri River has been increasing over the last five years since reliable flows have returned. In September 2014, the first barge shipments in eleven years traveled north to Sioux City, Iowa carrying hundreds of thousands of pounds of equipment to an expanding fertilizer plant in Nebraska. The existence of these reliable flows allowed robust barge traffic to continue through December with vessels moving as far north as Mile Marker 660.

The 2015-16 navigation season was also a productive year for barge traffic on the Missouri River. In 2015, the Missouri River saw an increase in barge traffic volume due to reliable flows along with a well-maintained navigation channel. During the record 2015 harvest, the system relieved the roads of 190,000 trucks, reducing traffic on the heavily congested Interstate 70. The Port of Kansas City experienced an increase in barge traffic volume in 2016 to roughly 45,000 tons, more than three times the amount of tonnage shipped to and from the port during 2015. In addition to this amount, an additional 60,000 tons moved from private terminals through the Kansas City area for a total of over 100,000 tons of freight. The Port of Kansas City expects an increase in 2017 of at least 20%.

At the Inland Rivers Ports and Terminals meeting in February of 2017, a representative from Archer Daniels Midland (ADM) announced that ADM loaded barges on the Missouri River [in 2016] for the first time in 15 years, transporting 50,000 tons. During the same convention, Missouri Farmers Association Cooperative (MFA) officials indicated the company loaded barges at Booneville in 2014 for the first time in 14 years leading the company representative to say, MFA is back in the water big-time.

With continued reliable flows, operators and stakeholders expect the increase during the last five plus years to continue. The Corps, unlike the early 2000s, has not changed the flows in recent years. A return to scientifically unjustified changes in flows to allegedly recover endangered and threatened species is untenable.

AWO Supports Emergent Sandbar Habitat Construction

Recovery of the endangered and threatened species can be accomplished without changes to the Master Manual or major flow modifications. Of the six alternatives, AWO supports mechanical emergent sandbar habitat construction contained in each of the alternatives, including Alternative 3, the preferred alternative. Alternative 3 strikes the best balance between species recovery and stakeholder interests. This alternative meets the species targets for the birds at a much lower federal cost than Alternative 2 and at a comparable cost to Alternatives 5 and 6, with significantly less impacts

to industry stakeholders.

AWO strongly opposes the various flow modifications common to alternatives 2, 4, 5, and 6 or the one-time flow test in Alternative 3. The flow changes in these alternatives would negatively impact navigation on the Missouri and Mississippi rivers and negatively impact agriculture, a major customer of the towing industry.

Low summer flow provisions in Alternative 2 (USFWS 2003 Amended BiOp Projected Actions) will cause irreparable harm to the navigation industry by creating a split-navigation season on the Missouri River, severely impacting navigation. The low summer flows in Alternative 2 will also have severe negative impacts on navigation on the Mississippi River from Saint Louis to Cairo, Illinois during the height of export season. While the negative impacts to navigation are severe, the DEIS acknowledges uncertainty on whether the low summer flows under Alternative 2 would benefit the endangered pallid sturgeon. The DEIS states:

It is highly uncertain whether or not low summer flows would directly contribute to increased survival of age-0 pallid sturgeon (Jacobson et al., 2016b). Based on theoretical evidence described in Jacobson et al. (2016b), this management action is expected to result in some level of benefit to the pallid sturgeon; however, the level of benefit, if any, to the pallid sturgeon cannot be confirmed or quantified.

With a price tag of a staggering \$15.75 billion, or almost five times more expensive than the preferred alternative, Alternative 2 is an unacceptable gamble for the recovery of pallid sturgeon and for the continuity of navigation on the Missouri and Mississippi rivers.

The navigation industry opposes massive spring and fall releases and bi-modal spring pulses in alternatives 2, 3, 4, 5, and 6. The releases in these alternatives have severe negative impacts on flood control and commercial navigation. Scientific data indicates that previous spring releases have been ineffective as a spawning cue for the pallid sturgeon. The ISAPs 2011 Final Report on Spring Pulses and Adaptive Management indicates that spring pulses, as currently implemented, are not accomplishing their intended outcomes. Specifically, the ISAP Report concludes that the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning pallid sturgeon. The more recent ISAP Evaluation of MRRMP v3 AM Plan and Pallid Level 3 Action, released in November 2015, states that the flow needs of the pallid sturgeon are imprecisely known at all life stages, therefore considerations of flow manipulations to benefit pallid sturgeon are now based on imprecise knowledge. This document further confirms that the Spawning Cue Flows action presents a hypothesis without compelling technical support. The Action Description of bi-pulse flows and frequency is very detailed, but without scientific justification. In addition, the Corps acknowledges in the DEIS that the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. AWO is opposed to any future spring or fall pulse/release that threatens navigation without scientific foundation.

The DEIS states the following regarding the one-time spawning cue test:

The one-time spawning cue test (level 2) release that might be implemented under Alternatives 3, 4, and 5 was not included in the hydrological modeling for these alternatives because of the uncertainty of the hydrological conditions that would be present if implemented. Hydrologic modeling for Alternative 6 simulates reoccurring implementation (level 3) of this spawning cue over a wide range of hydrological conditions in the period of record. Therefore, the impacts from the potential implementation of a one-time spawning cue test would be bound by the range of impacts described for individual releases under Alternative 6.

If a one-time flow test is eventually implemented in the future, this federal action must undergo comprehensive economic and hydrological modeling to assess its impacts on Congressionally-authorized purposes of the system, especially the primary purposes, navigation and flood control. The modeling for this release over the range of hydrological conditions for Alternative 6 is not sufficient to address future hydrological conditions, weather patterns and the possible impacts of climate change.

Impacts to the Missouri and Mississippi Rivers

It is highly likely that the decreasing releases from the Gavins Point Dam in Alternative 2 during the summer months would drop flows below the Construction Reference Plane levels and halt navigation. Navigation would once again become unreliable and the users of the commercial navigation system would suffer severe negative economic consequences.

The DEIS Section 3.15-Navigation concludes the following regarding Alternative 2:

Although split navigation seasons would adversely affect navigation NED [National Economic Development], RED [Regional Economic Development], and OSE [Other Social Effects] under Alternative 2, the impacts would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas.

This contradictory and flawed conclusion demonstrates a fundamental ignorance of Missouri River navigation and the navigation industry. To thrive all businesses require regulatory certainty, for the towing industry that includes reliable flows.

Perhaps the most interesting component of the DEIS conclusions on the impacts of Alternative 2 on Missouri River navigation is that these conclusions are contradictory. The passage above from section 3.15.2.5 states that the impacts of Alternative 2 would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible&

However, Section 3.15.2.11-Cumulative Impacts-Missouri River Navigation concludes that navigation could experience adverse impacts from low-summer flows. This section of the DEIS states the following:

Adverse impacts could result in the reduction of the navigation season length for years with the low summer flow, and the potential reduction in service level provided that could occur in the years with the spawning cue pulse. When combined with other past, present and reasonably foreseeable future actions, the cumulative impacts on navigation associated with Alternative 2 would result in a large reduction in navigation benefits. The majority of the relatively large, long-term adverse impacts would be caused by the low summer flow which would shorten the navigation season and prohibit navigation during the important months of the year. While shippers may be able to plan around the low summer flow period, the reliability of the of the Missouri River would be reduced and shippers would begin to transition to other modes of transportation. Over time as more shippers switch to other modes, the overall navigation benefits on the Missouri River would be largely reduced.:

The conclusions in the DEIS on the cumulative impacts of Alternative 2 on Missouri River navigation are severe and not one bit negligible contrary to the earlier conclusions in Section 3.15.2.5 on the impacts of Alternative 2 on Missouri River navigation. Why does the DEIS include contradictory conclusions regarding the impacts of Alternative 2 on Missouri River navigation? Why are these contradictory conclusions not explained in the DEIS? The potential negative impacts of Alternatives 4, 5 and 6 on Missouri River navigation are grave.

Alternatives 4 and 5 create problems for navigation by doubling the releases from Gavins Point for a period of 35 days. Alternative 4 would implement a flow release of up to 60,000 cfs out of the Gavins Point Dam on April 1 as often as every four years. Alternative 6 would implement a bimodal pulse (release) in March and May. Based on the Corps modeling, the Gavins Point releases during the March release would be between 39-61,000 cfs. Gavins Point releases during the May release would range from 50-67,000 cfs. These excessive flows would increase safety risks for crews, forcing towing companies to decrease tow sizes, travel only during daylight hours or completely stop. These safety actions would vastly increase costs to the nations transportation system.

Alternative 2 would also implement a bi-modal spring release from Gavins Point. In Alternative 2, the first pulse would begin on March 15 and would be as high as 31,000 cfs and the second pulse would start on May 1 and would be as high as 60,000 cfs. Both spring pulses would negatively impact navigation for roughly four weeks. Alternative 5 takes a different approach by mandating a flow release of up to 60,000 cfs out of Gavins Point in the fall [in the middle of harvest season] as often as every four years.

If the river is already at high levels, which is often the case in the spring months, any increase in flows could cause negative impacts to navigation, agricultural, land owners, industries, and communities along the river. Releases in the 60,000 cfs range would most likely halt navigation due to high velocities. Towing companies operating on the Missouri River are concerned about releases from Gavins Point in May that exceed 50,000 cfs because they believe this amount of extra water has the potential to stop navigation on the Missouri River and cause elevated navigational risks on the mid-Mississippi River. The month of May is typically a time of high water on both the Missouri and Mississippi rivers without the addition of a spring pulse. If the May release is implemented without taking into consideration the natural flows, it would be a significant problem for navigation and other stakeholders in the entire region, including the farming community. Since the Missouri River often floods in the spring months, why would the Corps release more water and make the flooding worse?

Finally, a fall release of 60,000 cfs out of Gavins Point during the middle of the busy navigation harvest season-when farmers and other stakeholders are attempting to transport their commodities-also jeopardizes navigation on the river as flooding in the fall has increased and weather patterns have become more unpredictable.

The DEIS assessment of the proposed alternatives impacts on the Mississippi River is flawed, insufficient and inaccurate for several reasons:

" An implementation period of 15 years was chosen for the planning process and this DEIS. However, according to the DEIS, the geographical scope of this federal action includes the Missouri River within its meander belt from Fort Peck Dam in Montana to its confluence with the Mississippi River near St. Louis, Missouri, and the Yellowstone River from Intake Dam at Intake, Montana to the confluence with the Missouri River. It is very important to note that the geographic scope of this DEIS does not include the Middle Mississippi River from St. Louis, Missouri downstream to Cairo, Illinois. The failure to include the middle Mississippi River in the geographic scope of the DEIS calls into doubt the Corps ability to analyze the impacts of the proposed alternatives on the Mississippi River in a thorough and accurate manner.

" The Corps informed MRRIC that it did not model the economic, hydrological or environmental impacts of the alternatives to Mississippi River navigation in its human considerations analysis on navigation. Instead, the Corps stated that the impacts of the alternatives on Mississippi River navigation would be addressed in the DEIS. The failure to address the impacts of the alternatives on Mississippi River navigation in the human consideration report calls into question the Corps ability to perform a comprehensive and accurate assessment of the impacts of the alternatives on Mississippi

River navigation. This fact is confirmed by the numerous omissions of key data and false assumptions in the DEIS section on Mississippi River Impacts.

" The DEIS indicates that the impacts to flood risk management in Section 3.24 were evaluated using two of the four economic account models: NED and OSE. By only using these two accounts to evaluate the impacts to flood risk management, the DEIS has omitted key data points resulting in a major understatement of the costs and impacts to Mississippi River flood control interests. The failure to perform a comprehensive RED analysis to measure the impacts to flood risk management on the Mississippi River is very concerning. In addition to this, the DEIS does not indicate the reason an RED impact analysis was not performed. A comprehensive RED analysis for the Mississippi River, if done properly, would illustrate the negative impacts of these alternatives on local and regional economic conditions, such as employment, income, sales, sales tax revenue, flood damages, and other potential costs.

" In terms of the impacts of the alternatives on Mississippi River navigation, the DEIS evaluation does not use any of the four accounts: Environmental Quality Methodology (EC), NED, RED, or OSE. Instead, the Corps measures the impacts of the alternatives on Mississippi River navigation by analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the Hydrologic Engineering Center-River Analysis System (HEC-RAS) Model for the entire period-of-record for each alternative. So, the Corps used four accounts (EC, NED, RED, OSE) throughout the DEIS, and then utilizes a completely different methodology to measure the alternatives impacts on Mississippi River navigation. The DEIS fails to explain the reason for this abrupt change. The failure to perform a comprehensive RED analysis to measure the alternatives impacts on Mississippi River navigation is inexcusable and unacceptable. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the aforementioned local and regional economic conditions.

" Finally, the failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the Mississippi Rivers major contribution to the national economy. By failing to conduct a NED, RED, OSE, and EQ analysis in its modeling, the DEIS significantly understates the economic, environmental and social impacts of the alternatives on Mississippi River navigation.

One of the major flaws in the DEIS is its failure to appropriately evaluate the proven economic principle of water-compelled rates for both the Missouri and Mississippi rivers. The DEIS defines water-compelled rate benefits as a reduction in the cost for land transportation (particularly railroads) due to competition from the towing industry. There is no question that the mere presence of barge transportation as a viable alternative mode of transportation keeps railroad rates lower and more competitive. According to a 2015 Transportation Research Board Special Report entitled Funding and Managing the U.S. Inland Waterways System: What Policy Makers Need to Know:

Shippers of bulk commodities contend that without barge transportation there is insufficient competition for transportation of their commodities to ensure efficient resource allocation. Specifically, many coal and agricultural shippers and receivers assert that they are captive to a single railroad that can exercise market power in the setting of rates and that a water alternative is needed to protect them from monopoly rates.

For example, a president of one of the shipping companies operating on the Missouri River recently stated, The Missouri River helps keep transportation rates competitive between all modes of transportation. This benefits the shipper.

The DEIS failed to perform an independent comprehensive analysis of water-compelled rates on either the Missouri or Mississippi rivers. There is no mention of water-compelled rates in either Sections 3.15 Navigation-Affected Environments et al., nor is there any analysis of water-compelled rates in Section

3.24 Mississippi River Impacts. Instead, the Corps devotes roughly one-half of one page to this critical concept in the Navigation Environmental Consequences Analysis Technical Report to the DEIS.

In the navigation technical report analysis of water-compelled rates, the Corps relies on outdated data from almost 20 years ago from the same single academic resource that the Corps has been consistently using on this topic for many years. The navigation technical report states the following on water-compelled rates:

To determine the measurability of water-compelled railroad benefits, the USACE contacted Dr. Mark Burton and Dr. Larry Bray with the University of Tennessee Center for Transportation Research (UT-CTR). The UTCTR was chosen for the analysis because Dr. Burton has conducted several previous analyses of Missouri River water -compelled rate benefits and Dr. Bray is an expert in the economics of transportation. To generate a conclusion, Dr. Burton and Dr. Bray conducted literature research and analyzed current Missouri River waterway and railroad.

Dr. Bray and Dr. Burton concluded that there is not enough waterway traffic on the on the Missouri River to capture, and therefore, measurable water-compelled railroad rates attributable to the Missouri River commercial navigation seems improbable. This conclusion ignores the fundamental principle of water-compelled rates and does not account for the recent increase and continued growth of navigation on the Missouri River.

The failure to include an independent comprehensive analysis of water compelled-rates in the DEIS is inappropriate and unacceptable. By not including this analysis, the Corps has drastically understated both the economic benefits of navigation and the impacts of these alternatives on both Missouri and Mississippi River navigation.

Flaws in DEIS Economic and Hydrological Models

The DEIS has numerous flaws in the economic and hydrological models rendering the overall economic impacts of the proposed alternatives significantly understated. And, the limitations of the modeling are not defined. One of the major deficiencies in the economic modeling is it relies too heavily on averages when more detailed information is available and already documented. The ISETR panel stated that the documentation for these models is in need of improvement. The economic impacts of the proposed alternatives on human considerations are measured over an 82-year period-of-record. Likewise, measurements of impacts to resources were based on an 82-year hydrologic period-of-record. The 82-year period-of-record does not properly represent the true impacts of the proposed alternatives on the various stakeholders because it skews the effects of major high- and low-water events, such as the great floods of 1993 and 2011, as well as the severe droughts of 1988, 1989 and 2012. Under this 82-year period-of-record, the negative impacts of these alternatives are significantly understated. This is particularly the case regarding the navigation industry, which was almost decimated by the drought of the late 1980s.

Another example of the problems with the over reliance on averages and the use of the 82-year period-of-record in the models are the years 2011 and 2012. In 2011, the Missouri River experienced one of the worst flood events in its history, and this event was followed by a severe drought in 2012. Both the flood of 2011 and the severe drought of 2012 caused massive damages to the navigation and agriculture communities, with impacts still seen. There was nothing average about 2011 and 2012, but the use of the 82-year period-of record minimizes the massive damages.

Finally, the use of the 82-year period-of-record is flawed because it includes years when the federal government mandated artificial regulatory actions that greatly diminished the presence of navigation

on the Missouri River. This, in turn, results in a significant understatement of the navigation benefits on the Missouri River. As stated previously, the low summer flows on the Missouri River in the early 2000s caused navigation to virtually disappear. Several towing companies went out of business during this time due to the lack of consistent reliable flows on the Missouri River. A few years later, the Corps implemented a large spring rise to serve as a spawning cue for the pallid sturgeon. This second artificial federal action further discouraged navigation on the river due to reliability concerns. In fact, navigation on the Missouri River did not begin to recover until recent years when the Corps provided reliable flows. Yet, despite these artificial government actions that negatively impacted navigation during these years, the DEIS still includes these years in the period-of-record for the modeling. These years should be excluded from the modeling, otherwise the benefits of navigation are substantially understated in the DEIS.

Another problem with the Corps economic modeling used in the DEIS is that it consistently relies on old, outdated and inaccurate information to calculate the impacts. For example, to estimate the impacts in the NED account for navigation, the variables to estimate changes in transportation saving and repair, replacement and rehabilitation costs (R, R, & R) were based on data from the Master Water Control Manual Missouri River Review and Update Study, Volume 6A-R: Economic Studies Navigation Economics (Revised) (1998). This study is almost twenty years old and does not reflect the recent increase in barge activity on the Missouri River. In addition to relying on this outdated study, the Corps did not consult with members of the towing industry or its customers to obtain feedback on how to calculate transportation savings and R, R, & R costs in its NED analysis. Furthermore, the RED evaluation also appears to be insufficient and lacking in data from the tugboat, towboat and barge industry.

In several sections, the Corps models include faulty assumptions and omit critical data that cause the output results to be misleading and inaccurate. For example, the modeling does not account for the impacts of navigation on transportation costs and agricultural profitability. Low summer flows and flood events intensified by unreliable releases from Gavins Point can have serious negative impacts on transportation. Since these interconnected economic impacts are not addressed, the overall economic impacts of the management actions for all alternatives are substantially understated.

Table 3-173 shows that for Alternative 5, years with full or partial releases do not have an impact on navigation benefits. The DEIS indicates that this makes sense since the releases would be in the fall when the navigation season is almost complete. This is a false assumption because it does not account for the harvest season and the increased export market on both the Missouri and Mississippi rivers during the fall. This flawed assumption results in inaccurate and understated impacts of Alternative 5 on navigation.

The conclusion illustrated in Table 3-173 also falsely assumes that navigation on the Missouri River ceases when the navigation season (flow support) officially ends. This is not the case as navigation continues on the river after the end of the navigation season as long as there is a reliable channel and weather conditions permit. In fact, several barge companies were operating on the Missouri River in February of 2017 due to favorable weather and reliable flows. Once again, this false assumption results in understated impacts of Alternative 5 on navigation as well as understated total economic benefits of Missouri River navigation.

It should also be noted that only five economic models on human considerations were presented to the ISETR for review and evaluation. The ISETR is still waiting on eight other sets of economic models on human considerations. When pressed by MRRIC members for the impacts and outcomes of the human consideration navigation model, the ISETR panel admitted that they do not have the expertise to understand how this model affects transportation costs, rail loads, infrastructure impacts, and water-

compelled rates. The expert panel admitted that the navigation model was too technical for them to understand. In response to a question as to whether the ISETR was comfortable with the analysis of water-compelled rates in the navigation model, the leader of the ISETR said, We dont know what these terms mean-water-compelled rates, transportation savings-these terms are very confusing to us. We are not transportation economists. The leader of the ISETR panel stated in November 2016, We are going to have to punt on the navigation model. This answer was in response to a question of whether the ISETR was confident in the Corps navigation model regarding the impacts of the alternatives on Mississippi River navigation. The ISETR stated that that the Technical Report on navigation accompanying the DEIS will be much easier to understand. Despite professional concerns, the ISETR recommended that the Corps proceed with these models for use in the DEIS. AWO strongly recommends that the review team that conducts the comprehensive Independent Peer Review of the DEIS include professionals that have a firm and comprehensive understanding of the navigation economic model.

The DEIS analysis on OSE impacts on navigation is also incomplete and inadequate. Once again, this has resulted in the economic costs, human impacts and social consequences of these alternatives to be grossly understated. The navigation analysis for OSE in the DEIS only considers changes in air quality if commodities moving on the waterway potentially shift to land because of any of the alternatives. In fact, air quality is the only OSE considered in the DEIS for any of the alternatives. The DEIS makes no mention of increased fatalities, or congestion if goods move to truck and/or rail. It also fails to account for revenue diversions from federal and state budgets to repair roads and bridges. The OSE does not account for lost time and productivity due to the increased amount of time spent in traffic due to modal shifts. By failing to include these social effects and costs, the DEIS grossly understates impacts. In fact, the evaluation is inaccurate.

It is important to note that all the economic models used to assess the impacts of the proposed alternatives on navigation and flood control have yet to be approved Corps Headquarters. MRRIC members have been told that, while these models have yet to be approved by headquarters, getting them approved is just a formality.

Why would any respectable organization proceed with a major study examining the economic impacts of a proposed action(s) when the economic models have not been reviewed or given final approval for use? This fact is incomprehensible to most stakeholders. Until the final models have been adequately reviewed and commented on by stakeholders and MRRIC, no alternative should be chosen.

The hydrological impacts of the proposed alternatives on Mississippi River navigation and stage levels are also significantly understated. The methodology used for the analysis of the impacts on the hydrology in the middle Mississippi River is similar to the methodology used for analyzing the impacts for the Missouri River. Regarding the methodology used for the analysis on the Mississippi River, the DEIS states the following:

Specifically, the analysis of the flow alterations under the six alternatives was largely based on the HEC-Reservoir Simulation (ResSim)and HEC-RAS Modeling for the 82-year period-of-record.

The DEIS concludes that, despite the massive spring and fall releases from the Gavins Point Dam in Alternatives 2, 4, 5, and 6, there would be no significant impacts to middle Mississippi River navigation from any of these alternatives. Likewise, the DEIS concludes that there would be no significant impact to middle Mississippi River navigation from the significantly lower summer flows contained in Alternative 2. These conclusions are hard to justify given the fact that the DEIS also states that the Missouri River contributes almost half the flow in the middle Mississippi River. The DEIS also claims that the spring and fall flow releases in Alternatives 2, 4, 5, and 6 would be partially to largely

attenuated by the time they reach Hermann, Missouri. However, the DEIS does not provide any detailed analysis as to why this would be the case. Does the Corps just expect the large amount of extra water released from Gavins Point to stay in the Missouri River and not flow downstream into the Mississippi River?

This question seems to be answered later under the Subsection Impact from Management Actions Common to All Alternatives where it states the following:

It is anticipated that there will be no impacts to biological resources in the middle Mississippi River from the management actions common to all alternatives. The listed activities would occur on the Missouri River and would not impact the stage or flow on the middle Mississippi River.

Once again, it is hard to understand how the DEIS can draw this conclusion when it states in two different subsections of Section 3.24-Mississippi River Impacts that the Missouri River contributes almost half of the flow to the middle Mississippi River. The conclusions are illogical.

Section 3.24 further states that the impacts of Alternatives 2, 4, 5 and 6 on stage and flow in the middle Mississippi River would be small or negligible. This section also concludes that the impacts to flood risk management in the middle Mississippi River are not anticipated to be significant under Alternatives 3 through 6. Finally, this section claims that the impacts to navigation in the middle Mississippi River would not be significant under Alternatives 2 through 6.

AWO strongly disagrees with these conclusions in Section 3.24. We believe that the impacts to stage, flood control and navigation on the middle Mississippi River are significantly understated due to the flaws in the hydrological and economic models.

However, while the DEIS claims that these impacts on the middle Mississippi River will be small to negligible, the Corps data concludes that the lower summer flows in Alternative 2 would result in a lower stage of approximately two feet in July and August. This two-foot reduction in stage on the middle Mississippi in the busy summer months is not a small to negligible impact, especially during times of drought. This two-foot reduction would have severe impacts on shipping costs. The DEIS further concludes that the massive spring and fall releases in Alternatives 2, 4, 5, and 6 would increase the stage and flow on the middle Mississippi by one to three feet. Once again, these increases are not small or negligible, especially when they occur during peak flood season.

Even the minimum low flow of 25,000 cfs for several weeks would have significant effects on navigation on the Mississippi River. These impacts would come in the form of reduced draft and tow sizes. Reduced draft or tow size out of St. Louis to the Gulf because of insufficient flows would cost to the nation, at a minimum, millions. In periods of high water on the Mississippi River, increasing the amount of water flowing in from the Missouri River and raising the stage by two to three feet would have grave impacts to the shippers, farmers, consumers, and communities along the river.

Adaptive Management Plan

The lack of oversight for administrative decisions in the Adaptive Management (AM) Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional NEPA requirements. AWO understands the Corps stated concerns that balancing the preservation of endangered species with the needs of navigation and flood control is no small task. However, the difficulty of the task does not justify the boundless flexibility the DEIS affords the AM plan for implementing alternative strategies without additional oversight. The Corps does not have organic or independent authority to proceed on flow changes without Congressional authorization and

utilization of the NEPA process.

In its present state, the DEIS allows the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. Though the DEIS states there is a governance structure for the AM Plan, it simultaneously permits actions that are "not part of the preferred alternative," if those options are "warranted and feasible." Yet, the DEIS fails to clarify what constitutes warranted and feasible, beyond that which yet-unknown science deems necessary. As a result, the DEIS and the AM Plan open the door to actions that go beyond the established ROD without automatically triggering a full NEPA process to produce a supplemental EIS, as required by law.

The DEIS admits "a supplemental NEPA process may be necessary prior to the end of the 15-year period." Yet, it then fails to clarify the kind of action which would trigger this requirement, such as going beyond the dictates of the Master Manual. Instead, the DEIS permits the Corps to take actions that have not been fully vetted or even proposed, without a supplemental EIS and input from stakeholders. Though scientific monitoring requires a flexible approach, AWO is concerned the present plan goes well beyond reasonable flexibility and that it fails to adhere to legislative requirements clearly established under NEPA and reaffirmed by the courts. Under the guise of scientific necessity, the DEIS proposes that the Corps have unfettered ability to go beyond limitations of the ROD or Master Manual without the accountability of a supplemental EIS.

Upon closer examination of the case law, it is clear the courts have a history of reiterating the need to initiate the NEPA process for substantial changes. In *Operation of the Mo River Sys. Litig., Mo. v. U.S. Army Corps of Engrs*, the Eighth Circuit clarified substantial changes are those that are not qualitatively within the spectrum of alternatives that were discussed in a prior EIS. The DEIS is presently a perfect example of permitting substantial changes without fully satisfying NEPA requirements. A mere mention of an alternative is clearly insufficient to satisfy the requirements of NEPA as reaffirmed in the courts.

Additionally, the courts have a history of reminding the Corps of its legislative obligation to treat flood control and navigation as the primary purposes of the system. While the courts understand and sympathize with the complexity of balancing multiple and varied interests, it has been made clear that the Corps cannot sacrifice flood control and navigation for endangered species. Thus, drastically altering an established course of action from a published EIS, has been soundly rebuked by the courts.

Conclusion

Under the Flood Control Act of 1944, Congress authorized the Corps to govern the U.S. waterways. Additionally, this act required the Corps to prioritize flood control and navigation as dominant functions of its authority. Though the responsibilities of the Corps have increased over time with additional directives from Congress, namely those to assist in protecting endangered species, the new obligations have not diminished the original priorities. While the courts have noted the difficulty in balancing these varied interests, case law is clear that endangered species do not get to take precedence to the detriment of flood control and navigation. Thus, while it is a painstaking task, it is nonetheless imperative the Corps find a fair balance for these complex issues. AWO understands the difficult nature of this endeavor and is confident the recovery of the pallid sturgeon, least tern and piping plover can be achieved without negatively impacting the efficient movement of commerce on the Missouri and Mississippi rivers.

In closing, AWO supports mechanical emergent sandbar habitat construction common to all

alternatives including Alternative 3, the preferred alternative. We believe the preferred alternative strikes the best balance, but are concerned that the one-time flow test would negatively impact commercial navigation. AWO opposes alternatives 2,4,5, and 6 and any alternative or action that would modify the flows of the river and require a change to the Missouri River Master Manual.

Thank you again for allowing AWO the opportunity to comment on the MRRMP DEIS. The Corps commitment to address these concerns is greatly appreciated. AWO looks forward to working together with the Corps to support a Missouri River system that balances the needs of both humans and our ecosystem while providing reliable navigation flows.

Sincerely,

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Correspondence Information

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Correspondence Text

April 24, 2017

To: U.S. Army Corps of Engineers

ATTN: CENWO-PM-AC-MRRMP-EIS

Subject: Comments on the Use of the Social Cost of Greenhouse Gases in the Draft Environmental Impact Statement for the Proposed Missouri River Recovery Management Plan (MRRMP-EIS)

Submitted by: Environmental Defense Fund, Institute for Policy Integrity at New York University School of Law, Natural Resources Defense Council, and Union of Concerned Scientists

In the Draft Environmental Impact Statement for the Missouri River Recovery Management Plan, the Army Corps of Engineers appropriately applies an estimate of the social cost of carbon (SCC) to monetize changes in greenhouse gas emissions resulting from the proposed alternatives. Specifically, the Corps uses an estimate from a range developed by the Interagency Working Group on the Social Cost of Greenhouse Gases. That Interagency Working Group drew on the best available scientific and economic literature and, from 2009 through 2016, developed harmonized, transparent estimates of the social cost of greenhouse gases for all federal agencies to use in their analyses. On March 28, 2017, President Trumps Executive Order 13,783 officially disbanded the Interagency Working Group and withdrew its technical support documents that underpinned the range of estimates. The Order also withdrew the Council on Environmental Quality's guidance on considering greenhouse gas changes in environmental impact statements. Nevertheless, Executive Order 13,783 assumes that federal agencies will continue to monetiz[e] the value of changes in greenhouse gas emissions and instructs agencies to ensure such estimates are consistent with the guidance contained in OMB Circular A-4. Our organizations respectfully submit these comments encouraging the Corps-and all federal agencies-to continue valuing the social cost of greenhouse gases as thoroughly, accurately, and transparently as possible, drawing from the best available scientific and economic data and methodologies. Our organizations may separately submit other comments regarding other aspects of the draft Environmental Impact Statement. These comments make the following key recommendations:

" First, it is appropriate to continue estimating the social cost of greenhouse gases in environmental impact statements, because monetizing such values advances the National Environmental Policy Acts goals of informing decision-makers and the public. More broadly, under legal standards for rational decision-making, agencies must monetize important greenhouse gas effects when their decisions are grounded in cost-benefit analysis.

" Second, OMB's Circular A-4 requires agencies to coordinate and use the best available data and methodologies to estimate the social cost of greenhouse gases. Though Executive Order 13,783 withdrew the Interagency Working Groups technical documents, leaving agencies without specific guidance for how to incorporate the social cost of greenhouse gases, the estimates developed by the Interagency Working Group continue to reflect the best available data and methodological choices consistent with Circular A-4, as required by the new Executive Order. The estimates of the Interagency Working Group also reflect close collaboration and consistency across agencies. Agencies should avoid relying exclusively on a single model to derive their estimates, and instead should follow the

Interagency Working Groups reliance on multiple, peer-reviewed models.

" Third, reliance on a global estimate of the social cost of greenhouse gases is consistent with Circular A-4. By comparison, no existing methodology for estimating a domestic-only value is reliable, complete, or consistent with Circular A-4. If an agency is required to provide a domestic-only estimate, the existing, deficient methodologies must be supplemented to reflect international spillovers to the United States, U.S. benefits from foreign reciprocal actions, and the extraterritorial interests of U.S. citizens including financial interests and altruism.

" Fourth, reliance on a 3% or lower discount rate for inter-generational effects-or a declining discount rate-is consistent with Circular A-4. Applying a 7% discount rate to inter-generational effects would be inconsistent with Circular A-4s requirements to distinguish social discount rates from rates based on private returns to capital; to make plausible assumptions; to adequately address uncertainty, especially over long time horizons; and to rely on the best available economic data and literature.

" Fifth, while Circular A-4 requires thorough treatment of uncertainty, including probability distributions, OMBs guidance also requires plausible assumptions about uncertainty. Giving disproportionate weight in decision-making to improbably optimistic assessments of future climate impacts (i.e., the low-percentile estimates from a probability distribution) would be inappropriate due to the uncertainties, catastrophic risks, and risk aversion related to climate change. All existing best estimates of the social cost of greenhouse gases are almost certainly underestimates and should be treated as a lower bound.

These comments make several other recommendations about the appropriateness of a 300-year time horizon for measuring climate effects, the requirement to qualitatively describe omitted damages, and the relevance of the Information Quality Act to estimating the social cost of greenhouse gases.

Finally, these comments offer specific advice to the Corps on its future use of the social cost of greenhouse gases, including to monetize methane and nitrous oxide as well as carbon dioxide, and to pay attention to how the estimates increase over time.

1. It Is Appropriate to Estimate the Social Cost of Greenhouse Gases in EISs

To achieve the National Environmental Policy Act (NEPA)s goals of informing decision-makers and the public, monetizing the costs and benefits of changes in greenhouse gas emissions is appropriate for any environmental impact statement (EIS) with substantial greenhouse gas effects. More broadly, under legal standards for rational decision-making, agencies must monetize important greenhouse gas effects when their decisions are grounded in cost-benefit analysis.

NEPA May Require Monetizing Climate Effects, Especially If Other Costs and Benefits Are Monetized NEPA requires hard look consideration of beneficial and adverse effects of each alternative option for major federal government actions. The U.S. Supreme Court has called the disclosure of impacts the key requirement of NEPA, and held that agencies must consider and disclose the actual environmental effects of a proposed project in a way that brings those effects to bear on [the agencies] decisions. Courts have repeatedly concluded that an EIS must disclose relevant climate effects. Though NEPA does not require a formal cost-benefit analysis, agencies approaches to assessing costs and benefits must be balanced and reasonable. Courts have warned agencies, for example, that [e]ven though NEPA does not require a cost-benefit analysis, it was nonetheless arbitrary and capricious to quantify the benefits of [federal action] and then explain that a similar analysis of the costs was impossible when such an analysis was in fact possible.

Furthermore, it is arbitrary to exclude a monetized cost or benefit from a final EIS when that monetized value was included in the draft EIS. Because the Corps included in this draft EIS a reasonable estimate of the social cost of carbon based on the best available science and economics, it must likewise include in its final EIS a reasonable estimate based on the best available science and economics.

While often eschewing formal cost-benefit analysis in environmental impact statements, agencies typically include in their NEPA reviews of resource management decisions both quantitative and monetized analyses of the economic benefits and distributional effects of the decision, including estimated tons of recoverable resources per acre and the market value thereof; rental rates per acre

and annual royalty rates; temporary and permanent job growth, including annual wages and indirect job effects from local expenditures; construction of infrastructure supporting the project; and other related benefits. This draft EIS, for example, monetizes regional labor income changes, flood risk management benefits, recreational effects, and the value of hydropower generation, among other effects. As the U.S. District Court of Colorado concluded, [i]t is arbitrary to offer detailed projections of a projects upside while omitting a feasible projection of the projects costs. Thus, to the extent agencies continue to quantify and monetize many of the economic and distributional effects of resource management decisions, agencies must also treat climate effects with proportional analytical rigor. The recent withdrawal of the Council on Environmental Quality's guidance on greenhouse gas emissions does not change the fact that using the social cost of greenhouse gases is consistent with and may be required under NEPA obligations. As CEQ explained in its withdrawal, the guidance was not a regulation, and [t]he withdrawal of the guidance does not change any law, regulation, or other legally binding requirement. In other words, when the guidance recommended the appropriate use of the social cost of greenhouse gases in EISs, it was simply explaining that the social cost of greenhouse gases is consistent with longstanding NEPA regulations and case law, all of which are still in effect today.

Numerous federal agencies support using the social cost of greenhouse gases in EISs. EPA has called on agencies to include a monetized estimate of anticipated greenhouse gas effects in their environmental impact statements, and multiple agencies have applied the social cost of carbon in their environmental impact statements, including the Office of Surface Mining Reclamation and Enforcement, the Bureau of Land Management, the National Highway Traffic Safety Administration, and the Forest Service. Clearly there are no legal, conceptual, methodological, or practical barriers to applying the social cost of greenhouse gases in NEPA reviews, and there is much to recommend applying it.

Economic Principles Support Monetizing Climate Effects to Fulfill NEPA's Goals

NEPA's goals are to inform decision-makers and the public by providing a hard look at the full range of environmental consequences of the government's proposed action and any feasible alternatives. To inform decision-makers and the public, NEPA reviews should aim to present information in the manner that most easily facilitates comparison across alternatives and that best avoids any information-processing biases that might distort rational decision-making. The economic literature supports monetizing climate effects to achieve these goals.

Monetization provides much-needed context for otherwise abstract consequences of climate change. If the NEPA review for an agency action merely quantifies greenhouse gas emissions by metric ton, or only qualitatively discusses the general effects of global climate change, decision-makers and the public will tend to overly discount that individual actions potential contribution. Without context, it is difficult for many decision-makers and the public to assess the magnitude and climate consequences of, for example, an additional million tons of carbon dioxide. Monetization, on the other hand, allows decision-makers and the public to weigh all costs and benefits of an action-and to compare alternatives-using the common metric of money. Monetizing climate costs, therefore, better informs the public and helps bring those effects to bear on [the agency's] decisions.

The tendency to ignore non-monetized effects is the result of common but irrational mental heuristics like probability neglect and base-rate bias. For example, the phenomenon of probability neglect causes people to reduce small probabilities entirely down to zero, resulting in these probabilities playing no role in the decision-making process. This heuristic applies even to events with long-term certainty or with lower-probability but catastrophic consequences, so long as their effects are unlikely to manifest in the immediate future. Weighing the real risks that, decades or centuries from now, climate change will fundamentally and irreversibly disrupt the global economy, destabilize earth's ecosystems, or compromise the planet's ability to sustain human life is challenging; without a tool to contextualize such risks, it is far easier to ignore them. Monetization tools like the social cost of carbon and social cost of methane are designed to solve this problem: by translating long-term costs into present values, instantiating the harms of climate change, and giving due weight to the potential of

lower-probability but catastrophic harms.

Agencies and the public might also suffer from base-rate bias, which causes the undervaluation of information that is generally applicable across a range of scenarios. Agencies fall into this trap when their NEPA reviews provide generic narrative descriptions of climate change yet conclude that climate change is too global and general a problem to address in a project-specific environmental impact statement. This approach inappropriately forecloses the possibility of mitigating the effects of climate change. Metrics like the social cost of carbon and social cost of methane encourage agencies to identify such mitigation opportunities by monetizing the effects on climate change from the emission of as little as a single ton of greenhouse gases. In fact, these monetization tools were developed to assess the cost of actions with marginal impacts on cumulative global emissions, and so are well suited to projects or rules with even relatively small net changes in greenhouse gas emissions.

Standards of Rationality Requires Attention to and Consistent Treatment of Important Factors

The Supreme Court defined the standard of rationality for agency actions under the Administrative Procedure Act as follows:

Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view of the product of agency expertise. Furthermore, the Court found that the standard requires agencies to examine the relevant data and articulate . . . a 'rational connection between the facts found and the choice made.

Two courts of appeals have already applied arbitrary and capricious review to require the use of the social cost of greenhouse gases in agency decision-making. In *Center for Biological Diversity v. National Highway Traffic Safety Administration*, the U.S. Court of Appeals for the Ninth Circuit ruled that, because the agency had monetized other uncertain costs and benefits of its vehicle fuel efficiency standard, its decision not to monetize the benefit of carbon emissions reduction was arbitrary and capricious. Specifically, it was arbitrary to assign[] no value to the most significant benefit of more stringent [vehicle fuel efficiency] standards: reduction in carbon emissions. When an agency bases a rulemaking on cost-benefit analysis, it is arbitrary to put a thumb on the scale by undervaluing the benefits and overvaluing the costs.

More recently, in *Zero Zone Inc. v. Department of Energy*, the U.S. Court of Appeals for the Seventh Circuit found that the expected reduction in environmental costs needs to be taken into account for the Department of Energy [t]o determine whether an energy conservation measure is appropriate under a cost-benefit analysis. More specifically, in response to petitioners challenge that the agency's consideration of the global social cost of carbon was arbitrary, the Seventh Circuit responded that the agency acted reasonably in monetizing the global climate effects.

In short, agencies must monetize important greenhouse gas effects when their decisions are grounded in cost-benefit analysis.

New Executive Order Encourages Continued Monetization of the Social Cost of Greenhouse Gases
Executive Order 13,783 officially disbanded the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) and withdrew its technical support documents that underpinned their range of estimates. Nevertheless, Executive Order 13,783 assumes that federal agencies will continue to monetiz[e] the value of changes in greenhouse gas emissions and instructs agencies to ensure such estimates are consistent with the guidance contained in OMB Circular A-4. Consequently, while the Army Corps and other federal agencies no longer have technical guidance directing them to exclusively rely on the IWGs estimates to monetize climate effects, by no means does the new Executive Order imply that agencies should not monetize important effects in their regulatory analyses or environmental impact statements. In fact, Circular A-4 instructs agencies to monetize costs and benefits whenever feasible. The Executive Order does not prohibit agencies from relying on the same choice of models as the IWG, the same inputs and assumptions as the IWG, the same statistical methodologies as the IWG, or the same ultimate values as derived by the IWG. To the contrary, because the Executive Order requires consistency with Circular A-4, as agencies follow the Circulars

standards for using the best available data and methodologies, they will necessarily choose similar data, methodologies, and estimates as the IWG, since the IWGs work continues to represent the best available estimates. The Executive Order does not preclude agencies from using the same range of estimates as developed by the IWG, so long as the agency explains that the data and methodology that produced those estimates are consistent with Circular A-4 and, more broadly, with standards for rational decision-making.

Similarly, as explained above, the Executive Orders withdrawal of the CEQ guidance on greenhouse gases does not change agencies obligations to appropriately monetize climate effects in their EISs. The CEQ guidance had merely summarized and applied longstanding NEPA regulations and case law, all of which are still in effect today. Using the best available estimates of the social cost of greenhouse gases is still consistent with, and may be required by, NEPA.

As the rest of these comments explain, existing best estimates of the social cost of greenhouse gases in fact are already consistent with the Circular A-4. Therefore, the IWG estimates or those of a similar or higher value are appropriate for future use in regulatory analyses and environmental impact statements.

2. Circular A-4 Requires Agencies to Coordinate and Use the Best Available Data and Methodologies to Estimate the Social Cost of Greenhouse Gases

Agencies Should Not Rely on a Single Model, but Should Use Multiple, Peer-Reviewed Models

Circular A-4 requires agencies to use the best reasonably obtainable scientific, technical, and economic information available. To achieve this, you should rely on peer-reviewed literature, where available.

Since 2010, federal agencies have used estimates of the social cost of greenhouse gases based on the three most cited, most peer-reviewed integrated assessment models (IAMs). These three IAMs—called DICE (the Dynamic Integrated Model of Climate and the Economy), FUND (the Climate Framework for Uncertainty, Negotiation, and Distribution), and PAGE (Policy Analysis of the Greenhouse Effect)—draw on the best available scientific and economic data to link physical impacts to the economic damages of each marginal ton of greenhouse gas emissions. Each model translates emissions into changes in atmospheric greenhouse gas concentrations, atmospheric concentrations into temperature changes, and temperature changes into economic damages. These three models have been combined with inputs derived from peer-reviewed literature on climate sensitivity, socio-economic and emissions trajectories, and discount rates. The results of the three models have been given equal weight in federal agencies estimates and have been run through statistical techniques like Monte Carlo analysis to account for uncertainty.

In a 2017 report, the National Academies of Sciences (NAS) recommended future improvements to this methodology. Specifically, over the next five years the NAS recommends unbundling the four essential steps in the IAMs into four separate modules: a socio-economic and emissions scenario module, a climate change module, an economic damage module, and a discount rate module.

Unbundling these four steps into separate modules could allow for easier, more transparent updates to each individual component, to better reflect the best available science and capture the full range of uncertainty in the literature. These four modules could be built from scratch or drawn from the existing IAMs. Either way, the integrated modular framework envisioned by NAS for the future will require significant time and resource commitments from federal agencies. It is likely unrealistic that the Corps could undertake this approach on its own or complete it in time for this EIS process without significant and costly delays.

In the meantime, the NAS has supported the continued near-term use of the existing social cost of greenhouse gas estimates based on the DICE, FUND, and PAGE models, as used by federal agencies to date. In short, DICE, FUND, and PAGE continue to represent the state-of-the-art models. The Government Accountability Office found in 2014 that the estimates derived from these models and used by federal agencies are consensus-based, rely on peer-reviewed academic literature, disclose relevant limitations, and are designed to incorporate new information via public comments and updated research. In fact, the social cost of greenhouse gas estimates used in federal regulatory

proposals and EISs have been subject to over 80 distinct public comment periods. The economics literature confirms that estimates based on these three IAMs remain the best available estimates. In 2016, the U.S. Court of Appeals for the Seventh Circuit held the estimates used to date by agencies are reasonable.

While Executive Order 13,783 withdrew the explicit guidance requiring federal agencies to rely on IWGs technical support documents to estimate the social cost of greenhouse gases, nevertheless, the IWGs choice of DICE, FUND, and PAGE, its use of inputs and assumptions, and its statistical analysis still represent the state-of-the-art approach based on the best available, peer-reviewed literature. This approach satisfies Circular A-4s requirements for information quality and transparency. Therefore, as agencies comply with the Executive Orders instructions to ensure that social cost of greenhouse gases are consistent with Circular A-4, agencies will necessarily have to rely on models like DICE, FUND, and PAGE, to use the same or similar inputs and assumptions as the IWG, and to apply statistical analyses like Monte Carlo.

If agencies choose not to rely directly on the IWG estimates, models should be chosen based on Circular A-4s criteria of quality and transparency. DICE, FUND, and PAGE are still the dominant, most peer-reviewed models, and most estimates in the literature continue to rely on those models. Each of these models has been developed over decades of research, and has been subject to rigorous peer review, documented in the published literature. Other models exist but lack DICE, FUND, and PAGEs long history of peer review or exhibit other limitations. For example, the World Bank has created ENVISAGE, which models a more detailed breakdown of market sectors, but unfortunately does not account for non-market impacts and so would omit a large portion of significant climate effects. Models like ENVISAGE are not currently appropriate choices under the criteria of Circular A-4.

An approach based on multiple, peer-reviewed models (like DICE, FUND, and PAGE) is more rigorous and more consistent with Circular A-4 than reliance on a single model or estimate. DICE, FUND, and PAGE each include many of the most significant climate effects, use appropriate discount rates and other assumptions, address uncertainty, are based on peer-reviewed data, and are transparent. However, each IAM also has its own limitations and is sensitive to its own assumptions. No model fully captures all the significant climate effects. By giving weight to multiple models-as the IWG did-agencies can balance out some of these limitations and produce more robust estimates.

Finally, while agencies should be careful not to cherry-pick a single estimate from the literature, it is noteworthy that various estimates in the literature are consistent with the numbers derived from a weighted average of DICE, FUND, and PAGE-namely, with a central estimate of about \$40 per ton of carbon dioxide, and a high-percentile estimate of about \$120, for year 2015 emissions (in 2016 dollars, at a 3% discount rate). The latest central estimate from DICEs developers is \$87 (at a 3% discount rate); from FUNDS developers, \$12; and from PAGEs developers, \$123, with a high-percentile estimate of \$332.

In fact, much of the literature suggest that a central estimate of \$40 per ton is a very conservative underestimate. A 2013 meta-analysis of the broader literature found a mean estimate of \$59 per ton of carbon dioxide, and a soon-to-be-published update by the same author finds a mean estimate of \$108 (at a 1% discount rate). A 2015 meta-analysis-which sought out estimates besides just those based on DICE, FUND, and PAGE-found a mean estimate of \$83 per ton of carbon dioxide. Various studies relying on expert elicitation from a large body of climate economists and scientists have found mean estimates of \$50 per ton of carbon dioxide, \$96-\$144 per ton of carbon dioxide, and \$80-\$100 per ton of carbon dioxide. There is a growing consensus in the literature that even the best existing estimates of the social cost of greenhouse gases may severely underestimate the true marginal cost of climate damages. Overall, a central estimate of \$40 per ton of carbon dioxide at a 3% discount rate, with a high-percentile estimate of about \$120 for year 2015 emissions, is consistent with the best available literature; if anything, the best available literature supports even higher estimates.

Similarly, a comparison of international estimates of the social cost of greenhouse gases suggests that a central estimate of \$40 per ton of carbon dioxide is a very conservative value. Sweden places the long-term valuation of carbon dioxide at \$168 per ton; Germany calculates a climate cost of \$167 per

ton of carbon dioxide in the year 2030; the United Kingdoms shadow price of carbon has a central value of \$115 by 2030; Norway's social cost of carbon is valued at \$104 per ton for year 2030 emissions; and various corporations have adopted internal shadow prices as high as \$80 per ton of carbon dioxide.

Agencies Should Coordinate Efforts and Harmonize Estimates

Without IWGs framework for inter-agency coordination or the instructions in IWGs technical documents for all agencies to use standardized estimates of the social cost of greenhouse gases, agencies have a choice going forward: either each agency could try to select and justify its own estimates, or agencies could continue to coordinate their efforts and harmonize their estimates. The latter is preferred and most consistent with Circular A-4's instructions.

Circular A-4 directs agencies to keep in mind the larger objective of analytical consistency in estimating benefits and costs across regulations and agencies. . . Failure to maintain such consistency may prevent achievement of the most risk reduction for a given level of resource expenditure. By sharing resources, information, and expertise, agencies can save time and money and ultimately produce better estimates. Harmonized values for the social cost of greenhouse gases will increase predictability and transparency for regulated entities, the U.S. public, and international actors looking to U.S. actions to develop their own reciprocal approaches (see *infra* for more on reciprocal foreign actions). Though the recent Executive Order officially disbanded the IWG, agencies can and should continue to coordinate their efforts.

3. Reliance on a Global Estimate Is Consistent with Circular A-4

Not only is it consistent with Circular A-4 and best economic practices to estimate the global damages of U.S. greenhouse gas emissions in regulatory analyses and environmental impact statements, but no existing methodology for estimating a domestic-only value is reliable, complete, or consistent with Circular A-4. If an agency is required to provide a domestic-only estimate, the existing, deficient methodologies must be supplemented to reflect international spillovers to the United States, U.S. benefits from foreign reciprocal actions, and the extraterritorial interests of U.S. citizens including financial interests and altruism.

Circular A-4 Requires Different Emphases . . . Depending on the Nature of the Regulatory Issue From 2010 through 2016, federal agencies based their regulatory decision and NEPA reviews on global estimates of the social cost of greenhouse gases. Though agencies often also disclosed a highly speculative range that tried to capture exclusively U.S. climate costs, emphasis on a global value was recognized as more accurate given the science and economics of climate change, as more consistent with best economic practices, and as crucial to advancing U.S. strategic goals.

Opponents of climate regulation challenged the global number in court and other forums, and often attempted to use Circular A-4 as support. Specifically, opponents have seized on Circular A-4's instructions to focus on effects to citizens and residents of the United States, while any significant effects occurring beyond the borders of the United States . . . should be reported separately.

Importantly, despite this language and such challenges, the U.S. Court of Appeals for the Seventh Circuit had no trouble concluding that a global focus for the social cost of greenhouse gases was reasonable:

AHRI and Zero Zone [the industry petitioners] next contend that DOE [the Department of Energy] arbitrarily considered the global benefits to the environment but only considered the national costs. They emphasize that the [statute] only concerns national energy and water conservation. In the New Standards Rule, DOE did not let this submission go unanswered. It explained that climate change involves a global externality, meaning that carbon released in the United States affects the climate of the entire world. According to DOE, national energy conservation has global effects, and, therefore, those global effects are an appropriate consideration when looking at a national policy. Further, AHRI and Zero Zone point to no global costs that should have been considered alongside these benefits. Therefore, DOE acted reasonably when it compared global benefits to national costs.

Circular A-4's reference to effects beyond the borders confirms that it is appropriate for agencies to consider the global effects of U.S. greenhouse gas emissions. While Circular A-4 may suggest that

most typical decisions should focus on U.S. effects, the Circular cautions agencies that special cases call for different emphases:

[Y]ou cannot conduct a good regulatory analysis according to a formula. Conducting high-quality analysis requires competent professional judgment. Different regulations may call for different emphases in the analysis, depending on the nature and complexity of the regulatory issues and the sensitivity of the benefit and cost estimates to the key assumptions.

In fact, Circular A-4 elsewhere assumes that agencies analyses will not always be conducted from purely the perspective of the United States, as one of its instructions only applies as long as the analysis is conducted from the United States perspective, suggesting sometimes the perspective may instead be global. For example, the Environmental Protection Agency and the Department of Transportation have adopted a global perspective on the analysis of potential monopsony benefits to U.S. consumers resulting from the reduced price of foreign oil imports following energy efficiency increases, and the Environmental Protection Agency assesses the global potential for leakage of greenhouse gas emissions owing to U.S. regulation.

The nature of the issue of climate change requires such a different emphasis from the default domestic-only assumption. To avoid a global tragedy of the commons that could irreparably damage all countries, including the United States, every nation should ideally set policy according to the global social cost of greenhouse gases. Climate and clean air are global common resources, meaning they are freely available to all countries, but any one countrys use-i.e., pollution-imposes harms on the polluting country as well as the rest of the world. Because greenhouse pollution does not stay within geographic borders but rather mixes in the atmosphere and affects climate worldwide, each ton emitted by the United States not only creates domestic harms, but also imposes large externalities on the rest of the world. Conversely, each ton of greenhouse gases abated in another country benefits the United States along with the rest of the world.

If all countries set their greenhouse emission levels based on only domestic costs and benefits, ignoring the large global externalities, the aggregate result would be substantially sub-optimal climate protections and significantly increased risks of severe harms to all nations, including the United States. Thus, basic economic principles demonstrate that the United States stands to benefit greatly if all countries apply global social cost of greenhouse gas values in their regulatory decisions and project reviews. Indeed, the United States stands to gain hundreds of billions or even trillions of dollars in direct benefits from efficient foreign action on climate change.

Therefore, a rational tactical option in the effort to secure that economically efficient outcome is for the United States to continue using global social cost of greenhouse gas values itself. The United States is engaged in a repeated strategic dynamic with several significant players-including the United Kingdom, Germany, Sweden, and others-that have already adopted a global framework for valuing the social cost of greenhouse gases. For example, Canada and Mexico have explicitly borrowed the U.S. estimates of a global Social Cost of Carbon to set their own fuel efficiency standards. For the United States to now depart from this collaborative dynamic by reverting to a domestic-only estimate could undermine the countrys long-term interests and could jeopardize emissions reductions underway in other countries, which are already benefiting the United States.

For these and other reasons, federal agencies have, since 2009, properly relied on global estimates of the social cost of greenhouse gases to justify their decisions. At the same time, agencies have often disclosed a highly speculative estimate of the domestic-only effects of climate change. In particular, the Department of Energy always includes a chapter on a domestic-only value of carbon emissions in the economic analyses supporting its energy efficiency standards; the Environmental Protection Agency has also often disclosed similar estimates. Such an approach is consistent with Circular A-4s suggestion that agencies should usually disclose domestic effects separately from global effects. However, as explored more below, reliance on a domestic-only methodology would be inconsistent with the standards of Circular A-4, and existing estimates of domestic-only effects are severe underestimates. Consequently, it is appropriate under Circular A-4 for agencies to continue to rely on global estimates of the social cost of greenhouses to justify their regulatory decisions or their choice of

alternatives under NEPA.

For more details on the justification for a global value of the social cost of greenhouse gases, please see Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 *Columbia J. Envtl. L.* 203 (2017). Another strong defense of the global valuation as consistent with best economic practices appears in a letter published in the latest issue of *The Review of Environmental Economics and Policy*, co-authored by Nobel laureate Kenneth Arrow.

No Current Methodology for Estimating a Domestic-Only Value Is Consistent with Circular A-4
OMB, the National Academies of Sciences, and the economic literature all agree that existing methodologies for calculating a domestic-only value of the social cost of greenhouse gases are deeply flawed and result in severe and misleading underestimates.

The Interagency Working Group had offered some domestic estimates. Using the results of one economic model (FUND) as well as the U.S. share of global gross domestic product (GDP), the group generated an approximate, provisional, and highly speculative range of 7-23% of the global social cost of carbon as an estimate of the purely direct climate effects to the United States. Yet, as the interagency group acknowledged-and as discussed more thoroughly in the next subsection of these comments-this range is almost certainly an underestimate because it ignores significant, indirect costs to trade, human health, and security that are likely to spill over into the United States as other regions experience climate change damages, among other effects.

Neither the existing IAMs nor a share of global GDP are appropriate bases for calculating a domestic-only estimate. FUND, like other IAMs, includes some simplifying assumptions: of relevance, FUND and the other IAMs are not able to capture the adverse effects that the impacts of climate change in other countries will have on the United States through trade linkages, national security, migration, and other forces. This is why the IWG characterized the domestic-only estimate from FUND as a highly speculative underestimate. Similarly, a domestic-only estimate based on some rigid conception of geographic borders or U.S. share of world GDP will fail to capture all the climate-related costs and benefits that matter to U.S. citizens. U.S. citizens have economic and other interests abroad that are not fully reflected in the U.S. share of global GDP. GDP is a monetary value of final goods and services-that is, those that are bought by the final user-produced in a country in a given period of time. GDP therefore does not reflect significant U.S. ownership interests in foreign businesses, properties, and other assets, as well as consumption abroad including tourism, or even the 8 million Americans living abroad. At the same time, GDP is also over-inclusive, counting productive operations in the United States that are owned by foreigners. Gross National Income (GNI), by contrast, defines its scope not by location but by ownership interests. However, not only has GNI fallen out of favor as a metric used in international economic policy, but using a domestic-only SCC based on GNI would make the SCC metrics incommensurable with other costs in regulatory impact analyses, since most regulatory costs are calculated by U.S. agencies regardless of whether they fall to U.S.-owned entities or to foreign-owned entities operating in the United States. The artificial constraints of both metrics counsel against a rigid split based on either U.S. GDP or U.S. GNI.

In 2015, OMB concluded, along with several other agencies, that good methodologies for estimating domestic damages do not currently exist. Similarly, the National Academies of Sciences recently concluded that current IAMs cannot accurately estimate the domestic social cost of greenhouse gases, and that estimates based on U.S. share of global GDP would be likewise insufficient. William Nordhaus, the developer of the DICE model, cautioned earlier this year that regional damage estimates are both incomplete and poorly understood, and there is little agreement on the distribution of the SCC by region. In short, any domestic-only estimate will be inaccurate, misleading, and out of step with the best available economic literature, in violation of Circular A-4s standards for information quality.

Benefits and Costs that Accrue to U.S. Citizens Are Much Broader Than Effects within U.S. Borders
To the extent agencies are required to distinguish a portion of the global social cost of greenhouse gases that accrue[s] to U.S. citizens alone, agencies will need to analyze a much broader range of

climate effects than those occurring within U.S. borders. Circular A-4 instructs to estimate all important opportunity costs, meaning what individuals are willing to forgo to enjoy a particular benefit. U.S. individuals are willing to forgo money to enjoy benefits or avoid costs from climate effects that occur beyond U.S. borders, and all such significant effects must be captured.

International Spillovers: First, agencies may not ignore significant, indirect costs to trade, human health, and security likely to spill over to the United States as other regions experience climate change damages. Due to its unique place among countries-both as the largest economy with trade- and investment-dependent links throughout the world, and as a military superpower-the United States is particularly vulnerable to effects that will spill over from other regions of the world. Spillover scenarios could entail a variety of serious costs to the United States as unchecked climate change devastates other countries. Correspondingly, mitigation or adaptation efforts that avoid climate damages to foreign countries will radiate benefits back to the United States as well. While the current IAMs provide reliable but conservative estimates of global damages, they currently cannot calculate reliable region-specific estimates, in part because they do not model such spillovers.

As climate change disrupts the economies of other countries, decreased availability of imported inputs, intermediary goods, and consumption goods may cause supply shocks to the U.S. economy. Shocks to the supply of energy, technological, and agricultural goods could be especially damaging. For example, when Thailand-the worlds second-largest producer of hard-drives-experienced flooding in 2011, U.S. consumers faced higher prices for many electronic goods, from computers to cameras. A recent economic study explored how heat stress-induced reductions in productivity worldwide will ripple through the interconnected global supply network. Similarly, the U.S. economy could experience demand shocks as climate-affected countries decrease their demand for U.S. goods. Financial markets may also suffer as foreign countries become less able to loan money to the United States and as the value of U.S. firms declines with shrinking foreign profits. As seen historically, economic disruptions in one country can cause financial crises that reverberate globally at a breakneck pace. The human dimension of climate spillovers includes migration and health effects. Water and food scarcity, flooding or extreme weather events, violent conflicts, economic collapses, and a number of other climate damages could precipitate mass migration to the United States from regions worldwide, especially, perhaps, from Latin America. For example, a 10% decline in crop yields could trigger the emigration of 2% of the entire Mexican population to other regions, mostly to the United States. Such an influx could strain the U.S. economy and will likely lead to increased U.S. expenditures on migration prevention. Infectious disease could also spill across the U.S. borders, exacerbated by ecological collapses, the breakdown of public infrastructure in poorer nations, declining resources available for prevention, shifting habitats for disease vectors, and mass migration.

Finally, climate change is predicted to exacerbate existing security threats-and possibly catalyze new security threats-to the United States. Besides threats to U.S. military installations and operations at home and abroad from flooding, storms, extreme heat, and wildfires, Secretary of Defense Mattis has explained that Climate change is impacting stability in areas of the world where our troops are operating today. The Department of Defense's 2014 Defense Review declared that climate effects are threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions-conditions that can enable terrorist activity and other forms of violence, and as a result climate change may increase the frequency, scale, and complexity of future missions, including defense support to civil authorities, while at the same time undermining the capacity of our domestic installations to support training activities. As an example of the climate-security-migration nexus, prolonged drought in Syria likely exacerbated the social and political tensions that erupted into an ongoing civil war, which has triggered an international migration and humanitarian crisis.

Because of these interconnections, attempts to artificially segregate a U.S.-only portion of climate damages will inevitably result in misleading underestimates. Some experts on the social cost of carbon have concluded that, given that integrated assessment models currently do not capture many of these key inter-regional costs, use of the global SCC may be further justified as a proxy to capturing all

spillover effects. Though surely not all climate damages will spill back to affect the United States, many will, and together with other justifications, the likelihood of significant spillovers makes a global valuation the better, more transparent accounting of the full range of costs and benefits that matter to U.S. policymakers and the public.

Reciprocal Foreign Actions: Second, an indirect consequence of the United States using a global social cost of greenhouse gas to justify actions that protect against climate damages is that foreign countries take reciprocal actions that benefit the United States. Circular A-4 requires that the same standards of information and analysis quality that apply to direct benefits and costs should be applied to ancillary benefits and countervailing risks. Consequently, any attempt to estimate a domestic-only value of the social cost of greenhouse gas must include indirect effects from reciprocal foreign actions. As detailed more in Howard & Schwartz (2017), because the world's climate is a single interconnected system, the United States benefits greatly when foreign countries consider the global externalities of their greenhouse gas pollution and cut emissions accordingly. Game theory predicts that one viable strategy for the United States to encourage other countries to think globally in setting their climate policies is for the United States to do the same, in a tit-for-tat, lead-by-example, or coalition-building dynamic. In fact, most other countries with climate policies already use a global social cost of carbon or set their carbon taxes or allowances at prices above their domestic-only costs, consistent with the global perspective used to date by U.S. agencies to value the cost of greenhouse gases. Both Republican and Democratic administrations have recognized that the analytical and regulatory choices of U.S. agencies can affect the actions of foreign countries, which in turn affect U.S. citizens.

According to one study, over the next fifteen years, direct U.S. benefits from global climate policies already in effect could reach over \$2 trillion. Any attempt to estimate a domestic-only value of the social cost of greenhouse gases must include such indirect effects from reciprocal foreign actions.

Extraterritorial Interests: Circular A-4 requires agencies to count all significant costs and benefits, and specifically explains the importance of including non-use values like bequest and existence values: ignoring these values in your regulatory analysis may significantly understate the benefits and/or costs of regulatory action. Similarly, while Circular A-4 distinguishes altruism from non-use values, the guidance instructs agencies that if there is evidence of selective altruism, it needs to be considered specifically in both benefits and costs. Many costs and benefits accrue to U.S. citizens from use values, non-use values, and altruism attached to climate effects occurring outside the U.S. borders. U.S. citizens have economic and other interests abroad that are not fully reflected in the U.S. share of global GDP. As explained above, GDP does not reflect significant U.S. ownership interests in foreign businesses, properties, and other assets, as well as consumption abroad including tourism, or even the 8 million Americans living abroad.

The United States also has a willingness to pay-as well as a legal obligation-to protect the global commons of the oceans and Antarctica from climate damages. For example, the Madrid Protocol on Environmental Protection to the Antarctic Treaty commits the United States and other parties to the comprehensive protection of the Antarctic environment, including regular and effective monitoring of effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment. The share of climate damages for which the United States is responsible is not limited to our geographic borders.

Similarly, U.S. citizens value natural resources and plant and animal lives abroad, even if they never use those resources or see those plants or animals. For example, the existence value of restoring the Prince William Sound after the 1989 Exxon Valdez oil tanker disaster-that is, the benefits derived by Americans who would never visit Alaska but nevertheless felt strongly about preserving the existence of this pristine environment-was estimated in the billions of dollars. Though the methodologies for calculating existence value remain controversial, U.S. citizens certainly have a non-zero willingness to pay to protect rainforests, charismatic megafauna like pandas, and other life and environments existing in foreign countries. U.S. citizens also have an altruistic willingness to pay to protect foreign citizens health and welfare. This altruism is selective altruism, consistent with Circular A-4, because the United States is directly responsible for most of the historic emissions contributing to climate

change.

NEPA Requires a Global Perspective

Circular A-4 cannot change agencies statutory obligations. The National Environmental Policy Act contains a provision on International and National Coordination of Efforts that broadly requires that all agencies of the Federal Government shall . . . recognize the worldwide and long-range character of environmental problems. Using a global social cost of greenhouse gases to analyze and set policy fulfills these instructions. Furthermore, the Act requires agencies to, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment. By continuing to use the global social cost of greenhouse gases to spur reciprocal foreign actions, federal agencies lend appropriate support to the National Environmental Policy Act's goal of maximize[ing] international cooperation to protect mankind's world environment. Also of note, Circular A-4 implements Executive Order 12,866, but that Order has been supplemented by additional Orders. Executive Order 13,609, which remains in effect, recognizes that significant regulations can have significant international impacts, and it calls on federal agencies to work toward best practices for international regulatory cooperation with respect to regulatory development. Therefore, for federal policies and actions with significant international effects, a global perspective on costs and benefits is appropriate and may be required.

4. Reliance on a 3% or Lower Discount Rate for Intergenerational Effects-or a Declining Discount Rate-Is Consistent with Circular A-4

In 2015, OMB explained that Circular A-4 is a living document. . . . [T]he use of 7 percent is not considered appropriate for intergenerational discounting. There is wide support for this view in the academic literature, and it is recognized in Circular A-4 itself. While Circular A-4 tells agencies generally to use a 7% discount rate in addition to lower rates for typical rules, the guidance does not intend for default assumptions to produce analyses inconsistent with best economic practices. Circular A-4 clearly supports using lower rates to the exclusion of a 7% rate for the costs and benefits occurring over the extremely long, 300-year time horizon of climate effects.

A 7% Discount Rate Is Not Sound and Defensible or Appropriate for Climate Effects

As quoted previously, Circular A-4 clearly requires agency analysts to do more than rigidly apply default assumptions: You cannot conduct a good regulatory analysis according to a formula. Conducting high-quality analysis requires competent professional judgment. Analysis must be based on the best reasonably obtainable scientific, technical, and economic information available, and agencies must use sound and defensible values or procedures to monetize benefits and costs, and ensure that key analytical assumptions are defensible. Rather than assume a 7% discount rate should be applied automatically to every analysis, Circular A-4 requires agencies to justify the choice of discount rates for each analysis: [S]tate in your report what assumptions were used, such as . . . the discount rates applied to future benefits and costs, and explain clearly how you arrived at your estimates. Based on Circular A-4's criteria, there are numerous reasons why applying a 7% discount rate to climate effects that occur over a 300-year time horizon would be unjustifiable.

First, basing the discount rate on the consumption rate of interest is the correct framework for analysis of climate effects; a discount rate based on the private return to capital is inappropriate. Circular A-4 does suggest that 7% should be a default position that reflects regulations that primarily displace capital investments; however, the Circular explains that When regulation primarily and directly affects private consumption . . . a lower discount rate is appropriate. The 7% discount rate is based on a private sector rate of return on capital, but private market participants typically have short time horizons. By contrast, climate change concerns the public well-being broadly. Rather than evaluating an optimal outcome from the narrow perspective of investors alone, economic theory requires analysts to make the optimal choices based on societal preferences and social discount rates. Moreover, because climate change is expected to largely affect consumption, a 7% rate is inappropriate.

In 2013, OMB called for public comments on the social cost of greenhouse gases; in the 2015 Response to Comment document, OMB (together with the other agencies from the IWG) explained

that:

[T]he consumption rate of interest is the correct concept to use . . . as the impacts of climate change are measured in consumption-equivalent units in the three IAMs used to estimate the SCC. This is consistent with OMB guidance in Circular A-4, which states that when a regulation is expected to primarily affect private consumption—for instance, via higher prices for goods and services—it is appropriate to use the consumption rate of interest to reflect how private individuals trade-off current and future consumption.

The Council of Economic Advisers similarly interprets Circular A-4 as requiring agencies to choose the appropriate discount rate based on the nature of the regulation: [I]n Circular A-4 by the Office of Management and Budget (OMB) the appropriate discount rate to use in evaluating the net costs or benefits of a regulation depends on whether the regulation primarily and directly affects private consumption or private capital. The National Academies of Sciences also explained that a consumption rate of interest is the appropriate basis for a discount rate for climate effects. In short, 7% is an inappropriate choice of discount rate for the impacts of climate change.

Second, uncertainty over the long time horizon of climate effects should drive analysts to select a lower discount rate. As an example of when a 7% discount rate is appropriate, Circular A-4 identifies an EPA rule with a 30-year timeframe of costs and benefits. By contrast, greenhouse gas emissions generate effects stretching out across 300 years. As Circular A-4 notes, while Private market rates provide a reliable reference for determining how society values time within a generation, but for extremely long time periods no comparable private rates exist.

Circular A-4 discusses how uncertainty over long time horizons drives the discount rate lower: the longer the horizon for the analysis, the greater the uncertainty about the appropriate value of the discount rate, which supports a lower rate. Circular A-4 cites the work of respected economist Weitzman and concludes that the certainty-equivalent discount factor corresponds to the minimum discount rate having any substantial positive probability. The National Academies of Sciences makes the same point about discount rates and uncertainty.

Third, a 7% percent discount rate would be inappropriate for climate change because it is based on outdated data and diverges from the current economic consensus. Circular A-4 requires that assumptions—including discount rate choices—are based on the best reasonably obtainable scientific, technical, and economic information available. Yet Circular A-4's own default assumption of a 7% discount rate was published 14 years ago and was based on data from decades ago. Circular A-4's guidance on discount rates is in need of an update, as the Council of Economic Advisers detailed earlier this year after reviewing the best available economic data and theory:

The discount rate guidance for Federal policies and projects was last revised in 2003. Since then a general reduction in interest rates along with a reduction in the forecast of long-run interest rates, warrants serious consideration for a reduction in the discount rates used for benefit-cost analysis. In addition to recommending a value below 7% as the discount factor based on private capital returns, the Council of Economic Advisers further explains that, because long-term interest rates have fallen, a discount rate based on the consumption rate of interest should be at most 2 percent, which further confirms that applying a 7% rate to a context like climate change would be wildly out of step with the latest data and theory. Similarly, recent expert elicitations—a technique supported by Circular A-4 for filling in gaps in knowledge—indicate that a growing consensus among experts in climate economics for a discount rate between 2% and 3%; 5% represents the upper range of values recommended by experts, and few to no experts support discount rates greater than 5% being applied to the costs and benefits of climate change. Based on current economic data and theory, the most appropriate discount rate for climate change is 3% or lower.

Fourth, Circular A-4 requires more of analysts than giving all possible assumptions and scenarios equal attention in a sensitivity analysis; if alternate assumptions would fundamentally change the decision, Circular A-4 requires analysts to select the most appropriate assumptions from the sensitivity analysis.

Circular A-4 indicates that significant intergenerational effects will warrant a special sensitivity analysis:

Special ethical considerations arise when comparing benefits and costs across generations. . . It may not be appropriate for society to demonstrate a similar preference when deciding between the well-being of current and future generations. . . If your rule will have important intergenerational benefits or costs you might consider a further sensitivity analysis using a lower but positive discount rate in addition to calculating net benefits using discount rates of 3 and 7 percent.

Elsewhere in Circular A-4, OMB clarifies that sensitivity analysis should not result in a rigid application of all available assumptions regardless of plausibility. Circular A-4 instructs agencies to depart from default assumptions when special issues call for different emphases depending on the sensitivity of the benefit and cost estimates to the key assumptions. More specifically:

If benefit or cost estimates depend heavily on certain assumptions, you should make those assumptions explicit and carry out sensitivity analyses using plausible alternative assumptions. If the value of net benefits changes from positive to negative (or vice versa) or if the relative ranking of regulatory options changes with alternative plausible assumptions, you should conduct further analysis to determine which of the alternative assumptions is more appropriate.

In other words, if using a 7% discount rate would fundamentally change the agency's decision compared to using a 3% or lower discount rate, the agency must evaluate which assumption is most appropriate. Since OMB, the Council of Economic Advisers, the National Academies of Sciences, and the economic literature all conclude that a 7% rate is inappropriate for climate change, agencies should select a 3% or lower rate. Applying a 7% rate to climate effects cannot be justified based on the best reasonably obtainable scientific, technical, and economic information available and is inconsistent with the proper treatment of uncertainty over long time horizons.

Alternatively, Use a Declining Discount Rate

Circular A-4 contemplates the use of declining discount rates in its reference to the work of Weitzman. As the Council of Economic Advisers explained earlier this year, Weitzman and others developed the foundation for a declining discount rate approach, wherein rates start relatively higher for near-term costs and benefits but steadily decline over time according to a predetermined schedule until, in the very long-term, very low rates dominate due to uncertainty. The National Academies of Sciences report also strongly endorses a declining discount rate approach.

One possible schedule of declining discount rates was proposed by Weitzman. It is derived from a broad survey of top economists and other climate experts and explicitly incorporates arguments around interest rate uncertainty. Work by Arrow et al, Cropper et al, and Gollier and Weitzman, among others, similarly argue for a declining interest rate schedule and lay out the fundamental logic. Another schedule of declining discount rates has been adopted by the United Kingdom.

However, as the Council of Economic Advisers notes, there are technical difficulties with the declining discount rate approach that have yet to be fully addressed by economists. OMB has similarly cautioned that there is not yet a consensus around which schedule to adopt for declining discount rates. The Council of Economic Advisers therefore suggests that, in lieu of a declining discount rate, it is still appropriate to pick a flat but somewhat lower discount-rate schedule for projects involving distant costs and benefits.

If agencies are not yet confident that the economic literature supports a specific schedule for a declining discount rate, applying a 3% or lower rate to long-term climate effects remains the best practice.

5. Circular A-4 requires plausible assumptions about uncertainty, which support higher estimates of the social cost of greenhouse gases.

Circular A-4 requires thorough treatment of uncertainty around both values and outcomes, and for especially large or complex matters it recommends a formal probabilistic analysis. Generally, Circular A-4 encourages agencies to disclose the full probability distribution of potential consequences, including both upper and lower bound estimates in addition to central estimates.

However, this guidance comes with some caveats. First, this approach to central estimates and the probability distribution is appropriate as long as society is 'risk neutral with respect to the regulatory alternatives. But if society is risk averse-as is the case with climate change-different considerations

need to be taken into account. Second, in 2011, the Office of Information and Regulatory Affairs interpreted Circular A-4's goal as not to characterize the full range of possible outcomes . . . but rather the range of plausible outcomes. Agency analysts must exercise judgment. Finally, as with all elements of agencies' economic analyses, Circular A-4 stresses that Your analysis should be credible, objective, realistic, and scientifically balanced.

Consequently, while it may be appropriate to disclose the full probability distribution of an uncertainty analysis, it is not appropriate under Circular A-4 to give a low-percentile estimate of the social cost of greenhouse gases equal weight in decision-making with the central and upper-percentile estimates. Giving equal attention to a low-percentile estimate is not credible, objective, realistic, and scientifically balanced, does not reflect plausible scenarios, and would undermine consideration of risk aversion. Instead, a proper and plausible treatment of uncertainty in the context of climate change will support higher estimates of the social cost of greenhouse gases.

The estimates of the social cost of greenhouse gases used to date by federal agencies are a range of four estimates: three central or mean-average estimates at a 2.5%, 3%, and 5% discount rate respectively, and a 95th percentile value at the 3% discount rate. The Interagency Working Groups' technical support documents did disclose fuller probabilities distributions, but those four estimates were chosen by agencies to be the focus for decision-making. In particular, application of the 95th percentile value was not part of an effort to show the probability distribution around the 3% discount rate; rather, the 95th percentile value serves as a methodological shortcut to approximate the uncertainties around low-probability but high-damage, catastrophic, or irreversible outcomes that are currently omitted or undercounted in the economic models.

The shape of the distribution of climate risks and damages includes a long tail of lower-probability, high-damage, irreversible outcomes, due to tipping points in planetary systems, inter-sectoral interactions, and other deep uncertainties. Climate damages are not normally distributed around a central estimate, but rather feature a significant right skew toward catastrophic outcomes. In fact, a 2015 survey of economic experts concludes that catastrophic outcomes increasingly seem likely to occur. The integrated assessment models used to calculate the social cost of greenhouse gases are unable to systematically account for these potential catastrophic outcomes, and so a 95th percentile value is typically used instead to account for such uncertainty. There are no similarly systematic biases pointing in the other direction which might warrant giving weight to a low-percentile estimate.

Additionally, the 95th percentile value addresses the strong possibility of widespread risk aversion with respect to climate change. The integrated assessment models do not reflect that individuals likely have a higher willingness to pay to reduce low-probability, high-impact damages than they do to reduce the likelihood of higher-probability but lower impact damages with the same expected cost. Beyond individual members of society, governments also have reasons to exercise some degree of risk aversion to irreversible outcomes like climate change.

In short, the 95th percentile estimate attempts to capture risk aversion and uncertainties around lower-probability, high-damage, irreversible outcomes that are currently omitted or undercounted by the models. There is no need to balance out this estimate with a low-percentile value, because the reverse assumptions are not reasonable:

" There is no reason to believe the public or the government will be systematically risk seeking with respect to climate change.

" The consequences of overestimating the risk of climate damages (i.e., spending more than we need to on mitigation and adaptation) are not nearly as irreversible as the consequences of underestimating the risk of climate damage (i.e., failing to prevent catastrophic outcomes).

" Though some uncertainties might point in the direction of lower social cost of greenhouse gas values, such as those around the development of breakthrough adaptation technologies, the models already account for such uncertainties around adaptation; on balance, most uncertainties strongly point toward higher, not lower, social cost of greenhouse gas estimates.

" There is no empirical basis for any long tail of potential benefits that would counteract the potential for extreme harm associated with climate change.

Furthermore, emphasis on low-percentile values would have no support in the community of experts on climate economics. The existing estimates based on the 5% discount rate already provides a lower-bound; indeed, if anything the 5% discount rate is already far too conservative as a lower-bound. A recent survey of 365 experts on the economics of climate change found that 90% of experts believe a 3% discount rate or lower is appropriate for climate change; a 5% discount rate falls on the extremely high end of what experts would recommend. Only 8% of the experts surveyed believe that the central estimate of the social cost of carbon is below \$40, and 69% of experts believed the value should be at or above the central estimate of \$40. Moreover, even the best existing estimates of the social cost of greenhouse gases are likely underestimated because the models currently omit many significant categories of damages-such as economic growth, pests, pathogens, erosion, air pollution, fire, energy supply, health costs, political conflict, and ocean acidification-and because of other methodological choices. There is little to no support among economic experts to give weight to any estimate lower than the 5% discount rate estimate.

The National Academies of Sciences did recommend that the Interagency Working Group document its full treatment of uncertainty in an appendix and disclose low-probability as well as high-probability estimates of the social cost of greenhouse gases. However, that does not mean it would be appropriate for individual agencies to rely on low-percentile estimates to justify decisions. While disclosing low-percentile estimates as a sensitivity analysis may promote transparency, relying on such an estimate for decision-making-in the face of contrary guidance from the best available science and economics on uncertainty and risk-would not be a credible, objective, realistic, and scientifically balanced approach to uncertainty.

More generally, agencies should remember that uncertainty is not a reason to abandon the social cost of greenhouse gas methodologies; rather uncertainty supports a higher estimates of the social cost of greenhouse gases, because most uncertainties about climate change entail tipping points, catastrophic risks, and unknown unknown about the damages of climate change.

6. Circular A-4 Requires Analyzing the Full 300-Year Time Horizon of Climate Effects

Circular A-4 instructs that the timeframe for agencies analyses should cover a period long enough to encompass all the important benefits and costs likely to result from the rule. A-4 further explains that [b]enefits and costs do not always take place in the same time period. Importantly, the ending point for economic analysis should be set far enough in the future to encompass all the significant benefits and costs likely to result from the rule.

Opponents of climate regulation have complained in court that it is inconsistent to analyze 300 years worth of climate effects when an agency's regulatory analysis looks at perhaps only 30 years worth of compliance costs. In fact, there is no inconsistency with such an approach. For example, when the Department of Energy has set energy efficiency standards, it has analyzed all the consequences resulting from implementation over roughly a 30-year period (a typical expected life of appliances): all the compliance efforts over 30 years, all the consumer savings over 30 years, and all the greenhouse gas emissions over 30 years. However, because greenhouse gases persists in the atmosphere for centuries, the climate benefits from reducing emissions over those 30 years will continue to accrue far beyond that time frame into the future. The U.S. Court of Appeals for the Seventh Circuit recently upheld the Department of Energys approach that captured all the effects from 30 years of regulatory implementation, including the 300 years of climate costs and benefits that will accrue from those 30 years of emission changes.

One state-level administrative judge (from Minnesota) reviewing the social cost of carbon expressed concern about the multiplying risk of calculation errors associated with very long time frames. On the other hand, the Minnesota judge acknowledged that a ton of CO₂ released into the atmosphere will not be fully absorbed into the land or the oceans for a minimum of two hundred years, and noted that a preponderance of the evidence demonstrates that CO₂ will continue to have a cumulative impact on the climate for as long as it remains in the atmosphere. Ultimately, the Minnesota judge recommended a 200-year time frame. However, more recent analysis by the highly respected National Academies of Sciences concludes that the effects of climate change over a 300-year period are well established in

the scientific literature.

In 2017, NAS issued a report stressing the importance of a longer time horizon for calculating the social cost of greenhouse gases. The report states that, [i]n the context of the socioeconomic, damage, and discounting assumptions, the time horizon needs to be long enough to capture the vast majority of the present value of damages. The report goes on to note that the length of the time horizon is dependent on the rate at which undiscounted damages grow over time and on the rate at which they are discounted. Longer time horizons allow for representation and evaluation of longer-run geophysical system dynamics, such as sea level change and the carbon cycle. In other words, after selecting the appropriate discount rate based on theory and data (in this case, 3% or below), analysts should determine the time horizon necessary to capture all costs and benefits that will have important net present values at the discount rate. Therefore, a 3% or lower discount rate for climate change implies the need for a 300-year horizon to capture all significant values. NAS reviewed the best available, peer-reviewed scientific literature and concluded that the effects of greenhouse gas emissions over a 300-year period are sufficiently well established and reliable as to merit consideration in estimates of the social cost of greenhouse gases.

The best available science and economics, as required by Circular A-4, thus supports a 300-year time horizon for climate effects.

7. Circular A-4 requires qualitative description of all omitted damages

Experts widely acknowledge that even the best existing estimates of the social cost of greenhouse gases are almost certainly underestimates of true global damages—perhaps severe underestimates. Using different discount rates; selecting different models; applying different treatments to uncertainty, climate sensitivity, and the potential for catastrophic damages; and making other reasonable assumptions could yield very different, and much larger estimates. For example, a 2014 report found current social cost of carbon estimates omit or poorly quantify damages to the following sectors: agriculture, forestry, and fisheries (including pests, pathogens, and weeds, erosion, fires, and ocean acidification); ecosystem services (including biodiversity and habitat loss); health impacts (including Lyme disease and respiratory illness from increased ozone pollution, pollen, and wildfire smoke); inter-regional damages (including migration of human and economic capital); inter-sector damages (including the combined surge effects of stronger storms and rising sea levels); exacerbation of existing non-climate stresses (including the combined effect of the over pumping of groundwater and climate-driven reductions in regional water supplies); socially contingent damages (including increases in violence and other social conflict); decreasing growth rates (including decreases in labor productivity and increases in capital depreciation); weather variability (including increased drought and inland flooding); and catastrophic impacts (including unknown unknowns on the scale of the rapid melting of Arctic permafrost or ice sheets).

Circular A-4 requires that When there are important non-monetary values at stake, you should also identify them in your analysis. Specifically, agencies must Include a summary table that lists all the unquantified benefits and costs, and use your professional judgment to highlight (e.g., with categories or rank ordering) those that you believe are most important. Agencies should therefore fully disclose the limitations of their social cost of greenhouse gas estimates and include detailed charts of any important, unquantified climate effects.

8. The Information Quality Act Further Requires Agencies to Use the Best Available Data

The Information Quality Act (IQA), also known as the Data Quality Act, was enacted in 2001, and further supports all the recommendations of these comments about basing estimates of the social cost of greenhouse gases on the best available science and economics.

The text of the IQA itself is brief; it calls upon the Office of Management and Budget (OMB) to prepare guidance for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies, in fulfillment of the provisions of the Paperwork Reduction Act (35 U.S.C chapter 44). It also requires that each agency create its own information quality guidelines to those ends.

Like all other federal agencies, the Army Corps of Engineers, a component of the Department of

Defense, is required to abide by the IQA. As described in further detail below, the IQA-as well as the agency-specific guidelines to which the Corps must adhere-requires the Corps to use the best available data, meaning data that is objective, accurate, complete, and reliable.

It is important to note that IQA guidelines are independently applicable as well as incorporated into Circular A-4, which says that agencies must assure compliance with the Information Quality Guidelines for your agency. Circular A-4 further goes on to say that [t]he data and analysis that you use to support your rule must meet these agency and OMB [information] quality standards.

The Corps follows the Department of Defense's guidelines, which are substantially similar to those issued by the OMB. According to the agency's guidelines, the Corps must use information that meets a basic level of quality. The guidelines state that quality is comprised of three substantive conditions, information's utility, objectivity, and integrity.

Utility [r]efers to the relevance and timeliness of information to its intended users. The guidelines also mandate that agency components, like the Corps, need to consider the uses of the information not only from the perspective of the component but also from the perspective of the public in assessing information. Finally, the guidelines tell agency components that they must consider the usefulness of the information for its reasonable and expected application.

The guidelines state that objectivity [i]nvolves two distinct elements, presentation and substance. That means that information has objectivity if it is presented in an accurate, clear, complete and unbiased manner, as well as presented in the proper context. In a scientific, financial, or statistical context, objectivity means that the original and supporting data shall be generated, and the analytical results shall be developed, using sound statistical research methods, subject to formal, independent, external peer review. Moreover, influential scientific, financial, or statistical information must have a high degree of transparency of data and methods...to facilitate the reproducibility of such information by qualified third parties.

Finally, integrity of information [r]efers to the security of information, which the guidelines define as whether the information is protected from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification.

For any analysis or risks to public health, safety or the environment, the Department of Defense guidelines also require the Corps and other agency components to adopt or adapt, as appropriate, the quality principles of the Safe Water Drinking Act of 1996. The Safe Water Drinking Act principles state that, to the degree that an Agency action is based on science, the agency shall use the best available, peer-reviewed sciences and supporting studies conducted in accordance with sound and objective scientific practices, and data collected by...best available methods. For analysis of public health effects, information must be comprehensive, informative, and understandable. Furthermore, the agency must specify, to the extent practicable, the expected risk or central estimate of risk for the specific populations; each appropriate upper-bound or lower-bound estimate of risk; [and] each significant uncertainty identified in the process of the assessment of public health effects and studies that would assist in resolving the uncertainty.

Continuing to estimate the social cost of greenhouse gases using peer-reviewed models, a global perspective, a 3% or lower discount rate, and a 300-year time horizon will meet the Corps requirements set forth in the IQA.

9. The Corps Should Monetize Methane as well as Carbon and Adjust for Yearly Increases

The Corps use of an estimate of the social cost of carbon in its draft EIS is commendable. However, currently the Corps does not appear to be using the social cost of methane or the social cost of nitrous oxide. Additionally, the Corps seems to be using only a single estimate of the social cost of carbon, without considering how that estimate will grow over time or giving weight to higher estimates that better capture uncertainty, catastrophe, and risk aversion.

For example, Alternative 2 identified in the EIS would increase carbon dioxide emissions by over 121 million pounds annually (about 55,000 metric tons), as well as several thousands of pounds more in methane and nitrous oxide emissions; by comparison, Alternative 3 (the option preferred by the Corps) would decrease carbon dioxide emissions by 8 million pounds annually (about 3600 metric tons). The

Corps applied an estimate of the Social Cost of Carbon to partially monetize these effects, choosing the central estimate for present-year emissions at a 3% discount rate, or about \$38 per metric ton of carbon dioxide. Applying this metric to the Plan Alternatives greenhouse gas effects, the Corps calculates that Alternative 2 would lead to climate costs totally over \$2 million annually, while its preferred Alternative 3 would save about \$138,000 in climate benefits annually.

Monetize Methane and Nitrous Oxide Emissions

Based on the above calculations, it seems the Corps has only monetized the carbon dioxide emissions. However, estimates of the social cost of methane and the social cost of nitrous oxide also exist in the literature and have been used by agencies. All the reasons discussed above for applying the social cost of greenhouse gases generally also counsel in favor of monetizing non-carbon emissions. Since the Corps has already quantified the emissions of methane and nitrous oxide, monetization can be accomplished by simple multiplication.

Move Beyond a Single Estimate, to Account for Growing Damages over Time and Uncertainty

The same calculations discussed above further suggest that these climate effects would occur on an annual basis. However, the Corps has chosen only a single estimate of the social cost of greenhouse gases: based on the calculations, the Corps has chosen an estimate appropriate for roughly present-year emissions. The social cost of greenhouse gases in fact increases every year. Because carbon dioxide accumulates in the atmosphere over time and climate damages escalate as temperature rises, a ton of carbon dioxide emitted next year is marginally more damaging than one emitted today, and so the social cost estimates rise over time. Even if it not feasible for the Corps to calculate the entire future stream of greenhouse gas effects over the years, discounted back to net present value, the Corps should acknowledge that it is only monetizing greenhouse gases for a single year, and that increased emissions would be more costly and reductions would be more beneficial in future years. Finally, the Corps should acknowledge that there is a range of social cost of greenhouse gas estimates, including a 95th-percentile value that captures uncertainty, risk aversion, and the potential of catastrophic outcomes.

Sincerely,

Susanne Brooks, Director of U.S. Climate Policy and Analysis, Environmental Defense Fund

Tom s Carbonell, Senior Attorney and Director of Regulatory Policy, Environmental Defense Fund

Rachel Cleetus, Ph.D., Lead Economist and Climate Policy Manager, Union of Concerned Scientists

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For any questions regarding these comments, please contact jason.schwartz@nyu.edu.

* No part of this document purports to present New York University School of Laws views, if any.

Correspondence: 170

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/24/2017	Date Received: 04/24/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Hardcopy of comments sent to Major General Scott Spellmon via mail and email

Correspondence: 171

Correspondence Information

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Notes:	

Correspondence Text

April 24, 2017

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Re: Comments on Draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and Hydropower Environmental Consequences Analysis Technical Report

On behalf of Professor Michael Greenstone, the Energy Policy Institute at Chicago (EPIC), and the Abrams Environmental Law Clinic at the University of Chicago Law School, I respectfully submit these comments regarding the use of the social cost of carbon (SCC) by the U.S. Army Corps of Engineers (USACE) in its draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS or Draft Management Plan).

Professor Greenstone is the Milton Friedman Professor in Economics, the College, and the Harris School, as well as the Director of the interdisciplinary Energy Policy Institute at the University of Chicago and the Energy & Environment Lab at the University of Chicago Urban Labs. He previously served as the Chief Economist for President Obama's Council of Economic Advisers, and he currently serves on the Secretary of Energy's Advisory Board. Professor Greenstone also previously directed the Brookings Institution's Hamilton Project, which studies policies to promote economic growth, and has since joined its Advisory Council. He is an elected member of the American Academy of Arts and Sciences and editor of the Journal of Political Economy. He earned his Ph.D. from Princeton University. He has worked extensively on the Clean Air Act and examined its impacts on air quality, manufacturing activity, housing prices, and human health to assess its benefits and costs. He is currently leading large-scale projects to estimate the economic and social costs of climate change, including through the Climate Impact Lab initiative,¹ and to identify efficient approaches to mitigating these costs.

When Professor Greenstone was serving as Chief Economist for the Council of Economic Advisers, he co-led the interagency process to develop a government-wide approach to evaluating the costs and benefits of the release of greenhouse gases (GHGs) into the atmosphere, more commonly known as the Social Cost of Carbon. As discussed further below, the Interagency Working Group on the Social Cost of Carbon (IWG) included subject-matter experts from six federal agencies and six offices from the Executive Office of the President of the United States. In developing its estimates, it used consensus-based decision making, relied on existing academic literature and models, and took steps

to disclose limitations and incorporate new information.²

EPIC seeks to confront energy and environmental challenges by using a cross-cutting approach that links the University of Chicago's renowned economists with leading thinkers in policy and law, business, big data, engineering and natural and physical sciences through the University and at partner institutes such as the Marine Biological Lab and Argonne National Lab.³ The Abrams Environmental Law Clinic seeks to solve some of the most pressing environmental problems through advocacy and litigation at the local, state and federal levels.⁴

This comment makes three points. First, federal law requires that agencies consider the effects of GHG emissions before taking any "major Federal action[] significantly affecting the quality of the human environment."⁵ Second, the USACE complied with the law by using the SCC to assess the effects of changes in hydropower generation on GHG emissions. Third, while the USACE's calculation of the SCC complies with the analysis set forth in the Office of Management and Budget's Circular A-4, the best, reasonably-obtainable scientific, technical and economic information justifies a higher SCC.

I. NEPA requires that the USACE consider the effects of GHG emissions, and the SCC is the appropriate tool with which to measure those effects.

The National Environmental Policy Act (NEPA) requires that an agency evaluate and publish a project's direct, indirect, and cumulative impacts on the environment in an environmental impact statement (EIS).⁶ If an agency fails to consider an environmental impact in a final EIS and a tool exists with which the agency can measure that impact, the agency must revise its EIS.⁷

Agencies must consider the effects of GHG emissions on the environment.⁸ In *Center for Biological Diversity v. National Highway Traffic Safety Administration*, the U.S. Court of Appeals for the Ninth Circuit stated that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct."⁹ Established case law outlines several key constraints on how agencies must approach this NEPA analysis.

While agencies may incorporate either a monetary cost-benefit analysis or a qualitative analysis,¹⁰ an agency that chooses to quantify the benefits of a proposed government action must also include and quantify the costs of the action-including costs associated with GHG emissions-in its analysis.¹¹ In a case involving the USACE, *Sierra Club v. Sigler*, the U.S. Court of Appeals for the Fifth Circuit wrote, "If an agency were permitted to cite possible benefits in order to promote a project, as the Corps has done here, yet avoid citation of accompanying costs . . . the cost-benefit analysis in the EIS would be reduced to a sham: such a 'cost-benefit analysis' would always be tipped in favor of benefits."¹² An EIS must be a balanced assessment of both the benefits and costs of a proposed action, and, to the greatest extent possible, must analyze benefits and costs in comparable terms. Furthermore, an EIS must be based on sound economic assumptions to support reasoned agency decision-making. Otherwise, the EIS will mislead the agency regarding the effects of a proposed project and can falsely support approval of a project that would not have proceeded if the agency had known of the project's adverse environmental effects.¹³ The U.S. Court of Appeals for the D.C. Circuit has held that an agency is prohibited from substituting "qualitative assessments for well-established quantitative methods whenever it deems such substitutions convenient."¹⁴

The SCC and the social cost of methane (SCM), which was also the product of the IWG process, are recognized tools with which an agency can quantify the effects of GHG emissions. Between 2010 and 2016, agencies used the SCC and the SCM to provide an estimate of benefits from reduced GHG pollution in more than eighty final rulemakings.¹⁵ The U.S. Court of Appeals for the Seventh Circuit

has upheld the government's use of the SCC in rulemakings.¹⁶ Other courts have followed suit and have held that the SCC is a tool agencies may use to perform required evaluations of the effect of GHG emissions.¹⁷

In the next section, we will apply these background legal principles and explain how the USACE consideration of GHG emissions effects by using the SCC was lawful and was properly included in its draft MRRMP-EIS.

II. The USACE lawfully employed the SCC to measure its Draft Management Plan's effects on GHG emissions.

In December 2016, the Kansas City and Omaha Districts of the USACE, in cooperation with the U.S. Fish and Wildlife Service (USFWS), published a draft Missouri River Recovery Management Plan and Environmental Impact Statement.¹⁸ The Draft Management Plan is the USACE's effort to comply with the Endangered Species Act (ESA) by replacing lost habitat and protecting federally-listed species affected by the reservoir system and other projects on the Missouri River.¹⁹ This section demonstrates that, pursuant to its legal obligations discussed in Section I above, the USACE (1) evaluated the Draft Management Plan's effects on the level of GHG emissions under different scenarios, (2) used a well-established tool-the SCC-to quantify those GHG effects, and (3) included that analysis in the Draft Management Plan.

The USACE employed the SCC within its Draft Management Plan in order to "value [the] increases and decreases in emissions" that could be expected under different scenarios.²⁰ As the USACE explained in its supplemental technical report, this well-established tool "allow[s] agencies to incorporate the social benefits of reducing carbon emission into cost-benefit analyses of regulatory actions that impact cumulative global emissions."²¹ In particular, the SCC provides "an estimate of the monetized damages associated with an incremental increase in carbon emission in a given year."²²

Specifically, the USACE used the SCC to analyze the costs and benefits of alternative approaches to managing hydropower infrastructure and habitat restoration activities it controls on the Missouri River, in compliance with ESA requirements. The Draft Management Plan includes six alternatives, each of which would affect the physical conditions of the Missouri River watershed to varying degrees and thereby affect hydropower performance to varying degrees.²³ The preferred alternative, which involves the replacement of lost habitat through mechanical construction only, would result in a modest increase in average annual hydropower generation that displaces electricity from carbon-emitting sources, and, consequently, generates a social benefit of \$138,170 from predicted reductions in carbon dioxide (CO₂) emissions.²⁴ Other alternatives (excepting the "no action" alternative) would result in social costs ranging from \$668,559 to \$2,089,000 from increased CO₂ emissions associated with a net decrease in hydropower and resultant net increase in the utilization of fossil-fuel based alternatives.²⁵

The USACE's preferred alternative is consistent with the fact that hydropower generation, especially when provided by existing dams, is a cost-effective, low carbon emissions source of baseload energy; the SCC analysis helps demonstrate that expanding the hydropower capacity of the Missouri River is superior to fossil-fuel alternatives with regard to carbon emissions.²⁶

It should be noted that, in its SCC analysis, the USACE used a value of \$38 per metric ton of CO₂, denominated in 2007 dollars, and applied a discount rate of three percent.²⁷ This likely understated the value of the SCC. As an initial matter, the USACE should value the cost of CO₂ in accordance with the current dollar value, i.e. 2016 or 2017 dollars, not 2007 dollars, as the rest of its calculations are

based on current dollars. The USACE needs to be consistent in which "dollars" it uses, or it risk understating costs. Further, "the central value [of \$38 per metric ton] is the average of SCC across models at the 3 percent discount rate."²⁸ As elaborated below in Part III, using a proper discount rate is "[o]ne of the most important factors influencing [the SCC] estimates," because "[a] large portion of climate damages are expected to occur many decades into the future and the present value of those damages . . . is highly dependent on the discount rate."²⁹

III. While the USACE's calculation of the SCC complies with OMB Circular A-4, the best available scientific, technical, and economic information justifies a higher SCC.

In his March 28, 2017 Executive Order, President Donald J. Trump emphasized that agencies must ensure that their estimates of the SCC "are based on the best available science and economics."³⁰ In addition-and to the extent to which agency discretion has not been otherwise limited by statute, regulation, or the courts-the Executive Order requires that agencies perform their analyses in conformance with Circular A-4, a 2003 Office of Management and Budget (OMB) guidance document.³¹

This section demonstrates that under Circular A-4, the USACE was justified in using a three percent discount rate-as compared to a higher one-and explains why, in the future, the Corps would be justified in using a discount rate lower than three percent and thereby increasing the SCC used in its impact analyses.

A. The USACE's analysis was consistent with OMB Circular A-4.

1. Generally, the USACE analysis is consistent with the foundational analytical approach prescribed in Circular A-4.

Circular A-4 outlines three overarching principles that should guide agencies as they analyze the impact of potential administrative actions:

First, to the extent possible, agencies should monetize the costs and benefits of potential actions and choose the alternative that maximizes net benefits.³² In performing such cost-benefit analysis, an agency should evaluate the proposed action over a time horizon long enough that all of the major costs and benefits to United States citizens and residents are realized.³³

Second, the agency should ensure that its analysis is based on the "best reasonably obtainable scientific, technical, and economic information."³⁴ To do so, the agency should rely on peer-reviewed literature and consult with experts.³⁵

Third and finally, the agency should conduct a robust analysis that tests multiple values for key parameters and is transparent about important assumptions.³⁶ More broadly, and perhaps most importantly, the agency's analysis should be "credible, objective, realistic, and scientifically balanced."³⁷

In this management plan, the USACE complied with each of Circular A-4's guiding principles:

First, the USACE monetized the social cost of additional carbon emissions to account for the costs and

benefits to United States citizens and residents. In particular, the USACE reported a cost of \$38 per metric ton (in 2007 dollars), which reflected the best estimate of the monetary social cost of carbon at the time of the underlying analysis.³⁸

Second, the USACE relied on the best information available to it at the time it prepared the MRRMP-EIS.

Third and finally, the SCC analysis on which the USACE relied was a transparent and clear study that disclosed its key assumptions and made the limitation and uncertainties of its analysis clear. In a 2014 report, the Government Accountability Office (GAO) confirmed that the study the USACE used to calculate the SCC complied with Circular A-4's goals-it was transparent and relied almost entirely on academic literature and models.³⁹

2. Use of a three percent discount rate is consistent with Circular A-4. In fact, Circular A-4 provides ample justification and flexibility to use an even lower discount rate.

Circular A-4 recommends conducting analysis with discount rates of seven percent and three percent. The higher discount rate was an approximation of the return to equities or private capital in 2003 and the lower discount rate was an approximation to the risk free interest rate then. As we explain below, the nature of the returns to carbon mitigation investments favor the use of the lower discount rate, possibly even one lower than the risk free rate. Further, the discount rate analyses set forth in Circular A-4 supports using a discount rate even lower than risk free rate to assess the present value of intergenerational costs such as those generated by climate change.

It is important to note, however, that Circular A-4 is now dated with respect to its characterization of interest rates in that capital has become uniformly and significantly less expensive since 2003. Thus under the rationale of Circular A-4, the baseline discount rates should be lower. In fact, the government now estimates that long-term government bonds will generate a real rate of return of approximately 0.7 percent.⁴⁰ And, current OMB guidance documents reflect the fact that the risk-free discount rate has fallen toward zero.⁴¹ The result is that the Circular A-4 guidance would appear to recommend using a risk free discount rate of less than one percent. Future USACE management plans and environmental impact statements should too.

Lastly, it is worth noting that Circular A-4 recommends that agencies use lower discount rates-between one and three percent-when an administrative action will have significant intergenerational effects.⁴² (Again, these suggested discount rates come from a higher interest rate environment so current values are likely lower than this one to three percent range.) According to OMB, "uncertainty about the appropriate value of the discount rate" for regulatory actions with intergenerational effects over a longer time horizon supports using rates different and lower than three or seven percent.⁴³ Circular A-4 concludes that, to set a discount rate that "treat[s] all generations equally" and avoids devaluing the "welfare of future generations" relative to the current generation, an appropriate discount rate for actions with such uncertain, long-term costs and benefits is from "1 to 3 percent per annum."⁴⁴ Because any agency decision related to climate change necessarily impacts future generations in uncertain, long-term ways, it was appropriate for the USACE to use a lower discount rate in this case, and it should use an even lower discount rates in future analyses.

B. In future analyses, USACE would be justified in using lower discount rates and higher estimates of the SCC.

Above, we explained that when the USACE completed this management plan, it complied with Circular A-4 because it chose a discount rate based on the best available data to it. To continue to incorporate the best available information in environmental impact reviews, USACE should use an even higher SCC, for four central reasons:

- * First, the discount rate should match the risk characteristics of climate change, meaning that it should be in the neighborhood of the risk less rate or possibly even lower;
- * Second, the monetized costs of carbon emissions should reflect the most up-to-date science, which suggests that the damages from climate change are worse than previously anticipated;
- * Third, the USACE should continue to include the global costs of climate change because implementing a global analysis leads other countries to reduce emissions, which benefits United States citizens and residents; and
- * Fourth, the uncertain and heterogeneous nature of future climate damages supports using a higher SCC value than that produced through current calculations.

1. The discount rate should match the risk characteristics of climate change.

To determine the appropriate interest rate to use in future management plans, the USACE should choose the rate from an investment that matches the structure of payoffs that climate mitigation provides. Thus, if the payoffs from climate change mitigation tend to appear predictably, like they do for holding a diversified portfolio of stocks, the USACE would want to use something like the average return for the stock market. However, if the payoffs tend to appear in lean years when the economy is not growing or is even contracting, then the USACE should use a lower discount rate. To give an example, take investments in gold. Over the last forty-eight years, gold generated a 3.3 percent rate of return,⁴⁵ whereas investments in the stock market generated 5.3 percent returns.⁴⁶ Yet investors continue to hold gold because it insures them against catastrophic risks in other markets. During the Great Recession, for example, the stock market dropped by fifty-three percent,⁴⁷ whereas the price of gold increased by fourteen percent.⁴⁸ In that sense, gold acted like insurance—it helped investors hedge their exposure to major risks. And because investors dislike risk, they pay more—in the form of lower rates of return—to avoid it.

Because climate change poses substantial and substantially uncertain risks, agencies should use a lower discount rate to hedge against potentially significant future damages. A low discount rate is appropriate in light of the possibilities that continued carbon emissions will cause temperatures to increase rapidly, sea levels to rise quickly, physical "tipping points" to occur suddenly, or dramatic human responses to these changes that include mass migration and international conflict. The case for using a low discount rate to determine the SCC is, in many respects, similar to the case for investing in gold, or for purchasing life, fire, and other insurance policies that protect against major disruptive events. Furthermore, this rationale is endorsed in Circular A-4, in its explication, discussed above, of how a lower discount rate is appropriate in analyzing more uncertain or intergenerational potential costs and benefits of a regulatory action.

2. Current scientific, technical and economic analyses support using higher estimates of future climate change damages than estimates used in previous SCC calculations.

In future management plans and impact analyses, the USACE should also use higher underlying estimates for the damages from climate change. When the USACE estimated the SCC for this management plan, it relied on the best data available to it at the time. But the models the USACE relied on were based on studies that are approximately two decades old, and more accurate information is now available. In fact, since 2009, scientists have released roughly 150 reputable studies that indicate that climate change will cause even more significant damages than initially anticipated.⁴⁹ Indeed, evidence of faster-than expected retreat of the West Antarctic ice sheet, newer findings related to human health, and concerns about heat, food prices, and violence all point toward increasing estimates of future climate change damages.⁵⁰ The USACE did not incorporate this improved and available scientific, technical and economic information into its current calculation; moving forward, it should.

3. The SCC should take into account global costs and benefits because doing so increases the likelihood of international emissions reductions, which will reduce climate change damages and costs borne by the United States.

The USACE should continue to monetize the social costs of carbon by accounting for the global harms caused by climate change. Including global effects of climate change in the SCC makes it more likely that other countries will accurately account for climate change risks in their own decision making and strengthens the United States' ability to persuade other countries to reduce their own GHG emissions.⁵¹ Because climate change is fundamentally a global phenomenon, reductions of GHG emissions in other countries will benefit U.S. citizens.⁵² Specifically, the United States will benefit if China, India, the European Union, and other major emitters reduce their emissions. Using a global SCC will increase the probability that other countries will take decisive action to reduce their own GHG emissions.⁵³

Therefore, using global damages in calculating the SCC will have the important benefit of increasing the likelihood of greater emissions reductions abroad. The Paris Climate Agreement, in which nearly 200 countries agreed to take action on carbon emissions, demonstrates this benefit. This effect is perhaps even more evident in the bilateral announcement of U.S. and Chinese commitments with respect to GHG emissions reductions, which was announced in advance of the Paris Climate Agreement and involved U.S. leadership producing the first Chinese commitment to halt and ultimately reverse growth in its GHG emissions. We have already witnessed how U.S. commitments to account for and address climate impacts can produce international reductions in projected GHG emissions. Just like domestic GHG emissions reductions, those international reductions will produce real domestic benefits in terms of mitigating climate damages that will be experienced by U.S. citizens and residents on U.S. soil.

4. The high degree of uncertainty and heterogeneity of likely climate change damages indicates an even lower discount rate is appropriate.

Finally, because climate damages are uncertain and likely will not be distributed equally across the country, the Corps should use an increased SCC. The SCC figure used in the USACE analysis here does not reflect current understandings of the degree to which climate damages are uncertain and uses base-case projections that mask the impact of a number of potentially catastrophic outcomes. Given people's general aversion to extreme losses, future Corps' management studies and environmental impact statements should increase the SCC to reflect the uncertainty of climate impacts and the potential for catastrophic damage scenarios.

No matter what possible climate change damages ultimately come to pass, costs associated with climate change impacts will likely be unevenly distributed. Current calculations model the SCC by aggregating and averaging damages. In reality, however, it is likely that the damages of climate change will be experienced in different modes and to very different degrees by different populations in different regions; for example, damages will likely be far greater in coastal areas subject to sea level rise and flooding, like Miami, than inland areas with very cold winters like Minneapolis. Because there is declining marginal utility to consumption, when a few individuals suffer significant damages and others experience smaller costs, the overall cost to social welfare is greater than if all individuals suffered an averaged level of harm. As a result, in future analyses, the Corps should adopt a higher social cost of carbon to account for the concentrated harms of climate change.

V. Conclusion

On behalf of Professor Greenstone, EPIC and the Abrams Environmental Law Clinic, I appreciate the opportunity to submit these comments and hope that the information provided herein proves useful to the USACE in finalizing the Missouri River Recovery Management Plan and Environmental Impact Statement. Further, Professor Greenstone, EPIC and the Abrams Environmental Law Clinic encourage the USACE to consider making the suggested modifications to its estimate of the social costs associated with GHG emissions in future environmental impact statements and environmental assessments.

Sincerely,

/s/ Mark Templeton

Mark Templeton
Associate Clinical Professor of Law
Director, Abrams Environmental Law Clinic

1 See Social Cost of Carbon, Energy Policy Institute at the University of Chicago, <https://epic.uchicago.edu/research/centers/climate-impact-lab>.

2 See generally U.S. Gov't Accountability Office, GAO-14-663, Regulatory Impact Analysis: Development of Social Cost of Carbon Estimates (2014), <http://www.gao.gov/assets/670/665016.pdf>.

3 See Energy Policy Institute at the University of Chicago, <https://epic.uchicago.edu/about>.

4 See Abrams Environmental Law Clinic, The University of Chicago Law School, <http://www.law.uchicago.edu/clinics/environmental>.

5 42 U.S.C. § 4332(2)(C) (2015).

6 See 40 C.F.R. § 1502.16.

7 See *Pub. Emps. for Env'tl. Responsibility v. United States Fish & Wildlife Serv.*, 189 F. Supp. 3d 1, 3 (D.D.C. 2016); see also *Dine Citizens Against Ruining our Env't v. United States Office of Surface Mining Reclamation & Enft*, No. 12-cv-01275-JLK, 2015 WL 1593995, at *3 (D. Colo. Apr. 6, 2015).

8 *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008).

9 Id. Moreover, the result of an agency's required analysis cannot be to conclude that GHG emissions have no social and environmental costs. See id. at 1200 ("[T]he value of carbon emissions reduction is certainly not zero.").

10 See 40 C.F.R. §1502.23.

11 See *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983).

12 Id.

13 See *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446 (4th Cir. 1996); see also *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) ("Simply by focusing the agency's attention on the environmental consequences of a proposed project, NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast... Publication of an EIS, both in draft and final form, also serves a larger informational role. It gives the public the assurance that the agency 'has indeed considered environmental concerns in its decisionmaking process,' and, perhaps, more significantly, provides a springboard for public comment.") (citation omitted) (emphasis added).

14 *Ctr. for Sustainable Econ. v. Jewell*, 779 F.3d 588, 612 (D.C. Cir. 2015).

15 Peter Howard and Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 *Colum. J. of Envtl. L.* 203, 270 (2017) (listing regulatory proceedings that apply the SCC or the SCM).

16 *Zero Zone, Inc. v. United States Dep't of Energy*, 832 F.3d 654, 678-79 (7th Cir. 2016) (ruling that the Department of Energy's "determination of [the] SCC was neither arbitrary nor capricious.").

17 See, e.g., *High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp.3d 1174, 1190-91, 1193 (D. Colo. 2014) (finding "that the FEIS's proffered explanation for omitting the protocol was arbitrary and capricious in violation of NEPA.").

18 See generally Notice of Availability of the Draft Missouri River Recovery Management Plan and Environmental Impact Statement, 81 *Fed. Reg.* 91151-01 (Dec. 16, 2016); Notice of Extension of the Public Comment Period for the Draft Missouri River Recovery Management Plan and Environmental Impact Statement, 82 *Fed. Reg.* 11024-01 (Feb. 17, 2017) (extending the public comment period from February 24, 2017 to April 24, 2017).

19 U.S. Army Corps of Engineers, Draft: Missouri River Recovery Management Plan and Environmental Impact Statement (Vol. 1 Dec. 2016)
<http://cdm16021.contentdm.oclc.org/cdm/ref/collection/p16021coll7/id/3093>.

20 U.S. Army Corps of Engineers, Technical Report, Hydropower Environmental Consequences Analysis, EIS No. 20160311 (Dec. 2016), at 16,
<http://cdm16021.contentdm.oclc.org/cdm/ref/collection/p16021coll7/id/3071>.

21 Id. (quoting Interagency Working Group on Social Cost of Carbon, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis: Under Executive Order, 2 (July 2015),
<https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc-tsd-final-july-2015.pdf>).

22 Hydropower Environmental Consequences Analysis Technical Report, *supra* note 20, at 16.

23 *Id.* at 3-5.

24 *Id.* at 39.

25 The "no action" alternative and other alternatives would use reservoir releases and low water elevation to replace lost habitat, in addition to mechanical construction of habitat. *Id.* at 15, 38-41 ("Without the generation of electricity from hydropower sources, power would likely come from a fossil fuel source, such as a coal-fired or natural gas power plant. Therefore, a reduction in hydropower generation could result in an increase in air emissions due to a greater reliance on fossil fuel power generation in meeting system demand. Reduction in hydropower generation could result in an increase in air emissions due to a greater reliance on fossil fuel power generation in meeting system demand.").

26 *Id.* at 15. (describing hydropower as "a low emission-producing resource"); Missouri River Recovery Management Plan, *supra* note 19, at xviii-xix (describing hydropower as "creating a source of low cost, renewable energy"); *c.f.* Michael Greenstone et al., Will We Ever Stop Using Fossil Fuels? 30 J. Econ. Perspectives 117, 130 (2016) ("Intermittency and the large reductions in net demand during peak generation periods imply that, absent economical storage technologies, solar and wind power are ill-suited for baseload generation which is currently covered by coal, natural gas, nuclear, and hydroelectric power."); *id.* at 134 ("In some parts of the [developing] world . . . some proportion of the rising demand for electricity might be met by hydroelectric power.").

27 Hydropower Environmental Consequences Analysis Technical Report, *supra* note 20, at 38; U.S. Env'tl. Protection Agency, EPA Fact Sheet: Social Cost of Carbon 3 (Dec. 2016) https://www.epa.gov/sites/production/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf. (explaining that SCC calculated in 2007 dollars).

28 Interagency Working Group on Social Cost of Carbon, Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis, *supra* note 21, at 12 (internal quotation marks omitted).

29 U.S. Env'tl. Protection Agency, EPA Fact Sheet: Social Cost of Carbon, *supra* note 27, at 1-2.

30 Executive Order 13783 of March 28, 2017: Promoting Energy Independence and Economic Growth, 82 Fed. Reg. 16,093, 16,095-96 (Mar. 31, 2017).

31 *Id.*

32 See Circular A-4, 2 (OMB Sept. 17, 2003).

33 *Id.* at 15.

34 *Id.* at 17.

35 *Id.*

36 See *id.* at 17-18, 39.

37 *Id.* at 39.

38 See At What Cost? Examining the Social Cost of Carbon: Hearing Before the H. Comm. on Sci., Space, and Tech., Subcomm. on Env't, Subcomm. on Oversight 115th Cong. 3 (2017) (statement of Michael Greenstone) .

39 Regulatory Impact Analysis: Development of Social Cost of Carbon Estimates (GAO July, 2014), <http://www.gao.gov/assets/670/665016.pdf>.

40 See 2017 Discount Rates for OMB Circular A-94 (OMB Dec. 12, 2016).

41 Id.

42 Circular A-4 at 35-36.

43 See id. In addition, a lower discount rate reflects any normative considerations that counsel against excessively burdening future generations.

44 Id.

45 At What Cost? Examining the Social Cost of Carbon: Hearing Before the H. Comm. on Sci., Space, and Tech., Subcomm. on Env't, Subcomm. on Oversight 115th Cong. 5 (2017) (statement of Michael Greenstone); See also LBMA Gold Price: Daily Prices, <http://fred.stlouisfed.org/release?rid=256> (calculate real average annual return of gold from 1968-2016).

46 At What Cost? Examining the Social Cost of Carbon: Hearing Before the H. Comm. on Sci., Space, and Tech., Subcomm. on Env't, Subcomm. on Oversight 115th Cong. 5 (2017) (statement of Michael Greenstone); See also Online Data Robert Shiller, <http://www.econ.yale.edu/~shiller/data.htm> (calculate real average return of S&P 500 with dividends).

47 At What Cost? Examining the Social Cost of Carbon: Hearing Before the H. Comm. on Sci., Space, and Tech., Subcomm. on Env't, Subcomm. on Oversight 115th Cong. 6 (2017) (statement of Michael Greenstone); See also S&P Dow Jones Indices, <http://www.spindices.com/> (calculate percent change from start of recession (December 2007) to lowest point (3/9/2009)).

48 See At What Cost? Examining the Social Cost of Carbon: Hearing Before the H. Comm. on Sci., Space, and Tech., Subcomm. on Env't, Subcomm. on Oversight 115th Cong. 6 (2017) (statement of Michael Greenstone); See also Dow Jones Commodity Index Gold, <http://us.spindices.com/indices/commodities/dow-jones-commodity-index-gold> (calculate percent change over same time period).

49 Greg Ip, The Flawed Case Against Pricing Carbon, THE WALL STREET JOURNAL, Apr. 6, 2017, at A2.

50 See Michael Greenstone & Cass R. Sunstein, Donald Trump Should Know: This Is What Climate Change Costs Us, N.Y. TIMES, (Dec. 15, 2016), https://www.nytimes.com/2016/12/15/opinion/donald-trump-should-know-this-is-what-climate-change-costs-us.html?_r=0.

51 See generally Howard & Schwartz, *supra* note 14.

52 That same global nature of climate change also supports consideration of international costs and benefits as a matter of basic accuracy and completeness in cost-benefit analysis.

53 Additionally, Circular A-4 endorses the analysis of international costs and benefits of a regulatory action. See Circular A-4 at 15 ("Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately."); see also *id.* at 38 ("[T]ransfers from the United States to other nations should be included as costs, and transfers from other nations to the United States as benefits, as long as the analysis is conducted from the United States perspective.").

Correspondence: 172

Correspondence Information

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Correspondence Text

April 24, 2017

U.S Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - MANAGEMENT COMMENT PLANS
1616 Capital Avenue
Omaha, NE 68102

RE: Draft Missouri River Management Recovery Plan and Environmental Impact Statement
Comments

The members of the Mid-West Electric Consumers Association (Mid-West) appreciate the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (DEIS) developed by the U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service regarding the three Endangered Species Act (ESA) - listed species on the Missouri River.

Summary of Mid-West Comments:

- Mid-West supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-Emergent Sandbar Habitat (ESH) work for piping plovers;
- The actual impact on hydropower of the various alternatives is likely understated;
- The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studied; and
- The Adaptive Management Process needs a stronger "stop doing" function.

Additionally, Mid-West supports the comments of its member utilities and also the comments of the Nebraska Public Power District.

Mid-West Member Interests in the DEIS:

Mid-West represents the interests of some 300 consumer-owned utilities serving approximately 8 million people across nine states in the Upper Great Plains that purchase power from the Pick-Sloan Missouri Basin Program. The preference utility members of Mid-West rely on the cost-based, renewable, non-carbon emitting hydroelectric power generated on the Missouri River and its tributaries for a significant portion of their power supplies. Any diminution in this renewable generation would be

both costly to the preference utilities and the largely rural customers served by it, and result in a significant increase in the output of carbon dioxide from replacement thermal resources.

This hydroelectric power is also tremendously valuable as part of the energy that fuels the economy of the Upper Great Plains. As is shown in the table of Environmental Consequences of the Action Alternatives Compared to No Action on page xxvii of the Executive Summary of the DEIS, hydroelectric generation on the mainstem Missouri River provides almost \$526,000,000 in National Economic Development benefits per year under the No Action alternative.

The Pick-Sloan customers are committed to maintaining the long-term value of have these hydroelectric projects. These customers have agreed to provide over \$1 billion in capital over the next twenty years to the Corps of Engineers to support repair and rehabilitation of the six mainstem Missouri River dams. A significant reduction in the amount of power generated by these projects could result in these capital investments becoming uneconomic.

The members of Mid-West have also actively participated the Missouri River Recovery Implementation Committee (MRRIC) since its inception, trying to help craft consensus positions among the various stakeholders.

Mid-West Supports the Corps' Preferred Alternative:

Mid-West supports a slightly revised Corps' Preferred Alternative. The one revision to the Preferred Alternative Mid-West proposes is the addition of more off-channel, non-ESH work for plovers. As the work highlighted in the recent MRRIC Annual Forum (Michael Anteau, U.S.G.S., Conservation of Piping Plovers on the Missouri River: Thinking Beyond the Banks) suggests, there are productive habitat opportunities beyond the banks of the Missouri River that could prove very useful to piping plover recovery.

With the addition described above, Mid-West supports the Preferred Alternative for the following reasons. First, it provides the best balance of actions likely to result in recovery of the ESA-listed species versus the environmental and economic consequences of those actions. Second, it has the smallest environmental consequences of all the other alternatives in virtually every category, including the No Action alternative. Finally, the Preferred Alternative's embrace of Adaptive Management is entirely appropriate given the magnitude of the scientific uncertainty surrounding all three of the ESA-listed species. For these reasons, Mid-West believes the Preferred Alternative is the superior alternative for ESA-listed species recovery on the Missouri River.

Hydropower Impacts Are Likely Understated:

Mid-West appreciates the open and transparent way in which the Corps explained the processes for modeling the impacts on hydropower from the various alternatives. While the methodology employed by the Corps to estimates hydropower impacts is not unreasonable, Mid-West is concerned that the estimates of the hydropower impacts are likely understated.

There are several reasons for our concern. First, to calculate the value of lost energy future estimates of power prices were derived from the Southwest Power Pool (SPP) market, which the Western Area Power Administration (WAPA) Upper Great Plains Region only joined in October 2015. The long-term projection is then driven by an Energy Information Administration forecast applied to the historical SPP prices. Less than two years of SPP data is an extremely short period of time from which to derive long-term power price estimates.

Second, if there were a real and sufficiently large reduction in the hydroelectric output of the Missouri River projects, WAPA could change its contracts with the purchasing utilities to reduce WAPA's

delivery obligation by the size of the reduction. The purchasing utilities would ultimately construct new resources rather than continuing to rely on market purchases forever. While market purchases may serve as a good short-term proxy, utilities would have to build new resources rather than rely on market purchases to protect against severe market fluctuations. The Corps' analysis appears to assume resource construction to replace the capacity of the reduced hydroelectric generation, but not for reduced energy output. Therefore, the long-term response to a significant reduction in the hydroelectric output of the Missouri River generating projects should be the construction of a new resource.

Finally, while the DEIS provides some discussion of the potential impacts of changes in hydroelectric output on the production of ancillary services, quantitative analysis is necessary to determine the true impact. Ancillary services have become more important aspects of generation as huge amounts of intermittent renewable resources have been added to the system and as a consequence of a growing concern about the reliability of the power grid.

While Mid-West believes that the Corps' approach to estimating the economic impact of the management alternatives on hydroelectric output and cost is generally reasonable, that analysis also likely underestimates the actual impact for the reasons stated above.

Cumulative Reliability Impacts from Reduced Hydropower and Thermal Generation:

While the DEIS provides scant discussion on the impacts to reliability from either the reduced hydroelectric or thermal generation output, there seems to have been no consideration of the cumulative impacts to the reliability of the power grid from the loss of both hydroelectric and thermal generation under the various alternatives. As the DEIS analyses show, lower or altered Missouri River flows can significantly reduce the output or value of hydroelectric generation and at the same time reduce the amount of thermal generation available. What was apparently not considered was the cumulative impact of the loss of both types of generation and the consequent impact on system reliability.

The loss of significant amounts of baseload generation at the same time can seriously impact system reliability. It is not clear that sufficient transmission capacity exists to be able to purchase and import power from the market to replace the lost generation or that the market is liquid enough to absorb the necessary replacement power purchases without significant price increases.

It is imperative that the cumulative impact of changes in hydroelectric and thermal generation output on power system reliability be addressed in the final environmental impact statement to assess to what degree grid stability may be at risk under the various alternatives.

The Adaptive Management Process:

The Adaptive Management Process (AMP) proposed in the DEIS is a reasonable component of the recovery plan, especially for the pallid sturgeon, largely because so little scientific data is currently available. For example, recent research (Anthony Civiello, USACE, The Influence of Shallow-Water Habitat on Age-0 Shovelnose Sturgeon Diet and Condition) calls into question the efficacy of constructing interception and rearing complexes (IRCs). However, IRC construction is a significant component of the recovery plan for the pallid sturgeon contained in the DEIS. The AMP will help to reconcile new or conflicting data about different theories for recovery of the pallid.

While the proposed AMP is a rational approach to this uncertainty, there is one area where it needs to be strengthened. Theories purporting to aid in species recovery inevitably gain a constituency. These constituents passionately argue for the veracity of their theory and the need for research funding to test the theory. When faced with evidence contradicting their theory, these advocates then argue for

slight adjustments to the theory followed by a request for additional research to support the newly-revised theory. The result can be a never-ending cycle of adjustment and additional research for a theory that should have been discarded but for the constituency supporting it.

The proposed AMP needs a much stronger "stop doing" function as part of its structure. The description on page 12 of the Draft Adaptive Management Plan suggests that a theory may be discarded after implementation, monitoring and evaluation show it is not workable. However, the primary path seems to be for the advocates to propose variations to their theory and additional research to see if the revised theory works any better. A weak "stop doing" function provides an endless "do loop" for theories early and stifles innovation by preventing other theories from being considered due to limited research resources. The "stop doing" element of the AMP needs to be strengthened considerably to quickly eliminate theories that lack quantitative scientific support in order to make room to test other theories.

The members of Mid-West appreciate the opportunity to comment on the DEIS and would be happy to answer any questions.

Correspondence: 173

Correspondence Information

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Correspondence Text

April 24, 2017

Major General Scott A. Spellmon
Commander, Northwestern Division
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

The Missouri Corn Growers Association (MCGA) is a membership based organization representing the best interests of corn farmers in the state of Missouri. Many of our members' livelihoods depend on the fertile Missouri River bottom farm land. Management decisions on the river directly impact their operations, families and lifestyles.

MCGA has consistently advocated for flood control and navigation to remain the top priorities for river management, as authorized by Congress. The continual divergence from these priorities, in lieu of a lopsided focus on endangered species recovery without proper science, remains a top concern to our growers. With that premise in mind, MCGA appreciates the opportunity to comment on the Draft Missouri River Recovery Program and Management Plan (DEIS).

We have concerns with each of the six alternatives in the DEIS. Of particular concern, with the exception of Alternative 1 (No Action), each of the alternatives relax current flood control constraints within the Missouri River Reservoir Mainstem Water Control Manual (Master Manual) in an effort to provide flow support to the pallid sturgeon. The Corps or the Services have yet to provide science to support the hypothesis that these increased flows help pallid sturgeon recovery. Given this fact, we are alarmed this option remains on the table in any of the plans.

This could equate to an increase in river stage of nine feet at Omaha or as much as six feet at St. Joseph. That doesn't even take into consideration additional rainfall below the reservoirs. We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we have long been wary of. In 2015, 20 members of Congress from Missouri to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Our members who live and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are wary of any attempt to boost pallid sturgeon population by increasing

flows from Gavins Point Dam, especially given there is zero science to back up these actions. Our growers simply cannot be the collateral damage of a grand science experiment that has yet to prove results. For these reasons we remain strongly opposed to a spring rise in any form.

In addition, flow modifications of up to 60,000 cfs for 35 days in Alternatives 4 and 5 are a complete non-starter. As mentioned above The Corps is essentially abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases. Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage at the worst time of year to do so.

Conversely, summer low flow provisions in Alternative 2 would cause extreme harm to the Missouri River's navigation industry; one that's been on the rise due to increased water supply and reliability. The Missouri River can contribute over 70 percent to the flow of the middle Mississippi River during times of drought. The harmful effects of low summer flow to our nation's economy must be taken into consideration and the Corps should remove this proposed flow option. Navigation is critical to moving harvested crops to market and inputs up river. With increased supplies of corn we must have every transportation option available. Waterways continue to be the most efficient and environmentally friendly mode of moving grain to market. Missouri River management should support those goals.

We believe Alternative 3 comes the closest to striking a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. We do appreciate the Corps' cancellation of the current bimodal spring rise as outlined in this alternative, but remain fully concerned that a spring rise could be considered further down the line in this alternative. Until the Corps or the Services can produce peer reviewed science that supports a spring rise as an effective tool to pallid sturgeon recovery, the rise shouldn't even be part of the conversation of river management.

In examining each of the alternatives, a concern common to each is the lack of hydrologic and economic modeling. We cannot even begin to understand the impacts to flood control and interior drainage because the DEIS only completed modeling for four levee sites in the entire floodplain. This is a flaw that cannot be overlooked and we urge the Corps to complete hydrologic modeling and peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is implemented. Once this modeling is complete, it is then important that the models should only be considered one tool in the decision-making tool box. Though thorough modeling is an important part of the process, the outcome of a model should not exclusively determine a decision. It should only be used as part of the equation.

Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full NEPA review and a separate Environmental Impact Study. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Further, we urge the Corps not to rush into construction of 12 Interception Rearing Complexes (IRCs) for pallid sturgeon during a six year timespan as specified in the DEIS. Instead, the Corps should rigorously study effects of one such IRC to determine its effectiveness before committing to building the entirety. We should not go down the same path as failed shallow water habitat projects, which had a negative impact on navigation and private property rights while doing nothing for endangered species.

Once again, on behalf of our members, we appreciate the opportunity to provide feedback on the DEIS and for the service you provide our nation. We are a willing partner in your efforts to maintain the

Missouri River for a variety of purposes. If we can be of additional assistance, I hope that you will not hesitate to contact us.

Sincerely,

Gary Porter, President
Missouri Corn Growers Association

Correspondence: 174

Correspondence Information

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emailing PDF to Mark Harberg and Mary Roth.

Correspondence: 175

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Correspondence Text

I
April 24, 2017

Major General Scott A. Spellmon
Commander
U.S. Army Corps of Engineers Northwestern Division
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At high river stage, which is two feet below flood stage, the levee district where I farm begins to have challenges with drainage.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to

be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Misti L McKenzie
MLM Farms, Inc.
Richmond, Mo

Sent from my iPhone

Sent from my iPhone

Correspondence: 176

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Correspondence Text

April 24, 2017

MG Scott A. Spellmon
Northwestern Division Commander
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear MG Spellmon:

Waterways Council, Inc. (WCI), the national trade association advocating for a modern, efficient, and well-maintained system of inland waterways, appreciates the opportunity by the U.S. Army Corps of Engineers to submit public comments on the Missouri River Recovery Management Plan (MRRMP) Draft Environmental Impact Statement (DEIS).

WCI is a broad-based coalition of shippers and inland carriers, waterways service providers, contractors, ports, manufacturers, energy providers, agriculture and agribusiness interests, organized labor, conservation organizations, and other advocacy groups concerned about a reliable national inland river navigation system.

The nations inland waterways remain a vast national treasure of 12,000 miles of navigable rivers stretching across 38 states, intracoastal waterways, channels, ports, canals, and locks and dams that facilitate the safest, most fuel-efficient and environmentally friendly transportation mode for essential commodities. Our inland waterways sustain more than 541,000 jobs worth \$29 billion, and facilitate competition for farmers, manufacturers and other shippers in demanding world markets. The American construction industry benefits from properly maintained waterways, and Americas energy renaissance relies upon efficient waterways transportation. Other non-transportation beneficiaries of our waterways include hydropower, water supply, ecosystem maintenance, recreation, national defense and more.

Many of WCIs members farm or operate businesses along the Missouri River basin. Some of our members in the commercial navigation community have recently returned to operating on the Missouri River. All of our members are concerned with management of of the Missouri River, a testament to its important role in the national system of Americas commercially navigable waterways.

WCI opposes the massive spring and fall releases and bi-modal pulses in Alternatives 2, 3, 4, 5, and 6. The releases in these Alternatives have severe negative impacts on both flood control and commercial navigation. Scientific data indicates that previous spring releases have been ineffective as

a spawning cue for the pallid sturgeon. The Independent Science Advisory Panels (ISAP) 2011 Final Report on Spring Pulses and Adaptive Management determines that spring pulses, as currently implemented, are not accomplishing their intended outcomes. Specifically, the ISAP Report concludes that the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning pallid sturgeon.

The more recent ISAP Evaluation of MRRMP v3 AM Plan and Pallid Level 3 Action, released in November 2015, states that the flow needs of the pallid sturgeon are imprecisely known at all life stages, therefore considerations of flow manipulations to benefit pallid sturgeon are now based on imprecise knowledge. This document further confirms that the Spawning Cue Flows action presents a hypothesis without compelling technical support.

The Action Description of bi-pulse flows and frequency, while very detailed, is devoid of scientific justification. In addition, the Corps acknowledges in the DEIS that the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. WCI opposes any future spring or fall pulse/release that threatens navigation without a comprehensive scientific foundation.

While the spawning cues for pallid are unknown, its very well known that actions on the Missouri River have immense impact to navigation on the Mississippi River, the resource moving hundreds of millions of short-tons each year, serviced by or for thousands of manufacturing facilities, docks, terminals, grain elevators and other facilities relying on the Mississippi River for transportation.

According to the Missouri Department of Natural Resources, the Missouri River supplies over 40% of the flows to the middle Mississippi River during normal conditions and provided more than 70% during the 2012-2013 drought. During severe drought years, such as the late 1980s, more than 80 percent of the water flowing by the St. Louis Arch originates from the Missouri River. These flows are critical to keep the Mississippi River operable. Section 3.24.2.1 of DEIS itself states that the Missouri River contributes almost half the flow in the middle Mississippi River.

The world saw the impacts from Missouri River flows during the drought of 2012-2013. Once Missouri River navigation flows were decreased after December 1, 2012, the reliability of Mississippi River flows was severely threatened. Due to the critical impacts that Missouri River management flows have on the Mississippi River, any future flow changes would negatively impact the commerce on the nations marine superhighway and the nations economy.

Navigation on the Missouri River itself relies on consistent and reliable flows, and the recent return of traffic are testament to the necessity of reliable flows. According to the Missouri Department of Transportation, barge traffic on the Missouri River has been increasing over the last five years, in large part due to reliable flows. In September 2014, the first barge shipments in eleven years traveled north to Sioux City, Iowa carrying hundreds of thousands of pounds of equipment to an expanding fertilizer plant in Nebraska. The existence of reliable flows allowed robust barge traffic to continue through December of that year, with vessels moving as far north as Mile Marker 660.

Flow changes have a direct impact on Missouri River navigation opportunities. Prior to the severe disruptions in flows in the late 1990s and early 2000s, towing companies operating exclusively on the Missouri River could obtain five-year contracts from shippers. After the flow changes, all line haul companies working exclusively on the Missouri River were out of business.

The 2015-2016 navigation season was also a productive year for barge traffic on the Missouri River. In 2015, the Missouri River saw an increase in barge traffic volume due to reliable flows and a well-maintained navigation channel. The Port of Kansas City experienced an increase in barge traffic volume in 2016 to roughly 45,000 tons, more than three times the amount of tonnage shipped to and

from the port during 2015. In addition to this amount, an additional 60,000 tons moved from private terminals through the Kansas City area for a total of over 100,000 tons of freight. The Port of Kansas City expects an increase in 2017 of at least 20 percent. During the record 2015 harvest, the system relieved the roads of 190,000 trucks, with most of these trucks reducing traffic on the heavily congested Interstate 70.

Several WCI members have returned to navigation on the Missouri River. At the Inland Rivers Ports and Terminals meeting in February of 2017, a representative from Archer Daniels Midland (ADM) announced that ADM loaded barges on the Missouri River [in 2016] for the first time in 15 years, transporting 50,000 tons. During the same convention, Missouri Farmers Association Cooperative (MFA) officials indicated the company loaded barges at Booneville in 2014 for the first time in 14 years.

Most operators and stakeholders expect this increase to continue if the Corps continues its recently policy of not changing flows, unlike the actions of the early 2000s, when scientifically unjustified actions to recover endangered and threatened species caused major flow changes, detrimental to barge transportation. WCI continues to maintain that if the Corps provides reliable flows and a well-maintained channel, commercial navigation on the Missouri River will have an opportunity to return.

WCI opposes any flow changes that will adversely impact commercial navigation, including the potential one-time test flow in Alternative 3, but especially the drastic flow changes in Alternatives 2, 4, 5 and 6.

WCI believes recovery of endangered and threatened species can be accomplished without changes to the Master Manual or with major flow modifications. We point out the bi-partisan, basin-wide letter sent from numerous Members of Congress to the Corps on December 18, 2015 opposing any flow changes.

That species recovery is deliverable through the mechanical emergent sandbar habitat construction.

While WCI has concerns with each Alternative, among all considerations, Alternative 3 strikes the best balance between species recovery and human considerations. This Alternative meets the species targets for the birds at a much lower federal cost than some of the other Alternatives, with less impact to industry stakeholders.

Flow changes would have multiple negative impacts on the economy and environment.

Further, there is no credible science to support flow changes in the name of the recovery of threatened and endangered species. Any alternative, including 2,4,5, and 6 that would change the Master Manual for the recovery of the species cannot be considered without a separate NEPA process. Additionally, WCI has concerns with the described Adaptive Management (AM) plan.

WCI has been an alternate representative for agriculture stakeholders on the Missouri River Recovery Implementation Committee (MRRIC) since its inception in autumn 2008. Authorized by Congress in Section 5018 of the 2007 Water Resources Development Act, MRRIC is comprised of nearly 70 representatives of tribes, stakeholder groups, states, and federal agencies.

The Committee is charged with providing guidance to federal agencies on the existing Missouri River recovery plan, including priorities for recovery work and implementing changes based on the results of adaptive management, and developing recommendations that recognize the social, economic and cultural interests of stakeholders, mitigate the impacts on those interests and advance the multiple uses of the river.

Two panels were created by MRRIC to peer review the work of the Corps and other federal agencies and advise MRRIC on their products - the aforementioned Independent Science Advisory Panel (ISAP) and the Independent Social Economic Technical Review (ISETR) panel. Both evaluated the agencies work on science and technical matters related to the recovery of the endangered pallid sturgeon and the threatened least tern and piping plover and on the social and economic impacts of species recovery actions on stakeholders, respectively.

WCI shares members with American Waterways Operators, which has submitted its own, more comprehensive comments. WCI echoes AWOs comments from its letter dated April 24, 2017, particularly concerning the following items:

" While WCI supports some measures found in Alternative 3, the one-time flow test has not been modeled and as such, it must go through a full NEPA review process before it is initiated.

" The DEIS itself has numerous flaws in the economic and hydrological models utilized to measure the impacts of the various Alternatives on stakeholders. Throughout the DEIS, the data derived from these models is either insufficient or inaccurate. The overall economic impacts of the proposed alternatives are significantly understated and the limitations of the modeling are not recognized or defined.

" One of the major deficiencies in the economic modeling in the DEIS is it relies too heavily on averages, despite the availability of more detailed information previously documented. The economic impacts of the proposed Alternatives on human considerations in the DEIS are measured over an 82-year period-of-record. This timeframe and hydrological period-of-record cannot properly represent the true impacts of the proposed Alternatives on various stakeholders, as it skews the effects of major high water and low water events, such as the great floods of 1993 and 2011, as well as the severe droughts of 1988, 1989 and 2012. Under this 82-year period-of-record, the negative impacts of these Alternatives are significantly understated in the DEIS. This is particularly the case regarding the severe negative impacts to the resiliency of the navigation industry from the drought of the late 1980s.

" Another example of the problems with the over-reliance on averages and the use of the 82-year period-of-record in the models are the years 2011 and 2012. In 2011, the Missouri River experienced one of the worst flood events in its history, and this event was followed by a severe drought in 2012. Both the flood of 2011 and the severe drought of 2012 caused massive damages to the navigation and agriculture communities, with impacts still being felt. The impacts of these extraordinary years are minimized utilizing the 82-year period-of-record.

" Utilizing the 82-year period-of-record is flawed because it includes years where the federal government mandated artificial regulatory actions that greatly diminished the presence of navigation on the Missouri River. This, in turn, results in the DEIS significantly understating the benefits of navigation on the Missouri River. As stated previously, the low summer flows on the Missouri River in the early 2000s caused navigation to virtually disappear. Several towing companies went out of business during this time due to the lack of consistent reliable flows on the Missouri River. A few years later, the Corps implemented a large spring rise under the auspices of a spawning cue for the pallid sturgeon. This second artificial federal government mandate further discouraged navigation on the river due to flow reliability concerns. In fact, navigation on the Missouri River did not begin to recover until recent years when the Corps stopped these flow mandates. Yet, despite these artificial government mandates that negatively impacted navigation during these years, the DEIS still includes these years in the period-of record for the modeling. These years should be excluded from the modeling, otherwise the benefits of navigation are substantially understated in the DEIS.

" Economic modeling used in the DEIS consistently relies on old, outdated and inaccurate information to calculate impacts. One example is a twenty-year-old study used to estimate the impacts in the National Economic Development (NED) account for navigation. The towing industry was not consulted to obtain feedback on how to calculate transportation savings in its NED analysis. Further, the Regional Economic Development (RED) evaluation also appears to be insufficient and lacking in data

from the tugboat, towboat and barge industry.

" In several sections of the DEIS, the Corps models include faulty assumptions and omit critical data that cause the output results to be misleading and inaccurate. For example, the modeling does not account for the impacts of navigation transportation costs and agricultural profitability. Low summer flows and flood events worsened by unreliable releases at Gavins Point can have serious negative impacts on transportation. Since these interconnected economic impacts are not addressed in the DEIS, the overall economic impacts of the management actions for all alternatives are substantially understated.

" Table 3-173 shows that for Alternative 5, years with full or partial releases do not have an impact on navigation benefits since the releases would be in autumn when the navigation season is almost complete. This false assumption does not account for the harvest season and the increased export market in autumn on both the Missouri and Mississippi Rivers. The result is inaccurate and understated impacts of Alternative 5 on navigation.

" The conclusion illustrated in Table 3-173 also falsely assumes that navigation on the Missouri River ceases when the navigation season (more accurately defined as flow support) officially ends. This is not the case, as navigation continues on the river after the end of the navigation season, provided a reliable channel exists and weather conditions permit. In fact, several barge companies were operating on the Missouri River in February of 2017 due to favorable weather and reliable flows. Once again, this false assumption results in understated impacts of Alternative 5 on navigation as well as understated total economic benefits of Missouri River navigation.

" Only five economic models on human considerations were presented to the ISETR for review and evaluation. The ISETR is still waiting on eight other sets of economic models on human considerations. Moving forward on any Alternatives prior to the completion of these economic models is inappropriate.

" The ISETR panel does not have the technical expertise to tackle the impacts and outcomes of the human consideration navigation model and its effects on transportation costs, rail loads, infrastructure impacts, and water-compelled rates. The review team that conducts the comprehensive Independent Peer Review of the Corps DEIS to ensure its validity must include individuals that have a firm and comprehensive understanding of the navigation economic model.

" The DEIS analysis on Other Social Effects (OSE) of the various Alternatives impacts on navigation is incomplete and inadequate. Economic costs, human impacts and social consequences of these alternatives are severely understated. The navigation analysis for OSE in the DEIS considers only changes in air quality, ignoring the increased fatalities, or congestion derived if products move via truck and/or rail. It also fails to account for revenue diversions from other federal and state budgets to repair roads and bridges along with increased expenditures for concrete and asphalt. The OSE fails to account for lost time and productivity due to the increased amount of time spent in traffic due to modal shifts caused by these alternatives. By failing to include these other social effects and costs, the DEIS analysis grossly understates impacts.

" All economic models used to assess the impacts of the proposed alternatives on navigation and flood control have yet to be approved by the U.S. Army Corps of Engineers Headquarters.

" WCI strongly opposes the various flow modifications common to alternatives 2, 4, 5, and 6. The flow changes in these alternatives would negatively impact navigation on both the Missouri and Mississippi rivers, with particularly severe impacts to agriculture. Agricultural exports are one of the few resources that provides the country with a positive trade balance.

" Low summer flow provisions in Alternative 2 (USFWS 2003 Amended BiOp Projected Actions) will cause irreparable harm to the navigation industry by creating a split navigation season on the Missouri River, severely negatively impacting navigation. The low summer flows in Alternative 2 will also have severe negative impacts on navigation on the Mississippi River from Saint Louis to Cairo, Illinois during the busiest part of the navigation season. While the negative impacts to navigation are severe, the DEIS acknowledges uncertainty on whether the low summer flows under Alternative 2 would benefit the endangered pallid sturgeon.

" With a staggering price tag of \$15.75 billion, or almost five times more expensive than Alternative 3, Alternative 2 is an unacceptable gamble for the recovery of pallid sturgeon and for the continuity of navigation on the Missouri and Mississippi rivers.

" The Adaptive Management (AM) Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional NEPA requirements. In its present state, the DEIS allows the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. The Corps does not have independent authority to proceed on flow changes without Congressional authorization and utilization of the NEPA process.

" Economic Modeling and Analysis of the Impacts of Alternatives on Mississippi River Flood Risk Management and Navigation in DEIS are flawed and missing key data.

" The impacts the Alternatives will have on Mississippi River navigation is gathered via inconsistent methodology than that used throughout the rest of DEIS. Environmental Quality Methodology (EC), NED, RED, or OSE are ignored in favor of analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the HEC-RAS Model for the entire period-of-record for each alternative. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the aforementioned local and regional economic conditions.

" Failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the Mississippi Rivers major contribution to the national economy. By failing to conduct a NED, RED, OSE, and EQ analysis in its modeling, the DEIS significantly understates the economic, environmental and social impacts of the alternatives on Mississippi River navigation.

" It is highly likely that the decreasing releases from the Gavins Point Dam in Alternative 2 during the summer months would drop flows below the Construction Reference Plane levels and halt navigation. Navigation would once again become unreliable and the users of the commercial navigation system would suffer severe negative economic consequences.

" Alternatives 4 and 5 create problems for navigation by doubling the releases from Gavins Point for a period of 35 days. These excessive flows would increase safety risks for crews, forcing towing companies to decrease tow sizes, travel only during daylight hours or completely stop. These safety actions would vastly increase costs to the nations transportation system.

" Alternative 2 would also implement two bi-modal spring releases from Gavins Point. Both spring pulses would negatively impact navigation for roughly four weeks.

" If the river is already at its usual high spring levels, any increase in flows could cause negative impacts to navigation, agricultural, land owners, industries, and communities along the river. Releases in the 60,000 cfs range would most likely halt navigation due to high velocities. Additional releases in the spring cause elevated navigational risks on both the Missouri and Mississippi Rivers. The month of May is typically a time of natural high water on both rivers without the addition of a spring pulse.

" The DEIS assessment of the proposed Alternatives impacts on the Mississippi River is flawed, insufficient and inaccurate. The geographic scope of this DEIS does not include the Middle Mississippi River from St. Louis, Missouri downstream to Cairo, Illinois. The failure to include the middle Mississippi River in the geographic scope of the DEIS hinders any ability to analyze the impacts of the proposed Alternatives on the Mississippi River in a thorough and accurate manner.

" Economic, hydrological or environmental impacts of the Alternatives to Mississippi River navigation is not accurately factored in the human considerations analysis on navigation.

Under the Flood Control Act of 1944, Congress authorized the Corps to govern the U.S. waterways. Additionally, this act required the Corps to prioritize flood control and navigation as dominant functions of its authority. Though the responsibilities of the Corps have increased over time with additional directives from Congress, namely those to assist in protecting endangered species, the new obligations have not diminished the original priorities. While the courts have noted the difficulty in

balancing these varied interests, case law is clear that endangered species do not get to take precedence to the detriment of flood control and navigation. Thus, while it is a painstaking task, it is nonetheless imperative the Corps find a fair balance for these complex issues.

WCI is confident the recovery of the pallid sturgeon, least tern and piping plover can be achieved without negatively impacting the efficient movement of commerce on both the Missouri and Mississippi rivers.

In closing, WCI supports mechanical emergent sandbar habitat construction common to all alternatives including Alternative 3, which consists of components that strike the best balance. WCI reiterates its concern that Alternative 3s one-time flow test would negatively impact commercial navigation. WCI opposes alternatives 2,4,5, and 6 and any alternative or actions that would modify the flows of the river and require a change to the Missouri River Master Manual.

Thank you again for allowing us the opportunity to comment on the MRRMP DEIS. WCI appreciates the challenge facing the Corps, and its commitment to address these concerns. WCI looks forward to working with the Corps to support a Missouri River system that balances the needs of both humans and our ecosystem while providing reliable navigation flows.

Sincerely,

Paul C. Rohde
Vice President, Midwe

Correspondence: 177

Correspondence Information

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Correspondence Text

April 24, 2017

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

RE: MISSOURI RIVER RECOVERY MANAGEMENT PLAN, DRAFT ENVIRONMENTAL IMPACT STATEMENT, AND ADAPTIVE MANAGEMENT PLAN, DECEMBER 2016

Dear U.S. Army Corps of Engineers:

Thank you for the opportunity to comment on the Missouri River Recovery Plan (MRRP) draft Environmental Impact Statement (EIS) and Adaptive Management Plan (AM Plan) from December, 2016. The draft MRRP Management Plan-Environmental Impact Statement (EIS) re-evaluates current management actions of the USACE within the MRRP. The MRRP includes actions that are required to fulfill the Bank Stabilization and Navigation Project (BSNP) Mitigation Act authorized by the U.S. Congress, as well as the 2000/2003 Amended Biological Opinion issued by the U.S. Fish and Wildlife Service.

The Missouri Department of Conservation (Department) is charged by citizen initiative through the Missouri Constitution to protect and manage fish, forest, and wildlife resources in the State of Missouri. As such, the Department actively participates in project reviews when projects might affect those resources. The Department has no regulatory role, however, the following comments and recommendations are for your consideration and are offered to avoid, minimize, and where necessary mitigate impacts to fish, forest, and wildlife resources in Missouri. Please consider the following comments.

OVER-ARCHING COMMENTS

1. The Department supports all eight Congressionally-authorized purposes of the Missouri River. Balancing river flows to meet all expectations is a challenging assignment. Science-based planning of the Missouri River system can promote agriculture, offer sustainable economic development, continue navigation, support public water supplies, provide for public recreation, and sustain fish and wildlife. These purposes enhance benefits for Missourians and the nation.
2. The U.S. Congress passed the Water Resources Development Acts of 1986 and 1999 to restore habitat lost from the Bank Stabilization and Navigation Program (BSNP) in the Missouri River, known

as the BSNP Fish and Wildlife Mitigation Project (Mitigation Project). These Congressional acts also established a funding mechanism for the effort that would compensate for the loss of more than half a million acres of Missouri River habitat that occurred over the course of decades between St. Louis, Missouri and Sioux City, Iowa.

3. The loss of public trust resources is a loss for the citizens of Missouri and a majority of the loss (305,000 acres) occurred in Missouri. To date, roughly 30 percent of the 105,000 acres required for compensatory mitigation in Missouri has been completed. These existing mitigation lands provide partial restitution to Missouri citizens by providing Missourians and visitors with greater access to the river for floodplain fishing, hunting and other wildlife-associated recreation.

4. The nearly 72,000 acres of habitat yet due as restitution to the citizens of Missouri represents an opportunity for enhanced public recreation, restoration of lost habitat for fish and wildlife, economic growth and ecological sustainability that is necessary to also maintain a wide variety of uses along the river, including agricultural, water supply, and other uses.

5. The Missouri River is a significant resource for the citizens of Missouri. Recreation on the Missouri River enriches our economy and quality of life. Recreational use of the Missouri River in Missouri and along shared borders results in upwards of \$38 million in economic impact (2004 dollars), supports 490 jobs, and generates \$2.9 million in state and local taxes. River users participate in 69 river uses along the 552 miles in Missouri. There were 1.2 million visits to the Missouri River in Missouri and along shared borders during a 13-month study. The Department has interest in maintaining all forms of recreational use on the Missouri River. Any actions taken by USACE should seek to maintain or enhance the upwards of \$38 million in economic impacts in Missouri from recreation along the Missouri River.

6. Missourians overwhelmingly support forest, fish and wildlife conservation with over 95 percent indicating their interest. Over two million residents and visitors participate in fishing, hunting, or wildlife-associated recreation in Missouri. There is an over \$12 billion economic impact in Missouri from wildlife-related recreation and the forest products industry. Fish and wildlife recreation and the forest products industry support over 99,000 jobs. Most Missourians agree (76 percent) that the Department should make an effort to restore animals that once lived or are currently very rare in the state. Together, these figures illustrate that Missourians place value on sport species as well as native, non-game species.

7. In addition to the Federally Endangered pallid sturgeon, a number of native fish species are known to be in decline or are below historic abundances in the river in Missouri including: sturgeon chub; sticklefin chub; flathead chub; western silvery minnow; lake sturgeon. Nebraska reports a high proportion of native fish species in the Missouri River are in decline. In fact, the U.S. Fish and Wildlife Service petitioned in August 2016 to consider listing sturgeon chub and sticklefin chub as endangered species. Habitat mitigation efforts were intended to benefit a wide variety of species, and were not linked to Endangered Species Act compliance.

EXECUTIVE SUMMARY COMMENTS

The Introduction describes that the EIS is prepared as a programmatic assessment of evaluate major federal actions on: Endangered Species affected by the reservoir system; and the Bank Stabilization and Navigation Project (BSNP); as well as on the BSNP Fish and Wildlife Mitigation Project (Mitigation Project) authorized by Congress.

U.S. Army Corps of Engineers (USACE) funded the Mitigation Project for the BSNP from federal Fiscal Year 1992-2005. With an amended Biological Opinion (2003), the USACE added a second program known as 2003 Biological Opinion Implementation, which retained separate allocation from federal Fiscal Year 2004-2005. In Fiscal Year 2006 and subsequently, these programs were combined as the Missouri River Recovery Program, funding was co-mingled, and the proportion of funds budgeted or spent for meeting the USACEs Mitigation Project responsibility was significantly reduced.

While the Mitigation Project can be complimentary and beneficial to Endangered Species Act (ESA) compliance, it is designed to be a tool for Clean Water Act, Section 404 compliance. Elimination or significant modification of Mitigation Project activities from the MRRP would seem to constitute a major program change. Without a component of the Mitigation Project dedicated to sport and other native, non-endangered species, it is unclear how such program changes might continue to meet the USACEs responsibility for compensatory mitigation from the BSNP project to Missourians and the nation.

ENVIRONMENTAL IMPACT STATEMENT (EIS)

Through the National Environmental Policy Act process, USACE evaluated five management alternatives for the MRRP apart from current operations, which are known as the No-Action Alternative (or Alternative 1).

Table 2-31 (Summary of the Alternatives Impacts), by National Elevation Dataset suggested recreation would experience a positive impact from Alternative 2 compared to the No Action Alternative, while Regional Economic Data analysis estimates that Alternative 2 will have a negative impact on recreation compared to the No Action Alternative (Alternative 1). Water depth alone may not be an accurate predictor of habitat availability, recreational use, and subsequent recreational economic impact. Aquatic wildlife pursued by recreational users will occupy habitats when water depth, velocity, and temperature - along with other factors - are aligned for the target species. Water velocity can be both a physical and behavioral barrier to habitat occupancy, while temperature will affect fish activity. More detail on the assumptions and analysis of recreation impacts for the proposed Alternatives would be helpful.

Flood risk management is one of the authorized purposes of the Missouri River. From Table 2-31 in the EIS, it appears Alternative 2 offers more flood risk management benefit than any other Alternative (Alternatives 1 and 3-6).

According to Table A.3.1 (Summary of Features Comprising the MRRP-EIS Alternatives Carried Forward for Detailed Consideration), Alternatives 1 and 2 do not include Level 1 (research without changes to the system) or Level 2 (In-river testing, with local implementation) studies. Adaptive Management with monitoring was described as the fourth action to be taken in the 2000/2003 Biological Opinion. Thus, if implemented, Alternatives 1 and 2 appear to have some component of adaptive management. The EIS describes adaptive management under Alternatives 1 and 2 would continue as implemented since 2009, and for aquatic species would include shallow water habitat creation (page ix).

ADAPTIVE MANAGEMENT PLAN (AM Plan)

The AM Plan describes a proposed governance structure (Section 1.2.2, page 18) for decision-making where composition of the Technical Team may include Federal and state agency personnel, university professors, and contractors selected to address the underpinning science for the program. It is unclear whether state fish and game agencies would be included on the Technical Team, or serve as

contractors. Actions taken under the EIS and AM Plan will affect wildlife under the jurisdiction of state fish and game agencies. Actions taken will also have an impact on recreation in basin states. However, USACE plans for engagement and state fish and game agency roles within the process remain undefined.

Decision Criteria for some targets are described in the Adaptive Management Plan, while others are yet to be developed. While the AM Plan focuses hypotheses on three listed species, including addressing pallid sturgeon decline and the recruitment bottleneck from Age-0 to Age-1, ecosystem function could be more thoroughly considered. The 2000/2003 Biological Opinion identified alteration of big river ecologic functions and habitat as a primary cause of declines in reproduction, growth, and survival of pallid sturgeon (page 104). A number of additional species are known to be in decline in the Missouri River currently, including species petitioned for listing in August 2016 which are part of the pallid sturgeon diet. As proposed in the AM Plan, new information would be integrated into hypotheses, including underlying causes of pallid sturgeon in poor body condition documented by Nebraska Game and Parks Commission (January 2016, page 292 of the AM Plan). Later work that year by R. Jacobson confirmed declines in fish condition in the lower Missouri River basin.

It seems appropriate for the pallid sturgeon Decision Criteria to include whether additional species are listed as threatened or endangered. This criterion could serve as a basis for evaluating the current listed species approach to the Missouri River Recovery Program.

Additionally, Decision Criteria depicted in Figure 64 (Diagram of a decision tree addressing contingent information in the Lower Missouri River) of the Adaptive Management Plan might include whether there are relationships between flow, turbidity, and food availability/foraging efficiency.

A key sub-objective of the AM Plan is to increase pallid recruitment to Age-1, while using the metric of catch rates on Age-2 and Age-3 pallid sturgeon. Current catch rates for these age classes are low and comprised primarily of hatchery reared fish. For the metric to be meaningful, other questions should be addressed regarding the low numbers of wild caught fish in these age groups, such as: Is there gear bias? Are the correct habitats sampled? Are pallid sturgeon not reaching these age classes?

The AM Plan describes three levels of monitoring. At least two of the three types would occur over many years before a change in the population could be detected. While awaiting monitoring results before implementing an action, inaction could result in a continued decline in pallid sturgeon. Appendix D describes the current Pallid Sturgeon Population Assessment Program (PSPAP) objectives, sampling design and protocols were developed by an interagency team of Missouri River Basin experts (i.e., state fish and wildlife agencies) and guided by the USACE Project Delivery Team. By contrast, the proposed objectives, sampling design and protocols appear in development by the USACE and a group of scientists outside of the state agencies. Recently, a workshop was held to explain to state agency representatives the PSPAP that was recently developed. Also in that Appendix, the current proposed PSPAP sampling would seek only larval (non-drifting) pallid sturgeon below Kansas City. Drifting free embryos have been captured upstream of the Platte River. The recommendation to only sample below Kansas City for larval sturgeon is based on flow models that have not yet been validated.

The AM Plan references Steffensen et al. 2013 population estimates of wild pallid sturgeon in the Missouri River, and acknowledged these estimates may not be applicable to all of the lower river segments. The plan would benefit by reporting other population estimates done in other stretches of the lower river to give a better range of pallid populations below Gavins Point Dam.

In the Departments most intensive and best effort with trotlines (brood stock collection), around 100

pallid sturgeon are captured in 21 straight days of sampling. The proposed target sampling effort for mark-recapture of pallid sturgeon in Recovery Priority Management Area 4 (RPMA) is based on sampling approximately 1,550 pallid sturgeon juveniles and adults annually to reach the desired 5% recapture rate for the population. The target may be an unrealistic number for captures, even if all RPMA state catches are combined. Will population modeling results and reliability be compromised if these criteria are not met?

Finally, Appendix D acknowledges the integrated approach to population-level monitoring, assessment, and modeling sacrifices data on other species that would allow for inferences on inter-species interactions or multi-species responses to stressors. USACE proposes to address this via specific hypotheses about interactions from specific, short-term science projects. While these projects may provide insight into single species interactions, they will be unable to determine impacts on the fish community as a whole. The focus on pallid sturgeon responses to management actions will offer little ability to describe other benefits or detriments to other important species issues, for instance, inadvertently providing invasive carp habitat.

SUMMARY

The Missouri River is a significant resource for the citizens of Missouri. Recreation impacts on the Missouri River enrich the Missouri economy and quality of life.

Science-based planning can promote agriculture, ensure sustainable economic development, and enhance fish and wildlife benefits. The AM Plan and EIS together should continue to balance all the eight authorized purposes of the Missouri River to maximize benefits for Missourians and the nation. Currently these documents focus on USACE responsibility under the ESA, although the proposed federal actions would impact wildlife managed by state fish and wildlife agencies. Greater clarity should be provided on USACE plans to engage the state fish and wildlife agencies about federal actions that would affect management of endemic wildlife within their borders.

Additionally, the EIS should reflect the USACE duty to the citizens of Missouri to fulfill its obligations under the Mitigation Project and provide details describing how this part of the mission will be accomplished.

Please do not hesitate to contact me if I can be of assistance to you on this or other matters pertaining to fish, forest, or wildlife resources in Missouri (Jennifer.Campbell@mdc.mo.gov or 573-522-4115 Extension 3159).

Sincerely,

JENNIFER CAMPBELL
POLICY COORDINATOR

Correspondence: 178

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Correspondence Text

The Missouri Parks Association is pleased to comment on your Missouri River Recovery Management Plan and Environmental Impact Statement, and to support the continued restoration of hydrologic and ecosystem function and endangered species recovery that we believe can best be advanced by the plan's Alternative #2.

Our association is a citizen organization of more than 3,000 members statewide dedicated to the protection, enhancement, and interpretation of Missouri state parks and historic sites. We have long supported both ecosystem and historic landscape restoration, in which state park staff have been leaders, at times in cooperation with the Corps. Our Missouri state park system has more than a dozen parks and historic sites located along the Missouri River, from Big Lake in northwest Missouri to Confluence Point at the mouth, many of which may benefit significantly from efforts in cooperation with the Corps to restore habitat for native fish and wildlife populations and establish more natural-and more historic-hydrologic and ecosystem function along the river.

We regard Alternative #2 as having the greatest potential for restoration of ecosystem and hydrologic function as well as recovery of endangered species populations, with the caveat that you use the most scientifically advanced and proactive plan for adaptive management, such as is contemplated for the other alternatives; there is no justification for anything less. Alt #2 provides for considerably more emergent sandbar and shallow water habitat as well as more land acquisition, including more channel widening, backwater construction, and floodplain connectivity, all critically needed for river restoration. It is more expensive in dollar cost, but we believe that if the EIS included a state-of-the-art analysis of ecosystem services, as it certainly should by law and by Corps policy, alt #2 would prove to be the least expensive as well as the most effective in the long run.

In the near term, we know that Missouri has greater potential damages from flooding and risks to drinking water from low flows than other states along the river, so we would be willing to accept somewhat more limited flow modification, as in Alt #3. But these risks have been exacerbated by the Corps's Bank Stabilization and Navigation Project and its failure to enforce the minimum floodway widths (3,000 feet above and 5000 feet below Kansas City) mandated by the Flood Control Act of 1944. This makes it all the more imperative for the Corps to acquire available lands in the floodway from Sioux City to the mouth as required by WRDA 1986 and 1999, at least up to the mandated 166,000 acres. This mandate is still less than a third of the 522,000 acres of fish and wildlife habitat lost to the BSNF, 300,000 acres of which were lost in Missouri alone; and the Corps is still far from reaching the mandated goal. Alt #2 would provide for a good faith continuation of the effort; the other alternatives would not. The lands, once acquired, would be available for levee removal or setback and other restoration for the benefit of fish and wildlife, including the three endangered species, as well as for substantial flood risk reduction for humans.

The Missouri Parks Association has been on record in strong support of Corps restoration projects at

Jameson Island, Cora Island, and elsewhere along the Missouri River, especially in the vicinity of our state parks, and we would be happy to voice our support for more such projects and encourage others to do so as well. We particularly appreciate the Corps' commitment to scientific research, monitoring, and state-of-the-art adaptive management in the proposed plan, and trust that it would be applied to Alt #2 as well as to the other alternatives. In the event the Corps selects its preferred Alt #3, we ask that it be augmented with a substantially greater commitment to land acquisition, floodplain connectivity, and habitat restoration, with all the attendant benefits for people as well as for wildlife.

Sincere thanks for your consideration.

Correspondence: 179

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Correspondence Text

April 21, 2017

US Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Nebraska Wildlife Federation

On behalf of the Nebraska Wildlife Federation I am submitting the attached comments on the Missouri River Recovery Program Draft Environmental Impact Statement (DEIS) prepared by the US Army Corps of Engineers.

The Nebraska Wildlife Federation is a state affiliate of the National Wildlife Federation, the largest grassroots environmental and conservation organization in the U.S. We support policies which are beneficial to wildlife and habitats, rivers, and clean energy in Nebraska. Education and conservation are our major activities. We have been on the governing board for the Platte River Cooperative Agreement since its inception.

We appreciate this opportunity to provide comments on the DEIS. Because of the immense length of the total document, it was difficult to read it in its entirety which means that some of our comments or questions may be answered in unread portions of the document, so we ask for your patience.

We believe that Alternative #2 is the best choice among the six alternatives for the Preferred Alternative. As the 2003 USFWSs Amended Biological Opinion, it is focused entirely on Missouri River habitats, species recovery, and beneficial flows. However, Alternative 2 has been made untenable by the excessive cost for land and acres, far greater than any other alternative, almost guaranteeing it wont be acceptable to Congress or the public. We therefore ask that the Corps re-work the alternatives analysis, develop a greater range of alternatives, revise Alternative 2s costs and add the new Adaptive Management Plan to it, develop a more specific Purpose and Need Statement, and reduce the over-reaching of the Human Considerations impacts.

Thank you,

Marian Maas, Ph.D.

Member, Board of Directors

Subject: Missouri River Recovery Program Draft Environmental Impact Statement Comments
MRRMP - DEIS

Comments for the Missouri River Recovery Management Plan and Draft Environmental Impact Statement

Submitted by Marian Maas, Ph.D.

Nebraska Wildlife Federation

April 24, 2017

Part I - Policies

Authorized Uses and Impact of Recent History - Loss of MRAPS

The Water Resources Development Act (WRDA) of 2007 had asked for the recovery of listed and native species of the Missouri River and a study of the ecosystem. This was Congress's request. A stakeholder group, Missouri River Recovery Implementation Committee (MRRIC) was also established by the act to help provide guidance to the US Army Corps of Engineers (Corps), and the US Fish and Wildlife Service (USFWS). I (Marian Maas, Ph.D.) have served as a stakeholder on MRRIC for Water Quality since its inception. After several years the Corps developed MRAPS and MRERP to help carry out the requirements of WRDA. MRERP was the study called-for to examine the habitat from bluff-to-bluff, and MRAPS was to examine the Authorized Uses. Unfortunately there were particular interests, many who sat on MRRIC, who did not want these studies to proceed, and their lobbying in Congress resulted in the defunding of the studies and their elimination despite the fact that the Corps had collected considerable data, especially for MRERP.

A narrowing of recovery - avoidance of jeopardy - and the rise of Human Considerations in place of MRAPS

The Corps changed direction after this and drastically reduced the extent of recovery. The Corps now only wants to avoid jeopardy of the three threatened and endangered species - a much more narrow effort and fails to carry-out the intent of WRDA 2007. No longer is the ecosystem nor any of the other native species part of the Recovery Program. This was an immense diminishment of the Corps Recovery efforts and of the intent of the 2007 WRDA. The Corps unilaterally made this change. It is a reasonable question to ask if this was a legally acceptable change?

It is ironic that the Corps did not seem to protest the loss of MRAPS, and yet later spend so much time and money into promoting and developing the Human Considerations filter through which all considerations for DEIS alternatives had to successfully pass. Though never referred to as such, the Human Considerations (HC) are really the Authorized Uses and close outgrowths from them. The Corps has placed so much emphasis upon them and spent considerable manpower and money, for example: contracts with a facilitating company to develop the HCs, another company to help figure-out criteria for them, countless sessions in MRRIC and work group calls, development of proxies and proxy voting, and more. All hypotheses and management actions considered for the prevention of jeopardy of the species had to be evaluated for impact on all Human Considerations and if certain HCs were slightly impacted, the management action (i.e., habitat improvement) was dropped. The question remains: Why did the USACE wish to develop the Human Considerations to such an extent and over-reach in their weight in this EIS effort?

If MRAPS had been able to go to completion, it would have revealed which Authorized Uses and sub-uses were relevant in today's world (not the 1940s), and how habitat conditions could then be wisely considered (and whether time should even be spent on developing Human Considerations for certain ones). Without the frank assessment of the uses which MRAPS would have presented, the Corps will

continue to make management decisions for the river - and spend millions of dollars - on outdated and incorrect assumptions. It is a continuation of the past and now will likely continue for the next twenty-five years. Since the 1944 Flood Control Act was a culmination of previous older pieces of legislation and businessmen's wishes from the 1920s and 1930s, we are approaching river management policies based on concepts from 100 years ago. The demands of lobbyists were the ones who were responsible for the original channelization and destruction of the river and riverine corridor, and little has changed.

The Authorized Uses in the 1944 Flood Control Act served as the 'human considerations for the Act. From a legal standpoint, the 8 authorized uses were the means to address the human needs and uses of the river. Irrigation never materialized, nor navigation on the IA-NE reach of the river (except for a small surge in the 1970s), which shows that times change and assumptions made in one era may not have an application many decades later. To have the Authorized Uses, and then to double-whammy them with Human Considerations, is an injustice to the potential habitat and species recovery management actions that are diminished or eliminated because of them.

In evaluating the DEIS, it is clear that impacts to HCs are the big hurdle that any and all management actions have to pass through. It appears that HC are driving the decision-making. The DEIS does not explain the weighting of criteria nor the degree to which the Corps is using HC to prioritize. It seems that any recovery management action must not infringe, or cause impediments, on any HC. It would appear that this serves as an escape hatch for the Corps to avoid doing an environmentally favorable alternative or any an action for which certain interest groups oppose.

Discussion of Alternatives

Alternative #3, the Preferred Alternative - less likely to meet species goals than Alternative #2 . Alternative #3 has been chosen by the Corps as the Preferred Alternative. It is actually the worst of the alternatives. The DEIS justifies it by 3 reasons: 1) wide range of benefits relative to Alternative #1, 2) reduced program expenditures, and 3) increased performance for most HCs. But despite those justifications, it states that Alternative #3 is less likely to meet species goals than Alternative #2! And that Alternatives #3-6 have uncertainties associated with their effectiveness in meeting the species objectives. This means that two-thirds of the alternatives offered (actually 5/6ths, because we know that Alternative #1, No Action, has problems with meeting species needs since the current actions have led us to the place we are in now), will have problems with meeting species objectives. Why would the Corps select so many of the alternatives which they deem, themselves, will have trouble effectively meeting the species objectives? Is it because they don't want to offer other alternatives such as a natural flow regime or levee setbacks for re-connectivity and flood risk reduction? Additionally, the public can only assume that the Corps knows that these alternatives likely aren't going to work very effectively so they will state it now to avoid being held responsible later.

Adaptive Management won't be enough to help Alternative #3

It is thought by some that if Alternative #3 doesn't do enough for habitat and the pallid sturgeon, it will show-up in the Adaptive Management (AM) process eventually over time. This is probably true, but this is also a poor reason to accept Alternative #3. Here are some reasons: 1) the appearance in the data might take multiple years to become apparent; 2) a new management action as it is now set-up will take years to be implemented, perhaps up to 15 years (by my calculation) to make its way through Level 1, 2, 3 and finally Level 4, implementation; this includes planning an action, testing in the lab and in study reaches, monitoring and data collection, assessments, final reports, and policy decision-making. I question whether the pallid sturgeon has that long! Most of the reproducing wild pallid sturgeon are an aging population and another decade or two will see the last of those individuals. 2) Even if the Adaptive Management Plan shows that the chosen management action is not working, the forward process is fraught with if this and if that conditions which have to be met. Both the AM and EIS seem to be so concerned that one interest group or another will be even minimally impacted, that the processes as written will take years to clear the hurdles; and 3) which brings me to the fact that there

are specific interest groups, who are suspicious of the AM, and would likely oppose any findings by the AM which would require changing the status quo. Indeed, as I have stated, I believe it will be difficult for the research and studies of Level 1, 2, and 3 to be implemented because they will always be met with resistance if their results indicate river management (and probably the Master Manual) needs to be changed to help the species. As years go by and staff and program priorities change, there is less and less likelihood that new/reserve hypotheses are pulled down off the shelf and put into Levels 1-4, and that AM will ever be fully applied.

Alternative #2 - should be the Preferred Alternative -

Alternative #2 was never a player. The Corps never intended to have the USFWS's 2003 Amended Biological Opinion become the Preferred Alternative. It was included because NEPA review would expect it to be there, and as a gesture to the environmentalists. The Corps never fully completed compliance with it in the first place, why would they want to have to deal with it some more! Perhaps the most glaring failure to comply was the minimalist approach to land acquisition for habitat construction. It only acquired a low number of acres per year with the idea that 40 years from now it could purchase the rest if held to the fire. This fails the good faith concept, and simply means that land acquisition in the amounts recommended, would never occur. Other problems were the changing of unit values so that it was difficult to impossible to compare the amount of new Shallow Water Habitat (SWH) acres with previous years, and slow responses to requests for year-end summaries.

Alternative 2 is described as meeting the minimum of floodplain connectivity as recommended by USFWS. But this seems absent entirely from Alternatives 3-6. But though the Corps speaks of Naturalization of the flow regime four times in Table 5 of the Adaptive Management Executive Summary, it doesn't discuss it in the text. Allowing for a natural flow regime, inundation of floodway/floodplain areas for re-connectivity as a result of naturalization of the flow regime is excellent and a far more sustainable way to recover habitat. We encourage the Corps to expand on this and continue this discussion more fully in the DEIS.

Alternative #2 is thought to infringe on certain human considerations

Additionally, the Corps appears to believe that 1) changing the river flows to a more natural flow regime, 2) that reconnecting the river with its floodplain by the enhancement of backwaters, SWH in meaningful numbers, or 3) that the acquiring of land for these habitats and levee setbacks in a substantive amount, are infringements on other authorized uses, and is therefore an unacceptable alternative. All three features actually make Alternative #2 the best for the species.

A low summer flow is in Alternative #2 as well as a spring rise. The Corps has not implemented either of these from the 2003 Amended BiOp for various reasons, part of the Corps incomplete compliance. (One spring rise occurred years ago but it was small and had no effect.) We support both of these as they reflect a more naturalized flow regime, using naturalized from the Corps own text. For an alternative to support the habitat conditions for the pallid sturgeon, ignoring of higher rises in the spring and lower flows in the late summer is incomprehensible. All rivers and streams in this region of the country exhibit this characteristic and river organisms have evolved in this environment throughout time. No one is recommending huge releases like the 2011 flood. But the higher flows and the low summer flow must be of reasonable magnitude, duration and reoccurrence to truly have a benefit for the fish. To expect for a beneficial management action to not have any impacts at all on HC, makes this whole undertaking a fallacy.

Having natural variation in flows, higher and lower over the course of the year, is a naturalization of flow and is critical to make the aquatic environment which gives the necessary variations in conditions in which all the many species of fish, water insects, macroinvertebrates, and cellular organisms depend for robust populations. The large, higher flows have multiple uses: setting the stage for spawning, scouring vegetation, scouring sediment, re-depositing sediment, providing drift for larvae fish, filling backwaters, bringing-in terrestrial nutrients, and simply reconnecting that long-separated riverine area back with the river. The benefits are numerous and solid.

For higher flow releases or lower flows to be curtailed/eliminated because of relatively minimal impacts to several Human Consideration interest groups becomes a value issue. They would say that valuing human needs should always come first, and I would say that is true - to a reasonable degree. But it is equally unfair value-wise, to not recognize the role the natural world has in the scheme of life and for future generations, and how greedy it is to expect the environmental components to always take a hit while human, artificial things can have what they want. Some priority in values must be for species recovery - after 60 years of failing to do so.

Alternative #2 is too expensive - why?

Indeed, in the Corps documents, it runs five times more expensive than each of the other alternatives - a rather strange feature. And also strangely, each of the other five alternatives are about the same in cost, estimated \$3 billion. The one and only alternative that most likely will best prevent jeopardy, has a huge price tag! The one alternative that is biologically focused, and the only one which can return land to the riverine corridor for habitat re-establishment, channel variation, as well as providing flood risk reduction, has been made untenable to Congress, the Presidents Budget, and the public taxpayer by its high cost.

The exaggerated cost of Alternative #2 is a disservice to the endangered and threatened species of the Missouri River (and all native species of the river environs) as well as to the public. The public places the care of the fish, birds and other species of the Missouri River into the hands of the Corps, expecting to have honest and biologically-wise management of the river. It is the publics expectation as is reinforced by The Public Trust. The public consists of more than the barge industry, agriculture, states with agendas and intake facilities.

Mechanical ESH creation is eight to ten times higher in Alternative 2 when compared to Alternative #3, even though #3 is an all-mechanical alternative! This exorbitant value is hard to understand and one wonders how this can be? Was it simply over-estimation of sandbar construction costs in #2 or a purposeful bias in these estimates? It is possible to manipulate project costs. To make #2 - or any project proposal, for that matter - markedly higher or lower, consistently picking either the highest estimate in the range or the lowest estimate in the range for each project component, will yield such a final number as is desired.

Land for acquisition has been valued in the document at \$4000-6000/acre. Although a mix of land valuation has been used, most of the land along the river that would be acquired is not top-quality farmland and the \$4000-6000 range is too high. Much of that land is sandy (from centuries of the river moving back and forth and depositing light silt and sand) or a mix of sand and clay. Additionally, many pieces of land along the river offered by willing sellers are irregular in shape, making farming with large machinery more difficult to do and less desirable. The irregularity also means there are corners and patches of shrub and wooded vegetation and uneven terrain. Also, land prices have been declining in the last 12 months, and as long as grain prices remain low (grain buyers have predicted low prices to continue into the significant future because of increased production in South America and Asia), land prices will continue to decline. The cost of land has therefore been over-priced in Alternative #2.

A final note on the sandbar habitat would be remiss if the in-sustainability of mechanically created habitat was not mentioned. It has to be created over and over and over again. Costs are \$50,000/A. The sustainability issue is a legitimate question and using flows to at least create some of them makes total sense - and Im sure Congress will think so as well. Taxpayers, and ultimately the legal system, will ask this same question. If Congress refuses to fund mechanically created sandbar habitat because of its cost and lack of sustainability, then it becomes a jeopardy issue because of failure to provide the \$ for recover of the species.

Rewrite Alternative #2 to moderate the costs and increase its Adaptive Management

Alternative #2 should have been adjusted to make it more competitive with the other alternatives. 3546 acres of bird habitat is to be created each year in #2, an \$8 billion cost - far greater than the Preferred Alternatives 391 acres. It is not unrealistic to ask that the Corps modify this aspect and adjust it to a lower level. Also the number of acres of mechanically created sandbar habitat is so large, that this,

too, should be adjusted downward for a more realistic alternative. By using higher values, the Corps makes it an unreasonable situation.

The AM in #2 is passive, rather than the active Adaptive Management Plan found in Alternatives 3-6. We ask that the new Adaptive Management Plan be also included in Alternative 2, although the passive plan is not totally unacceptable. There could be a merger of some features and a compromise accomplished which could work, however, the total disregarding of an adjustment or even a discussion of such in Alternative #2 is disappointing.

In viewing the USACE's own statement about Alternative #2, it was stated that the Corps would only accept Alternative #2 as its Preferred Alternative if all of the impediments were removed (cost, HC impacts, etc.). This means that in addition to the large number of acres and the huge cost, there seems to have been an over-reach of the Human Considerations influence in the decision-making process based on how HC seemed to drive the selections made in this DEIS.

This would mean an over-reach in the calculations of NED and RED, and a likely weighting of the selection preference towards Alternative #3. The no-impact-to-HC biased the direction of the evaluation of possible management actions and weighted the process away from sound biological actions in #2. Thus, Alternative #2 failed cost-wise and HC-wise, according to the Corps weighted selection process. The reporting of Human Considerations data by the special interests themselves was a bit like the fox in the henhouse, and how well the Corps vetted the information - or had the staff and time to do so - is questionable.

In support of a naturalization of flows, it is important to include here that the Corps needs to articulate more clearly to the interest groups about the Master Manuals usage. The Corps has stated in the past that the Master Manual is adjustable. However certain interests insist that there should be no changing of its contents, no opening of the Master Manual. These are barge, intake, and agricultural interest groups who demand a status quo flow regime. Using increased flows to create sandbar habitat and a spring rise for spawning cues and spring spawning conditions would require such an opening. To have certain interest groups prevent these cost-saving and habitat-forming management actions from occurring is detrimental to this whole DEIS and Recovery process and is a blocking of a reasonable management action for a Federal agency.

A better range of alternatives needs to be offered - .

Alternatives 4, 5, and 6 should have been merged into one single alternative because they are similar in all ways except for the specifics of each of their flows and the limiting conditions. Alternative #4 has a spring release and #5 has a fall release - to occur every four years IF all three stipulated conditions are met, which in reality will likely happen only half the time, at best. They each will also attempt a one time spawning cue release after about ten years! #6 has a spring bimodal spawning cue release every 3 years, if again, all conditions are met. Each of these releases should be revised and be of some consequence rather than a token gesture towards releases. The restrictions attached to these releases and the time period over which they are to adhere to almost make these alternatives ridiculous from a biological point of view.

Fall releases, Alternative #5, seemed to be disliked and discredited as a non-player by the Corps. It should have held more importance because it carries with it multiple benefits, not just the assumed habitat one. There is the benefit of filling backwaters for fall bird migrations (beneficial to Recreation Authorized Use), and replenishing of nutrients for fall and spring use by the species. But of equally importance is that it reduces the amount of water in the reservoirs, thus creating greater capacity for early snow melt and spring rains runoff. This allows for available capacity for flood risk reduction (Flood Control Authorized Use) to exist without having to count on getting water out while contending with ice jams in late winter/early spring. It is, in other words, the best way to have sufficient capacity in the reservoirs for avoidance of another 2011 flood.

A suggested list for a broader range of alternatives

The following is a listing of concepts and needs which have not been mentioned in this DEIS, or have

been mentioned but rejected due to their failing the HC filtration process (which in actuality is based on questionable data as to the severity of the impact, the insistence of certain interest groups of this purported impact, and an over-weighted value given to it). The following is a frank discussion of a broader range of beneficial alternatives or needs which should be considered:

" Levee setbacks and a riparian corridor along the full length of the mainstem river. The NE Game and Parks Commission have proposed for a number of years an erodible corridor. This provides significant acres of adjacent lands capable of holding excess water and of providing infiltration and evaporation - all contributing to Flood Risk Reduction. This corridor would also provide habitat, connectivity to the floodplain and prevention of fragmentation of habitat.

" Improvement of the recreational potential of the mainstem river. Recreation is an Authorized Use but the Corps limits recreation almost entirely to recreation on the reservoirs. The Corps does little, to nothing, to facilitate recreation on the river downstream of Gavins Point - using the not their responsibility/authorization as justification. This seems to be an absconding of due diligence of their responsibilities as caretakers of the management of the system. Opportunities for fishing, boating, nature seekers, and just about any recreational pursuit are impacted by 1) lack of accessibility to the river from the banks because of the conversion of the river into an unused navigation channel in the NE-IA reach; 2) a significantly dangerous velocity - as a past Director of IA DNR described the river a dangerous ditch! So while many other rivers in this country have recreational opportunities, the Missouri River has not nearly what it could have. The high speed of the current is not conducive to canoeing, kayaking, small motor fishing boats, rafting or swimming. With steep banks and no shallow water, there can be little fishing from the shore, no camping along the shore, nor picnics or shoreline lunches. Even hiking or equestrian trails don't exist. However there are numerous recreational vehicle established camp grounds all along the river. They are situated there because people are drawn to rivers, and this will increase as population increases. Sadly, the Corps did not consider these settlements in their Human Considerations for Recreation. I know this because I made the count of such campgrounds and mobile settlements from Google Earth (about 15 on the Iowa side of the IA-NE reach) and submitted the count to the Corps and know for a fact that the data was thrown out because these were private. I still do not know why that had anything to do with the evaluation of Recreation on the river. It goes to show that the Corps is only interested in their boat ramps on the reservoirs!

" Low summer flows; Natural flow regime -The low summer flow was rejected by the Corps as a stand-alone Alternative early in the process because of strong lobbying by certain interests (Intakes, Navigation) on MRRIC. However, this would have embraced the natural flow regime that should have been included in the range of alternatives. All rivers and streams in this region of the country have lower flows in late summer or early fall, the dryer portions of the years weather patterns. Alternative #2, wisely, does include low summer flows.

" Maintaining the reservoirs at lower levels - The reservoirs clearly indicate that one of their main functions is to assist in flood control for the Basin. But what good are they for flood control if they are always kept full, for the purpose of having sufficient water for releases for navigation throughout the navigation season and to have full reservoirs for the local fishing industry. For true flood control, reservoirs should be kept at 46.8 maf on March 1st, 10 maf lower than the current level maintained. Lower pools augment benefits for the listed birds.

" Removal of commercial navigation north of St. Joseph, MO - The Corps refuses to recognize that the use of the river for barge traffic in the IA-NE reach is almost non-existent. There isn't a business model anywhere which would continue to expend materials and money in large quantities for an economic plan in which so little return is achieved. Adjustments to the Master Manual should be made. The huge cost to maintain the navigation channel for so little cargo in this reach is never mentioned in this DEIS. It is a myth that barges must be maintained for agriculture. While there is some grain hauled via barges in this reach of the river, trains haul a considerable amount and can take it faster to market terminals. There are unit trains in the western Great Plains which carry grain across the Rockies straight to west coast terminals. The old argument that barge traffic has a smaller environmental footprint than rail or truck sounds nice, but really doesn't excuse the resultant more heavy impact to the

rivers habitat as a consequence of maintaining the navigation channel. The cost to the rivers environmental condition to maintain the navigation channel for so few barges is omitted from any of these discussions and is an unfair favoritism to a small fraction of society. It is the destructiveness of maintaining one use at the expense of another.

" Recovery and restoration of the river habitats to re-establish commercial fisheries - If river habitat is improved, catfish, drum and other large river fish commercial fishing could be re-established. For many years, fishermen all along in large and small river towns earned a living through commercial fishing on the Missouri River. This was an economic benefit to river communities. However in the past decade, all traditional commercial fishing has ceased because of lack of fish. All points to diminished habitat, invasive species, clarity of water which has reduced the non-sight feeding species which used to dominate the river species, pollutants, and etc.

" Invasion of the Asian Carp - The invasion of the Asian Carp has changed the balance of the river species community. They eat-up all the prey fish until they unbalance it so much that they eventually starve themselves, but in the process, many other fish species are impacted through stress, competition, foraging areas and river spaces stolen, and being devoured. The DEIS does not address this problem and it should be considered.

" Basin states threatened and endangered species -The species which are listed on states threatened and endangered lists should at least be addressed in this DEIS. Lands which adjoin the Missouri River and which have an avoidance of jeopardy concerns for the states, have overlapping needs and shouldnt be shut out of this process.

" Require barges which operate on the Missouri River be of the shallow draft type - This would allow for more habitat construction and shallower water in the channel for spawning habitat construction. Also more river water could be used to widen the river in coordination with top widening modifications to banks, be used to fill backwaters, and to have greater connectivity to the flood plain. The Missouri River is not locks and dams, and does not have the deep pools associated with that system. It makes sense that barges that operate on the river should require less draft and at the same time, makes channel habitat construction more possible.

" USFWSs String of Pearls - The Services outstanding concept of the development of habitat sites distributed along the Missouri River, giving a diversity of habitats for all species. The Corps never advocated for it at any MRRIC meeting, and obviously, doesnt want to have to do it. But there is not a better habitat plan anywhere, including this DEIS, that has been suggested. Features of the String of Pearls fit well with habitat for this DEIS.

" The State of Missouri needs to fund levee setbacks and green infrastructure to handle higher flows - The failure years ago of drainage districts in Missouri to adequately address flooding has restricted the Corps management actions for the Lower River. Habitat-forming flows and species habitat releases could be done adequately if there wasnt this problem. All these years the Corps had to contend with the restrictions of these reaches rather than putting into place actions which would have benefitted the pallid sturgeon.

" Removal of a dam (or dams)

" Need for Critical Habitat Designation

Mitigation

Alternative #2 is the only alternative that addresses mitigation in any meaningful way (channel widening; 35 k acres). There is a lack of mitigation in the Preferred Alternative, although the Corps recognizes that mitigation obligations still exist. In relation to how well the DEIS addresses all species in view of the Fish and Wildlife Coordination Act, a failing to include mitigation has been found. This DEIS is not to over-ride/modify the original EIS which contains the mitigation requirement, however the absence of even a reference to mitigation is troubling. Does the Corps hope to be able to gain momentum in deemphasizing and downsizing it. The Corps coverage of mitigation in the Executive Summary, which is all that most of the public reads, is minimal. It is as if the Corps would prefer to

avoid the topic with the public, and not discuss the role mitigation has towards species recovery and restoration. This is not acceptable. The Corps must re-write the DEIS and include mitigations habitat planning.

The immense negative impact to native species, including the endangered and threatened species, by the draining, channelizing and damming of the river is reflected in the native fish species decline which is often cited. Even the once common sicklefin and sturgeon chubs are now being considered for ESA endangered/threatened status. Most all riverine species - mammal, amphibian, reptile, bird and plant - have been impacted with the loss of backwater and channel habitat. Wet meadows and scrub grounds with willow and cottonwoods have been cleared and drained until now there is often only a narrow strip of land running between the river and the adjoining cropland. Unfortunately doing a study on the loss of habitat and riverine species is not glamorous and such inventories generally haven't been made - except for MRERP! But with the lack of funding, the final analysis was never made public and likely wasn't completed. But loss of habitat can be seen by anyone who takes a boat ride on the IA-NE reach of the river - and compare the visual with pre-channelization written accounts in the literature.

The Missouri River is described as the most modified river in the United States. With modification comes loss of the original or prior condition, thus the once productive and natural Missouri River no longer has the conditions which allowed for abundant plants, trees, birds, fish, turtles, crayfish, mink, otters, and countless others. The Public Trust was disregarded when the river was turned into the commercial navigation channel & water conveyance ditch, pipe & that it is today. Mitigation - replacement of some of that which was lost - lies within the duties of the USACE and should be included as

Part II - Selections from the Executive Summaries

The following entries will not be in any specific order or category.

- Ecosystem Services inadequately valued

In the DEIS Executive Summary, the table labeled Environmental Consequences of the Actions Compared to No Action is a rather amazingly confusing chart. For those members of the public who printed this in B&W without realizing the need for color (on only a couple of pages), it is especially useless. Of greater importance is: 1) Ecosystem services is rated the same for all alternatives! 2) there are different units used in the chart - again confusing for the public. It is suggested that perhaps the chart can be broken down into smaller sections; darker hash marks vs. lighter dots/lines be used rather than colors; and lastly, how in heavens name can ecosystem services be virtually unaffected???

The Corps has limited the category of ecosystem services for analysis to climate regulation and carbon sequestration (and other cultural resources and non-use values - what are these???) - which confused me when this was first done months ago and still confounds me as to why this was done?

While these are two important areas of concern, why were ecosystem services put into climate regulation and carbon sequestration because in my view, these do not serve as surrogates for the river, and don't really connect with river issues at all!! And, assuming that these did fit well, the Corps did not do any quantification of them. This is honestly one of the poorest written sections.

Throughout this entire DEIS process, through the many MRRIC meetings and discussions, Ecosystem Services were barely touched upon. It should have received a much greater analysis and prominence. Such things as in agriculture - when farmers complain if a willing seller sells the neighboring piece of ground to the Corps; county assessors and the farmers complain that acres were taken out of production and the county loses property taxes - these things are always pointed out. However, nothing is said about the reduction in flood risk by the new acres devoted to Recovery, or the savings in flood insurance or FEMA costs. Personally, I can add other factors which contribute to Ecosystem Services by these new acres out of production: infiltration of rain, greater diversity of plant species, increase in invertebrate diversity, prairie bird nesting, hunting opportunities, buffer crop or buildings from river rises, water quality enhancement, etc.

The Corps needs to elaborate on quality of life in ecosystem services. Habitat producing land near metropolitan areas contributes to relaxation, stress reduction, and thus contributes to the health of a population. It provides interaction with nature which has deep roots in the human psyche. Such lands provide fellowship with others while hiking, boating, camping, fishing, and hunting clubs. Some individuals may feel a religious interaction with nature and their Creator. And not to mention the cultural and religious connections to the river by the Tribes, again, something not especially emphasized throughout these proceedings.

It is asked that the Corps rewrite this section and do it in an acceptable manner. And although it states in the Executive Summary, pg.xxiii, that ecosystem services are discussed in other sections, I question the validity of that statement.

In the Notice of Availability of the DEIS document, pg. 7:

The one-time spawning cue test: From a scientific point of view, a one-time test is virtually worthless, certainly it is not adequate for data quantity. There needs to be enough repeat of the testing in order to rule out variability and background noise, and to have a minimal data points at least to have some kind of statistical analysis. Using natural rises in data gathering is great, but data collection will be a challenge. The time span of 10 years before a release would be conducted is simply a caving-in to the anti-spring rise, anti-release interests - plain and simple. It is accommodating the very vocal ag and levee districts. The wild pallid sturgeon population is aging and there really isnt time for a ten year delay before a scientifically designed release can be studied.

On Pg. 8, There was an entire listing of the human environment associated with each of the alternatives . Of these, considerable more attention was given to some versus others. Two the human environment which received little attention throughout this process was water quality and ecosystem services. This is just to go on record that these different human interests varied in discussion and analysis.

In the Draft Missouri River Recovery Management Plan and Environmental Impact Statement Executive Summary:

Pg.ii - In the description of the pallid sturgeon, any reference of it being an ancient fish has been removed. The Corps used to include that in its description but I remember hearing a MRRIC member once saying How do you know its ancient? and questioning this statement over and over. I looked it up on Wikipedia today and found the entry to be excellent. Here are notes from the first portion of the entry:

Sturgeon evolution dates back to the Triassic period, some 245 to 208 million years ago. They are referred to as primitive fishes because their morphological characteristics have remained relatively unchanged since the earliest fossil record. Most sturgeon species are considered to be at risk of extinction, making them more critically endangered than any other species.

Based on this (and Ichthyology textbooks), I would like the Corps to rewrite this portion and honestly describe the pallid sturgeon as an ancient fish.

Pg. x - an excellent listing of the multiple benefits found within Alternative #2

Pg. xiv - The Pallid Sturgeon paragraph:

The majority of this paragraph seems to be directed to the delisting of the pallid sturgeon! The species is far from being delisted. It speaks of the species status as having improved (No!) and that the population is currently stable as a result of artificial propagation and stocking efforts. (Population is stable?) Further, the paragraph seems to believe that the pallid sturgeon will face local extirpation in just several reaches of the river. I believe that possibility of extirpation can be throughout much of the river. Would the Corps please recheck this paragraph. Based on how it reads, it would seem that we

dont really have much of a problem with the pallid sturgeon!

Pg. xviii - The page discusses the 500 non-federal levee units throughout the Lower Missouri River and their inadequacy to withstand major or even small floods. I would like the Corps to mention the recommendations in the Pick-Sloan Act for expected width of the channel and the width that should be established between the two levees. Neither of these guidelines were ever followed, and the result is too narrow of a channel and levees too close to the river.

Pg. xx - The thermal power paragraph speaks of the negatives of lower and higher flows, temperature, and other negative impacts. Adaptation to a more variable river should be recognized by the power plant companies as an expectation not too unreasonable. However they dont want to have to make any changes. Climate change will probably eventually require such changes.

Pg. xxiii - The inclusion of a paragraph on the Mississippi River impacts is disappointing to see. I was told that the Missouri River is not to be managed for the Mississippi River. The exact opposite appears to be the case!

Pg. xxiv - 1st paragraph - no, darters are not necessarily tolerant of current nor turbidity, especially turbidity.

Pg. xxv - Water Supply and Thermal Power - The paragraph is quite detailed and quite negative. It is very evident that the power plant lobbyists have reached the Corps. Clearly, any decrease in flows will not occur because of the rigid opposition by these interests and other intake interests.

Pg. xxviii - The second paragraph of the section on Plan Selection - Preferred Alternative: This is a somewhat difficult paragraph to understand and is packed with information. Interesting information is that hydrological difference would be reduced flows relative to Alternative 1 nearly half of the years during late March and late April/early May - this is exactly the time when there should be more flows from snow melt and spring runoff!? And that there would be a slight Fall rise.

Pg. xxvii - Under Implementation of Preferred Alternative under Adaptive Management, 2nd paragraph: agencies means plural; Does this mean that the USFWS has already agreed with the choice for the preferred alternative?

Draft Version 6, Science and Adaptive Management Plan

Pg. 7 - #7. Line 8-9 - Was the entire hydrographs influence on the three species really evaluated? The study of the full range of the hydrograph was one of the major points from the ISAP. Ive never really been told whether or not the full hydrograph was ever done.

Pg. 11, Figure 4 - What is the weight given to the filtering by the HC? How much negative impact causes a management action to be eliminated? How is the negative impact quantified? How large a part does the socioeconomic have in evaluating the actions - what % among the other criteria? Nothing is said in Figure 4 of the level of filtering that occurs.

Human Considerations was barely mentioned in the Executive Summary, yet considerable weight was given to them in the alternative analyses. I request that this is clearly laid out for the public to know if any particular Human Consideration/interest group received greater weight than others.

Pg. 14, lines 4-5 - Refers to the alternatives as being derived from EA findings and further screened based on effects to human considerations&; It would be desirable that a brief accounting of the quantification of this screening be presented here in the Executive Summary.

Pg. 14, lines 11-21 - This is referring to Reserve Hypotheses but that term is never applied. Why not?

Pg. 16, lines 13-15 - A bit concerned here that any new information like skinny fish might require a new NEPA process. This would be a way of maintaining the status quo, which is so clearly preferred by most all of the interest groups except Fish and Wildlife.

Pg. 34, lines 5-19 - In all of the discussions about Level 1-4, there is never a timeline provided. I would like for the Corps to list their expected amount of time it will take for an average management action to move through to the Level 4 implementation stage.

Pg. 36, Table 5 - Naturalization of the flow regime is great to see in this table for Level 1 and 2. But based on the language on pg. 46, Sec. 1.5.3, the likelihood of these flows happening is poor.

Pg. 37, line 12-13 - an agreed-upon time limit - what time limit might this be and who gets to make the agreement?

Pg. 38 Table 6 and accompanying discussion - What is the length of time for each of these levels? Why is this not stated here? Additionally, who will initiate the studies for Level 1? I am concerned how, who and when Reserve Hypotheses might have testing begun?

Pg. 42, Table 7 - So, after 6 years, there will be 12 pairs of IRCs and assessment will continue through for 10-11 years. Only after 10 year will implementation might begin. This is a long time. Couldnt the assessment begin with the first sets and be enough to at least put in more pairs? It just seems to be a delaying tactic - it will be 20 years before all 12 sites will have given the go ahead to fully implement! This clearly is a commitment to the special interests who dont want these things in or near the navigation channel.

And lastly, one spawning habitat site to be built? Is this a joke?

Pg. 44 There will be 15 - 20 years before there is any major release in the spring. This plan is such an attempt to minimize that no real spawning cue release will likely every occur. If Level 1 observational studies are interpreted to not be appropriate enough to proceed to Level 2 studies, which by the way, is another hurdle to pass before proceeding to Level 3, which also is another hurdle. It is clear that this is designed to make the spawning cue rise unable to ever reach implementation level.

Thank you for this opportunity to comment on the DEIS. I appreciate the effort that USACE has put into the documents and look forward to seeing the revisions.

Marian Maas, Ph.D.
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Correspondence Text

Nancy Hilding
President
Prairie Hills Audubon Society
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April 24th, 2017

April 24, 2017
U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC
1616 Capitol Avenue
Omaha, NE 68102

Dear Reviewers,

Prairie Hills Audubon Society is a SD non-profit Corporation, whose mission is to "Educate about, protect & restore our environment & natural heritage." Most our members live in Western South Dakota and we are a chapter of the National Audubon Society.

Humans have greatly changed the Missouri River. The river was once a wide, shallow, slow moving river. Now in the lower third it is channelized. It is impounded by six large reservoirs in the upper basin. It has lost flood plain connectivity due to the Bank Stabilization and Navigation Project (BSNP) and a series of levees. The overall health of the river has declined.

In many respects this plan doesn't change much from the way the Missouri River is managed currently. We do not support adoption of any the proposed alternatives - and we strongly oppose Alternative 3.

We urge the Corps to formulate a new alternative in the final EIS that incorporates recovery actions that will:

- Reconnect the river to its floodplain
- Restore wetlands & sandbars
- Provide quality habitat for self-sustaining populations of fish and wildlife
- Incorporate BSNP Mitigation in all recovery actions
- Utilize natural processes for habitat restoration whenever possible
- Protect Tribal cultural & historic resources & work to compensate Tribes for adverse impacts from the dams & improve communications and relations

with tribes

- Fully discuss the threat from oil pipelines and protect the River from oil pipeline crossings .

We support increased monitoring and research on the river and funding for habitat recovery projects. We support aspects of the proposed Adaptive Management Plan that allow for any needed modification of recovery actions. We support future funding for all of these efforts.

We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns the proposed alternatives do not go far enough to restore the river and its aquatic and terrestrial habitat. Regarding terns and plovers in particular, the EIS discusses their nesting on reservoir shorelines, notably the issue of the reservoir serving as ecological traps in some years. Yet we can't find where the alternatives address this problem directly, especially by trying to prevent it.

Lowering pools, on average- -the March 1 target- -is practically a taboo idea in the Missouri River basin, even in the wake of the truly frightening flood of 2011. We believe that lower pools will give you more flexibility in storage and releases that will permit real reservoir unbalancing in more years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that have too often flooded tern and plover nests on sandbars below the dams.

The inevitable and ongoing channel degradation below dams means there will be ever-less production of natural sandbars into the near future. The acreage of mechanical sandbar construction does vary considerably, though, and among the alternatives we favor Alt. 2, which has the highest targets for that acreage.

We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

For decades the Missouri River has not been allowed to be itself. The man-made changes have, for the most part, kept the river in a straightjacket. We urge inclusion of recovery actions that allow the river to resume a more natural state, in selected areas such as on state and federally owned lands and on land acquired from willing sellers, and let it heal itself.

We want to see actions that restore wetlands and backwater areas to reconnect the river to its floodplain. We also favor additional top width widening projects such as Deer Island to create slow, shallow water habitat. We strongly support the inclusion of the Bank Stabilization and Navigation Project Mitigation in the recovery process. We also want to see the removal of man-made pinch points on the lower river. This can be done with more levee setbacks, reducing flood risk and lowering the river's stage, especially during high flow events.

We favor actions that provide the best opportunities for recovery of the pallid sturgeon, piping plover, and least tern, as well as leading to self-sustaining populations of other native fish and wildlife. We support allowing the river corridor to also provide habitat for terrestrial species. We support actions that bring back aspects of the natural river and the historic Missouri River flows. We believe these efforts will be good for the health of the river, the listed species, native fish and wildlife, and all the people of the basin.

We also request that we are kept fully apprised of all future updates, meetings, hearings, and comment opportunities on the MRRMP as this process moves forward.

We thank you for the opportunity to provide comments.

Sincerely,

Nancy Hilding
President
Prairie Hills Audubon Society

Correspondence: 181

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Correspondence Text

24 April, 2017

To: US Army Corps of Engineers Omaha District ATTN: CENWO-PM-AC - Management Plan
Comments 1616 Capitol Avenue Omaha, NE 68102
From: George R. Cunningham, on behalf of Sierra Club Nebraska Chapter
Subject: Missouri River Recovery Program Draft Environmental Impact Statement

The language in the Corps' DEIS states that this document is a Missouri River Recovery Management Plan and Environmental Impact Statement, however, the phrase "Missouri River Recovery Management" is quickly replaced by terms describing this EIS as a decision document designed to avoid jeopardy to the federally listed species due to actions by the Corps' in carrying out its responsibilities of the Missouri River Bank Stabilization and Navigation Project (BSNP). Unfortunately this document fails miserably at addressing Missouri River Recovery, and in no way provides a blueprint for recovery of the three (3) listed species driving the EIS. Sadly, the never ending saga of Missouri River management in context with the widely recognized need to mitigate the immense damages the BSNP has caused to the Nation's longest river, as well as the statutory responsibilities under the Endangered Species Act (ESA) remains hollow these long number of years since the revision of the Master Manual after the great flood of 1993. Some 24 years later, the Corps' refuses to demonstrate coherent understanding of ecosystem science that has been developed over the last quarter century and refuses to taking on the responsibility of incorporating ecosystems services economics and conservation science into the management of the Missouri River.

Even more remarkable is the product developed as a result of a great deal of federal resources in terms of employee hours, travel, consultation fees, and overall funds fails to provide a reasonable range of alternatives to meet the agency's responsibility under NEPA and under the Endangered Species Act. The Corps' five alternatives numbered two through six should have provided a reasonable range of actions, or collection of actions, designed to recover (not avoid jeopardy which simply means maintaining the status quo) the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery (again not jeopardy) and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading. The range among alternatives 2 through 6 are inadequate in that there are significant differences between alternative 2 and between the group of 3 through 6. But among alternatives 3 through 6 the differences are minimal. Alternatives 3 through 6 overlap considerably with only minor differences among 3 and 6 are in flow releases prescriptions. But even these differences are minor considering how infrequently the flow releases are likely to occur. For example, alternative 4 includes a spring ESH release, but that is anticipated to fully occur less than one in ten years. Thus, as written Alternatives 3 through 6 are too similar to contribute significantly to the Corps' requirement to provide a reasonable range of alternatives.

We believe the most corrective course of action is for the Corps to revisit these Alternatives and fully embrace the current scientific thinking of ecosystem services economics and conservation science of larger riverine ecosystems. The Corps' needs to fully embrace the notion that this document should be the document that was started under the Missouri River Ecosystem Restoration process several years ago. The management of the Missouri River and the subsequent environmental requirements for such management must include the Missouri River, its connectivity and lack of connectivity to its floodplain, its major tributaries, as well as the modified human environments of cities, towns and agricultural enterprises within this floodplain. Moreover, if the Corps' is to produce a viable living EIS that will stand the scrutiny of the USFWS Biological Opinion and work within the constructs of the Master Manual, the Corps' must block out the noise and distractions of: 1) potential lack of future federal funds; 2) the current litigation over the 2011 flood; 3) and the unfounded notion perpetuated by some of the States within the Missouri River Basin that purport the Corps does not possess jurisdictional authority to regulate flows for all authorized purposes equally.


The Corps must recognize and accept that the key ecological attributes that sustain riverine ecosystems are not massively expense mechanically created habitat or perpetually operated hatcheries, but are instead operation measures that mimic the nature hydrograph, recognize the need for sediment management and potential augmentation in sediment deprived river segments, and fully accepting the critically role floodplain connectivity serves in ecosystem function. Imperative to establishing floodplain connectivity is the realized benefits of fully complying with the authorized authority of the 1986 and 1993 BSNP mitigation WRDA legislation.

Given all the science behind two decades of study on the Missouri River and the evidence developed by community planning and management flood prone landscapes, we recommend that the Corps develop a new range of alternatives. A reasonable alternative would include a commitment to using state of the art ecosystem science as a tool to meet recovery goals, not settling for avoiding jeopardy. This new alternative would incorporated the goals of mitigation and restoration acres through the BSNP mitigation program, which in turn would lead to floodplain connectivity. In addition, meaningful flows that approximate the historic natural flows is critical for the Pallid Sturgeon as well as the native turbid river cyprinids species the Pallid depends upon.

Sincerely,
George R. Cunningham
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Re: Draft Environmental Impact Statement by the U.S. Army Corps of Engineers for the Missouri River Recovery Management Plan - Montana, North Dakota, South Dakota, Nebraska, Kansas, Iowa, and Missouri

Dear Mr. Harberg:

The U.S. Department of the Interior (Department) has reviewed the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (Draft MRRMP/EIS) and offers the following comments provided by the U.S. Fish and Wildlife Service and National Park Service.

U.S. Fish and Wildlife Service (USFWS) Comments

The Draft MRRMP/EIS identifies effects associated with actions necessary to comply with the Endangered Species Act (ESA) by avoiding a finding of jeopardy to three federally-listed threatened and endangered species associated with the Missouri River: the pallid sturgeon, the interior least tern, and the Northern Great Plains piping plover. The USFWS offers the following comments pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4327), the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) (FWCA), and the Endangered Species Act, (as amended) (16 U.S.C. 1531-1543) (ESA).

The USFWS recognizes the value and supports an adaptive management approach to implementation of management actions in light of uncertainty. To that end, the USFWS applauds the Corps in its efforts to work towards implementation of the rigorous adaptive management approach outlined within the Draft MRRMP/EIS. However, research in and of itself will not achieve the purpose and objectives of the Draft MRRMP/EIS. Management intervention of sufficient scope and magnitude with associated monitoring will increase the rate of learning and pathways to the ultimate actions needed to achieve the purpose and objectives of the Draft MRRMP/EIS. The USFWS recommends the Corps increase

the level of implementation (magnitude and scope) of management actions to improve and expedite the adaptive management process and to help ensure the purpose and objectives of the Draft MRRMP/EIS are achieved.

The USFWS is also concerned about the commitment of the Corps to implementing actions sufficient to achieving the purpose and objectives of the Draft MRRMP/EIS. As intimated above, the vast majority of efforts are Level 1 and Level 2 in nature, in which no population level response is expected by the species the pathways, criteria and descriptions to Level 3 actions (actions at a magnitude where a population response is expected), are often ambiguous and in many cases not defined, and require more clarity/definition in the Final MRRMP/EIS..

Moreover, Level 4 management actions, the ultimate scale of implementation to remove a limiting factor, are for the most part non-existent within the Draft MRRMP/EIS. (Reference Table 4-1 within Volume 1: Summary of Time Limits for Level 3 Implementation and Scope of Actions). The USFWS has maintained that commitment to action both in the context of continuous learning through adaptive management as well as in the face of ambiguous or equivocal results is essential to success. The USFWS recommends clearer articulation of commitment for implementation to Level 3 actions. The Corps should define and analyze the scope of Level 3 actions for all proposed management actions to remove ambiguity or in many cases absence of management actions at Level 3.

Decision trees within the Draft MRRMP EIS adaptive management plan (adaptive management plan) describe the ecological responses and knowledge acquisition considerations within the adaptive management process to move to higher levels of action, e.g. Level 3 and Level 4. Additionally, the governance process engages the partners and stakeholders who have interest in the decision process. However, the USFWS is concerned that the numerous administrative and regulatory process requirements may slow movement within the adaptive management plan. Hence, the USFWS recommends the Corps include and describe 'action forcing' criteria to ensure appropriate changes are made in a timely matter within both the scientific and administrative portions of the adaptive management plan. The USFWS has consistently maintained that the MRRMP EIS should contemplate and evaluate the full suite of actions that the Corps can take so as to reduce the potential for further process delays during implementation of the Missouri River Recovery Program (MRRP).

The USFWS will not complete a final assessment of the ability of the Draft MRRMP/EIS to achieve its purpose and objectives until consultation pursuant to section 7 of the ESA (Section 7) are complete. However, at this time the USFWS is concerned that the suite of actions in the preferred alternative alone may not meet the purpose and objectives of the Draft MRRMP/EIS. The near-complete reliance upon mechanical construction in the Missouri River system overlooks the value of ecological functions to support the program purposes. Restoring natural flows should be a cornerstone of management approaches to river ecosystems (Poff et al. 1997), yet the current Draft MRRMP/EIS preferred alternative only includes them as a potential for testing the applicability of flows. The 2003 amended biological opinion reinforced the importance of a more natural flow regime linked with physical habitat improvements:

Continued survival of pallid sturgeon depends on restoration of riverine form and functions, as well as some semblance of the pre-development or natural hydrograph. Missouri River habitat restoration is, therefore, multi-faceted, and involves a combination of reservoir operational changes (e.g., hydrograph and temperature), structural modifications (e.g., chute restoration), and non-structural actions (e.g., floodplain acquisition or easements). The maximum benefits of physical habitat projects to listed species can only be realized when coupled with complementary hydrology.

Specifically, it should be recognized that success may ultimately only be achieved through the implementation of an array of actions which are not currently contained in any one alternative in the

Draft MRRMP EIS. To facilitate a more robust approach to adaptive management the USFWS recommends the Corps include a broader spectrum of potential management actions (including flow actions which are described in other alternatives) in the final selected alternative. A more thorough evaluation of when such actions may take place while minimizing impacts to stakeholder interest should also be conducted. The USFWS recognizes many of these additional actions may not be implemented immediately, however, having them accessible pending a myriad of potential needs and conditions exemplifies a robust and needed adaptive management approach. A final solution may include elements of the alternatives currently presented in the Draft MRRMP EIS and recommendations presented in this letter.

The USFWS recommends that the Corps identify and define actions which could be implemented immediately. The USFWS also encourages the Corps to include our recommendations in this letter to 'frontload' their biological assessment, to meet the purpose and objectives of the Draft MRRMP/EIS. These actions should be included within the Final EIS.

As the result of ongoing research, appears there may be potential for survival/recruitment of larval pallid sturgeon within the Missouri River below Fort Peck Dam (Ryan Wilson. pers. comm. 2017). The USFWS encourages consideration of MRRP actions within that reach of the Missouri River, pending the additional information and subsequent review. The following are examples of potential actions the Corps should consider to expand the scope of the MRRMP/EIS:

- Flow and temperature modifications - utilize surface water discharges from Fort Peck and Fort Randall Dams to increase river water temperatures; Implement summer low flows from Gavins Point, Fort Randall, and Fort Peck dams to increase seasonal water temperature and habitat heterogeneity;.
- Discontinue hydro-peaking from Fort Peck and Fort Randall dams to increase recruitment of pallid sturgeon;
- Increase floodplain connectivity to allow for nutrient and sediment inputs;
- Implement top-width widening to increase organic and sediment input and habitat diversity.

The USFWS is concerned the Corps has artificially constrained the range of actions in crafting the Draft MRRMP/EIS. While a variety of actions are considered, the scope of the actions currently presented in alternatives three through six are insufficient to achieve objectives of the Draft MRRMP/EIS. The USFWS recommends a broader range in both scope and magnitude of management actions be considered in the Final EIS.

The USFWS is concerned the preferred alternative does not address the identification and removal of impediments to implement more natural flows in the Missouri River. The Final EIS should consider the use of land acquisition, flowage easements, coordination with landowners, and necessary site preparations, within the 15-year project implementation period to achieve the purpose and objectives of the Draft MRRMP/EIS.

The USFWS believes there is high uncertainty that the least tern, piping plover and pallid sturgeon objectives could be met if there are continued delays to implementing flows during critical life history phases for these species. The USFWS recommends the Corps commit to use other tools such as flows to meet the objectives. We recognize that it may take many years to clear the impediments to use flows to restore the ecological function of the Missouri River. However, incorporating and using the authorities of the Bank Stabilization and Navigation Fish and Wildlife Mitigation Project (BSNFWMP), will benefit both listed and non-listed species, provide increased conveyance and capacity for flood waters, and reduce flood risk to residents, property and infrastructure along the Missouri River. The Corps should focus initial efforts in reaches where flood risk is the highest such as the reach below Fort Randall Dam and other previously identified reaches where pinch points and low-lying land are at

risk. Efforts such as this would highlight the Corps commitment to action and ultimately achieving the purpose and objectives of the Draft MRRMP/EIS.

While the USFWS recognizes the purpose of the Draft MRRMP/EIS focuses on ESA listed species, the USFWS is also committed to an ecosystem approach for the benefit of all fish, wildlife and people. Lands acquired through the BSNFWMP have made important contributions to the ecological health of the Missouri River benefitting a variety of species. Habitat and its associated ecological functions are the keys to a healthy ecosystem that will provide the needs of all fish and wildlife on the Missouri River. Habitat restoration on mitigation lands can benefit multiple non-listed species, including species at risk, in addition to the pallid sturgeon, interior least tern and the piping plover.

The Draft MRRMP/EIS (Page 1-1) states that this document is a programmatic assessment for two purposes, (1) major federal actions necessary to avoid jeopardy of the three listed species and (2) implement the BSNFWMP described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Act (WRDA) of 1986, 1999, and 2007. The Draft MRRMP/EIS (Page 1-7, Section 1.1.5) further states that the MRRP is the umbrella program that coordinates the Corps efforts in three programs, one being "Acquiring and developing lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986, and modified by Section 334(a) of WRDA 1999 (collectively known as the BSNFWMP)." Although, the Corps has stated that everything they are proposing to do for the listed species is consistent with and contributes to the BSNFWMP, the USFWS is concerned that the Draft MRRMP/EIS does not fully described how the Corps proposes to do that, nor what actions they will engage in to further the BSNFWMP. The USFWS recommends that the Final EIS fully disclose how the Corps will meet their FWCA mitigation responsibilities for all native fish and wildlife species habitat on the river during implementation of the MRRP, and consider the adverse impacts to non-federally listed species by focusing habitat mitigation to only listed species for the next 15 years.

As addressed on page 1-7 of the Draft MRRMP/EIS, the 2003 BSNFWMP was authorized by Congress to mitigate for the 522,000 acres of fish and wildlife habitat lost between 1912 and 1980 due to construction of the Bank Stabilization and Navigation Project (BNSP) (USACE 2003) with habitat restoration of 48,100 acres. Section 334 of WRDA 1999 increased the acreage of habitat to be mitigated for the BSNFWMP by 118,650 acres, bringing the total acres to be mitigated to 166,750 acres.

It has taken 14 years to acquire land in fee title or easement to restore approximately 66,000 acres of habitat (approximately 40%) of the required 166,750 acres BSNP mitigation lands. Habitat types to be restored include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat (SWH), backwater areas, and slack water habitats. To date, the obligations of the BSNFWMP have not been completed, but are still relevant and remain unchanged (Page 1-14), over 100,750 acres still need to be acquired. The USFWS recommends the Final EIS address the continued commitment to acquiring these mitigation lands.

Based upon actions currently identified in the Draft MRRMP/EIS, only a small amount of land will be purchased to help meet endangered species objectives. Previous consultations and listing decisions hinged upon significant progress being made and ultimately completion of the BSNFWMP, as such, the USFWS recommends the Corps work toward furthering implementation of the BSNFWMP to meet the objectives of the Draft MRRMP/EIS.

The USFWS recommends the Corps include the reach between Gavins Point Dam and Fort Randall Dam within the geographic scope of the Draft MRRMP/EIS and adaptive management plan. This reach of Missouri River has and continues to be profoundly impacted by operation of the dams through

alterations to hydrologic regime, temperature regimes, and sediment regimes, for example. A significant number of pallid sturgeon (>12,000) have been stocked in this reach, with nearly all year classes represented. The survival and growth of hatchery reared fish is similar to other reaches. Despite effects of the operations of the mainstem dams, portions of this reach still provides the type of natural habitat complexity that are highly altered or absent elsewhere in the basin. The habitat complexity developed downstream of the Niobrara River confluence is the size and scope that likely retard and delay the drift of larvae or perhaps even intercept larvae. If larval fish move downstream through the delta and reservoir, they may contribute to recruitment in the lower Missouri River. At this time, few fish are reproductively mature, but as more hatchery reared fish reach sexual maturity, this reach will warrant more detailed monitoring to determine the role that this population and river reach play in achieving the MRRP objectives.

The collection and analysis of monitoring and research data are essential to the adaptive management decision process. A process has been initiated by the Effects Analysis team, led by the U.S. Geological Survey, to design the monitoring needs for pallid sturgeon in anticipation of MRRP implementation. The USFWS appreciates the opportunity to continue to actively engage in this process, and offers the following recommendations to be considered in preparation of the Final EIS:

- The USFWS envisions true population monitoring as appropriate for Levels 3 and 4. Because Levels 1 and 2 represent research studies, the data collection at these levels should be integral to the specific research and will likely be completed by a wide array of entities conducting the studies. The USFWS envisions monitoring crews assist with data gathering or accomplishing tasks for Levels 1 and 2, when they overlap efficiently with Level 3 and 4 monitoring activities. Many Level 1 and 2 studies will transition to Level 3 and 4 actions.

When this occurs, the pallid sturgeon monitoring program will need to be revised to address the broader implementation scale or new needs for adaptive management associated with the original question/hypotheses, the USFWS looks forward to continued engagement in this process

- Monitoring priorities should include population structure, dynamics, and status and trends information, which are essential to the pallid sturgeon population augmentation program. The USFWS believes monitoring forage fish that are important in the diet of the pallid sturgeon, and serve as short-term indicators of effect of actions. Finally, the USFWS recommends the use telemetry technology to evaluate habitat use.
- The USFWS recommends that the Corps commit to funding and prioritizing the analysis and synthesis of the data beyond annual project completion reports by sampling segment. The lack of data analyses inhibits our ability to understand uncertainty related to pallid sturgeon ecology. This must be corrected before a new monitoring program is implemented.

The USFWS supports and appreciates the Corps collaborative approach to decision making within the governance section of the Draft MRRMP/EIS. Continued engagement with partners and stakeholders including Missouri River Recover Implementation Committee, Basin Tribes, Federal and State Agencies will prove invaluable to the success of our conservation efforts in the Missouri River Basin.

The USFWS appreciates the opportunity to review the Draft MRRMP/EIS and looks forward to continuing to work with the Corps through its completion for the recovery of the fish and wildlife resources of the Missouri River, while also taking into consideration the human resources. If you have any questions concerning this matter please contact Michael Thabault, Assistant Regional Director for Ecological Services, at (303) 236-4210 or Casey Kruse, Missouri River Coordinator at (605) 665-4856 for further questions and clarification.

Literature Cited:

Poff, N. LeRoy; J. David Allan; Mark B. Bain; James R. Karr; Karen L. Prestegard; Brian D. Richter; Richard E. Sparks; Julie C. Stromberg, *The Natural Flow Regime*, BioScience, Vol. 47, No. 11. (Dec., 1997), pp. 769-784.

USFWS. 2003. U.S. Fish and Wildlife Service 2003 Amendment to the 2000 biological opinion of the operation of the Missouri River main stem reservoir system, operation and maintenance of the Missouri River bank stabilization and navigation project and operation of the Kansas River Reservoir system. USFWS, Washington D.C

National Park Service (NPS) Comments

The Missouri National Recreational River (MNRR) is a unit of the National Park System and a component of the National Wild and Scenic River System. The MNRR includes a 39-mile district from Fort Randall Dam to Running Water, South Dakota; a 59-mile district from Gavins Point Dam to Ponca, Nebraska; the lower twenty miles of the Niobrara River; and eight miles of Verdigre Creek. These areas are administered by the NPS, which has authority under the Wild and Scenic River Act (WSRA) 16 U.S.C. 1271 et seq. to protect and enhance the values for which the MNRR was designated.

Pursuant to Section 7(a) of the WSRA, the NPS has regulatory authority over federally-assisted water resource projects within the ordinary high watermark (OHWM) of the MNRR, as well as in the river above or below the designation and on tributaries to designated segments. Water resources projects that are determined to have a direct and adverse effect on the free-flowing condition, water quality, or the values for which the MNRR was established are prohibited unless adverse impacts can be avoided or eliminated. Additionally, water resource projects upstream, downstream, or on tributaries determined to invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values of the rivers are also prohibited.

Comments - Missouri River Recovery Management Plan (MRRMP)/EIS

- Alternative 2 is preferred by the NPS. It provides for the most habitat conservation and most closely mimics the Missouri's natural flow regimes (both high and low flows). Further, Alternative 2 results in the fewest visual and recreational impacts.
- Activities proposed in the MRRMP that meet the criteria for a federally-assisted water resources project and are located within the MNRR will require a Section 7(a) determination prior to implementation. As stated in the Act below, the determination must ensure that there are no direct and adverse effects on the values for which the river was established. Section 7(a) of the WSRA states: "...no department or agency of the United States shall assist by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic, or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area..."
- Outstandingly Remarkable Values (ORVs) must be protected under Section 10(a) of the WSRA. The NPS manages the MNRR to protect and enhance for present and future generations the following ORVs: cultural, ecological, fish and wildlife, geological, recreational, and scenic values. To protect these ORVs, activities proposed within the MNRR will also be reviewed for consistency with the anti-degradation policy in Section 10(a) of the WSRA, which states: "Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other

uses that do not substantially interfere with public use and enjoyment of these values. In such administration, primary emphasis shall be given to protecting its esthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area."

- The NPS believes that the preferred alternative (Alternative 3) is too limited in scope--it does not provide sufficient consideration for ecological function and other river resources. They recommend management actions that achieve closer to natural flow regimes, such as those in Alternative 2.
- The cost of implementing Alternative 2 is not prohibitively different from the other alternatives. Financial estimates in Chapter 3 (e.g., Table 3-67) show that the cost to implement Alternative 2 is within 10% of the cost to implement Alternative 1 (No Action).
- Flow modification should be retained as a viable alternative to exclusively using mechanical construction of emergent sandbar habitat. Utilizing flow modification to create emergent sand bar habitat is a reasonable and desirable action that is consistent with the USFWS Biological Opinion for the Master Manual.
- Insufficient consideration is given to the effect of vegetation management actions on outstandingly remarkable values within the administrative boundaries of the MNRR. Vegetation management to maintain sandbar habitat is mentioned, but the impacts to native plant communities such as cottonwood stands and non-listed, non-special status species should be addressed.
- The MNRR has developed an Emergent Sandbar Management Planning Approach and Management Plan (ESHMP). At a recent interagency coordination meeting (April 6, 2017 in Yankton, SD) attended by NPS, USFWS, and USACE, representatives agreed to further collaboration regarding sandbar set-aside areas to meet MNRR goals without adversely affecting recovery objectives for listed species. As the MRRMP proceeds to implementation, NPS requests that continued consideration be given to the ESHMP for management actions contemplated within MNRR. The ESHMP sets aside up to 35% of the existing emergent sandbar habitat within the park's boundary, and will inform future management and administrative decisions within the MNRR.
- It is stated that the Pallid Sturgeon Population Assessment Program will be continued in some form; however, there are no specifics given about what activities (e.g. inventory, monitoring, or research studies) will continue and at what level. The EIS should elaborate upon existing inventory, monitoring, and research that is underway and/or planned in the future - - this may include existing science actions in the Missouri River Recovery 2017-18 annual work plans. The current level of monitoring (including fish community monitoring) should be continued and made more robust to give the most complete picture of what is occurring in the river and how the sturgeon is affected.
- The MRRMP states that 166,750 acres are authorized as mitigation for 474,600 acres of fish and wildlife habitat lost between 1912 and 1980 (attributable to construction of the Bank Stabilization and Navigation Project). Of this authorized amount, 66,000 acres have been acquired in fee title or easement. Further efforts should be made to complete the authorized mitigation for this habitat loss pursuant to Section 5018 of the Water Resources Development Act.
- In addition to MNRR, the NPS administers several other units of the National Park System within and along the Missouri River and its tributaries. These are the Knife River Indian Villages National Historic Site, Fort Union Trading Post National Historic Site, and the Lewis and Clark National Historic Trail. In the event that these units may be directly or indirectly affected by project actions, additional coordination may be required.

Comments: Science and Adaptive Management Plan (AMP) - Draft Version 6

- The NPS recommends that the interagency coordination language in the last paragraph of Section 6.10.1 of the MRRMP also be incorporated within the Science and Adaptive Management Plan (AMP) component of the DEIS.
- Page 27, Section 1.3.1, Table 2, Lines 13-14 - Southern Region standardized emergent sandbar

habitat acres shown as available is contingent upon continued interagency coordination and consideration of the set-aside acres NPS has identified within its Draft ESHMP.

- Page 35, Section 1.4.2, Table 4, Sediment Augmentation - Include sediment bypass below Gavins Point Dam within the umbrella question and related hypothesis.
- Page 70, Section 2.3, Table 10 - Include specific (bulleted) reference within an appropriate block of Table 10 regarding WSRA Section 7 consultation requirement with the NPS for actions within the MNRR.
- Page 89, Section 2.3.6.3, Lines 1-11 - Include specific bullet regarding WSRA Section 7 consultation requirement for actions within the MNRR.
- Page 104, Section 2.3.8.2, Lines 21-32 - There is a reference to NPS "assisting the agencies in planning sandbar habitat construction activities in the MNRR." To provide clarity and consistency, please add the following: "in the MNRR reaches below Fort Randall and Gavins Point Dams. Each action in these areas must also comply with WSRA Section 7 determinations." WSRA Section 7 determinations will be informed by the Final NPS ESH Management Plan.
- NPS appreciates the opportunity to provide comments on the MRRMP. As a cooperating agency, the NPS has a continuing interest in working with the Army Corps of Engineers in the development of the MRRMP and EIS. For continued coordination please contact Hector Santiago, National Park Service/Midwest Region Wild and Scenic Rivers Coordinator at (402) 661-1848.

Sincerely,

Robert F. Stewart
Regional Environmental Officer

Correspondence: 184

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Correspondence Text

Dear Colonel Henderson:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' Draft Environmental Impact Statement for the Missouri River Recovery Management and Adaptive Management Plans pursuant to our authorities under the National Environmental Policy Act and Section 309 of the Clean Air Act. This review has been coordinated between the EPA Regions 7 and 8, which encompass the mainstem of Missouri River, and our comments reflect those of both regional offices.

The EPA continues to support the efforts of the Corps, the U.S. Fish and Wildlife Service and the other federal, state and tribal partners in hydrologically reconnecting the Missouri River and its tributaries to their floodplains, restoring native fish and wildlife communities, restoring a more natural river hydrology and creating greater habitat heterogeneity necessary to the recovery of threatened and endangered species.

We have rated the document Lack of Objections based on our review and have attached some suggestions regarding the Final EIS as well as an overview of our rating scheme. Thank you for the opportunity to provide comments on the Missouri River Recovery Management Plan and DEIS. If you have any questions regarding these comments or if we can assist you with any follow-up, please contact Mr. Josh Tapp, Deputy Director, Environmental Sciences and Technology Division, EPA Region 7, at (913) 551-7606 or tapp.joshua@epa.gov or Mr. Phil Strobel, Director, NEPA Program, EPA Region 8, at (303) 312-6704 or strobel.philip@epa.gov.

Sincerely,

Edward H. Chu
Acting Regional Administrator

Enclosures

Cc: Aaron Quinn, US Army Corps of Engineers, Omaha District
Philip Strobel, EPA Region 8

Detailed Comments

Range of Alternatives and Future NEPA Compliance

The U.S. Army Corps of Engineers acknowledges in the Draft Environmental Impact Statement that existing National Environmental Policy Act compliance coverage will be limited to those possible actions already included among the array of six alternatives. Management actions outside the scope of the six alternatives will require further NEPA compliance coverage in the future. We recommend that the Corps establish a process within the Adaptive Management Plan for identifying new, potential management actions and their status with regard to existing NEPA coverage early in the study process, e.g., Level 1. Early NEPA compliance documentation would allow rapid implementation of new approaches at Levels 2 and 3.

Bank Stabilization and Navigation Project Mitigation

Since 1986, the Corps has been authorized by Congress to acquire up to 166,750 acres of land and construct habitat to mitigate for fish and wildlife losses resulting from construction of the Missouri River Bank Stabilization and Navigation Project. This authorization, if completed, would replace only 32% of the 474,600 estimated acres of habitat lost between 1912 and 1980. Approximately 66,000 acres of land has been acquired to-date. This acquisition constitutes only 39% of that authorized by Congress and 14% of the estimated habitat lost as a result of the construction and maintenance of the BSNP. We encourage the Corps to confirm its commitment to continued execution of the BSNP Mitigation Project separately from the Corps' overall efforts to comply with the ESA. Critical to the Mitigation Project is a resumption of property purchase from willing sellers and habitat development within the meander belt to benefit all native species. Perhaps the Record of Decision could confirm the Corps commitment to continued acquisition of quality restoration sites specifically under the BSNP Mitigation Project to benefit native fish and wildlife species. Continued execution of this project provides a template for future implementation of new actions to recover listed species called for under the AMP and will support a reduction in flood risk to private property.

Preferred Alternative with Adaptive Management Plan

The Corps estimates that annual costs for years one through nine of the Management Plan and AMP to be almost \$95 million with a total project cost of \$3 billion. The Final EIS should evaluate the annual and total costs of Management Plan and AMP implementation in the context of the past amounts annually budgeted for the Missouri River Recovery Program and the BSNP Mitigation Project, specifically. This relative cost comparison provides context for both the scale of costs and the likelihood of the Corps receiving funds adequate to sustain the AMP as described. In addition, the FEIS should describe what and when actions would be taken both by the Corps and the Service should aspects or the entirety of the AMP not be implemented within the timeframe identified. The FEIS could, for example, state that the Corps would continue with the 'no action' alternative as its baseline action should funding sufficient to support the preferred alternative, as designed, not be provided. These kinds of comparisons and the identification of baseline actions necessary to project

purpose inform the decision-maker and public discourse.

Draft Environmental Impact Statement Rating Definitions

Environmental Impact of the Action

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative. EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

Correspondence: 185

Author Information

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Correspondence Text

Re: Missouri River Recovery Management Plan - EIS

The Friends of Lake Sakakawea have taken an opportunity to review background documentation regarding the proposed Missouri River Recovery Management Plan - EIS and alternatives developed by USACE. After considering the benefits and impacts associated with Alternative #3 (Preferred Alternative) we believe it meets the intent of the directive and objectives of the MRRIC process. Therefore, we concur with the preferred alternative, in intent and context, as it accounts for our organizations concerns and interests in Lake Sakakawea. In addition, we feel it should be acceptable to other North Dakota stakeholders.

One concern we have however is that the State is lumped into the plan's content as a "stakeholder". This is inadequate as there are specific state's rights issues to consider, therefore the "States" need to be identified independently in the document. In addition, the AMP as presented appears to negate the premise of the MRRIC "consensus" decision approach and the implementation of future operational and river management changes. No changes or deviations, either temporary or permanent, from the current Master Manual should occur without direct consultation with and input from the States, prior to implementation. Acceptance of Alternative #3 occurred through the MRRIC process, and so should future management variations. Future knowledge gained by plan implementation and monitoring, including river alterations for habitat creation, will provide scientific insight to effective or detrimental measures regarding management changes, which in our opinion need to continue to be made in a collaborative and not unilateral manor.

In closing, we fully support the comments provided by the State of North Dakota regarding the preferred alternative. We strongly encourage the USACE to adjust the draft, as applicable. to address North Dakota's concerns.

Respectfully,
Terry Fleck, Chairman

Correspondence: 186

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Correspondence Text

The following comments are provided by the USDA Natural Resources Conservation Service (NRCS) regarding the USACE Draft Missouri River Recovery Management Plan-EIS.

The NRCS is supportive of USACE and USFWS efforts to improve conditions for the endangered Pallid Sturgeon, Piping Plover, Least Tern, and overall habitat restoration efforts in and along the Missouri River.

Under federal conservation programs authorized by the Farm Bill, NRCS has worked with private landowners to restore wetland habitats and protect floodplains in areas immediately adjacent to the Missouri River in the area covered by the subject recovery plan. Various types of easements have been put in place, many of them perpetual, to meet specific congressionally authorized program purposes. Locations of properties with these conservation easements can be found at the following web page: <http://conservationeasement.us/> and/or by contacting the appropriate NRCS State Office.

The various alternative habitat improvement activities proposed (including, but not limited to: Shallow Water Habitat, Top-Width Widening, Interception Rearing Complex, Emergent Sandbar Habitat, channel reconfiguration, Flow Management, and Land Management activities) have the potential to impact lands that have NRCS easements in place.

Pursuant to 7 CFR 1468.6, USACE must obtain prior authorization from NRCS for any activities that will impact NRCS easement lands. Where a Compatible Use Authorization cannot be granted, USACE must replace the impacted easement area using NRCS' existing easement administration action procedures to exchange for replacement acres. Replacement acres must be solely under administrative control of NRCS.

NRCS also offers the following specific comments on the Technical Reports noted below (pages listed are from the page numbers in the document):

IRRIGATION ENVIRONMENTAL CONSEQUENCES ANALYSIS TECHNICAL REPORT

On Page 9, first full paragraph, starting with "Counties ..." in the last sentence the text states:

"For example, Dewey County in South Dakota would experience an increase of 323 days when water surface elevations would fall below minimum operating requirements from 1942 to 2012 under Alternative 6, which resulted in this county being selected for further analysis."

NRCS Comment: These 323 days do not have a basis in time, so it is not clear what the effect would be. Is this 323/70 years= 4.6 days per year below the minimum operating requirements? This could be explained in days per year, maximum or minimum days, or percent change in operation.

On Page 9, Section 3.1, it is stated that:

"Only one county, Thurston, Nebraska, was selected on the basis of a single criterion. Seven counties, primarily in South Dakota, were identified on the basis of all four criteria."

NRCS Comment: Table 2 shows that there is a second county, Williams, North Dakota, that also has only one criterion. It is not clear which is correct, the paragraph or the table.

On Page 15, last paragraph, and Page 16, Table 6.

NRCS Comment: The amount of irrigation water shown on Table 6 appears to be the net amount applied to the field. The gross amount pumped from the river is not shown or discussed. The difference between the gross and net amounts of water would include loss in conveyance, wind drift, evaporation, deep percolation, and runoff. In addition, water is not applied evenly across the field. The total amount of water pumped from the river would be greater than the amount applied to the field. It is not clear that the USACE analysis accounts for this difference.

WATER SUPPLY ENVIRONMENTAL CONSEQUENCES ANALYSIS TECHNICAL REPORT

Page 8 - the second to last paragraph, states:

"The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1. These impacts are occurring in both the upper and lower river and along riverine areas, as well as reservoirs though the reasons for these effects vary by location."

NRCS Comment: The 57.1 days referenced here is not clear. Is this over the period of record, per year, or in dry years? This average number of days is also referenced on pages 14, 20, 22, 27, and 32.

Thank you for the opportunity to comment. If you have any questions, please contact David Heffington, Ecologist, NRCS/USACE National Partnership Liaison, NRCS National Water Management Center (David.heffington@ar.usda.gov) , or Verlon Barnes, NRCS Missouri River Basin Coordinator, (Verlon.barnes@wdc.usda.gov) .

Doris Washington, Director
USDA/Natural Resources Conservation Service

National Water Management Center

Cc:

Jimmy Bramblett, Deputy Chief for Programs

Noller Herbert, Director, Conservation Engineering Division, NRCS

Terrell Erickson, Director, Ecological Sciences Division

Kim Berns, Director, Easement Programs Division

Andree DuVarney, National Environmental Coordinator

Kevin Wickey, Central Regional Conservationist

Verlon Barnes, NRCS Missouri River Coordinator

Jamie Danesi, Senior Public Affairs Officer, USACE, Omaha District

Correspondence: 187

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Correspondence Text

Re: Comments on the Draft Missouri River Recovery Program Management Plan and Environmental Impact Statement (DEIS)

Dear Major General Spellman:

Our family operates Hermann Sand & Gravel, Inc. (dredging company on the lower MO) and Missouri River Towing LLC (commercial towing business operating from St. Louis to Sioux City). Our dredging permits were capped by the Corps in 2008 which made it impossible to grow our business. We decided to start moving commercial hopper barges in 2009 and have been able to grow that business. Many terminals on the MO River have started shipping again. Our customers have invested millions of dollars in rebuilding their docks and equipment. The last time the Master Manual was adjusted it had a negative impact to our industry. Many companies went out of business. Terminals were closed. For the first time since then we are experiencing growth. New businesses are operating on the river, terminals are re-investing. In light of this new growth and investment, we need stability.

When the Master Manual was adjusted in 2004 we missed an opportunity to make changes to the operation plan to maintain a 300x9 channel. The amount of water released for navigation was reduced but there was no adjustment made to the structures that make up the BSNP. We can have a solid channel with the water that is currently provided with some minor adjustments needed between Kansas City and St. Louis. If there are changes made to the authorized purposes how can we insure that we will have flood control and a solid navigation channel to sustain our business?

It seems that the Corps and Fish & Wildlife Service are always looking into ways to improve the quality of life for the endangered species. When can they look at ways to improve flood control and navigation? How can the agencies maximize the benefits of the dams, hydropower, flood control and navigation channel?

We support no action or Alternative 3. Low flow provisions in Alternative 2 should be removed from consideration because of the disastrous impact it would have on my business. Also, I am opposed to flow manipulations in Alternatives 4, 5 and 6 that would cause precious water in the system to be wasted running environmental flow experiments for the pallid sturgeon when independent science panels have been unable to prove any benefit.

Thank you for the opportunity to provide comments on the DEIS and for your service to our industry and our nation.

Respectfully,

Steven W. Engemann, President
Hermann Sand & Gravel, Inc. / Missouri River Towing, LLC

Correspondence: 188

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Correspondence Text


I am a landowner in Southwestern Buchanan County, State Of Missouri and also rent farmland in an area protected by Halls Levee District which is a federal levee. My parents and grandparents farmed these same farms previous to my operating these farms. I have lived in this area my entire life and the farm I own goes to the Missouri River high bank. I am very familiar with how the operation of the Missouri River affects my farming operations. I stand opposed to the alternatives that add any additional releases from the dam systems into the Missouri River. We currently have difficulties with internal drainage and seepage when river levels run above 12 feet at the St. Joseph, Mo River gauge. Impounded waters and seepage cause the inability to plant our crops with mid April through June 1, being the planting window for our area. Also if we are unable to plant at these times the yields are reduced or possibly lands go unplanted do to these high water events. Also if crops are timely planted and high water events come after planting crops are drowned out and or yields suffer. These farms are how I make my living, pay my bills, pay taxes. The alternatives that are proposed would be detrimental as to the additional releases from the dam at Gavens Point amounting to as much as 5 to 5 ½ ft. at St. Joseph, MO; I have been told. Local rainfall plus tributary run off flooding. Surely there must be a way to protect the habitat without placing undo problems on the farmer/stakeholder. Possible I here of being able to mechanically provide habitat and not alter flows from the dams. I could possibly give consideration to this plan as long as no increase in flows. Flood control should be number one in any consideration made.

Respectfully Submitted;

Glen Frakes

Correspondence: 189

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Correspondence Text

Please be advised as board members of Halls Levee District of Buchann County; state of Missouri that our levee district protects approximately 18,500 acres and is a federal levee in the Kansas City, District. running from mile marker L-437 downstream to mile market L-428. We are very concerned in regard to proposed alternatives 1 thru 6 containing releases of various amounts that we feel would jeporadize interior drainage, seepage issues, and cause a negative effect to farm lands that our levee protects. To our under standing alternatives 5, 6 would be large releases from Gavens Point Dam in amounts of up to 60,000 cfs either in the spring or fall for periods up to 35 days are both completely unacceptable as to the problems of crop damages as to the inability to be able to farm these lands due to the increase in Missouri River levels. These releases coupled with any rainfall events that enter into the Missouri River basin via tributary run off plus local rainfall in our area would cause great harm to our levee district farms; landowners, tenants, residents in general. St. Joseph, Missouri river guage has a stage of 17 ft. flood stage. It is our understanding that the Gavens Point release of 60,000 cfs would add approximately 5 to 5.5 ft. to the river level which would cause all of our gravity discharge gates to be closed causing impoundment of waters on the protected side of the main levee system. Carrying this scenario even further the high chances of flooding would be quite likely especially with the spring months The fall releases would be detrimental to harvesting of farm crops along with potential flooding associated with releases and any rainfall plus run off. Not only are farmlands affected by interior drainage, seepage, impounded waters but so are infrastructure namely homes, building sites, roads, highways, interstate plus intra state travel, utilities, lives aare put in danger as flooding could by highly possible. It seems that these alternatives are not completely proven and are many unknown factors as to their success as to the pallid sturgeon, piping plover, lease tern and are somewhat of an experimental nature with the possibility that end results could be less than anticipated Possibly alternative number 3 that implements mechanical habitat reproduction and constructio would be less damaging but we remain opposed to any releases associated with alternative 3. We ask human considerations and flood control be number one priority in your evaluations.

We would believe that flood control remain paramount in any decisions made in the operation of the Missouri River now and in the future. Your judgement and decisions will affect numerous people,

commerce, taxpayers for years to come. Your decisions are of extreme importance.

Respectfully submitted,

Lanny Frakes, President

Virgil Crockett, Secretary


R. J Blakley, Board Member

Jeff Gaskill, Board Member

John Sonnenmoser, Board Member

Correspondence: 190

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Correspondence Text

Re: Draft Missouri River Recovery Management Plan and Environmental Impact Statement

Dear U.S. Army Corps of Engineers:

The Iowa Chapter of the Sierra Club consists of approximately 5700 members living across the state of Iowa. We are interested in protecting and preserving Iowa's natural landscape. For a number of years, the Chapter has advocated for the protection of the piping plover, least tern, and pallid sturgeon on the Missouri River.

The Iowa Chapter believes that work must be undertaken to restore the Missouri River habitat for the pallid sturgeon, interior least tern, and piping plover. Doing nothing, the no-build option, is not acceptable. Further, the preferred option, Alternative 3, is not acceptable and will be addressed by the comments below. Although Alternative 2 appears to be the best of all of the options, even that option falls short. We would recommend that you go back to the drawing board and bring forth a new plan that truly allows the Missouri River to recover.

The role of the United States Army Corps of Engineers (Corps) in producing and implementing the Missouri River Recovery Management Plan is to restore the populations of the piping plover, interior least tern, and pallid sturgeon. The role is not to perform a balancing act between the various commercial interests and the three endangered species. The Endangered Species Act requires the Corps to undertake the most protective actions for those species. It was the Corps whose actions imperiled the piping plover, interior least tern, and pallid sturgeon and placed the on-going existence of those species in jeopardy. And it is the Corps that has the responsibility to restore the habitat along the Missouri River so that these species can continue to exist, to thrive, and to increase their numbers.

The upstream damming of the Missouri River, flood control actions, and channelization of the river for barge movement has had long-term negative effects on all three of these species.

The Iowa Chapter believes that it is now time to plan for terminating barge traffic on the stretch of the Missouri River bordering Iowa and begin restoring the natural course of the river. The barge traffic has required the Corps to riprap, channelize, and modify the flow of the river. It is this set of actions that have caused the piping plover, interior least tern, and pallid sturgeon species to become threatened or endangered in Iowa.

Tensions over water use may increase significantly as the upper reaches of the Missouri River watershed become dryer with climate change and as the Ogallala Aquifer is depleted. That leads to a question as to whether the Missouri River bordering Iowa should continue as a commercially navigable river that supports barge traffic.

At the same time, the Fort Calhoun nuclear power plant has ceased operation and will begin a decommissioning process. The nuclear plant sat right at the edge of the river north of Omaha. Without the nuclear plant, water levels no longer need to remain consistent in that stretch of the river.

The Iowa Chapter believes that those tensions and changes will provide an opportunity to return sections of the river bordering Iowa into more natural habitat. That includes creating pools and sandbars in the river and restoring floodplains. Those efforts will provide habitat for the pallid sturgeon, piping plover, and interior least tern.

As a result of channelizing the Missouri River, thirty-one miles of river have been removed between Sioux City and Omaha.¹ Wing dikes, riprap, and levees have forced the water into the channel where it flows as fast as 12 miles per hour.² All of this has significantly deteriorated fish habitat in the Missouri River along the Iowa border.

An examination of the 2011 months-long flooding of the Missouri River along Iowa's border is instructive. The flooding scoured holes, created backwaters and areas with reduced stream flow. All of this improved fish habitat, increasing survival of eggs and young fish, providing habitat for the juveniles, and allowing the fish to reach maturity. The next year, fishing enthusiasts reported catching larger and more fish than in prior years. The Iowa Department of Natural Resources conducted fish surveys in 2012. They reported increased numbers of paddlefish, channel catfish, northern pike, and shovel-nose sturgeon.³

In their article "Effects of historic flooding on fishes and aquatic habitats in a Missouri River delta", Andrew Carlson, et. al. confirm the value of flood pulses in increasing fish populations.⁴

In Missouri, the pallid sturgeon is already unable to reproduce naturally on its own and is restocked as juveniles.⁵ Although it is not clear why the pallid sturgeon is unable to sustain its populations in the wild, it is clear that one reason is the lack of appropriate habitat. The habitat for the pallid sturgeon is "slow moving water clouded with organic material".⁶

By restoring habitat in Iowa and by eliminating barge traffic on the Iowa stretch of the Missouri River, pallid sturgeon may have a chance to increase their foothold in the river.

Interior least terns lay eggs on unvegetated sandbars. Periodic flooding of the river creates the sandbar habitat needed by the terns. ⁷ Restoring sandbars along the Iowa section of the Missouri River will help restore the populations of these birds.

Like the interior least terns, piping plovers lay eggs on sparsely vegetated sandbars. Restoring sandbars will help restore the populations of these birds.

For all of these reasons, the Iowa Chapter opposes Alternative 3 because it does not address the overdevelopment of the river. In fact, it relies on further development of critical habitat.

Thank you for considering these comments.

Sincerely,

Pam Mackey Taylor
Conservation Chair

1 Molly Montag, "A Whole New Habitat, Missouri River flooding creates new fish habitat", Sioux City Journal, October 23, 2012

2 Molly Montag, "A Whole New Habitat, Missouri River flooding creates new fish habitat", Sioux City Journal, October 23, 2012

3 Molly, "A Whole New Habitat, Missouri River flooding creates new fish habitat", Sioux City Journal, October 23, 2012

Also see James MacPherson, "Missouri River flood may aid protected birds, fish", Bismark Tribune, June

7, 2011

4 Andrew K. Carlson, Mark J. Fincel, Chris M. Longhenry, and Brian D. S. Graeb, "Effects of historic flooding on fishes and aquatic habitats in a Missouri River delta", Journal of Freshwater Ecology, 2016,

Volume 31, No. 2, pages 271-288

5 John Sleezer and Scott Canon, "The dinosaur fish that lost its reproductive mojo: Meet Missouri's fish

helpers", Kansas City Star, December 15, 2016

6 John Sleezer and Scott Canon, "The dinosaur fish that lost its reproductive mojo: Meet Missouri's fish

helpers", Kansas City Star, December 15, 2016

Also see, Seth Willey, George Jordan, Jane Ledwin, Paul Hartfield, Carlita Payne, and Kelly Bibb, "Pallid

Sturgeon (*Scaphirhynchus albus*) 5-Year Review Summary and Evaluation", U.S. Fish and Wildlife Service

7 Jane Ledwin, "Record Floods Shore up Interior Least Tern Habitat", U.S. Fish and Wildlife Service, available at https://www.fws.gov/ENDANGERED/news/episodes/hu-10-2011/least_tern/index.html

Correspondence: 191

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Ladies and gentleman:

This letter contains my personal comments regarding the USACE MRRMP DEIS and related documents. My comments pertain only to how the DEIS and its planning documents relate to the conservation and restoration of pallid sturgeon and their habitats in Montana.

I have been active in pallid sturgeon recovery and the Upper Basin Pallid Sturgeon Recovery Workgroup beginning in 2000 as the Native Fish Program Coordinator for Montana Fish, Wildlife and Parks (MTFWP). Retiring from MTFWP as Hatchery Bureau Chief in 2010, I continue to work for pallid sturgeon recovery as a member of the Upper Basin Workgroup. I was a founding member of the Upper Basin Pallid Sturgeon Propagation Committee, which has expanded into a range-wide committee. I facilitated and served as the primary author of the 2005 Upper Basin Propagation Plan and assisted with the crafting of its 2016 range-wide replacement. I have facilitated or participated in the technical review of pallid sturgeon propagation programs at five hatcheries. My experience provides me with knowledge of the science, policies and management of pallid sturgeon. My interest is that pallid sturgeon on Montana, primarily those in RPMA 2, achieve natural recruitment as soon as possible.

The MRRMP does not advance pallid sturgeon recovery or improvements to pallid sturgeon habitats impacted by USACE operations in Montana, as no management actions are planned to occur during the fifteen-year timeframe of this plan. I do not consider USACE funding of Intake as a USACE management action to benefit pallid sturgeon as this project 1) does not address USACE-caused take of pallid sturgeon in Montana and, (2) the project's primary purpose is to provide water to eastern Montana irrigators, not recover pallid sturgeon. But the work at Intake and its expectations and outcomes are not within the scope of this letter. Research is not a management action. The approach of the MRRMP is to take no management actions until the related science is conducted at the peer-reviewed publication level. State management agencies have successfully managed and recovered wildlife populations without this level of science. The MRRMP process only delays implementation of needed management actions by requiring prior and often redundant research into the minutiae of already successful Upper Basin pallid sturgeon programs such as propagation and stocking.

In its 2003 amendment to the 2000 BiOp the USFWS took issue with the USACE's design of its adaptive management approach. Fearing delays in implementing management actions by performing research as a surrogate for evaluating the effects of management actions, the USFWS explained what an adaptive management is supposed to be:

"Adaptive Management is founded on simplicity: identify desired outcomes; take reasonable management actions that are believed to yield positive results; monitor those actions to determine if the expected results were achieved; and make management changes based on the new information."

The USACE should adopt this approach to adaptive management.

The organization and process described in the DEIS is too complex and convoluted to maintain the proposed schedule of work and decisions. There are just too many parts and committees to get to the decisions needed to implement management actions. The plan's complexity will doom it to failure.

Perhaps most disturbing to me is the plan's purported dependency on a high level of science to make decisions while the plan contains glaring inaccuracies presented as the "best available science". An example is the continued mention of interstitial hiding by post-hatch free embryos and its inclusion in decision-trees within the plan. While there has never been evidence of use of interstitial space by pallid sturgeon hatched free embryos, evidence from Keenlyn, Holm, Kappenman, Braaten and Delonay provide evidence that interstitial hiding is not used by pallid sturgeon. If this is a demonstration of how slow accurate information is incorporated into the MRRMP decision-making process, meaningful management actions to benefit pallid sturgeon will not occur in reasonable timeframes if at all.

The MRRMP fails to benefit pallid sturgeon in Montana within a realistic timeframe and I question its ability to avoid a jeopardy determination. As written, the MRRMP is not a recovery document, rather it is an expensive, long-term research program for the USGS that unnecessarily delays implementation of management actions that could recover pallid sturgeon in Montana. In Montana, what does this plan recover? What habitats are improved? What USACE-caused impacts that threaten this species with extinction are eliminated? None. I encourage the USACE to streamline its process to identify and implement management actions to mitigate USACE impacts to pallid sturgeon and their habitats in Montana; abandon unneeded, repetitious research that duplicates work already completed in the Upper Basin and further delays implementation of actual management actions in Montana; and use a more aggressive approach to actually address take of pallid sturgeon by USACE operations. It is a shame that with all of the time, effort and expense expended in developing the MRRMP and all of the constructive comments submitted by Montana biologists to help the MRRMP address the needs of pallid sturgeon in Montana, the net result is a plan that does nothing to reduce the USACE-caused threats to our endangered pallid sturgeon.

Specific comments on components within the MRRMP DEIS and related documents appear below.

Thank you for the opportunity to comment.

Bob Snyder
Wolf Creek, Montana

Comments on USACE's MRRMP DEIS and associated documents

Comment on Development of Working Hypotheses - Pallid Sturgeon

Comment 1: The following statement on page 25 (32/40) in Development of Working Hypotheses - Pallid Sturgeon is inaccurate for the Upper Basin Recovery Priority Management Areas (RPMAs):

"However, it should be noted that despite the large and increasing knowledge base on pallid sturgeon reproductive ecology, research has yet to prove one or more critical processes that are responsible for lack of population growth."

Work by Braaten, Delonay, Guy, Bramblett and others and the age structure of extant wild adult pallid

sturgeon in Montana yields the conclusion that lack of population growth in the Upper Basin is caused by a total lack of natural recruitment and, further, entrainment of drifting free embryos into toxic headwater habitats is the cause of this lack of natural recruitment. To continue to ignore this fact is unreasonable.

Comments on the DEIS

Comment 1: The geographical range of the DEIS should be expanded to include the reach of the Missouri River above Fort Peck Reservoir and the Yellowstone River upstream of Intake Dam, including at least the lower reach of the Powder River and, perhaps, as far as the Big Horn River.

The geographical range of the DEIS should include the reach of the Missouri River above Ft Peck Reservoir because:

- 1) This reach of river is designated as Recovery Priority Management Area 1 by the USFWS.
- 2) Fragmentation by dams is identified as a limiting factor in the pallid sturgeon recovery plan.
- 3) Entrainment of free embryos into downstream anoxic reservoir habitat is strongly suspected of preventing recruitment in RPMAs 1 and 2 since the two dams (Ft Peck & Garrison) were closed.
- 4) The effects of Fort Peck Reservoir on the upstream pallid sturgeon population (genetic isolation from other pallid sturgeon, inundation of fluvial pallid sturgeon habitat, mortality of drifting free embryos and others) are completely ignored. Although Chris Guy's report of the anoxic conditions in Fort Peck Reservoir are used in the DEIS to document anoxic conditions in the headwaters of Lake Sakakawea, the effects on pallid sturgeon above Fort Peck Reservoir are ignored. Further, the need to ameliorate these impacts are ignored.
- 5) Had the USFWS designated critical habitat for pallid sturgeon it is unlikely that RPMA 1 would have been excluded from consideration in the USACE's DEIS.

The geographical range of the DEIS should include the Yellowstone River above Intake Dam because:

- 1) Telemetered pallid sturgeon have been documented as using an existing side channel to pass beyond Intake Dam., thus it is not a complete barrier.
- 2) Pallid sturgeon have been documented to spawn in the lower Powder River.
- 3) There is photographic evidence of historic use of pallid sturgeon of the Big Horn River.

Comment 2: Pages 2-25 - 2-26 (121/190 -122/190) of DEIS Volume 1 DEIS describes reasons USACE has eliminated consideration of any meaningful actions at Fort Peck Dam:

The water intakes for Fort Peck Dam are on the bottom of the reservoir making it challenging to develop and implement design options to discharge warm surface waters downstream. In 2009, USACE completed the Fort Peck Dam Temperature Contra/ Device Reconnaissance Study. Ten alternatives to improve downstream water temperatures were evaluated for further consideration (USACE 2009b). The use of a flexible curtain to act as a submerged weir became the focus through subsequent investigations (USACE 2012b). This option uses a flexible curtain that is suspended a set distance from the water surface using a float system with the curtain bottom being anchored to the Joke bottom with ballast and anchors. This option works by passing the warmer water from the upper portion of the water column over the weir crest into the intake area, rather than drawing cold water from the bottom of the reservoir (USACE 2012b). USACE does not consider this option feasible due to an estimated short life cycle (i.e., 10-20 years), uncertainties with meeting downstream temperature targets, emerging science on larval drift distances, high construction and operation and maintenance costs, and significant dam operation safety concerns.

Modeling predicts that if there is no delay in drift, then all combinations of aforementioned management actions on the Missouri River (alteration of Fort Peck flows, temperature modifications at Fort Peck, and drawdown of Lake Sakakawea) are likely to result in recruitment failure (Fischenich et al. 2014). As stated previously, a reconnaissance study conducted in 2009 cited the challenges presented by management options at Fort Peck Dam (USACE 2009b). Prohibitively high costs and/or risk and uncertainty related to dam operations and dam safety were associated with each option. Actively managing the hydrology below Fort Peck Dam to provide the appropriate volume and temperature at the correct time would be a significant challenge containing hydrological, physical, and biological uncertainty with a small probability for success (USFWS 2015b). Approximately 90 percent of the tagged adult pallid sturgeon in the upper Missouri River population use the Yellowstone River during the spawning period (May-July) (Braaten et al 2015). The only exception was during a historic flood when some fish chose the Missouri River, although most still chose the Yellowstone River. There is no evidence that pallid sturgeon could be attracted away from the Yellowstone River with reasonable manipulations in flow from Fort Peck Dam. Therefore, implementation of Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative development due to the high level of uncertainty regarding their feasibility to achieve desired biological results and documented issues regarding their technical feasibility. The AM Plan identifies a comprehensive framework for research and studies to address the uncertainty regarding the effectiveness of management actions for pallid sturgeon in the upper basin.

Although USACE believes it has done its due diligence to eliminate from consideration any modifications at Fort Peck Dam to provide flows and temperatures, "take" of pallid sturgeon will continue in the Missouri River between Fort Peck Dam and Lake Sakakawea due to the effects of unnatural flows and temperatures on pallid sturgeon and their habitats caused by the hypolimnetic discharge from Fort Peck Dam. Further, this leaves the Yellowstone River as the only potential source of recruitment in RPMA 2, which a 2016 Upper Basin workshop exercise predicts is unlikely.

There are measures that could be taken that would attract spawning pallid sturgeon to spawn below the mouth of the Milk River and achieve survival of at least a portion of the resulting free embryos. Recommendations will be forthcoming from Montana pallid sturgeon experts that accomplish exactly this.

Without addressing "take" of pallid sturgeon in the Missouri reach below Fort Peck Dam, the USACE cannot meet its goal of avoiding jeopardy.

Comment 3: On page 2-26 (122/190) in Volume 1 of the DEIS it states:

As a result, the Yellowstone River retains a near-natural hydrograph and temperature profile as well as near-natural habitat-forming processes.

The impacts of the Yellowtail Dam on the thermograph, hydrograph, turbidity and bedload of the Yellowstone River should not be ignored and references to "near-natural" conditions in the Yellowstone should not be used.

The USFWS should be encouraged to consider the impacts to pallid sturgeon and their habitat in the Yellowstone River by Yellowtail Dam in the next iteration of the pallid sturgeon recovery plan.

Comments on the Plan Alternatives

Proposed management actions in the DEIS are primarily focused on the lower Missouri River. In the most inclusive alternatives (Alternatives 3-6) the proposed actions in Montana are limited to:

- Propagation and augmentation,
- Pallid Sturgeon Population Assessment Project,
- Level 1 and 2 studies, and
- Monitoring and evaluation related to recruitment associated with Intake Dam modifications

Comment 1: No actions are proposed that will recover Montana pallid sturgeon populations, the least hybridized populations in the species' range and, therefore, the most valuable. The preclusion from consideration of modifications to Fort Peck Dam to address the downstream impacts of hypolimnetic dam discharge severely limit the list of possible management actions in Montana that would benefit pallid sturgeon and their habitats.

Comment 2: Level 1 research and most of Level 2 experiments do not meet the definition of a management action and should not be considered as management actions in the alternatives. Only those actions that manipulate or change in situ conditions or limiting factors with the expectation of population level results should be considered as management actions.

Comment 3: The preferred alternative only commits to Level 1 & 2 research but not to implementation of management actions that adaptive management research demonstrates are required for pallid sturgeon recovery in Montana. If Level 3 and 4 actions are not implemented, no population level changes are to be expected, therefore jeopardy will still exist, as limiting factors are not alleviated or mitigated.

Comment 4: Commitment to implementing Level 3 & 4 actions must be included in the final EIS and must be initiated within the timeframe of the plan. Further, the whole purpose of the AM process is to spend money and time to get to Level 3 & 4 actions. Without a commitment to implementing actions supported by the expensive and lengthy adaptive management process, why begin the process?

Comment 5: Realizing that the scope for the DEIS is 15 years, it is still dismaying that Big Question 5 Components 5 and 6 (studies with temperature control device at Fort Peck Dam) do not appear on the schedules for Proposed Implementation of Actions for the Upper Missouri River (Figure 4.4, 4 - 4, {1/344} in Volume 4 of the DEIS and in the SAM Plan). If unnatural temperatures in Missouri River below Fort Peck Dam constitute take, how can USACE avoid jeopardy without addressing the effects of hypolimnetic withdrawals? Is it acceptable to the USFWS that these important components are not planned on occurring within 15 years?

Comment 6: Based on the paucity of management action proposed to address the USACE-caused factors limiting pallid sturgeon in Montana, I can only conclude that the USACE's intent is to use taxpayers' money to delay substantive operational and infrastructure changes for the benefit of pallid sturgeon and their habitats. Although the Intake Dam project may provide fish passage above that structure, the potential for achieving natural recruitment from the Yellowstone River is highly suspect, as telemetry studies suggest pallid sturgeon have periodically pass and spawn upstream of Intake Dam since its construction but recruitment has not occurred since the closing of Garrison Dam. It is both biologically unsound and inconsistent with the purpose of the Endangered Species Act for the USFWS to not require the USACE to address pallid sturgeon limiting factors in both the Missouri and Yellowstone rivers, including the reach of the Missouri River upstream of Fort Peck Reservoir which is designated as a recovery priority management area by the USFWS.

Minor edits

On page 2-27 (123/190) in Volume 1 of the DEIS it states:

Three federal hatcheries (Gavins Point National Fish Hatchery in Yankton, South Dakota, Garrison Dam National Fish Hatchery in Riverdale, North Dakota, and Neosho National Fish Hatchery in Neosho, Missouri) and three state hatcheries (Blind Pony State Fish Hatchery in Sweet Springs, Missouri, Miles City State Fish Hatchery in Miles City, Montana, and Bozeman Fish Technology Center in Bozeman, Montana) are involved with propagation of Missouri River pallid sturgeon.

Comment 1: Bozeman FTC is a federal facility and although it active in pallid sturgeon research, it is no longer producing pallid sturgeon for conservation stocking.

Comment 2: Also, on the same page, RPMA is not "resource priority management area" but "recovery priority management area".

Correspondence: 192

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General Comments

1. The allotted time for the preparation and release of the Draft Plan with six alternatives was compressed and did not allow development of additional alternatives.
2. The estimated costs of the six alternatives indicate that actions included in the alternatives are likely unattainable. It is therefore important to prioritize actions and select the most efficient and economical results.
3. The adaptive management plan process utilizing the best available science is highly desirable.
4. A selected alternative should generally stay within the parameters of the Master Manual.
5. A selected alternative should not increase Missouri River bed degradation or lateral bank erosion.
6. A selected alternative should not increase flood risk.
7. A selected alternative should not threaten or increase costs of water supply to domestic and industrial users or cause increased fresh water treatment costs.
8. A selected alternative should not have a split season or otherwise threaten commercial navigation.

Specific Comments and Recommendations

The six alternatives presented have common and logical recommended actions for the Piping Plover and Interior Least Tern including:

- Vegetation management on the bird habitat
- Predator management on the bird habitat
- Human access restriction on the bird habitat
- Flow management to reduce take of the Piping Plover and Least Tern
- Piping Plover and Least Tern monitoring and research

The six alternatives presented do not include the range of habitat options for the Piping Plover and Interior Least Tern that should be considered. The Draft Missouri River Recovery Management Plan (Plan) does not include off channel habitats as suggested by the Missouri River Recovery Implementation Committee (MRRIC) and recommended by MRRIC's Science Adaptive Management Work Group (SAM), the Independent Science Advisory Panel (ISAP) and the Independent Social Economic Technical Review (ISETR). These habitats include meander scars, alkaline lakes, deltas,

oxbows and sand pits. The advantages of other habitats rather than Emergent Sandbar Habitat (ESH) may include reduced ESH damage from river flows, increased habitat longevity and reduced costs. Many areas could be used for habitat development including area sand mines (gravel pits), DeSoto Bend, Boyer Chute, Omadi Bend, Middle Decatur Bend, Union County South Dakota sites, Kenslers Bend, Bow Creek and many others.

The experiences of NPPD, on the Platte River, indicate the advantages of off channel habitat for recruitment of the Interior Least Tern and Piping Plover.

The six alternatives do not place enough emphasis on habitats in the reservoirs. Missouri River Piping Plovers that used the reservoirs for nesting between 2000 and 2016 ranged between 39% (2010) and 71% (2004). There are no recommendations in the alternatives to add nesting habitat on the reservoirs other than flow management. The costs of habitat (ESH) are entirely within the riverine segments.

The six alternatives presented have common recommended actions for the

Pallid Sturgeon including:


- Pallid Sturgeon propagation and augmentation
- Pallid Sturgeon Population Assessment Project (PSPAP)
- Monitoring and evaluation of Pallid Sturgeon Recruitment
- Lower river Pallid Sturgeon early life stage habitat construction
- Habitat development and land management of MRRP lands

The level 1 and 2 actions for the Pallid Sturgeon should be prioritized to efficiently use the funds available. The Pallid Sturgeon propagation and augmentation should continue unless future studies indicate otherwise. The PSPAP should continue. The lower river early life stage habitat construction should be implemented on a trial basis and fully analyzed for results before full implementation. Habitat development on MRRP lands should occur when possible. The impacts of Asian Carp on the Pallid Sturgeon and other native species should receive a high priority.

Don Meisner
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MRRIC Member
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Re: Draft Missouri River Recovery Management Plan and Environmental Impact Statement-Sediment Redistribution

Dear Sir/Madame:

The Missouri Levee and Drainage District Association ("MLDDA") respectfully submits the following additional comments on the Missouri River Recovery Management Plan and Draft Environmental Impact Statement ("MRRMP DEIS"). We appreciate the opportunity to further participate in shaping this most important plan.

Thank you for including sediment redistribution in the scoping process for the MRRMP DEIS at Section 2.5.1.14. The Lewis and Clark Lake Sediment Management Study (USACE 2013) concluded that additional scenarios exist that warrant examination.

As a part of Phase II of this study, we request that the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service implement a pilot project utilizing beach nourishment technologies' to transfer sediment from past a main stem dam into a downstream reach of the Missouri River. As the agencies are aware, stream bed degradation in certain reaches of the Missouri River below the dams is an issue that must be addressed in the coming decades.

Sediment transfer is a way to restore habitat and function to the Missouri and Mississippi River ecosystems while maintaining storage capacity for flood control, reducing bank erosion, and minimizing impacts on other uses of the rivers. The main stem dams trap sediment resulting in a less turbid river. According to the Recovery Plan for the Pallid Sturgeon (Recovery Plan),² pallid sturgeon historically occupied turbid river systems. ³ They adapted to this turbid habitat, so increasing the turbidity of the river will ostensibly benefit the pallid sturgeon.⁴ Taking sediment from behind the dams to increase the turbidity of the river also will help maintain the flood-storage capacity of the system. In addition, turbid water would erode banks less than clear water, all other things equal. Moreover,

sediment transfer should not significantly impact the authorized purposes of the Missouri River Main Stem Reservoir System that rely on flow management or water temperature: hydropower, downstream power supply (thermal cooling), flood control, and navigation (provided the largely self-scouring design of the system is unchanged).

Implementing a pilot project for such sediment transfer from a dam to the Missouri River is squarely within the Corps' Flood and Coastal Storm Damage Reduction Program. One of the purposes of this program is to accelerate the study and design process for inland flood damage reduction including the sedimentation response of flood-control channels.

Such a pilot project also helps fulfill two of the tasks in the Recovery Plan:

Recovery Outline

1.1.5. Restore the dynamic equilibrium of sediment transport within the Missouri River.

Recovery Outline Narrative

1.1.5. Main Stem Missouri River dams have trapped sediments in reservoirs and bank stabilization has reduced erosion in riverine reaches. Additional sediment input, initially within high-priority recovery areas, is necessary to restore instream habitats and turbid waters. Opportunities to restore the dynamic equilibrium of sediment transport should be pursued. Additional research is needed to determine mechanisms for transporting sediment past dams and into river reaches downstream.

Recovery Outline

Task 2.2.4. Develop pilot projects on selected dams to transport sediment past the dam and into the river reaches downstream.

Recovery Outline Narrative

2.2.4. The U.S. Army Corps of Engineers and U.S. Bureau of Reclamation should design and develop pilot projects to increase sediment transport past selected dams. Models should be used to predict effects of increased sediment supply and changing hydrographs on bed condition.

Thank you for considering sediment redistribution as a part of the scope of the MRRMP DEIS. We look forward to working with you to develop a pilot project.

Respectfully submitted,

MISSOURI LEVEE AND DRAINAGE DISTRICT ASSOCIATION

Tom Waters, Chairman

Robert J. Vincze, Attorney

1 See Coastal and Hydraulics Laboratory, Engineer Research and Development Center (ERDC), at CHLJInfo@erdc.usace.army.mil; see also [~/swwrp.usace.army.mil](http://swwrp.usace.army.mil).

2 Recovery Plan for the Pallid Sturgeon (*Scaphirhynchus a/bus*), USFWS, November 7, 1993.

3 Turbidity levels where pallid sturgeon have been found in South Dakota range from 31.3

Nephelometric turbidity units (NTU) to 137.6NTU (J. Erickson, pers. comm. 1992); Recovery Plan at page 8.


4 The Recovery Plan sets out the detriments of reduced turbidity to the pallid sturgeon:

The turbidity caused by suspended sediment also provided the pallid sturgeon and other native fish, adapted to living in a nearly sightless world, with cover while moving from one snag or undercut bank to another. Today, water clarity has increased dramatically, and this essential cover is gone. Under such conditions, predation by sight-feeding predators, such as northern pike (*Esox lucius*), walleye (*Stizostedion vitreum*), and smallmouth bass (*Micropterus dolomieu*), can be expected to significantly impact native species not equipped by evolution with good eyesight.

It is also suspected that increased clarity of the Missouri River affected food availability by changing species composition and by making it more difficult for pallid sturgeon, and other native species, to capture prey in the clearer water environment. In the Missouri River, pelagic planktivores and sight-feeding carnivores have increased in abundance, whereas species specialized for life in the turbid, predevelopment river (like the pallid sturgeon) have decreased in abundance (Pflieger and Grace 1987). This change in community structure is less apparent where changes in the natural hydrograph, temperature regime, and turbidity are less pronounced. Recovery Plan, page 12.

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Greetings,

Draft Missouri River Recovery Management Plan and Environmental Impact Statement of December 2016 - General Comments

1. The alternative selected should stay with the parameters that were established in the Master Manual.
2. The estimated costs of the six alternatives should be realistic, obtainable, utilize the best science available, and have a planned funding source. Actions should be prioritized to achieve the maximum positive results.
3. A selected alternative should minimize degradation of the river and minimize bank erosion and not increase flood risk.
4. A selected alternative should not threaten or increase costs of water supply to domestic and industrial users.
5. A selected alternative should not threaten commercial navigation.
6. Off channel habitat for the least tern and piping plover should be attainable and at a lesser cost both in terms of capital costs and maintenance costs.
7. The pallid sturgeon recommendations are similar in all alternatives and should be prioritized for implementation.

Best Regards,


CITY OF SOUTH SIOUX CITY

Lance Hedquist

City Administrator

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Re: Missouri and Levee and Drainage District Association,
Comments on the Draft Missouri River Recovery Management Plan and Draft Environmental Impact
Statement

Dear Mesdames/Sirs:

The Missouri Levee and Drainage District Association ("MLDDA") respectfully submits the following additional comments for inclusion in the administrative record on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement released to the public on December 16, 2016 ("MRRMP DEIS"). Thank you for the opportunity to participate in this important process.

The MLDDA is opposed to the low summer flows and spring pulses in the default plan in the 2003 Amended Biological Opinion and the vestiges of this plan in Alternative 2-U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions in the MRRMP DEIS. Another plan with low summer flows could serve to once again eliminate barge transportation on the Missouri River. A channel of appropriate depth must be maintained for reliable barge transportation, and such a channel can be permanently damaged by siltation and reduced scouring action due to a prolonged loss of adequate flow. As a result, alternative shipping costs would increase and the net price to farmers would decrease. Farmers would also pay higher prices for agricultural inputs as a result of the loss of water compelled rates (reduced competition) for long haul truck and rail transportation. The loss of barge transportation would serve to escalate transportation costs to a far greater extent than that represented by the increased demand placed on other modes of transportation by the tonnage that would have been carried by barge.

In addition, a repeated or extended disruption of flow on the Missouri River will force utilities to seek new terminals for western coal. Increase their shipping costs for such coal, reduce power generation on the river, and increase costs for utilities and their rate payers.

Furthermore, the Missouri River is vital to navigation on the Middle Mississippi River. Adequate flow on the Mississippi is important to maintain the proper channel depth for reliable transportation. Disruption of commodity shipments to the Lower Mississippi River will adversely impact world grain trade as a significant portion of the basin's total farm production is exported. Moreover, reduced drafts on the Lower Mississippi River will reduce drafts on the Ohio River and will thereby raise costs for a wide range of commodities including grain, steel and chemicals.

In support of the above comments, please see the enclosed copies of the following reports and papers:

"Impact of Reduced Missouri River Waterflow on Inland Barge Transportation," by Temple, Barker & Sloane, Inc., dated November 21, 1990.

"Rail Rates and the Availability of Water Transportation: The Missouri River Basin," prepared for the Tennessee Valley Authority and the U.S. Army Corps of Engineers, revised March 1, 1996 (Volumes I and II).

"Transportation Rate Analysis: Missouri River Master Manual Review," prepared for the U.S. Army Corps of Engineers, Missouri River Division by The Tennessee Valley Authority, Water Resources Projects and Planning, Knoxville, Tennessee, November 1996 (Volume I).

"The Impact to Missouri Agriculture of Reduced Waterflow on the Missouri River," prepared by the Missouri Department of Agriculture, Jefferson City, Missouri and the University of Missouri, Columbia, Missouri, June 1991.

"Legal Aspects of Federal Action Affecting Navigation on the Missouri River," by John C. Gage, August 15, 1990.

In addition, municipalities rely on the Missouri River for their drinking water including St. Louis; Kansas City, Kansas and Kansas City, Missouri; Johnson County, Kansas; St. Joseph and Jefferson City. Reduced river flows increase silt content in the water and processing costs. Low flows also may require further modification of each municipality's intake structures as evidenced by construction that St. Joseph and Kansas City were required to undertake because of low flows in the winter of 1989.

Respectfully submitted,

MISSOURI LEVEE AND DRAINAGE DISTRICT ASSOCIATION

Tom Waters, Chairman

Robert J. Vincze, Attorney

(with input from the late John Gage, Bill Lay, John Drew and Don Hurlbert)

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Re: Comments on the Draft Missouri River Recovery Management Plan and Draft Environmental Impact Statement

Dear Major General Spellmon,

My name is W. Dustin Boatwright and I serve the landowners of southeast Missouri as the Chief Engineer for The Little River Drainage District (LRDD) headquartered in Cape Girardeau, Missouri. LRDD is a Circuit Court Drainage District, formed in Butler County Missouri in 1907, tasked to make the land in the Missouri "Bootheel" productive for the State of Missouri. Today LRDD's mission is to provide flood control and drainage to our landowners by operating and maintaining the approved system of infrastructure in a seven (7) county region located in the southeast corner of Missouri.

The Little River Drainage District's approved reclamation plan encompasses 550,000 acres, drains 2 million acres runoff, and provides flood control and drainage benefits to residential and commercial development, agriculture, federal & state conservation land, airway, telecommunication, utility, roadway, railway, and sanitary infrastructure. LRDD's authorized system is made up of nearly 1000 miles of drainage channels, 300 miles of levees, five (5) detention basins (~20,000 acres), one (1) pump station, and three (3) gated structures. Today, LRDD's system provides reliable drainage and flood control protection that ensures the highly productive people and property of the St. Francis Basin Watershed (Missouri and Arkansas), contribute significantly to the United States Gross Domestic Product each year.

The Little River Drainage District's system of levees located in Cape Girardeau and Bollinger County Missouri became a part of the Mississippi River and Tributaries project (MR&T) following the 1928 Flood Control Act. The levees today are identified as System 21-Little River Headwater Diversion Levee System and System 5 -Castor River Levee System on the U.S. Army Corps of Engineers-National Levee Database. The two levee systems were improved at the cost of the Federal

Government, with assurances of the local people, to handle the Project Design Flood (PDF), which is the largest flood reasonably expected to occur. The Mississippi River Commission (MRC) was charged with the prosecution of the MR&T project in 1928. The President of the MRC also serves as the Commander of the Mississippi Valley Division of the U.S. Army Corps of Engineers which executes the MR&T project.

For historical relevance the Mississippi Valley flood of 1927 devastated our nation with more than 16 million acres inundated and levee failures throughout the lower Mississippi Valley. The 1927 flood alone caused 1/3rd of the United States GDP that year to be lost and never recovered. The flood left 500 people dead, 700,000 people without a home, 3,000 miles of railway destroyed, 2,000 miles of roadways destroyed, and 41,000 buildings inundated. In response, the United States Congress passed the Flood Control Act of 1928, authorizing the MR&T's comprehensive flood control project, to protect the people and property of the Mississippi Valley and the economic viability of our entire nation. The US Congress's passage of the act was to ensure the devastation and negative economic impact from 1927 flood does not repeat itself. In 2011 the MR&T comprehensive flood control system passed the flood of record without incident, which was greater in volume than the 1927 flood. On January 1, 2016 the MR&T comprehensive flood control system passed the flood of record, on the Middle Mississippi River at Cape Girardeau on LRDD's System 21-Headwater Diversion Levee System without incident. The MR&T project is a proven success and has returned 54 to 1 on the Federal investment, on damages prevented, by providing reliable flood control and navigation on the Mississippi River from Cape Girardeau, Missouri to the Gulf of Mexico.

The purpose of today's written testimony is to express opposition to the proposed changes/alternatives to the management of the Missouri River Basin. The implementation of the proposed changes/alternatives, based on the draft environmental impact statement, cause a significant impact to the Middle Mississippi River system located north of Cairo, IL for both flood control and navigation. The potential effect to the water surface elevation of the Mississippi River near Cape Girardeau Missouri, with the proposed changes/alternatives, produce a river stage increase in excess of 3 ft. Any change/alternative producing an induced increase to the water surface elevation on the middle and lower Mississippi River is unacceptable. Not only will the proposed alternatives potentially negatively impact the people and property protected by the MR&T system, but it will also affect those who farm in and along flood ways of the Mississippi River Watershed. In LRDD's District alone approximately 6,500 acres of farmland in the area known as the "East Basin" would be impacted by water surface elevation increases.

As mentioned briefly above The Mississippi River Commission (MRC) is tasked with the prosecution of the MR&T project. Since 1879 the US Congress has charged the MRC with the mission of developing plans to improve the condition of the Mississippi River, foster navigation, promote commerce, and prevent destructive floods in the Mississippi River Watershed (41 % of the United States). The Mississippi River Commission along with the landowners protected, and those not protected, by the MR&T project should be considered and involved in the decision process of any modifications within the Mississippi Watershed that impacts downstream flood control and navigation. The Little River Drainage District respectfully requests the Mississippi River Commission's immediate involvement along with outreach and involvement of the downstream landowners prior to any changes to the management of the Missouri River Basin.

Respectfully Yours,


W. Dustin Boatwright, P.E., M ASCE
The Little River Drainage District
Chief Engineer

WDB

CC: Major General Michael C. Wehr, President Mississippi River Commission & Commander
Mississippi Valley Division US Army Corps of Engineers

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Major General Spellman:

On behalf of the State of Missouri, thank you for this opportunity to provide comments on the Missouri River Recovery Program Management Plan Draft Environmental Impact Statement (DRAFT EIS). As Missouri's lead agency on water management issues, the Missouri Department of Natural Resources submits these comments on the DRAFT EIS.

Our comments reflect the importance of flood control and navigation on the lower Missouri River. The proper management of the System for these Congressionally authorized, dominant project purposes also supports the infrastructure that allows approximately 3 million Missourians to receive their drinking water from the Missouri River or its alluvium. Furthermore, numerous coal-fired and nuclear power plants on the lower Missouri River use the river for cooling purposes. Modification to either of these dominant purposes would have cascading and compounding impacts (see "Cumulative Impacts" enclosure for additional comments).

The U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service (FWS) have used the Missouri River Recovery Implementation Committee (MR.RIC) as a mechanism for stakeholder input regarding the various alternatives considered in the DRAFT EIS. Missouri has been actively engaged in the MRRJC since its inception and has provided comments on many preliminary documents for the DRAFT EIS. Throughout this three-year process, stakeholders have asked the Corps to identify the specific range of actions the agency is considering to implement. Establishing these sideboards in the Final EIS is critical to having a clear understanding of the potential impacts of the Missouri River Recovery Program Management Plan and the Adaptive Management Plan. We encourage the federal agencies to continue to communicate clearly and coordinate frequently with all affected stakeholders.

Limited Support of the Preferred Alternative

The Corps' Preferred Alternative (Alternative 3) appears to result in the least number of impacts to

flood control and downstream flow support for commercial navigation and water supply. Therefore, Missouri supports mechanical habitat construction as identified in the Preferred Alternative, but only if mechanical construction is implemented in a targeted and contextually sensitive manner. The Corps should implement the Preferred Alternative in a manner that would provide both beneficial habitat and improve overall channel flow conveyance. But habitat construction activities must also comply with all applicable state and federal water quality laws and regulations. In addition, the Corps has determined the channel structures from Kansas City downstream to the mouth are degraded and in need of repair. These insufficient structures cause challenges in maintaining the navigation channel. Therefore, it is important that habitat construction activities within this reach are implemented only after these deficient structures are brought up to their original design dimensions.

Our qualified support of the Preferred Alternative does not extend to the proposed one-time flow test, which would have the same reservoir release criteria as Alternative 6. Therefore, our comments regarding Alternative 6 also apply to the Preferred Alternative. Additionally, we are unable to provide comments on the impacts of the one-time flow event because the Corps did not model or assess the impacts associated with it in the Draft EIS. In fact, page xi of the Executive Summary states that the Corps did not do so "because of uncertainty of the hydrologic conditions present." The State of Missouri asserts that the Corps cannot implement an action on which the agency has not adequately assessed impacts.

Missouri Objects to Changes to the Master Manual

In order to implement Alternatives 2, 4, 5, or 6, the Corps would have to change the existing Missouri River Mainstem Reservoir System Master Manual. Corps staff has asserted that the DRAFT EIS analysis would provide the National Environmental Policy Act (NEPA) coverage to make such changes to the Master Manual. The State of Missouri, however, asserts these proposed significant and controversial changes to the Master Manual would require a separate and distinct NEPA process in order to fully characterize the implications. To highlight the significant public interest in the possibility of Master Manual changes, twenty members of Congress have communicated their concern to the Corps and urged the agency to pursue an alternative that does not require such a change to the Master Manual (see "Master Manual Congressional Letter 121815" enclosed).

Corps staff also has indicated the agency may pursue a deviation from the Master Manual for a one-time flow event, rather than changing the Master Manual altogether. The Corps cites Engineering Regulation 1110-2-240 as its authority to deviate from the water control plan. But ER 1110-2-240 only describes the process by which a deviation can be sought and does not grant the authority to do so. A deviation from the Master Manual for such experimental purposes is not consistent with the Corps' Congressional authority and it should not be pursued.

Maintaining Existing Flood Control and Navigation is Paramount

Throughout this process the State of Missouri's message has been clear and consistent: flood control and navigation are the primary purposes of the Missouri River Mainstem Reservoir System (System). These purposes were established by Congress in the 1944 Flood Control Act and must not be diminished or undermined. Northwest Deputy Division Commander Colonel Torrey DiCrio clearly articulated this very point during his presentation at the February 2017 Missouri River Navigators Meeting in Kansas City, Missouri. Even though NEPA requires the Corps to analyze a broad range of alternatives, most of the alternatives presented in the DRAFT EIS are inconsistent with the Corps' authority given the impacts they would have to flood control and navigation. As the Corps considers which actions it will ultimately implement, Missouri asserts the agency must insure that such actions are consistent with existing Congressional authority and established priorities.

Flood control constraints at Omaha, Nebraska City, and Kansas City are critical to insuring that actions

do not cause, or contribute to, downstream flooding. Alternatives 2, 4, 5, and 6 would relax flood control constraints by almost 80 percent. This is unacceptable to the State of Missouri as it would result in flooding on the lower river. For instance, the current flood control constraint at Kansas City is 71,000 cubic feet per second (cfs) whereas under Alternative 4 it would be increased to 126,000 cfs. This increase in the flood control constraint would cause flood stage to be exceeded at downstream locations such as Napoleon and Waverly even without additional runoff into the river. Relaxing the flood control constraints is contrary to the Corps' Congressional authority and the State of Missouri strongly opposes such an action (see "Flood Control" enclosure for farther comments).

In the DRAFT EIS, the current 2006 Master Manual is reflected as Alternative 1, or the No Action Alternative. While the 2006 Master Manual includes a bi-modal spring pulse, it left the flood control constraints undisturbed. The State of Missouri has consistently opposed the bimodal spring rises in the current Master Manual given that it increases flood risk (see "Spring Rise Letter Pauley to McMahon 1-27-12" and "Governor Letter to Gen. McMahon RE Spring Rise 3-9-10" enclosed). Given the high frequency of flood events in Missouri, we have always expressed opposition to any proposed spring rise releases from Gavins Point Dam.

It is critically important that the Corps recognize the Missouri River is an integral component of the Inland Waterway System. Beginning a few miles above St. Louis, Missouri and continuing to the confluence of the Ohio River, the bottleneck reach of the Mississippi River is heavily reliant on water from the Missouri River. The Missouri River has historically supplied 40 percent of the flow on average to the bottleneck reach of the Mississippi River. The Port of St. Louis is the third busiest (per tonnage) inland port in the United States. It's important to note that shipments do not arrive, or depart, unless the bottleneck reach has sufficient flow. Additionally, shipments to or from the Illinois River or the Upper Mississippi River, which must also transit the Middle Mississippi River, are affected by the flows coming out of the Missouri River. Shippers have no choice but to load barges lighter when river stages begin to fall. Even though the Corps produced estimates of how much tonnage would be impacted by each of the alternatives in the DRAFT EIS, the Corps failed to analyze the economic impact of such actions. The State of Missouri requests that the Corps correct this shortcoming in the Final EIS.

Another important benefit of Missouri River navigation is the rate savings in other transportation modes resulting from the existence of commercial navigation as a shipping option. Water compelled rates occur when rail and truck transportation modes lower their rates to compete with barge rates. In other words, water compelled rates translate to savings to both producer and consumer. The Corps elected to not evaluate the benefit of water compelled rates in the DRAFT EIS. The State of Missouri requests that the Corps correct this shortcoming by including such analysis in the Final EIS.

In addition, the State of Missouri is concerned that the Independent Socio-Economic Technical Review (ISETR) Panel, which was established by MRRIC, was not able to provide feedback on the Corps' economic navigation analysis because no one on the three-member panel is a transportation economist. It is imperative that the Corps produce navigation impact analyses that are meaningful and understandable in the Final EIS.

The Summer Low Flow Operation in Alternative 2 Must Be Removed

Alternative 2 of the DRAFT EIS has a low summer flow period proposed to run from late June to September. This operation is based on criteria specified in the 2003 Biological Opinion (BiOp). The stated goal of the low flow period is "to allow for flows that are sufficiently low to provide for shallow water habitat as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon" (MRRP MP EIS Vol. 1: p. 2-64-65). Missouri has repeatedly expressed opposition to the low summer flow alternative given that it would have significant economic impacts while not even seeking to mimic the timing of low flow periods in the pre-settlement natural hydrograph.

Fortunately, the 2003 BiOp included a provision for eliminating the prescriptive low summer flow alternative if the Corps developed 1,200 acres of additional shallow water habitat. Consequently, in 2004 the Corps worked with the FWS and the affected states to expedite construction of the requisite habitat in advance of July 1, 2004, the start date of the mandated low flow operation. At the completion this work, the Corps and FWS verified that between 1,395 to 1,785 acres of new shallow water habitat was successfully created and made available to pallid sturgeon by July 1, 2004 (see "Corps Letter to Thorson 06.07.2004" and "FWS Letter to BG Grisoli 2004 0624" enclosed). The FWS concurred that the Corps fulfilled the goal of this Reasonable and Prudent Alternative element and has not required the low summer flow operation. Therefore, the Corps has fully achieved the obligations and outcomes desired and the State of Missouri requests the low summer flow alternative be removed from further consideration in the DRAFT EIS (see "Low Summer Flow Should be Abandoned" enclosure for further comment).

Missouri Supports Science in the Adaptive Management Plan

The Adaptive Management (AM) Plan envisions a rigorous science program. If executed properly, meaningful steps can be made towards understanding species needs while minimizing impacts to the human environment and other uses. The Corps and the FWS must focus on further developing the science necessary to understand what is needed for species survival. For example, rather than committing the vast majority of budgetary resources to habitat construction, the Corps should also emphasize research and monitoring to understand the species habitat needs. Furthermore, the feedback loop of the adaptive management process was largely forgotten in the years following the 2003 Bi Op. During that time hundreds of millions of dollars were spent on the Missouri River Recovery Program and very little time and focus was spent on learning from the research and monitoring. It is extremely important that this is changed.

Missouri encourages the Corps to continue moving toward an effective, science-based decision making process through implementation of the AM Plan. With active execution of adaptive management, certain actions identified in the Preferred Alternative have the potential to not only benefit pallid sturgeon and other fish and wildlife, but enhance all authorized purposes. All of the basin states agree it is imperative that the adaptive management process remain open and transparent with consultation and coordination with basin States through their respective Governor's offices. Missouri's participation in MRRJC should in no way be construed as a waiver of its status as a sovereign state (see "Adaptive Management Plan" enclosure for further comment).

Summary

The Missouri River is one of our nation's most treasured and valuable resources. The State of Missouri shares a commitment with the rest of the citizens of the basin to protect the Missouri River for current and future generations, and the State will take appropriate measures to protect those interests. The Corps, for its part, has an overarching mandate to manage the river according to its Congressionally authorized uses. There are opportunities to learn more about species needs without putting Missourians' lives and livelihoods at risk, and we must seek ways to implement such strategies. I am confident that if the Corps and the FWS are willing to work with, and carefully listen to, basin stakeholders we will find an approach that will work for both the species and the citizens of the basin.

Sincerely,

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Carol S. Comer

Director

CSC:krj

Enclosures

Flood Control

Flood control was one of the two main reasons the Missouri River Mainstem Reservoir System (System) was created, the other being navigation. As such, the Corps established flood control constraints, or "target flows," with the 1979 Master Manual. Flood control constraints are one of the techniques the Corps utilizes to prevent, or not contribute to, downstream flooding. Nevertheless, several of the alternatives in the DRAFT EIS would relax the existing flood control constraints--some by almost 80 percent--in support of environmental flows (Table 1).

[Table 1. Flood control constraints under each of the alternatives in the Draft EIS. Note: The flood control constraints in Alternatives 2 and 6 are adjusted up or down based on runoff forecasts. The numbers listed here are from the Draft EIS.]

For example, at St Joseph, Missouri, the magnitude of the rises proposed in Alternatives 4 and 5 could cause the river to rise 4.5 to 6 feet as a result of reservoir releases alone (Table 2). These alternatives would increase flood risk on the lower Missouri River by both intentionally increasing releases as well as decreasing the Corps' ability to respond to downstream high water events.

[Table 2. Stage changes at St. Joseph due to increased System releases given average monthly flows. Data Sources: US Geological Survey, US Army Corps of Engineers.]

The Corps must be keenly aware that a vast amount of large, unregulated flow downstream of Gavins Point Dam contributes to downstream flooding. Flood risk on the Missouri River is amplified given the travel time from Gavins Point to the Missouri state line. It takes approximately five days for water to travel from Gavins Point Dam to St Joseph, Missouri, and seven days for it to reach Boonville, Missouri. There are many instances in which rain events in the lower basin have developed over a five- to seven-day period that have caused the river to rise significantly without additional water from Gavins Point Dam.

The Corps maintains it will be cognizant of forecasted rainfall prior to initiating a flow operation. But in the 2006 Master Manual (p. VII-30), the Corps states, "Experience has shown that predicted hydrologic conditions that could produce large rainfalls are only mildly accurate for periods 3 to 6 days in advance and are not accurate for periods more than 6 days in advance." It would be careless to implement these flow events in the face of the known risks associated with doing so.

To highlight the unreliability of the models used to forecast rainfall events, the National Oceanic and Atmospheric Administration (NOAA) Weather Prediction Center routinely verifies the accuracy of Quantitative Precipitation Forecasts (QPF) the agency produces and uses for National Weather Service river forecasting operations. Verifications comparing forecast precipitation to observed precipitation have shown accuracy to be as low as 10 % in predicting the amount of precipitation that will occur, as well as where it will occur. Forecasted precipitation may not be close to the observed total, and may not occur where it was forecasted. Therefore, the accuracy of forecasted runoff within the drainage area of any specific reach of the river is uncertain at best.

The NOAA Weather Prediction Center routinely verifies QPF performance. A score of 1 in the threat analysis indicates that the forecasted precipitation is accurate for the period analyzed. It is noteworthy that the months in which Alternatives 2, 4, 5, and 6 would be conducted do not have more than 50%

accuracy for even a 0.5-inch rainfall event. Therefore, the Corps cannot rely on forecasts as the deciding factor in determining whether a flow event should be conducted.

[Figure 1. National Weather Service, Weather Prediction Center, Quantitative Precipitation Forecast Verification. <http://origin.wpc.ncep.noaa.gov/html/scorcomp.shtml>]

Furthermore, flow events of the magnitude the Corps is contemplating frequently occur on the lower Missouri River. Alternatives 4 and 5 have flow events with a peak magnitude of 60,000 cfs in April and October. That is approximately 30,000 - 40,000 cfs more than the Corps would typically release based on Annual Operating Plan statistics (see Table 2 above and 2016-2017 Final Annual Operating Plan, Plate 3). Not only would such flow events raise the flood risk in the lower basin, but they are also completely unnecessary. Since the Missouri River Reservoir System became fully operational in 1968, there have been 487 occurrences in which a rise of 30,000 cfs or more has occurred at St. Joseph, Missouri, and 1,857 occurrences at Boonville, Missouri.

The proposed operational changes contained in the alternatives for the Missouri River also have impacts to flood risk management on the Mississippi River. The Missouri River contributes, on average, 40 percent of the flow to the Mississippi River at St. Louis. As recently as 2015, significant high water events have occurred on the Mississippi River when new records for both Cape Girardeau and Thebes gages were established. Increasing flow from Gavins Point Dam while the Mississippi River is experiencing flooding could present a significant threat to public safety. Once water is released from the Gavins Point Dam, it travels over 800 miles down the Missouri River before it reaches the Mississippi River. This process typically takes approximately ten days and the water cannot be recalled once released. This creates a serious potential for the environmental flow releases on the Missouri River to coincide with regional flooding on the middle Mississippi River and increase flood risk for communities along the middle Mississippi River.

Federal Flood Risk Management Guidelines Update

We are cognizant of uncertainty regarding its implementation, but Missouri suggests that the Corps review the most recent executive order concerning federal actions for projects in flood plains (EO 13960) to determine whether the various environmental flow alternatives comply with current federal requirements.

Navigation

In the DRAFT EIS, the Corps failed to assess impacts of the alternatives to Missouri River navigation from the changes in tonnage moved, navigation service level, season length, water compelled rates, and Mississippi River navigation.

Even though the Corps mentioned the amount of material moved on the Missouri River (Figure 3-59), there is no estimation or accounting for the value. For instance, the Corps' analysis does not distinguish between high-dollar commercial equipment (e.g., power plant equipment) and a bushel of corn. Between 2004 and 2015, AmerenUE has shipped replacement turbines and manufacturing equipment on the Missouri River which were valued at \$750 million (see John LaRandeau's presentation at St. Louis River Industry Club, February 2015). This information was not reflected in the DRAFT EIS. The turbines were shipped from France, and traveled nearly 1,300 miles on the Mississippi River and Missouri River to reach their destination. The Inland Waterway System is the only mode of transportation that can handle this type of large equipment. The Corps needs to properly account for the value of goods shipped on the Missouri River in the Final EIS.

Stakeholders repeatedly asked the Corps to include water compelled rates in the DRAFT EIS analysis.

Despite these requests, no such analysis was performed because it was deemed that "...Missouri River tonnage migrated to Arkansas River" and "...water-compelled railroad rates attributable to Missouri River commercial navigation seemed improbable" (Navigation Environmental Consequences Analysis Technical Report, p. 17). Barge transportation not only provides the most fuel-efficient method of moving tonnage (A barge can move 576 ton-miles per gallon of fuel.), but also is the safest (fewer accidents and spills) and least polluting mode (GAO Report 11-134, 2011). In 1998, while water-compelled benefits were valued at \$55.7 million for commodities moved on Missouri River, the value of Missouri River transportation availability was approximately \$10.4 million per year or \$8.43 per ton of commercial commodities shipped on the river (FAPRI-UMC Report, 2004).

The navigation analysis is further compromised by the Corps including routine repair, replacement, and rehabilitation costs (R, R, and R) and truck transportation costs. It is inappropriate to include these project costs in the navigation analysis while omitting similar costs for other Corps projects being analyzed. For instance, each of the mainstem dams has annual operation and maintenance costs that were not included in any of the analyses. Applicable operation and maintenance costs for all of the Corps projects need to be attributed appropriately and not solely assigned to navigation.

Missouri River navigation relies on a reliable navigation channel measuring nine feet deep and 300 feet wide. The channel is provided by a combination of water from major tributaries and the release of water from the mainstem reservoirs. Industry uses the channel all year, but the March to April period is key for fertilizer shipments and the fall and early winter is important for grain export. Industry requires predictability and adequate flow support. Sudden changes in flow support can be economically impactful and even dangerous. Although shipments can be made at lower river levels, industry economics require that river levels be at intermediate service or greater to be profitable. These characteristics are not factored into the Missouri River navigation economic assessments conducted in the DRAFT EIS. In addition, the Corps did not present a summary table of navigation performance (service level and season length) among the alternatives for the 82-year dataset. These oversights need to be corrected in the Final EIS.

Mississippi River Navigation Impacts are Ignored

The Missouri River joins the Mississippi River just upstream of St. Louis. During low flow periods, the Missouri River supplies as much as 72 percent of the flow to the Mississippi River at St. Louis. The reach of the Mississippi River between St. Louis and the mouth of the Ohio River at Cairo, Illinois, is often called the bottleneck reach. Located between the lock and dams and the inflow of the Ohio River, this reach can be a bottleneck to waterborne commerce on the entire inland waterway system. Over 120 million tons of cargo is shipped annually on the reach between St. Louis and Cairo, which includes 60 percent of the nation's grain harvest. The majority of this annual grain movement occurs during fall and winter.

Many of the Corps' alternatives proposed in the DRAFT EIS would adversely impact and reduce flow support to the Mississippi River. These impacts largely result from the significant volumes of water expended early in the year causing Missouri River flow support reductions in the fall. Due to annual runoff patterns, fall and winter is also frequently a period of lower river stages on the middle Mississippi River. Our analysis indicates that Alternatives 2, 4, and 6 increase the number of days at low-water action levels during October, November, and December. Under these alternatives, the number of days of normal loading is reduced in these months and navigation restrictions shift to lower (i.e., more restrictive) action level categories with greater impacts. These impacts are substantial enough to not be muted even when evaluating annual impacts.

In the DRAFT EIS, Mississippi River navigation impacts are completely ignored. Instead, the Corps rudimentarily examined "Riverine Infrastructure and Hydrologic Processes" and changes in river stage

only during certain years. The Corps concluded impacts to stage would be small or negligible. We believe this an egregious oversight given the importance of inland waterways to the nation and we request the Corps correct it in the Final EIS. Please note the Upper Mississippi River corridor generates more than \$345 billion annually supporting over 1 million jobs (Economic Profile, Upper Mississippi River) and that increasing the number and level of navigation restrictions can have extremely significant economic consequences.

Low Summer Flow Should Be Abandoned

Alternative 2 of the Draft EIS includes a low summer flow period specified to run from late June to September within two years following implementation of a complete bimodal spring flow release. The Corps specified this operation in Section VII.1.b of the 2003 Amended Biological Opinion (2003 Amended BiOp) as a Reasonable and Prudent Alternative (RPA) for the pallid sturgeon. The goal of this operation is "to allow for flows that are sufficiently low to provide for [shallow water habitat] as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon" (MRRP MP EIS Vol. 1: p. 2-64-65).

This operation is unnatural as it would not mimic the timing of lower flows as compared to the pre-settlement hydrograph and it would cause economic and environmental harm. This was proven during the summer of 2003 when the Corps failed to operate the Missouri River Reservoir System in accordance with the purposes mandated by Congress and implemented a summer low flow period of the approximate timing, magnitude, and duration of the aforementioned operation. This low flow period was implemented because the Fish and Wildlife Service (FWS) and the Corps failed to collaborate on river management in advance of the nesting of endangered bird species below Gavins Point dam. After the birds had nested, the FWS notified the Corps the agency would not allow birds or eggs to be moved once nested, thereby prohibiting the Corps from increasing releases as indicated in the Annual Operating Plan. If the Corps would have been notified of this new prohibition in advance of the bird nesting season, the Corps could have provided steady releases from the reservoirs to provide adequate flow support throughout the summer, while still allowing the birds to nest at higher elevations on the sandbars. Due to this failure of coordination and the low summer flow implemented, downstream users suffered significant losses, waterborne transportation became hazardous, drinking water systems were impacted, and water quality standards were exceeded.

On December 13, 2003, the FWS released their 2003 Amended Biological Opinion (BiOp). This BiOp mandated a summer low flow period as part of their RPA for the pallid sturgeon. The RPA also included provisions to modify these prescriptive low flows after 1,200 acres of additional shallow water habitat were developed. In hopes to avoid the summer low flow operation, in early 2004 the Corps reinitiated consultation with the FWS and sought to modify the prescribed flows by constructing the additional shallow water habitat. The Corps worked with the FWS and the affected states to initiate expedited construction of the required habitat in advance of July 1, 2004 - the start date of the mandated low flow operation. On June 7, 2004, the Corps sent a letter to the FWS (enclosed) stating that by July 1, 2004, the Corps expected to construct between 1,420 and 1,810 acres of new shallow water habitat. On June 24, 2004, the FWS responded (enclosed) and verified that the Corps' habitat construction and restoration efforts yield an estimated 1,395 to 1,785 acres of new shallow water habitat available to pallid sturgeon by July 1, 2004. The FWS concurred that the Corps fulfilled the goal of this RPA element and permitted the Corps to provide flow support releases to meet project purposes. Therefore, the obligations and outcomes desired under this specific RPA operation have been fully achieved, do not need to be reconsidered within this EIS, and should be removed.

Adaptive Management Plan

The State of Missouri supports the more open and transparent measures envisioned by the Corps in the Adaptive Management Plan (AM Plan). Transparency cannot be one-sided, nor can it occur only at the end point of the decision making process. The six mechanisms identified by the Corps in Section 2.1.3 need to occur throughout the implementation of the Missouri River Recovery Program. This is the only way the Corps can achieve the stated desire of the AM Plan to "build confidence" and "maximize the credibility" of the decisions made for the Recovery Program.

We strongly support independent review of not only the AM Plan but continued independent review of the Recovery Program as a whole. Seeking viewpoints from outside the Missouri River basin is critical to the success of the Recovery Program. A competitive proposal process would also engender more trust as it would entail more disclosure of the details of the scientific process. Knowing who has submitted proposals, how that research would be conducted, and if it is in line with the hypotheses and objectives laid out in the AM Plan, as well as how the results will be communicated with stakeholders, is also instrumental in building a robust scientific program.

The Corps began implementing the first two adaptive management mechanisms when it established the Independent Science Advisory Panel (ISAP). The ISAP has been highly beneficial to the Corps, and especially to the Missouri River Recovery Implementation Committee (MRRIC), and has brought a measure of trust to a process where little existed. Establishing the Independent Socio-Economic Technical Review Panel (ISETR) was also an important step in building trust within MRRIC as this panel reviewed the Corps' evaluation of human considerations. In Section 2.3.7.3 the Corps suggests that only one panel should be utilized moving forward. The State of Missouri is concerned with this approach as the membership suggested is heavily slanted toward the biological and species science. We request a more socio-economic focus in this process.

It is imperative that the socio-economic impacts of proposed actions are fully understood. There is already a fundamental lack of knowledge regarding the impacts of proposed actions to some other uses. For example, in the most recent review of Human Considerations impacts by the ISETR, one of the members stated the navigation impacts were not fully understood because no one on the panel had a background in transportation economics. This is troubling not only because navigation is one of the two primary authorized purposes of the System, but because three economics experts were not able to understand how the Corps analyzed the impacts to an entire industry. Missouri requests the Corps take steps to address this issue. Prior to implementing specific actions, the State of Missouri strongly urges the Corps and FWS to communicate to MRRIC and the public at large the rationale behind decisions made by the agencies. If the AM Plan is working as intended, no decisions should be made without the knowledge of stakeholders, nor should these decisions be a surprise to those involved in the other components of the AM Plan (Figure 14, p. 70). To aid in that transparency, the State of Missouri requests the In-Progress Review meetings discussed in Section 2.5.1 be shared with the MRRIC members, as well. Failure to do so could call into question the legitimacy of the process and erode stakeholder trust.

We recognize the Corps' ability to implement the AM Plan will depend on the budgetary resources Congress appropriates on an annual basis. MRRIC has recommended that the Corps prioritize the science program as the budget fluctuates. The scenarios presented in Section 2.4.6 should reflect MRRIC's recommendations, yet remain within the Corps' Congressional authority. Similarly, the annual budget cycle also will affect the amount the Corps is able to spend on research and monitoring. In Section 6.2, the Corps gives a very limited description of the data collection and monitoring processes. Therefore, at this point the State of Missouri is unable to provide meaningful feedback on this aspect of the AM Plan. As the AM Plan is implemented, we expect to provide more comments and feedback on monitoring and the data acquisition process.

Cumulative Impacts

The actions proposed within the DRAFT EIS are just the latest of a series of federal actions the Corps and Bureau of Reclamation have either implemented, proposed, or are planning to implement in the near future within this basin. Most of these federal actions have impacted or will impact reliable downstream flow support, which, along with flood control, are the primary purposes for which Congress originally authorized and constructed the Missouri River Reservoir System. The DRAFT EIS for the Missouri River Recovery Program only evaluates the impacts of the alternatives resulting from present or existing conditions.

The Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) require cumulative effects analysis, defined as:

"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions" (40 CFR § 1508.7).

The combined, incremental effects of federal actions are referred to as cumulative impacts and may pose serious impacts to the environment and, in this case, other river uses. While they may be relatively small, or seemingly insignificant when considered in isolation, cumulative impacts from a variety of sources can over time result in the degradation of important resources. Because federal projects cause or are affected by cumulative impacts, this type of impact must be assessed in documents prepared under NEPA.¹ Because of this requirement, the U.S. Environmental Protection Agency (EPA) also considers cumulative impacts in its review and scoring of NEPA documents.

Cumulative Impacts of Past Federal Actions are not Assessed in the DRAFT EIS

During the drought of the 1980s, upstream interests convinced the Corps that the Master Manual for the Missouri River Reservoir System needed to be updated. In doing so, upstream interests argued the 1979 Master Manual needed to be adjusted in order to "provide for the contemporary needs of the basin" by more fully considering recreation on the reservoirs. After years of working with upstream states and interests, it became very apparent to Missouri that the update was largely to protect the spawn of the arctic smelt, an exotic forage fish stocked by upstream states in the reservoirs. These smelt spawn near the shore of the reservoirs in water just inches deep. Consequently, when the levels of these large flood control reservoirs decrease even slightly during smelt spawn, the eggs are exposed and desiccate on the shore. It seems the primary focus of some in the Master Manual update was to reduce the frequency of this impact on this forage fish, while also maintaining higher reservoir levels to benefit recreation on the reservoirs.

This requested update of the Manual took many years to complete and was extremely contentious. During the process, the Missouri River Basin Association (MRBA), a basin group comprised of appointees from state water resources agencies appointed by the respective basin state Governors, provided input to the Corps. MRBA technical discussions largely focused on performance metrics of various operational criteria proposed. Most of the alternatives proposed would have impacted downstream flow support reliability, given that the alternatives were based on the premise that releases for downstream uses should be reduced earlier in a drought as compared to operations under the 1979 Master Manual. Upstream reservoir states recommended and promoted alternatives with large sediment pools and aggressive cuts to downstream flow support, while the State of Missouri consistently advocated for the existing operations under the 1979 Manual. Over time, upstream reservoir states came to support less aggressive and impactful alternatives and provided some concessions to downstream interests such as increased summer non-navigation releases and fewer

years in which navigation flow support would provide minimum service. It is important to reiterate these negotiations were focused on evaluating reservoir operation performance metrics designed to shift more drought impacts from the reservoirs to downstream uses. The change in the downstream flow support performance metrics from the 1979 Master Manual to the 2004 Master Manual, as presented in the Final EIS, is provided in Table 1 below.

[Downstream Flow Support Changes (1898 through 1998 - 100 yr. record). Table 1. CWCP is the downstream flow support performance of the operations under the 1979 Manual. MCP was the Corps' Preferred Alternative (March 2004). Source: Page 7-193; Missouri River Master Water Control Manual EIS]

The 2004 Final Supplemental EIS for the Missouri River Master Manual used only the historic hydrologic record under current conditions to assess the impacts to changes in operations. The Corps did not develop forecasting or sensitivity analyses to assess the effect of changing environmental conditions on operational performance. As a result, it was impossible to completely understand how the various alternatives would function in the future if conditions changed. Sedimentation in the reservoirs was one of the environmental factors of concern to the State of Missouri and it continues to be a concern. Subsequently, during a public workshop in Pierre South Dakota, the Corps' Chief of Missouri River Water Management, Larry Cieslik, was asked how future sedimentation would be handled once the manual is updated. The Corps responded that "sediment would go in the sediment pool" and further indicated that with increased sedimentation all beneficial uses of the reservoir system would be impacted. This interpretation made good sense and Missouri supported it. By utilizing this approach, a proportional reduction in all benefits would occur as overall storage is decreased. An adjustment in the flow support guide curves would reflect this reduction in storage, while maintaining the agreed-upon downstream flow support performance metrics (see MCP in Table 1). Under this approach, downstream flow support would be proportionally reduced only after the sediment pool filled (or mostly filled) and the carryover pool was reduced in capacity.

Unfortunately, following the issuance of the 2004/2006 Manual, the Permanent Pool is not where the Corps has accounted for sediment. Since 2004, the Corps has largely allocated the sedimentation to the Annual Flood Control (29,000 acre-feet of storage loss) and the Carryover Pools (771,000 acre-feet of storage loss). Furthermore, the Corps viewed the operational guide curves as numerically fixed, which diminished the capacity and benefits of the Carryover and Annual Flood Control Pool. The numerically-fixed guide curves and reduction in pool capacity create a condition where the downstream flow support level established by the 2004 Master Manual fail to perform as presented (see Table 2). These very real impacts to downstream flow support resulting from past management actions are neither mentioned nor assessed in the DRAFT EIS as required under CEQ regulations.

Reservoir sedimentation also has impacted the integrity of the very important flood control pools. The Corps has indicated capacity of the flood control pools is currently at or near the minimum size (16.3 MAF) and that any future sedimentation will require storage capacity to be removed from the Carryover Pool and the Sediment Pool to maintain the 16.3 MAF of flood control necessary. If the Corps simply adjusts the elevations of the top of the Carryover Pool downward to maintain the flood control storage capacity without also making adjustments to the Carryover Pool, further impacts to downstream flow support will occur. Based on the concerns outlined above, the State of Missouri requests the Corps clarify and assess the manner in which the system will operate in the future over changing environmental conditions (changes in sedimentation and hydrology).

[The Change in Operational Performance Due to Sedimentation. Table 2. MCP the Corps' Preferred Alternative (100 Year Record, 1898-1998). CC2015 was the Corps' Preferred Alternative after eleven years of sedimentation (117 Year Record, 1898-2015). Sources: Page 7-193; Missouri River Master

Water Control Manual EIS and DRM model results]

Cumulative Impacts of Reasonably Foreseeable Future Actions are not Assessed in the DRAFT EIS
The DRAFT EIS fails to evaluate numerous reasonably foreseeable future Federal actions, many of which will also impact the system and downstream flow support.

- Surplus Water Allocation (approximately 727,097 acre-feet of storage).

The Corps released a series of surplus water reports to provide surplus water to municipal and industrial (M&I) users on a temporary basis (less than 10 years) from the Missouri River mainstem reservoirs. The goal of these reports is to provide a temporary M&I water supply allocation of 727,097 acre-feet of storage to provide an estimated yield of 282,917 acre-feet, where no former water supply allocation existed. The majority of these reports remain in draft. The DRAFT EIS does not evaluate this future allocation.

- WRRDA Section 1046(c): This federal legislation prohibited the Corps from charging for Surplus Water from Missouri River reservoirs. This change in cost structure from a very low expense to an outright prohibition will disincentivize water supply conservation and could actually incentivize new contracts.
- Water Supply Allocation: The Corps is proposing to establish a new M&I water supply allocation within the already challenged Carryover Pool.
- Tribal Water Adjudication and Development: Tribal water rights adjudication and development is quickly advancing. The Corps needs to quantify, recognize, and assess these impacts among the alternatives within this study.
- Northwest Area Water Supply (NAWS) Project: The Bureau of Reclamation is proposing and constructing an out-of-basin diversion, the NAWS project, which would deliver water from the Missouri River to the Hudson Bay drainage basin.

The DRAFT EIS also fails to evaluate other reasonably foreseeable actions, such as:

- Depletions: The Missouri River already is substantially depleted. The Corps needs to determine impacts of the alternatives under a suite or range of future anticipated depletions.
- Red River Valley Water Supply Project: The State of North Dakota is studying and designing a large diversion between the Missouri River and the Red River.

Sources:

Consideration Of Cumulative Impacts In EPA Review of NEPA Documents; EPA 315-R-99- 002/May 1999

Missouri River Master Water Control Review and Update Final EIS/March 2004

Daily Routing Model (DRM) results

Human Considerations: General Comments

In order to evaluate Human Consideration impacts, the Corps attempted to analyze the economic and environmental impacts of the six alternatives as required by the 1983 Principles and Guidelines. Missouri submits the following comments regarding the modeling, methodology, and implications pertaining to the State's interests and strongly requests the Corps address them in the Final EIS.

Agriculture and Interior Drainage

It is unclear if the Corps considered the implications of the repeated flooding of cropland on property taxes, payments in lieu of taxes (PILT), federal tax deductions for flooded areas, and the insurability of impacted property. The Corps only analyzed direct economic losses rather than including the indirect

and associated impacts of crop losses. Moreover, the Corps has omitted the Environmental Quality (EQ) evaluation from the analysis even though such analysis is required by 1983 Principles and Guidelines (P&G). Missouri requests the Corps conduct a full Regional Economic Development (RED) analysis and include an EQ evaluation for the Final EIS.

Furthermore, the Corps only considered four interior drainage sites in its analysis. This is wholly insufficient as there are numerous levee districts in Missouri that would be impacted by the flow alternatives considered in the DRAFT EIS. The Corps acknowledged the potential impacts of flow events to interior drainage during the 2005 Plenary Meetings. From that process, the Corps collected data necessary to monitor the interior drainage impacts from flow events in the 2006 Master Manual. The Corps failed to use this same data in the DRAFT EIS analysis and failed to explain why the data was not used. Missouri requests interior drainage impacts be thoroughly analyzed using the 2005 interior drainage data, or similar data, in the Final EIS for a proper analysis of the impacts.

Commercial Sand and Gravel

The sand and gravel dredging industry is dependent on sediment load, yet the Corps failed to accurately analyze the amount of sediment in the system. The Corps also failed to analyze how the alternatives would impact sediment loading. The Corps' use of a 20-year period to extrapolate for the 82-year period of analysis to analyze for sediment is insufficient. A robust sediment model needs to be created to adequately analyze the impacts of sediment loading and their effect on the sand and gravel industry in the Final EIS.

Additionally, the Corps failed to analyze the effect of the one-time flow event in Alternatives 3, 4, and 5. In light of this, it is difficult for stakeholders to evaluate and provide meaningful feedback on impacts that were not analyzed. For the flow scenarios in which the Corps did assess impacts to the sand and gravel industry, the analysis is incomplete. The Corps failed to analyze the economic impact of flow scenarios. In the Final EIS, the Corps needs to correct these deficiencies if the analysis is to be considered sufficient.

Flood Risk Management

The Corps' evaluation of Missouri's flood risk is inadequate. Analysis of risk and uncertainty was one of the main concerns the Independent Socio-Economic Technical Review (ISETR) panel expressed regarding flood risk, and yet the Corps did not evaluate it. Missouri faces a significant risk every year and this warrants a comprehensive risk analysis. Therefore, the Corps needs to include a flood risk assessment in the Final EIS.

The Corps inexplicably stated that "...land use would not change across alternatives under different flood conditions." To the contrary, flood events have significant impacts that change the dynamics of the land use depending on the severity of the event. Although direct impacts of flood losses are estimated, the Corps did not estimate indirect and induced economic impacts due to flooding. Agricultural losses due to flooding, loss of property value, and increased crop insurance premiums also were not evaluated. The Corps needs to include these critical components of flood risk in their Final EIS economic analysis.

Another flaw in the Corps' analysis is that Regional Economic Development (RED) impacts were not evaluated in all the river reaches and were deemed negligible, which in turn renders the National Economic Development (NED) valuation incomplete.

Land Use and Ownership

As Missouri is considered to have the highest number of acres (Table 8, page 13) acquired from agriculture to meet the program objectives, the economic impacts of agricultural land acquisition should be carefully analyzed. Payment In Lieu of Taxes (PILT) is the mechanism by which Missouri counties receive money from the federal government to account for the loss of private property tax income. As the Corps acquires more land for habitat construction, property tax receipts would change significantly. The Corps needs to fully analyze the impacts of land use and ownership implications in the Final EIS and the effect federal land ownership has on local economies.

In summarizing the change in economic activity for all agricultural land acquisition (Table 15, page 19-20), the Corps states that "Missouri would experience the greatest adverse impacts to jobs and income, with a reduction of less than one job and \$19,000 in income." A worst-case scenario estimate of one job lost and \$19,000 in income is grossly underestimated because the Corps did not include indirect labor economic impacts in their analysis. A thorough and accurate economic analysis of land acquisition would help stakeholders understand the impact on the regional economy. In the Final EIS, the Corps needs to identify the correct assumptions for its economic analysis and appropriately estimate the numbers.

Recreation

The Corps has greatly underestimated recreation on the lower Missouri River. The data used in the DRAFT EIS is from 2005 whereas public participation has dramatically increased since that time. For example, the Hartsburg Pumpkin Festival, Katy Trail Bike Ride, Missouri River 340, and Race to the Dome are just a few of many recreation activities that occur in the lower Missouri River but are not quantified or considered in the analysis. Furthermore, the Corps used the antiquated Unit Day Value approach to evaluate recreation. Unit day value method is an old method used to evaluate recreation. The significant shortcomings of this method are widely understood and well documented in several studies (Ready and Navrud, 2005, Lindsey et al, 2004). Using an approach with such limitations only results in biased data. A contemporary model like hedonic pricing would serve better in estimating recreational impacts. For the Final EIS, the Corps needs to more adequately assess lower basin recreation with a more contemporary economic model.

For Alternatives 2 through 6, the summary of NED data from the tables does not reflect the description. The numbers are off by a factor of 1,000. For example, Table 3-200 states the lower river NED benefits are \$603 million, but the description depicts it as \$600,000. The Corps needs to correct this error in the Final EIS.

The Corps' economic analysis is incomplete because RED analysis was not conducted for Lake Sharpe, inter-reservoir reaches, and lower Missouri River reaches. The Corps cannot make statements on the impacts to RED without including the omitted reaches. NEPA requires the Corps to conduct a more robust analysis in the Final EIS.

Thermal Power

The Corps failed to conduct an economic analysis on the value the river provides in moving items too large to ship via other modes, such as large turbines for thermal plants and nuclear plants. In 2005, for instance, AmerenUE shipped replacement turbines to its Callaway Nuclear Power Plant on the Missouri River. Even though the turbines were valued at \$750 million (see John LaRandeau's presentation at St. Louis River Industry Club, February 2015 attached), this was not reflected in the DRAFT EIS. These turbines were shipped from France and then transited the Mississippi River and the Missouri River. The Inland Waterway System is the only mode of transportation that can handle this type of large equipment. In the Final EIS, the Corps should properly account for the value of goods

shipped on the Missouri River and the impact the thermal power industry would experience if the river was not a viable transportation mode.

Correspondence: 203

Correspondence Information

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Correspondence Text

[Robert Gearon email comments]

You're talking about more water flow from the river, this is good but I also think with okoloma, texas California and nevada adding in the mighty Mo and columbia rivers adding pipes we could help stop floods, protect the natural wildlife protect farms, and cities by just simply piping extra waters to Texas aquifers or california's reservoirs. There is no reason in our nation anyplace should go without water.

California should have a bigger reserve for water during flooding times.

over the past 7-10 years they could have used it.

Texas served a deep drought. I think with proper water management we could smooth out the pecks and valleys in water supply then we ever have.

The Kaw, MO and mississippi rivers should never have a flood stage.

And I also think we could add a hydroelectric dam or power plant on the MO river

Like edison's first power generator station by the falls in buffalo NY.

Mo should also think about reservoir area off the river's including the Mo and MI rivers. Kansas should consider more reservoir areas. we just got out of a deep drought. I lost a few trees because they did not get water and Kansas City's bills for water deter me from providing drinking water to plants.

If I could use natural water to provide plants the water they need when its dry out I would. But I also should no be billed for sewage when using water on lawns and for plants and trees. The EPA hit KCMO and ST Louis with steep fines for runoff and overflow of sewage into the MO and Mississippi rivers why isn't part of the money used to correct the problems, besides fixing the rivers?

The river won't truly be fixed until all of these things are repaired. And overflows stop happening.

Kansas City water bills are probably the highest in the nation and we live in a city with 2 rivers and an underground river.

[Jamie Danesi response]

Mr. Gearon,

Hello! I have received your comment, but I am not sure where to direct it. Is this a comment on the draft Missouri River Recovery Management Plan-Environmental Impact Statement, or is it a comment on the Missouri River Annual Operating Plan?

Thank you,

Jamie

Ms. Jamie Danesi
Senior Public Affairs Specialist
Missouri River Recovery Program
U.S. Army Corps of Engineers, Omaha District

[Robert Gearon comment response]

both. we do need to both control the rivers levels one with more flow to bring back a natural river and to also cut down on flooding by diverting excess water to texas or other drought stricken areas. During spring excuses when the river could flood.

Our rivers are the life blood of the nation, they provide us water a valuable natural resources. Its vital to farms wildlife and humans. Wisely using its natural resources is something we should do. so frankly all aspects of the river are the same thing.

I live in Kansas City MO I've lived here 47 years, in the past 20 years I've seen 2 major rive floods one devastating riverside and parkville the second flooding the park in parkville. and stopping railroad traffic also killing a police dog and sharrif more towards St Jo mo.

This is beside flooding farm land's ad costin crops. But I also like having an abundance of wildlife on the river. So If we had a system to pump water from the river to say areas that suffer drought, or make a catch basin for water during peek times.

Texas, oklahoma, Kansas, and some of our other surrounding states stuff a lot of unnecessary drought,

Piping water out to holding areas where its needed during Spring floods would stop the floods ad supply water for when its use is needed. This would only be done when the river reaches a critical stage, it would also take a lot of heat off the Mississippi river valley. Because during our last Flood the Mississippi suffered a lot more flooding then the MO river did. at that same time we were watching Lakes in Texas dry up from drought and Texas suffer a water shortage.

Correspondence: 204

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Missouri River Management Plan and Draft Environmental Impact Statement Review Comments

The Kansas City Water Services Department is responsible for providing water supply and wastewater management not only for citizens of Kansas City but also more than 35 surrounding cities and utility districts. The Department is also responsible for Kansas City flood risk management through the operations and maintenance of flood pumping stations and levees along the Missouri River.

The DEIS is a complex, technical, and lengthy document capable of adversely affecting our operations depending on the alternative chosen and the subsequent record of decision (ROD). Based on our review, we believe Alternate 3 has the least effect on our operations and authorized purpose. It should be noted; while supporting Alternative 3, staff continues to hold reservations regarding the flow regime identified in year 9.

Kansas City comments are addressed by our core functions and how each function would be affected by the management plan alternatives.

WATER SUPPLY

Water Services represents an essential City function and provides an average of 100 MGD of potable water to Kansas City and suburban customers for drinking water, sanitation, firefighting, recreation, and industrial uses. During peak summer demand, the water treatment plant is capable of producing over 200 MGD. The primary source of raw water is the Missouri River; supplemented by 14 alluvial wells for intermittent use as temperature control. The Missouri River Intake has been located at its current location since 1925.

An intake of larger capacity was constructed adjacent to the 1925 facility in 1955. This intake provides a larger capacity of 400 MGD with engineering design based on anticipated flows from the Missouri River based on the Pick-Sloan dam/reservoir construction which was soon to be completed and its anticipated operation as outlined at the time. Over 3 million dollars of intake modifications have been made to accommodate flow releases from Gavins Point dam due to changes in the Master Manual operation guidelines and reduced flow due to drought conservation measures. The access to water at lower flows has been exacerbated by 15 feet of channel degradation in the reach near our intake structure over the last 15 years. This degradation has resulted in a regionally supported study by the COE which must be taken into consideration when evaluating flow effects on water intakes in the Kansas City reach.

In analyzing flow regime effects, Alternatives 4, 5, and 6 appear to offer the least impacts on water intake operation during the release periods. In the event the reservoir does not receive adequate late winter influent rates; staff is concerned the above alternatives could lead to problems where low

reservoir discharge rates might result in inadequate water surface level flow to the raw water intake structure.

Alternative 1 (current operation) has created situations where drought coupled with channel degradation required modification to intake pumping in order to install low water stage auxiliary pumps to accommodate low water conditions. These units are not designed for continuous operation over long periods of time and do not provide adequate feed rates to the treatment plant where extended low water conditions persist. This alternative per the ISAP is also not effective for the endangered species and thus its continuation seems unlikely.

Alternative 2 poses the most concerns for our intake operation. Included in this regime is a summer low flow.,." iv. Beginning on or about June 15, 2006 but no later than July 1, 2006 the Corps shall begin reducing flows to provide a minimum 30 day minimum summer low flow release of 25kcfs. Once the low flow period has been achieved, the Corps may increase flows the minimum amount necessary to achieve project purposes by September 1, 2006." Op cit. 2003 BiOP.

If tributary input is low this policy could result in the reduction of pumping capacity below customer demand.

No effort has been made to evaluate the impacts and cost associated with Alternative 2 on the summer time use of the Water Supply intakes. Although Alternative #2 is not a preferred alternative, staff believes it is important to document the potential impacts noted above on the record.

Additionally, staff is concerned with the methodology used by the Corp in modelling the impacts of alternatives on the City Water Supply. It is staff's view that minimum flow requirements mentioned in the Master Manual did not properly model the impact of alternatives on the water supply intake due to riverbed degradation. Flow requirements for Kansas City, Leavenworth, and the St. Joseph area are much higher than those discussed in the Master Manual and should be revisited. This flaw in the model was admitted several times in the DEIS, including page 3-504 of the DEIS, where it was noted " ... the No Action Alternative does not reflect actual past or future conditions ... " The Master Manual uses worse case scenarios of the Period of Record and then used hypothetical Master Manual minimum flows to create a baseline. Because of bed degradation, the minimum flows mentioned in the Master Manual could not and would not support the Water Supply Intakes on this stretch of the River. As a result, the Corps has assumed that 33 of the 55 water intakes would experience 57 days below operating thresholds and 21 intakes would experience 14 days below shutdown elevations. This assumption is totally unacceptable. The Corps should reevaluate its approach and model realistic flow requirements to keep Water Supply Intakes in operations at all times. Additionally: the COE analysis of rental pumping submersible pump costs and sizes are unrealistic for a major utility intake as KCMO operates with a capacity of 400 MGD and average production of 100 MGD increasing to over 200 MGD during high temperature dry periods.

Alternative 3 appears to offer the least problems for the operation of the Water Intake and subsequent customer supply. Staff does have reservations about the flow regime for out year 8-9 which is currently undefined.

WATER QUALITY

Water Supply's main goal is to provide customers with a continuous supply of high quality drinking water meeting all of the requirements of the Safe Drinking Water Act (SDWA). Performing this task depends on the quality of the source water. The DEIS addresses this issue in Vol 2; 3.7.1-3.7.2.9.

Staff takes issue with the statements in 3.7.1.3 concerning other pollutants. This paragraph addresses substances such as pesticides and atrazine stating "....at Rulo, the pesticides ... atrazine ... were present but not at levels that exceeded water quality criteria". KCMO routinely treats for atrazine removal to meet the potable water contaminate level of a maximum of 3 ppb. KCMO periodically treats for Taste and Odor compounds caused by algal and bacterial releases of Geosmin and MIB. When these Taste and

Odor events occur, and staff is unable to respond effectively by adding Powdered Activated Carbon, our customers complain and this leads to an erosion of customer confidence in KCMO's drinking water. Of further consideration is the use of average temperatures for the lower River. KCMO routinely experiences high water temperatures during low flow periods coinciding with warm summer season. These high temperatures along with low turbidity normally associated with low summer flows create potential conditions for the formation of cyanotoxins. Although no firm maximum contaminant level has been established by EPA, Health Advisories have been issued by EPA and are defacto regulations of these compounds. In accordance with EPA Health Advisory, MO is one of the states," reviewing or developing an approach to address cyanotoxins in water. "(JAWWA Vol 109 p42.) Anecdotaly KCMO has experienced "blooms" characteristic for cyanotoxins formation during previous low flow summer periods. No attempt was made to analyze for toxins as methods are just being developed and no EPA requirements were in place. This is no longer the situation. We are concerned that any Alternative considered with low summer flows may create river conditions requiring more extensive treatment than is currently required.

WASTEWATER

KCMO operates six (6) wastewater treatment plants under National Pollution Discharge Elimination System NPDES permits, three (3) of which discharge to the Missouri River under NPDES permits. These permits are based in part on flows denoted 7Q10 and 3DQ10. Each one has different limits based on the flows and other factors. In the DEIS the COE surveyed the states, EPA and the affected plants as to their permit basis and method of calculation (i.e. Q, low flow, carcinogenic, and acute v chronic). They concluded impacts were low to none under all alternatives with the caveat that under alternative 2, three (3) plants in Missouri could be affected by low flow. They concluded through dialog with plant personnel, that planned upgrades would negate negative impacts on the treatment plant. But if those improvements were not made, treatment plant NPDES discharge standards would most likely be impacted under Alternative 2. Although not directly identified in the DEIS, staff does believe that the Blue River WWTP would be negatively impacted by the above alternative. The DEIS states that Alternative 3 would have negligible impacts.

FLOOD CONTROL

Kansas City Water Services is responsible for the operation and maintenance of eleven (13.5) miles of levees and flood walls in coordination with six (6) other levee districts in the metropolitan area. It also operates fifteen (15) interior drainage storm water lift stations. Following are summaries of flows at various stations prepared by Karen Rouse, DNR Surface Water Chief:

Alternative 6 - Flow Event Detail Frequency: 1 out of 3 years Bi-modal event (March and May)

March: peak is double the flow-to-target navigation flow; 2 days at peak May: preclude: 40 MAF on March 15 begins May 18 or later based on temperature peak is twice the steady release, hold peak for 2 days, 33 days total Flood Control Constraints adjusted by pulse magnitude: Kansas City: $71\text{kcfs} + 31.6\text{kcfs} = 102.6\text{kcfs}$

Alternative 5 - Flow Event Detail System Storage Preclude: 54.2 MAF on October 17 (full service) Fall flow event, as often as every 4 years Starts on October 17 Gavins Point release up to 60 kcfs for 35 days Flood Control Constraints adjusted by flow increase: Kansas City:= 126 kcfs

Alternative 4 - Flow Event Detail System Storage Preclude: 42 MAF Spring flow event, as often as every 4 years Starts on April 1 Gavins Point release up to 60 kcfs for 35 days Flood Control Constraints adjusted by flow increase- 126 kcfs

As can be seen from these flow levels; flood activation procedure levels would be reached under Alternatives 4, 5 and 6.

Alternatives 1 and 2 have some potential flood effects but not to the extent of 4, 5 and 6.

Alternative 1 (No Action)

Current bi-modal spring rise

Alternative 2 - Flow Event Detail Run unless a no-navigation flow year or flood control constraints are exceeded Bi-modal event (March and May)* March: peak 31 kcfs, 7 days at peak; 21 days total May: peak determined by March 1 runoff forecast (median= 16kcfs), 25 days at peak; 39 days total Flood Control Constraints adjusted by flow increase 87 kcfs, Kansas City: This alternative includes Low Summer Flow

*March and May events can be higher depending on runoff forecasts

Based on this analysis Alternative 3 has the least impacts.

NAVIGATION

We feel confident that KC Port Authority which operates the KCMO barge terminal will thoroughly comment on effects to navigation. From Water Services perspective, any flow modifications that threaten barge navigation could have an effect on our operational costs. KC Water Services currently ships 40,000 tons of chemicals to it plants. Many of these chemicals enjoy water compelled rates established years ago loss of navigation could jeopardize these rates.

Sincerely,

Terry Leeds
Director

CC: U.S. Army Corps of Engineers, Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
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 Date Sent: 04/20/2017 Date Received: 04/24/2017
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Correspondence Text

Re: MRRMP-EIS Draft comment

On behalf of the City of Sioux City I would like to thank the Corps for allowing us to present comments to draft EIS Rule. Sioux City wants to remind the United States Army Corps of Engineers of their obligation to meet all the eight Authorized Purposes where water supply and flood control are major components of the Authorized Purposes. The Missouri River makes up about 60% of the Mississippi River near St. Louis, Missouri. Changes in flows on the Missouri River will impact the Mississippi River elevation.

Sioux City has serious concerns about each of the six alternatives proposed in the Draft EIS and data present in the December 2016 Water Supply Environmental Consequences Analysis Technical Report.

In both reports, the Corps states there will be times where some intakes will not be able draw water from the Missouri River. This would be a catastrophe to any water utility who must provide water to it's customers. While Sioux City does not have a direct intake on the Missouri, we have long stressed to the Corp, that our water supply is dramatically impacted by changes in river elevation. Sioux City not only provides water to our community but also augments the water supply of South Sioux City, Nebraska and Dakota Dunes, South Dakota. Sioux City's water supply impacts over 125,000 people. This water is used for drinking water purposes, fire protection, Industry supply and irrigation .The inability to pump water from the Missouri River would mean no fire protection, hospitals, nursing homes, and dialysis facilities would not be able to provide service. If water interruption is expected to average 14. 7 days, as stated in both reports, both the general public and businesses would lose confidence in a utility to provide basic service and could potentially choose to relocate to an area of the country that can constantly provide water service. Our community could potentially become stagnate or the population would decline due to unreliable basic services. The reported NED and RED impacts are grossly under estimated if a water utility is unable to provide water for 14.7 days, let alone one day.

All the alternates are not supportive of the need for water supply to draw water from the Missouri River and may impact water quality. Water quality issues can come from algae blooms, higher delivered water temperatures, increased chemical usage and increased pumping costs. Costs that would need to be passed onto our users.

Alternate #2 could potentially place water intakes out of service longer depending on the needed water levels in the reservoirs to meet the Master Manual Annual Operating Plan (AOP). This report does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations. The proposed low flows in the summer, would impact water quality with high delivered water temperatures and potential for algae blooms with warmer river temperatures to increase incubation or growth of any organic organism in the water. Additional chemicals will have to be used to combat these organic organisms in higher concentrations. Low flow releases in the summer may impact the navigation lane, where water and power utilities may have to place barges with pumps out in the river's navigation lanes to reach water. Full releases from Gavin's Point in the spring could increase the potential for flooding if a substantial rain event occurred and the Corps did not decrease releases from Gavin's Point to manageable levels. These high releases could further increase degradation of the Missouri River bottom in certain locations due to higher velocities in the channel.

Sioux City will be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternatives 4, 5, and 6. If rainfall or snowfall did not meet annual expectations, as was experienced in early 2000, the AOP would decrease winter releases to prevent dropping into the Carryover Multiple Use Pool to the 2007 level experienced in the entire Missouri River Basin. Intake structures for the industries in our area would be at risk or be unable to draw water from the river during potential low releases in the winter.

The Corps has an obligation to meet targets proposed in each AOP as close as possible without violating the eight Authorized Purposes. Alternatives #1 and #3 come the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

Sioux City does not feel this technical report allows for the seven recommended actions made by the MRRIC in 2012 to evaluate the effects analysis. Consideration needs to also include the degradation that is ongoing for portions of the Missouri River, especially in the reach just below the confluence with the Big Sioux River. As the river beds degrade to lower elevations, additional water must be released to provide adequate water for our well pumps. Decreased river levels will impact our groundwater wells along the river with decrease capacities, decreased water quality and increased chemical and pumping costs.

Sioux City wishes to stress the importance of the selected alternative meeting the eight Authorized Purposes as established by the Pick-Sloan Act. Sioux City does not feel that adequate time was allocated to the process, thus limiting the number of alternatives. We also feel that the costs associated with these proposed six alternatives, is likely unfundable and thus the process becomes a mute issue.

Sioux City cannot stress enough that any plan has to protect our community from the risk of a flood. Couple with that is river degradation. While Sioux City appreciates the need for protection of endanger species, we feel that enough has not been done to deal with alternate range of habitat such as off channel habitats as suggested by The Missouri River Recovery Implementation Committee (MRRIC), and recommended by MRRIC'S Science Adaptive Management Group (SAM), the Independent Science Advisory Panel (ISAP) and the Independent Social Economic Technical Review (ISETR).

Sioux City does not believe that enough study on the influence of the Asian Carp's impact on the Pallid Sturgeon has been given. It would certainly seem that predator fish feeding on the fry of the indigenous fish is one issue that should warrant more study. Sioux City feels that the lower river early life stage habitat construction should be done on a trial basis first and then assessed to determine its success rate prior to full construction and implementation.

Sincerely,

Ricky J. Mach
Special Assistant to the City Manager

Brad Puetz
Water Plant Superintendent

Correspondence: 206

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Correspondence Text

Dear General Spellmon:

Thank you for providing the State of South Dakota the opportunity to comment on the Draft Missouri River

Recovery Management Plan (MRRMP), the associated Environmental Impact Statement (EIS) and Draft

Version 6 of the associated Science and Adaptive Management Plan (AM Plan). South Dakota is charged with managing fish and wildlife resources and their associated habitats and the water resources, including the natural flows of the Missouri River, within its boundaries for the benefit of the public. The opportunity to comment on the MRRMP and the associated EIS allows South Dakota to actively participate in the management process for this inter-jurisdictional river so important to our State. We look forward to working with you on the management of the Missouri River.

South Dakota has a history of actively participating in Missouri River management efforts. Our state has actively participated in the Missouri River Recovery Implementation Committee (MRRIC) and its workgroups. We have also provided input to the United States Fish and Wildlife Service (USFWS) for their use in drafting planning aid letters, in association with the Fish and Wildlife Coordination Act, for the United States Army Corps of Engineers' (USACE) use in developing the MRRMP and EIS and the associated AM Plan.

MRRMP Alternative Preference

After a thorough review of the six management alternatives presented for consideration, the State of South Dakota supports preferred Alternative 3 (mechanical habitat construction only), with some modifications requested. Alternative 3 differs from Alternatives 4 and 5 in that there is not a spring or fall flow release aimed at creating emergent sand bar habitat (ESH) for piping plover and interior least tern. Spring flow releases to act as pallid sturgeon spawning cues or to aid in pallid sturgeon recruitment are also not included in Alternative 3, as they are for Alternatives 2 and 6.

South Dakota supports Alternative 3 with modifications requested because we agree that there is enough uncertainty in the science related to flow patterns, volumes, and frequency needed to serve as a pallid sturgeon spawning cue or to aid in sturgeon recruitment, that these actions, and their impacts on South Dakota residents and municipalities, cannot be justified at this time. South Dakota supports efforts to recover endangered species, however, potential impacts of management actions that negatively affect basin stakeholders must be carefully considered with the potential benefit to the listed species. At this time, negative impacts of flow modifications are known and potential benefits to pallid sturgeon population status are unknown.

We believe the following modifications to Alternative 3 should be developed and included:

1. Increase the emphasis on pallid sturgeon physical habitat creation and associated research.
2. Consider and test sediment supplementation for the river below Gavins Point Dam.
3. Address current constraints on flows that may benefit pallid sturgeon and interior least terns and piping plovers, while reducing impacts to basin stakeholders.

Pallid Sturgeon Physical Habitat Creation and Research

South Dakota cannot support flow modifications of a magnitude that affect fisheries resources or recreational use in Missouri River reservoirs and river reaches in South Dakota or negatively impact riverside landowners and surface water users. Flow modifications should not be considered as viable management options until efforts to recover pallid sturgeon, using physical habitat creation, have been implemented, evaluated, and deemed insufficient to result in species recovery.

Plans for development of spawning habitat and interception rearing complexes (IRC) for larval pallid sturgeon as outlined in Alternative 3 should be implemented. Expanding the budget for Level 1 and 2 research on the effectiveness of physical habitat creation and modification within the current river channel needs to be a priority. However, if research indicates these habitats are contributing to reproduction and recruitment of pallid sturgeon, we recommend the goal of 20 acres of shallow water habitat or IRC per river mile be increased to 30 acres per river mile, the upper end of the range specified in the 2003 Amended Biological Opinion.

An additional justification for an increase in effort on Level 1 and Level 2 studies in the years immediately following plan implementation is the requirement that if Level 1 studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important, a one-time, bimodal spawning cue test release from Gavins Point Dam, as outlined for Alternative 6, be conducted. South Dakota recommends the research effort be increased such that in 9-10 years, there is sufficient information to determine if flow modifications to annual operations of the system are needed to support pallid sturgeon recovery.

Sediment Management

The Missouri River is naturally a turbid, sediment-laden river and native fish and wildlife species evolved and thrived in these conditions. Construction of the Missouri River mainstem dams drastically altered the sediment transport process. This has resulted in relatively clear, sediment-starved water that increases river bed degradation, which further promotes the disconnect with the floodplain, reduces shallow-water and backwater habitats, and negatively impacts invertebrate production.

During the process of developing management alternatives for inclusion in the MRRMP and EIS, sediment transport from above Gavins Point Dam to the Missouri River below the dam was not included in management actions considered for review and comment by MRRIC.

Increasing sediment transport downstream from the impounded section of the Missouri River needs to be included in the MRRMP alternatives. It should also be evaluated in the EIS with regards to potential benefits to the listed species and to overall ecosystem health. Some degree of increased downstream sediment transport will be needed to halt the loss of connectivity between the river and its riparian corridor and to provide needed turbidity and sedimentation for recovery of the listed species. The 2011 National Research Council report Missouri River Planning: Recognizing and Incorporating Sediment Management states that the pre-dam annual sediment load at Yankton for the 1940-1952 period was 125 million metric tons, compared to 0.25 million metric tons today. This is over a 99% reduction in sediment input. The Missouri River below Gavins Point Dam is sediment starved and feeding off its

bed and banks. It is obvious sediment augmentation of the Missouri River below Gavins Point Dam needs to be pursued as a part of any long-term management plan to allow the recovery and subsequent sustainability of the listed species.

We realize there is a significant expense associated with sediment transport from above to below Gavins Point Dam but this is an issue that needs to be addressed, regardless of expense. Adding sediment below Gavins Point Dam would help reduce shoreline erosion and degradation of the river bed and removing sediment from the Niobrara River delta would help reduce flow constraints that hamper the ability to use flow as a tool to aid in species recovery.

Efforts to increase sediment support of the river below Gavins Point Dam must be in association with pursuing an understanding with the Environmental Protection Agency (EPA) and state natural resources agencies that sediment augmentation is not pollution and a violation of the Clean Water Act. "The Big Muddy" cannot support the persistence of the listed species without sufficient sediment transport.

Flow Constraints

Current constraints on the volume of flows which can be used to create sandbar habitat or potentially benefit pallid sturgeon need to be addressed as part of any management alternative implemented. The current channel capacity of the Missouri River from Fort Randall Dam to Lewis and Clark Lake is 35,000 to 40,000 cfs (Table 3-2 of the MRRMP and EIS) and is obviously the main flow constraint for ESH-creating or pallid sturgeon bimodal spring pulse flow magnitude.

As an example, the fall ESH-creating flows from Gavins Point Dam would involve flows of up to 60,000 cfs, with Fort Randall Dam releases being increased a similar amount. With a channel capacity of 35,000 to 40,000 cfs in this reach, flooding would occur. However, if flow limits downstream of Gavins Point Dam are exceeded, Gavins Point release would be reduced by 5,000 cfs until flood targets are no longer exceeded. In instances where Gavins Point releases fall below 45,000 cfs, releases would be terminated. There is no mention of flows being reduced if they exceed the channel capacity and flooding occurs in the Ft. Randall to Lake Lewis and Clark reach. Actively working to increase the channel capacity in this river reach would benefit a flow-based management action and is a necessary prerequisite to any use of flow as an acceptable management action.

As indicated in Table 3-2 of the MRRMP and EIS, a hydraulic model for the river reach from Oahe Dam to Lake Sharpe is not available. We recommend that a hydraulic model for this inter-reservoir reach in the Pierre and Ft. Pierre area be created so that channel capacity information can be included when assessing potential impacts of various flows to stakeholders.

Another flow constraint that must be better understood involves interior drainage of agricultural fields in the lower basin. In South Dakota's bi-annual comments provided to the USAGE regarding development and implementation of the Annual Operating Plan (AOP) for Missouri River mainstem water management, we have asked for downstream flow constraints to be re-evaluated, as related to interior drainage, to better model impacts of various flow regimes to stakeholders.

As stated in Section 1.1.5 of the MRRMP and EIS, congress authorized the Missouri River Bank Stabilization and Navigation Project (BSNP) Fish and Wildlife Mitigation Project in the 1986 Water Resources Development Act (WRDA), Section 610 (A). WRDA 1999 Section 334 expanded the total number of acres to be mitigated to 166,750. To date, only about 66,000 acres have been developed. While habitat development and land management on Missouri River Recovery Program lands is a management action listed under all alternatives, emphasis on acquisition and management of lands, to

satisfy the mitigation responsibilities associated with the BSNP and to aid in species recovery, should be increased. Strategic acquisition of additional acres, from willing sellers, or establishment of easements to create habitat, should be pursued to reduce flow constraints and to serve as suitable locations for pallid sturgeon spawning habitat and IRCs.

Outside of concerns for the listed species, the Missouri River reservoir system was created by the Corps of Engineers, and it should be their responsibility to maintain the system and mitigate any negative impacts of its creation. Flood control, navigation, and other benefits of the mainstem reservoir system come at the cost of increased sedimentation, flow constraints, and the likelihood of flooding in the riverine section from Ft. Randall Dam to Lewis and Clark. These issues need to be addressed. If the flow constraint from Ft. Randall Dam to Lewis and Clark is not remedied, it will effectively negate using flow as a management tool or result in flooding of South Dakota residents. Waiting 9-to-10 years to see if increased flows are needed for species recovery and to begin working on increasing the channel capacity from Ft. Randall Dam to Lewis and Clark Lake is not acceptable. This delays addressing the sediment issue that already exists and which needs to be remedied.

Impacts of Specific Management Actions to South Dakota

South Dakota supports the use of the ProACT structured decision-making process to identify major human considerations and effects of various management actions on specific stakeholder groups. The ProACT process, and its use of proxy metrics, was helpful in illustrating trends in management action impacts on stakeholder groups. However, the amount of information initially considered in the ProACT exercise and the need to synthesize that information to something manageable certainly resulted in some potential, specific impacts to stakeholder groups and authorized purposes being lost in the analysis. Therefore, we have included the following information that highlights how specific management actions included in the alternatives presented for consideration have impacts for the State of South Dakota and our stakeholders, which are not adequately identified in the draft EIS.

Spring Flows to Create Emergent Sandbar Habitat (Alternative 4)

If System storage is at 42 million acre feet (MAF) or greater on April 1, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow limits are not exceeded, ESH creating flows would be implemented on April 1 with a release of up to 60, 000 cfs out of Gavins Point Dam, and as often as every 4 years.

1. Sandbar habitat-creating flows have the potential to severely impact the sport fishery of Lewis and Clark Lake. While other Missouri River reservoir fisheries generally respond positively to above average water yield, the small relative size of Lewis and Clark Lake results in a low storage ratio and detrimental impacts caused by high flushing rates. Walleye population abundance in Lewis and Clark Lake is negatively correlated to total water yield through Gavins Point Dam. The most likely cause for this correlation is the flushing of newly-hatched walleye from the lake through Gavins Point Dam during average to above average water yield years. Increased flows in April and May would likely have detrimental impacts to the sportfish population through increased flushing of newly hatched walleye through the dam.

2. A correlation exists between the average annual elevation of Lake Oahe and the amount of angler use and was used in some of the modeling for the Recreation Technical Report. However, major flow events result in degraded fishery quality and angler use a few years after their occurrence, resulting in low angler use even at high reservoir elevations. Major flow events have the ability to flush the majority of pelagic prey (rainbow smelt and lake herring) and Chinook salmon through Oahe Dam. Even if reservoir elevations are sufficient to allow good access to the reservoir after major flow events, the

lack of available food resources results in the loss of the larger walleye from the reservoir due to starvation. This occurred after large flow events in 1997 and 2011 and it took Lake Oahe over 5 years to recover each time. The Chinook salmon population in Lake Oahe was severely reduced by the 1997 and 2011 flow events, and as with the walleye fishery, has taken over 5 years to recover from each event. Timing of flow events, with regards to stratification of the water column in Lake Oahe and fish distribution within the water column, is a primary consideration when predicting impacts of high flows on the Lake Oahe recreational fishery.

3. Decreasing elevation of Lake Oahe and Francis Case during prey and game fish spawning periods (April - June) is a concern as stable-to-rising elevations are important to the success of prey fish and sportfish spawning events and egg incubation. With Lake Oahe being the lowest of the big-three storage reservoirs in the system, a spring release to create ESH will certainly remove the possibility of favorable conditions for spawning during the year of the flow implementation. Lake Francis Case is a much smaller reservoir than Oahe and the lowest source of available water for adjustments to releases from Gavins Point Dam. The need for an immediate source of water to support flow-related management actions could affect the elevation of Lake Francis Case during walleye spawning, thereby reducing the stability and quality of the walleye fishery, which contributes significantly to the recreation industry in South Dakota.

Fall Flows to Create Emergent Sandbar Habitat (Alternative 5)

If System storage is 54.5 MAF or greater, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow limits are not exceeded. flow release would be implemented on October 17 with a release of up to 60,000 cfs out of Gavins Point Dam, and as often as every four years.

1. Fall releases of the magnitude described have the potential to negatively affect reservoir system storage and the elevation of Lake Oahe. Efforts should be made to manage flows after the fall flow release to restore the elevation of the big-three storage reservoirs to the base of the annual flood control pool by March 1st, if possible. The upper Missouri River basin is in a state of drought much more often than it is in prolonged wet periods. As South Dakota has recommended in the past, we request that recent and current conditions in soil moisture and water yield be considered when developing reservoir elevation forecasts, rather than assuming normal water yield will occur during the forecasted period.

2. South Dakota and Nebraska jointly manage the paddlefish population below Gavins Point Dam. A paddlefish snagging season is conducted during the month of October each year. Restrictions on areas where boats can fish are in place if water is flowing over the dam spillway. Initiating increased flows on October 17th will affect the area of river below the dam open to paddlefish snaggers, reducing opportunity and potentially paddlefish harvest.

3. High reservoir releases will likely have similar impacts as the spring release on the Lewis and Clark Lake walleye population. By late fall, abundance of young walleye is highest in the downstream section of the lake, and fall releases of 60,000 cfs would likely result in entrainment of a large percentage of these newly hatched walleye. The actual effect of such a release is hard to estimate because a fall pulse of that magnitude is rarely seen in natural systems, and current reservoir management prescribes for much lower releases in the fall. Although the impact of a fall release would likely be lower than of the spring alternative due to increased size of young walleye, both alternatives would result in decreased walleye abundance in Lewis and Clark Lake.

Low summer flows for bird nesting and SWH Availability (Alternative 2)

The low summer flow described for pallid sturgeon would also serve as a lowered nesting season flow

for the benefit of least terns and piping plovers. Flows need to be sufficiently low to provide for SWH as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon.

1. Low summer flows have the potential to adversely impact the operation of water supply intakes for municipal, irrigation, and recreation uses in the riverine reach below Gavins Point Dam. Exacerbating our concerns is the recent establishment of a reproducing zebra mussel population in Lewis and Clark Lake and the Missouri River below Gavins Point Dam. Low summer flows may increase the likelihood of zebra mussel juveniles settling out of the water column and attaching to water intake systems.

Bimodal Spring Pulse for Pallid Sturgeon Recruitment (Alternatives 2 and 6)

A March pulse would occur once navigation releases were met at downstream target locations. The peak Gavins Point release would be two times the navigation release on the pulse initiation day, with potential releases for the March spawning cue being between 39,000 and 61,000 cfs.

A second pulse would occur during May when water temperatures reach 16- 18 °C. The peak Gavins Point release would be two times the base release on the pulse initiation day. Releases during the May spawning cue would range from 50, 000-67, 000 cfs

1. Effects on the Lewis and Clark walleye population by the bimodal spring pulse will be similar to the effects stated for alternative 4. While the March pulse will likely have little effect on the walleye population, the May pulse component will result in increased entrainment of newly hatched walleye. As stated earlier, walleye abundance in Lewis and Clark Lake is negatively correlated to water yield, and releases of 50,000-67,000 cfs in May would likely flush most of the newly-hatched walleye through Gavins Point Dam.

Impacts Common to all ESH Creating and Spring Bi-modal Pulse Flows

Alternatives 2, 4, 5, and 6 include management actions that involve large releases of water from the system. Some impacts to South Dakota stakeholders are common to all these actions.

1. Under these alternatives the large releases associated with the bi-modal spring pulses would require a large draw on storage from the mainstem reservoirs. If the timing of these releases coincides with lower reservoir levels due to drought, the intakes for public drinking water and irrigation systems can be adversely affected due to falling reservoir levels. This could drastically increase pumping costs and potentially expose water system intakes.

2. Public drinking water systems can also face increasing turbidity as well as taste and odor problems associated with degraded water quality resulting from low reservoir levels. This not only increases the cost of treatment and, ultimately, the cost to the consumer, but also threatens the ability to comply with the Safe Drinking Water Act.

3. Water releases described for many of the management alternatives provided for comment involve flows that will exceed the capacity of hydroelectric operations at each dam in South Dakota, meaning spillway or outlet work releases must occur. All flow releases involve the downstream transport, or loss, of fish. While effects of flows associated with standard operation of the Missouri River dams for hydropower generation have been experienced for decades, effects of spillway and outlet work flows are not as well understood due to the low frequency of their occurrence. We recommend coordinated sampling efforts with South Dakota Game, Fish and Parks fisheries staff when spillway or outlet works flows are scheduled, to increase knowledge of how these releases affect fisheries resources.

4. Due to channel degradation and hydroelectric peaking at Fort Randall Dam, the river downstream of the dam experiences large elevation fluctuations that can dewater aquatic habitats. This can result in

impacts to primary and secondary production and ultimately the aquatic food web. If hydroelectric peaking is continued during flow pulse events, the dewatering effect could be exasperated. We recommend the Corp attempt to keep releases from Fort Randall Dam steady during any managed pulse to minimize the dewatering of aquatic habitats in the Fort Randall reach.

5. Large draws on storage, that coincide with or inadvertently precede lower reservoir levels due to drought, will adversely affect boating facilities and the ability of recreational boaters to access the reservoirs. The result is a reduction in recreation based economic activity, a loss of local tax revenue and a significant cost to managing agencies in trying to maintain boating access.

From review of the table in the Executive Summary of the MRRMP and EIS summarizing environmental consequences of the alternatives compared to the no action alternative, it is evident that any management action involving flows will negatively impact cultural resources protection. This is especially concerning for Lake Oahe, where there are 1,047 sites, of which 175 are below the normal pool elevation of the reservoir. In addition to flow issues, creation of mechanical sandbar habitat has the potential to affect cultural resources. To address cultural resource issues, we encourage the early involvement of the State Historic Preservation Office (SHPO) and Historic Preservation Offices (THPOs) of the various Native American Tribes within South Dakota in the site selection process for created sandbar locations

Fish Stocking and System Alteration

South Dakota requests the following statement in Section 3.3.2.11 be removed from the MRRMP and EIS as it is unsubstantiated.

Past fishery stocking and management has caused a reduction in the abundance of native fishes from competition and inadequate amounts of biological resources available to support both populations; changes to the food web; and the introduction of pathogens.

Citations for scientific journal articles and USAGE documents in Section 3.3.2.11 of the MRRMP and EIS support statements regarding how past USAGE actions, including construction of the Missouri River mainstem reservoir system and the BSNP, resulted in significant adverse impacts to pallid sturgeon. These include creation of physical barriers to migration, interference with the larval drift process, preventing access to formerly used habitats, and changes in water quality. Additional references are cited to support statements that the decrease in sediment load has been associated with decreases in turbidity that might directly affect native fish fauna. They also indicate that channelization and bank stabilization on the Lower River have altered habitat complexity and diminished floodplain connectivity. Both of these factors are likely to have substantive effects on productivity and species distributions throughout the river. However, there is no support for the statement that fishery stocking and management has caused a reduction in native fishes.

Prior to system alteration by the creation of the mainstem reservoir system and the BSNP, native predatory fish species existed and many of those species, like channel and flathead catfish, continue to exist and thrive in the highly modified Missouri River ecosystems resulting from USAGE actions. The majority of the predators currently in riverine sections of the Missouri River are native species. It is in these riverine sections that native species, which formerly composed the prey base for pallid sturgeon, would be most likely to occur. The reason that the native prey fish component of the river is lacking is the complete alteration of the natural river ecosystem, not stocking predatory fish species in reservoirs where native prey fish production is unlikely to occur.

Recreation Technical Report Comments

The unit day value (UDV) method was used to evaluate National Economic Development (NED)

impacts of the alternatives on recreation in the Missouri River basin. This method relied on the opinions of the project managers for assigning points that ultimately determine the unit day value for each reservoir/reach. Additionally, under this method, boating is included in the general recreation category which has a lower range of unit day values than the general fishing category. This is not appropriate for the upper 5 reservoirs, since the majority of boaters are engaging in fishing activity. This highly subjective valuation method may be fine for simply comparing impacts of the different alternatives, but not for weighing impacts between interest groups. We ask that the USAGE utilize the Regional Economic Development (RED) RECON valuation method that is based on expense/revenue data for estimation of economic impact when comparing benefit/loss across multiple interest categories.

Adaptive Management Plan Comments

South Dakota and other state representatives on MRRIC have been discussing the role of states in the governance process of the MRRMP with the USA CE for over two years. The Fish and Wildlife Coordination Act gives states the opportunity to provide input to the USAGE, through the USFWS, on ecological and biological considerations of management actions and alternatives to benefit the listed species. However, it does not adequately provide states the opportunity to be briefed and consult with the USAGE on implementation of management actions which will affect Missouri River stakeholders within each state.

South Dakota appreciates the effort made by you and your staff General, to come to Pierre in early December of 2016 to discuss the MRRMP, EIS, and governance of the AM Plan with the Governor's staff and representatives from the departments of Environment and Natural Resources and Game, Fish and Parks. That is the type of interaction between the USAGE and the State of South Dakota that we would like referenced in the governance portion of the adaptive management plan, in association with any changes to the Master Water Control Manual.

Consultation between the USAGE and each basin state, if proposed management actions involve components outside the scope of the current Master Manual, should be a requirement. This will allow South Dakota to more completely comprehend what is included in proposed actions outside the constraints of the current Master Manual and how they may impact South Dakota. Therefore, we ask that the language in the third paragraph under the "States" heading of section 2.3.8 "Basin states, other federal agencies, and tribal roles outside the MRRIC collaborative process" in the AM Plan be changed to that listed below:

"With regard to the regulation of the Missouri River Mainstem Reservoir System, the USACE will continue to provide a draft and final Annual Operating Plan (AOP) that describes the planned operation of the reservoir system within the conditions of the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) for the coming year under a variety of runoff conditions. States will have the opportunity to provide comments on the draft and final AOP at the public meetings or by providing written comments during the comment periods. If at any time during AM Plan implementation, the Basin States or USACE determine the actions proposed to occur are outside of the conditions of the Master Manual, the Corps will first consult with all the Basins States, their designated representatives and/or other interstate organizations consisting of Missouri River Basin State representatives before making any substantive modifications. Additionally, states retain the right to comment or request consultation outside of MRRIC, FWCA, and AOP processes on any issue related to the Management Plan or ongoing AM process via official letter at any time."

Additionally, under section 5.3.1 of the draft AM Plan, it refers to the states as cooperating agencies in the Management Plan process and that all the cooperating agencies are also members of MRRIC.
South

Dakota formally requested to be a cooperating agency in the MRRMP development process but that request was not acted upon by the USACE, with the idea that state participation would be through MRRIC. In previous Missouri River management efforts, like the Missouri River Ecosystem Restoration Plan and the Missouri River Authorized Purpose Study, South Dakota was a cooperating agency. While South Dakota does participate in MRRIC, we desire to fulfill our role as a cooperating agency with regards to participation in the MRRMP and the AM Plan. With four of the six mainstem dams constructed on the Missouri River within the boundaries of the state of South Dakota, we certainly have a vested interest and expertise in both the recovery of the listed species and impacts to basin stakeholders that may result from management actions.

Summary

In summary of South Dakota's comments on the MRRMP and EIS, the State supports Alternative 3 (Mechanical-only construction) with modifications to increase the emphasis on development of pallid sturgeon science, include sediment management as a component of the management plan, and actively address flow constraints from Fort Randall Dam to Lewis and Clark Lake. We have provided specific impacts to South Dakota for each of the various management actions in the MRRMP alternatives. With regards to the draft AM Plan, South Dakota would like the language defining the role of states in governance to include that consultation between the USA CE and the State will occur when any management action outside of the scope of the current Master Manual is considered. We appreciate the opportunity to participate in this process and to contribute to management of the Missouri River system.

Sincerely,

Kelly R. Hepler, Secretary
Department of Game, Fish, and Parks

Steven M. Pirner P.E., Secretary
Department of Environment and Natural Resources

Cc: Governor Dennis Daugaard
Senator John Thune
Senator Mike Rounds
Representative Kristi Noem
Colonel John W. Henderson
Colonel Douglas B. Guttormsen
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Notes:

Correspondence Text

RE: Missouri River Recovery Program Management Plan Draft EIS Comments

Thank you for the opportunity to provide comments on the Draft Missouri River Recovery Plan and Environmental Impact Statement (DEIS). The State of Kansas has a wide variety of interests in the management of the Missouri River including fish and wildlife, recreation, flood control and water supply. Effective management of this system is crucial to the protection of those interests for future generations of Kansans. Of the 6 alternatives offered, we see Alternative 3 being the best alternative to fit the needs of the Citizens of Kansas.

The DEIS represents a significant body of work that provides a great deal of useful information. Undertaking recovery efforts for an ecosystem of this magnitude is a complicated task. With an effort that covers a system that is over 2300 miles long it is vital to have both flexibility to adapt to changing conditions and a wide variety of tools (potential actions) for the effort to have a chance to succeed. We offer the following comments that will focus on the channelized portion of the system.

The Corps of Engineers selected Alternative 3 as the preferred alternative. It is labeled as the Mechanical Construction Only alternative in the document. As defined by the DEIS, Alternative 3 contains the following general components:

Mechanical Emergent Sandbar Habitat Construction for Plovers and Terns

Vegetation and Predator Management and Human Restriction Measures to benefit Plovers and Terns

Flow Management to Reduce Take of Birds

Tern and Plover Monitoring and Research

Pallid Sturgeon Propagation

Pallid Sturgeon Population Assessment

Monitoring and Evaluation of Pallid Sturgeon Recruitment

Pallid Sturgeon Early Life Stage Habitat Construction

Habitat Development and Management on MRRP Lands

Reservoir Unbalancing Would Not Be Implemented

Adaptive Management

Studies

Spawning Habitat Construction (Up to 3 sites)

Mechanical ESH Habitat Construction (390 acres per year)

Pallid Surgeon Early Life Stage Construction (12 locations)

Each of these components are a necessary part of an overall Recovery effort if it is to be successful. Alternative 3 has many features that we like and some aspects that are cause for concern, mainly due to the scope of the effort identified.

Specifically it appears that Alternative 3 operates inside the current Master Manual. We see this as very positive. In addition, Alternative 3 provides more available storage for low flow periods allowing municipalities to better manage service. Alternative 3 provides several hundred more acres of Emergent Sandbar Habitat through mechanical construction. This should provide sufficient habitat to alleviate the need for releases from the Kansas Reservoirs to protect the limited habitat create by other alternatives. The State of Kansas has long opposed the use of Kansas River reservoirs for flow support on the Missouri River when the other tributary reservoirs in the system are left untouched. This practice represents an unbalanced threat to Kansas water supplies during the uncertainty of drought and impacts our local economies. Finally, Alternative 3 also has the least National Economic Development (NED) impact and appears to be a good balance between overall efficiency and impact to certain NED resources.

Some aspects of Alternative 3, while important components of an overall Recovery effort, are of concern to us either due to limited scope or inactivity. To be successful in recovering this ecosystem the overall effort must not only address the currently listed species, but also the other species they depend upon. One important tool for this aspect of Recovery is the Mitigation Program referenced in the DEIS. Estimates of public property lost to Missouri River modifications in Kansas top 55,000 acres of which only 6,100 has been replaced by 5 Missouri River Mitigation sites. There must be continued acquisition of additional property from willing sellers to mitigate for the thousands of acres of lost habitat. This also represents the land base necessary to provide habitats necessary for Recovery while preserving other existing uses of the river.

Recent data presented by the State of Nebraska concerning the status of forage fish and body condition of pallid sturgeon is also worthy of additional consideration. While we understand the timing of that presentation was not ideal for this process, it may represent valuable insight for future efforts.

The Missouri River bed degradation study is nearly complete and it documents critical degradation

from Kansas City to Leavenworth and through St. Joe with severe degradation above Leavenworth. Preliminary findings indicate serious impacts to shallow water habitat and crucial infrastructure, both issues need to be addressed. This issue cannot be separated from overall management of the system.

Alternative 3 provides for only 3 spawning habitat sites, this is insufficient. Given the variability of the river and spawning conditions, placing this limited number of sites in ideal locations is nearly impossible. More sites are needed throughout the system.

Similarly, Alternative 3 identifies only 12 pallid sturgeon early life stage habitat areas. This is insufficient to expect success. If we confine those only to the lower channelized reach that represents one site each 61 miles. To be successful, habitat for early life stages of pallid sturgeon must be at both reasonable distances (and suitable locations) throughout the system. It is important to keep in mind that a larval fish has limited mobility and ability to find and access preferred habitat in this high velocity modified system. It is also important to note that discussion of these areas also seem to plan for these areas to be concentrated very low in the system. Drift, whether it is of larval fish, benthic invertebrates or detritus in the system is a non-uniform event. Drift of these organisms cannot be expected to behave as a model of water flowing downstream. Even in a highly modified channel "roughness" of the channel will create variation in drift rates from varying velocities, eddys, areas behind dikes, etc. Suitable rearing habitat must be created at various locations throughout the system.

The decline in the biological community of the Missouri River is well documented with 3 species currently listed. In addition, a large number of additional species are known to be in decline. The underlying issue in the decline of these communities is habitat, and if the Corps is to succeed in restoring this ecosystem, it will only be accomplished through habitat. As the DEIS points out, in broad terms the system is roughly 1/3 natural (with modifications), 1/3 impounded or heavily influenced by impoundments, and 1/3 (735 miles) channelized.

The result is a highly modified system from a physical habitat perspective and a modified flow regime. With this extent of alteration the Corps must focus efforts on habitat restoration for there to be any chance of success. We are not suggesting that other related efforts, such as studies, monitoring and evaluation are not valuable tools. They are valuable, and many tools will be needed, but on the ground habitat must be the focus. Recent budgets, discussions at meetings and the emphasis within this document do not give us confidence that on the ground habitat is the focus of this effort at this time.

Failure to focus efforts and available budget resources on habitat will not only result in failure to reach the goal of this program to recover the currently listed species, but would likely result in additional species being formally listed. A scenario of "chasing listings" as declines continue and additional species are listed results in not only a loss of our natural resource base, but represents a threat to the State's broader interests related to the river by creating uncertainty and vulnerability to litigation.


The State of Kansas fully supports the Preferred Alternative. However, we feel very strongly the aforementioned suggested changes be included in the alternative. The final version needs to focus equally on implementation of on the ground habitat and expanded efforts in the habitat types identified above. We believe these actions will significantly improve the alternative's likelihood of success.

Sincerely,

Tracy Streeter, Director
Kansas Water Office

Correspondence: 208

Author Information

Keep Private: No
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Organization Type: S - State Government
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Correspondence Information

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Correspondence Text

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Some aspects of Alternative 3, while vital components of an overall Recovery effort, are of concern to us either due to limited scope or inactivity. To be successful in recovering this ecosystem the overall effort must not only address the currently listed species, but also the other species they depend upon. One important tool for this aspect of Recovery is the Mitigation Program referenced in the DEIS. Estimates of public property lost to Missouri River modifications in Kansas top 55,000 acres of which only 6,100 has been replaced by 5 Missouri River Mitigation sites. There must be continued acquisition of additional property from willing sellers to mitigate for the thousands of acres of lost habitat. This also represents the land base necessary to provide habitats necessary for Recovery while preserving other existing uses of the river.

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Recent data presented by the State of Nebraska concerning the status of forage fish and body condition of pallid sturgeon is also worthy of additional consideration. While we understand the timing of that presentation was not ideal for this process, it may represent valuable insight for future efforts.

The decline in the biological community of the Missouri River is well documented with 3 species currently listed. In addition, a large number of additional species are known to be in decline. The underlying issue in the decline of these communities is habitat, and if the Corps is to succeed in restoring this ecosystem, it will only be accomplished through habitat. As the DEIS points out, in broad terms the system is roughly 1/3 natural (with modifications), 1/3 impounded or heavily influenced by impoundments, and 1/3 (735 miles) channelized.

The result is a highly modified system from a physical habitat perspective and a modified flow regime. With this extent of alteration the Corps must focus efforts on habitat restoration for there to be any chance of success. We are not suggesting that other related efforts, such as studies, monitoring and evaluation are not valuable tools. They are valuable, and many tools will be needed, but on the ground habitat must be the focus. Recent budgets, discussions at meetings and the emphasis within this document do not give us confidence that on the ground habitat is the focus of the effort at this time.

Failure to focus efforts and available budget resources on habitat will not only result in failure to reach the goal of this program to recover the currently listed species, but would likely result in additional species being formally listed. A scenario of "chasing listings" as declines continue and additional species are listed results in not only a loss of our natural resource base, but represents a threat to the State's broader interests related to the river by creating uncertainty and vulnerability to litigation.

The Department would like to be in a position to support Alternative 3. While the version of Alternative 3 in the DEIS establishes a range of actions within which Recovery could be accomplished, we are concerned the level of action identified in the DEIS falls short. Specifically, the final version needs to both focus on implementation of on the ground habitat and expanded efforts in the habitat types identified above to reasonably expect the goal of Recovery to be accomplished. With modification to correct these deficiencies the Department would support the preferred alternative.

Sincerely,

Steve Adams
Chief of Planning
Kansas Department of Wildlife and Parks

Correspondence: 210

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/21/2017	Date Received: 04/21/2017
Number of Signatures: 1	Form Letter: Yes (Master)
Contains Request(s): No	Type: Letter
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Correspondence Text

Dear Major General Spellman:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation.

I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At _25 ft St Louis_ river stage, which is __ 5 ft _ feet below flood stage, _the L-15_ levee district where I farm begins to have challenges with drainage. SPEAK TO IMPACTS OF FARM OPERATION - I.E. AMOUNT OF PREVENTED PLANT, PUMPING COSTS, ETC.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.


I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Michael Farley
Farley Point Farms
West Alton, MO

Correspondence: 211

Author Information

Keep Private: No
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Correspondence Information

Status: Reviewed Park Correspondence Log:
 Date Sent: 04/22/2017 Date Received: 04/22/2017
 Number of Signatures: 3 Form Letter: Master
 Contains Request(s): No Type: Letter
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Correspondence Text

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In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation.

I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At a 20 foot river stage at Jefferson City, Hartsburg levee district where I farm begins to have challenges with drainage. This prevents farmers like me from planting the lower portions of the bottom during normal planting season; April 1 thru June 15.

The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydro logic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

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I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

Glen Beckmeyer
Janet Beckmeyer
Mark Beckmeyer
All partners in Beckmeyer Farms, Inc.
Hartsburg, MO

Correspondence: 212

Author Information

Keep Private: No
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Correspondence Information

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Date Sent: 04/19/2017 Date Received: 04/19/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
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Correspondence Text

Dear U.S. Army Corps of Engineers,

Please see comments below from the Siouxland Interstate Metropolitan Planning Council (SIMPCO) on the Draft Missouri River Recovery Management Plan and Environmental Impact Statements (EIS). SIMPCO is a Council of Governments located in the tri-state area of Iowa, Nebraska and South Dakota.

1. A selected alternative should generally stay within the parameters of the Master Manual.
2. The estimated costs of the six alternatives indicate that actions included in the alternatives are likely unattainable. It is therefore important to prioritize actions and select the most efficient and economical results.
3. The adaptive management plan process utilizing the best available science is highly desirable.
4. A selected alternative should not increase Missouri River bed degradation or lateral bank erosion.
5. A selected alternative should not increase flood risk.
6. A selected alternative should not threaten or increase costs of water supply to domestic and industrial users or increase the cost of treating water.
7. A selected alternative should not have a split season or otherwise threaten commercial navigation.

Specific Comments and Recommendations:

The six alternatives presented have common and logical recommended actions for the Piping Plover and Interior Least Tern including:

- Vegetation management on the bird habitat
- Predator management on the bird habitat
- Human access restriction on the bird habitat
- Flow management to reduce take of the Piping Plover and Least Tern
- Piping Plover and Least Tern monitoring and research

The six alternatives presented do not include the range of habitat options for the Piping Plover and Interior Least Tern that should be considered. The Draft Missouri River Recovery Management Plan (Plan) does not include off channel habitats as suggested by the Missouri River Recovery Implementation Committee (MRRIC). These habitats include meander scars, alkaline lakes, deltas, oxbows and sand pits. The advantages of other habitats rather than Emergent Sandbar Habitat (ESH) may include reduced ESH damage from river flows, increased habitat longevity and reduced cost. Many areas could be used for habitat development including area sand mines (gravel pits), DeSoto Bend, Boyer Chute, Omadi Bend, Middle Decatur Bend, Union County South Dakota sites, Kenslers Bend, Bow Creek and others.

The experiences of NPPD, on the Platte River, indicate the advantages of off channel habitat for recruitment of the Interior Least Tern and Piping Plover.

The six alternatives do not place enough emphasis on habitats in the reservoirs. Missouri River Piping Plovers that used the reservoirs for nesting between 2000 and 2016 ranged between 39% (2010) and 71% (2004). There are no recommendations in the alternatives to add nesting habitat on the reservoirs other than flow management. The costs of habitat (ESH) are entirely within the riverine segments.

The six alternatives presented have common recommended actions for the Pallid Sturgeon including:

Pallid Sturgeon propagation and augmentation
Pallid Sturgeon Population Assessment Project (PSPAP)
Monitoring and evaluation of Pallid Sturgeon Recruitment
Lower river Pallid Sturgeon early life stage habitat construction
Habitat development and land management of MRRP lands

The level 1 and 2 actions for the Pallid Sturgeon should be prioritized to efficiently use the funds available. The Pallid Sturgeon propagation and augmentation should continue unless future studies indicate otherwise. The lower river early life stage habitat construction should be implemented on a trial basis and fully analyzed for results before full implementation. Habitat development on MRRP lands should occur when possible. The impacts of Asian Carp on the Pallid Sturgeon and other native species should receive a high priority.


Thank you for the opportunity to comment on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

Sincerely,

Michelle M. Bostinelos
Executive Director
SIMPCO

Correspondence: 213

Author Information

Keep Private: No
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Organization Type: L - Non-Governmental
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E-mail:

Correspondence Information

Status: Reviewed Park Correspondence Log:
Date Sent: 04/17/2017 Date Received: 04/17/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

RE: Missouri River Recovery Management Plan & Environmental Impact Statement (MRRMP-EIS)

Dear Mr. Harberg:

Southwest Water Authority (SWA), which manages, operates, and maintains the Southwest Pipeline Project (SWPP) in southwestern North Dakota, would like to thank the U.S. Army Corps of Engineers (USACE) for the extension of the commenting period for the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS).

First, I would like to give some background about our organization. SW A was created by the North Dakota Legislature to provide for the supply and distribution of water to the people of southwestern North Dakota. It was also created to provide for the future economic welfare and prosperity of the people of the state, particularly the people of southwestern North Dakota, by making available waters from Lake Sakakawea and the Missouri River for beneficial and public uses. Further, it was declared necessary to study and continually develop these water resources to provide adequate water supplies for energy, industrial, agriculture, and other opportunities in this corner of the state. Unhindered and free access to Lake Sakakawea water is critical to meet these needs.

The SWPP serves more than 6,800 rural customers, 33 communities, 23 contract customers, 19 raw water customers, three crew camps, two raw water depots, Missouri West Water System in Morton County and Perkins County Rural Water System in South Dakota. The Project serves a population of approximately 56,000. The efficient network of pipelines, pump stations, reservoirs, and treatment facilities is essential to the success of people and business in our region of the state.

Southwest Water Authority recognizes the importance of responsible river management for the environment and species, however; it is also important the USACE also recognizes the importance of the economic and recreational interests of the Missouri River. Economically, quality water for business and industry is essential. Southwest North Dakota has experienced exponential growth in the energy

industry sector in the last few years, and the industry is expected to continue to grow. This Missouri River water is contributing to our region having one of the best economies in the United States. It is imperative the impacts to municipal water supply for our region and other Missouri River water commerce be considered with the highest regard.

The decisions of the USACE and any changes to the Master Water Control Manual could have a significant impact on SW A and those we serve. SW A would like to gain assurance that North Dakota state agencies, experts, and authorities would be involved in the decision making process if any changes to the Master Water Control Manual are to be considered. It is necessary to ensure water supply and water quality is maintained to our region for the residents of our State that rely on the Missouri River as a sole source of drinking water.

As a stakeholder in the health and management of the Missouri River, SWA has been a supporter of the Missouri River Recovery Implementation Committee (MRRIC) for several years. MRRIC has worked diligently as a collaborative forum to develop a shared vision and comprehensive plan for the restoration of the Missouri River ecosystem. MRRIC has worked closely with the USACE and the U.S. Fish and Wildlife Service to ensure stakeholder interests, such as those of SWA, are identified and considered in the MRRMP-EIS.

Thank you for giving us an opportunity to comment on this report. Please let me know if you have any questions or require additional information.

Sincerely,

Mary Massad
Manager/CEO
Southwest Water Authority

Cc: Garland Erbele, P.E., State Engineer, North Dakota State Water Commission

Correspondence: 214

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent:	Date Received: 04/24/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

Dear US Army Corps of Engineers:

Please create and implement a vigorous plan to restore the habitat of the piping plover, least tern, and pallid sturgeon on the Missouri River.

My state of Iowa is the most altered landscape in the U.S. We must bring some balance back to our actions and keep these endangered species from dying out in the never ending quest for commercial dominance. Our natural environment is our environment.

Alternative 3, especially, is not acceptable.

Sincerely,

Rachel Cole
3821 Vine Ave
Sioux City, IA 51106

Correspondence: 216

Author Information

Keep Private: No
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 Organization: MRPWSA ☒ Official Rep.
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Correspondence Information

Status: Reviewed Park Correspondence Log:
 Date Sent: 04/21/2017 Date Received: 04/21/2017
 Number of Signatures: 1 Form Letter: No
 Contains Request(s): No Type: Letter
 Notes:

Correspondence Text

Re: MRRMP-EIS Draft comment

I would like to thank the Corps for allowing me to present comments to draft EIS Rule. As president of Missouri River Public Water Supplies Association, I represent 18 water supplies from Sioux City, Iowa to St. Louis, Missouri on the Missouri River and one on the Mississippi River. The total population of the customers this Association of water utilities provides is over 5 million people. We, water utilities, supply water to businesses, hospitals, nursing homes, dialysis clinics, recreational, agricultural, and residential customers throughout the lower Missouri River basin. The utilities of this Association support over a billion dollars in commercial, agricultural, and residential revenue by providing safe water for public health and fire protection. A 2017 report by the Value of Water Campaign entitled "The Economic Benefits of Investing in Water Infrastructure" documents that water service disruptions put \$43.5 billion in daily economic activity at risk. This impact will ripple throughout the nation and world with what services and goods the Midwest offers.

We, water supplies of this Association, want to remind the United States Army Corps of Engineers of their obligation to meet all the 8 Authorized Purposes which Water Supplies is one of these Authorized Purposes. The Missouri River makes up about 60% of the Mississippi River near St. Louis, Missouri. Changes in flows on the Missouri River will impact the Mississippi River elevation.

The members of this Association have serious concerns about each of the 6 alternative proposed in the Draft EIS and data presented in the December 2016 Water Supply Environmental Consequences Analysis Technical Report.

In both Reports, The Corps states there will be times where some intakes will not be able draw water from the Missouri River. This would be a catastrophe to any water utility who must provide water to its customers. The inability to pump water from the River would mean no fire protection, Hospitals, nursing homes, and dialysis facilities would not be able to provide service. Water is essential for public

health and without it we would be no better than a third world country without basic sanitary conditions. Loss of water supply from the River, would result in billions of dollars in lost revenue due to businesses shutting down for safety and public health reasons in large metropolitan areas. If water interruption is expected to average 14.7 days, as stated in both reports, both the public and businesses would lose confidence in a utility to provide basic service and may relocate. The community would stagnate or the population would decline due to unreliable basic services. The reported NED and RED impacts, are grossly under estimated if a water utility is unable to provide water for 14.7 days, let alone one day.

All the alternates are not supportive of the need for water supply to draw water from the River and may impact water quality. Water quality issues can come from algae blooms, higher delivered water temperatures, and increased chemical usage.

Alternate #2 could potentially place water intakes out of service longer depending on the needed water levels in the reservoirs to meet the Master Manual Annual Operating Plan (AOP). This report does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations. The proposed low flows in the summer, would impact water quality with high delivered water temperatures and potential for algae blooms with warmer river temperatures to increase incubation or growth of any organic organism in the water. Additional chemicals will have to be used to combat these organic organisms in higher concentrations. Low flow releases in the summer may impact navigation lane, where water and power utilities may have to place barges with pumps out in the River's navigation lanes to reach water. Full releases from Gavin's Point in the Spring could increase the potential for flooding, if a substantial rain event occurred and the Corps did not decrease releases from Gavin's Point to manageable levels. These high releases could further increase degradation of the River bottom in certain locations due to higher velocities in the channel.

The water utilities from this Association will be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternatives 4, 5, and 6. If rainfall or snowfall did not meet annual expectations, as was experienced in early 2000, the AOP would decrease winter releases to prevent dropping into the Carryover Multiple Use Pool to the 2007 level experienced in the entire Missouri River Basin. Intake structures would be at risk from being unable to draw water from the River during potential low releases in the winter.

The Corps has an obligation to meet targets proposed in each AOP as close as possible without violating the 8 Authorized Purposes. Alternatives #1 and #3 come the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

From the Technical Report, the Association would like to know where the Corps obtained its data on location and low water shut-off elevation of our River Intake pumps. The information on the size of pumps and costs necessary to draw water from the river are under estimated. Locating pumps larger than 7,000 gpm to rent will be a difficult task, especially if half of the members in this Association are looking for these large pumps to rent. It is doubtful that a utility would be able to receive these auxiliary pumps in time to prevent a water outage. If a water outage would occur, the State regulatory agency will most certainly require a Boil Order to be issued. Has the Corps looked at the power requirements to operate these auxiliary pumps and if there will generators available to supply power? The information presented on the cost of renting pumps seems too grossly under estimate the impact if water supplies are not able to pull water from the River. Again, the water utilities in this Association serve over 5 million customers daily and support billions of dollars of industrial commerce and services which depend on our ability to pump water from the Missouri River.

We do not feel this technical report allows for the 7 recommended actions made by the MRRIC in 2012, to evaluate the effects analysis. Consideration needs to also include the degradation that is

ongoing for portions of the Missouri River. As the river beds degrade to lower elevations, additional water must be released to provide service levels to our intakes. Decreased river levels will also impact groundwater wells along the River with decreased capacities.

Of the alternatives presented in this Draft EIS, the members of this Association feel that alternative 3 has the least impact to the 8 Authorized Purposes which includes impacts to water supply and water quality.

Sincerely,

Michael Klender
MRPWSA President

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Dear Major General Spellman:

We, the levee board of Holt County Levee District #7 are particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Providing flood control and effective interior drainage is of utmost importance us. We are concerned that all of the alternatives besides Alternative 1 (no action) would significantly increase our flood risk. The Missouri River is capable of tremendous fluctuations in height due to natural causes, without USACE intervention.

It is dangerous to risk our nation's food supply on theories. Species recovery should be done only under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as the Missouri River's primary congressionally authorized purpose.

Our concerns are addressed by MMLDA, please refer to their opinions.

We ask you to please keep our concern in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully, David Banks, President of Board

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Re: Draft Missouri River Recovery Management Plan and Environmental Impact Statement-Takings

Dear Sir/Madame:

The Missouri Levee and Drainage District Association ("MLDDA") submits the following additional comments on the Missouri River Recovery Management Plan and Draft Environmental Impact Statement ("MRRMP DEIS"). Thank you for the opportunity to further participate in this process.

In *Arkansas Game & Fish Commission v. United States*, 133 S. Ct. 511, 184 L. Ed. 2d 417 (2012), the U.S. Supreme Court held that recurrent flooding, even if each flood was finite in duration, was not categorically exempt from Takings Clause liability, and that takings temporary in duration could be compensable. The Court found that there was no solid ground for setting flooding apart from all other government intrusions on property. In reaching its holding, the Supreme Court took note of the fact that the Game and Fish Commission repeatedly complained to the Corps about the destructive impact of the successive planned deviations from the Water Control Manual. *Id.* at 522. Furthermore, flooding of a farmer's land is a taking even though the farmer successfully reclaims most of his land which the government originally took by flooding. *Id.* at 519; see *United States v. Dickinson*, 331 U.S. 745, 751, 91 L. Ed. 1789 (1947).

The MLDDA has repeatedly commented on the destructive impact of floods and the increased risk of flooding posed by deviations from the Master Manual. The MLDDA respectfully points out that the implementation of the following actions is Likely to trigger takings claims and that it is opposed to such Alternatives and actions:

Alternative 1

Spawning Cue Release for Pallid Sturgeon

Alternative 2 (U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions)

Spring Habitat-Forming Flow Release

Spring Pallid Sturgeon Flow Release

Floodplain Connectivity

77,410 acres of connected floodplain would be inundated at a 20 percent annual chance of exceedance

Alternative 4

Spring ESH Creating Release

Alternative 5

Fall ESH Creating Release

Alternative 6-Pallid Sturgeon Spawning Cue

Attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May, even though these spawning cue releases would not be started or would be terminated whenever downstream flow limits are reached.


Respectfully submitted,

MISSOURI LEVEE AND DRAINAGE DISTRICT ASSOCIATION

Tom Waters, Chairman

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Dear Sirs,

Thank you for the opportunity to provide comments on the Draft Missouri River Recovery Plan and Environmental Impact Statement (DEIS). The Kansas Water Office (KWO) formulates a comprehensive state water plan for the management, conservation and development of the water resources of the state. The Kansas Water Plan includes sections corresponding with water planning areas which are determined by the KWO (K.S.A. 82a-903). Water planning is achieved by addressing issues in the regional areas of the state. Fourteen regional planning areas were established in December 2014 by the Kansas Water Authority (KW A) in conjunction with the Long Term Vision for the Future of Water Supply in Kansas. The 13 volunteer members of Missouri Regional Advisory Committee (RAC) represent the following interests: Recreation, Industry/Commerce, Agriculture and Agriculture Industry, WRAPS, Iowa Tribe of KS & NE, Public Water Supply, and Fish and Wildlife.

The Missouri RAC appreciates the opportunity to provide comments and supports the Preferred Alternative No. 3.

The Committee offers the following comments for consideration:

- Although there are significant uncertainties associated with its effectiveness in meeting the species objectives, Alternative 3 demonstrates it would be the least impactful means of meeting species objectives across the full range of interests in the Missouri River Basin. The USA CE should implement Level 1 and Level 2 studies as outlined in Alternative 3.
- Alternative 3 has a wider range of benefits relative to Alternative 1 including certain benefits to endangered species, reduced program expenditures, and better performance for most of the Human Considerations (HCs).
- Hydrologically, the effects of Alternative 3 would be very close to those for Alternative 1 but without

the specification for spawning cue releases in March and May. The differences in magnitude of the flows associated with Alternative 3 would be small compared to those associated with the other alternatives which makes this Alternative preferable.

- Alternative 3, which is preferred, has less channel reconfiguration for pallid sturgeon early life stage habitat relative to Alternative 1.
- Alternative 3 has the least National Economic Development (NED) impact and is a good balance between overall efficiency and impacts to certain NED resources especially when compared to Alternative 1 for the Missouri RAC Region.
- Alternative 3 operates inside the current Master Manual, however, four of the six alternatives include operating scenarios outside of the current Master Manual. Operations outside of the Master Manual have high probability of impacting water quality, a parameter not currently accounted for in the Water Supply Technical Report. Of particular concern is any flow regime(s) with the potential to create conditions optimal for cyanobacterial (blue-green algal) growth. With historical Missouri River operations falling within the defined constraints of the current Master Manual, little to no river water quality data exists for intentional and consistent operations outside of those defined constraints. Referring to Water Quality Technical Report, limited observed temperature data was available causing inaccuracies in modeled temperature changes for the alternatives and a loss of confidence in the data generated. What is known (and experienced with other source waters in Kansas) is that periods of reduced low flows result in slower and warmer waters conducive to blue-green algal growth. Nutrient loading on the Missouri River is more concentrated in Missouri RAC Planning Area and nutrient loading should be given more consideration in the EIS. Blue-green algae is harmful to aquatic life, can be costly for communities, impacting not only recreation, but public health and safety and is difficult to treat. These low flow impacts and the associated costs must be included in the EIS.
- Refer to Human Considerations Technical Report- Water Supply, Section 3.1 Paragraph 2, "The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1." These results will leave some communities without water supply for days. The report is also inconsistent in assessing risk assuming the worst case for flows, but best case for water utility to respond. Not all low water conditions can be solved by submersible pumps. The costs for the pumps are not accurate, asset life was shown as 10 years which is too long for this type of service under these conditions, it was also not apparent that a reduced wire to water efficiency was taken into account when calculating electrical costs and the cost in the report should be modified to reflect these considerations.

The cost to those communities without water supply has not been included in the report. The cost impact to Cleveland in 2003 when a regional power outage left 1.5 million persons in the city without water for 2 days was hundreds of millions when economic impacts in the region were considered. A: water supply outage means a loss in fire protection, inability to cook, bathe, flush toilets and a shutdown of critical facilities like hospitals with an increase in the risk of disease outbreaks. A water supply outage becomes a state and federal disaster. The model needs to be modified using a realistic flow condition where water supply intakes remain in service. The cost impacts to water supply need to be accurately reflected in the report and the EIS.

- In 2012, US Army Corps of Engineers utilized water from the Kansas Reservoirs to protect nesting Least Terns and Piping Plovers on the Missouri River by calling for supplemental navigation support releases. There is significant investment in storage in the Kansas Reservoirs, (Milford, Perry, and

Tuttle Creek) to meet the public's needs and the eight authorized purposes especially during drought conditions. Water from these Kansas Reservoirs should not be used to support the alternatives presented in the Missouri River Draft EIS that would impact Public Water Supply. Water Supply and Water Quality should be considered the highest priorities of the authorized purposes with substantial impacts to human considerations in the EIS.


- The impacts to land acquisition are understated in the Section 3.10 of the DEIS. Land Acquisition by the Corps removes property from the tax base for local government and this cost should be accounted for in the economic considerations. Property taxes are a source of revenues to local governments and schools that are tied to the productive cropland. The economic activity generated by farming, impacts local sales tax, personal property tax, special use taxes, and these impacts are underestimated in the analysis. Any conservation management plan should be voluntary and provide incentives to private landowners for protecting or enhancing habitat for the species needing protection. Non-participants in voluntary species conservation management plans should not be held to the standards of the plan. Benefit-cost ratio analysis for any alternative must result in higher benefits than the cost. Mitigation or replacement of habitat should be applied only in areas where conversion of the habitat is significant in relationship to the total amount of habitat available in the area.
- The land use model described in Section 3.1 Land Use and Ownership uses baseline assumptions related to cropland acres that will be taken out of production by the result of land being purchased and repurposed by the Corps. The cropland acres are not the only economic impact that should be accounted for. Interior drainage will be impacted by the alternatives which can delay or even prevent crops from being planted, cause structural issues, cause the need for rehabilitation of land, cause repairs of levee, and cause infrastructure damages. This cost should be included in the economic considerations in the EIS for each alternative.

Sincerely,

Carl Johnson
Missouri Regional Advisory Chair

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Re: Draft Missouri River Recovery Management Plan and Environmental Impact Statement-Farmland Protection Policy Act and NEPA

Dear Sir/Madame:

The Missouri Levee and Drainage District Association ("MLDDA") respectfully submits the following additional comments on the Missouri River Recovery Management Plan and Draft Environmental Impact Statement ("MRRMP DEIS"). Thank you for the opportunity to further participate.

One of the primary purposes of the MLDDA is to ensure that levees protect prime farmland. In the course of implementing mechanical construction under the Preferred Alternative 3 in the MRRMP DEIS, we urge the U.S. Army Corps of Engineers, in cooperation with the Department of Agriculture, to identify its effect on the conversion of prime farmland to nonagricultural uses under the Farmland Protection Policy Act ("Act"). "It is advisable that evaluations and analyses of prospective farmland conversion impacts be made early in the planning process before a site or design is selected." 7 C.F.R. §658.4(e).

In addition, we urge the agencies to evaluate the conversion of prime farmland to fallow land or habitat mitigation through land acquisitions for projects like the Big Muddy National Wildlife Refuge. While the Act and these regulations do not authorize the Federal Government to in any way affect the property rights of owners of such land, the Corps and the Fish & Wildlife Service should not be able to avoid the requirements of the Act because they only acquire land from "willing sellers." In fact, these acquisition programs are a form of "federal assistance" that converts farmland to nonagricultural uses. 7 C.F.R. §658.3(c).

The Department of Agriculture's rule under the Farmland Protection Policy Act requires the Corps to examine the potential impacts of the proposed actions, and if there are adverse effects on farmland preservation, to consider alternatives to lessen the adverse effects. Such an analysis is an integral part

of the environmental assessment process under NEPA. 7 U.S.C. §§4201 et seq.; 7 C.F.R. 658; ER 1105-2-100, Guidance for Conducting Civil Works Planning Studies.

The public is aware that although the Act does not provide a private cause of action to enforce its requirements, "the governor of an affected state, where a state policy or program exists to protect farmland, may bring an action in the Federal district court where a Federal program is proposed to enforce the requirements of section 1541 of the Act, 7 U.S.C. 4202, and regulations issued pursuant to that section." 7 C.F.R. §658.3(d). Please consider alternatives to lessen adverse effects on farmland preservation.

Respectfully submitted,


MISSOURI LEVEE AND DRAINAGE DISTRICT
ASSOCIATION

Tom Waters, Chairman

Robert J. Vincze, Attorney

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Re: Draft Missouri River Recovery Management Plan and Environmental Impact Statement -
Additional
Comments

Dear Sir/Madame:

The Missouri Levee and Drainage District Association ("MLDDA") respectfully submits the following additional comments on the Missouri River Recovery Management Plan and Draft Environmental Impact Statement ("MRRMP DEIS"). Thanks again for the opportunity to further participate in shaping this most important plan.

Page xiv, Executive Summary: "The operation of the System is guided by the Master Manual (USACE 2006a). This Master Manual records the basic water control plan and objectives for the integrated operation of the mainstem reservoirs. The reservoir stage and flow releases vary throughout the year as a result of reservoir operations that follow the Master Manual."

Comment: The Master Manual is a rule. 5 U.S.C. §706 et seq.; 33 U.S.C. §2312. "Any revision involving a long term or permanent change in the operation of the system that would serve as a significant deterrent to one or more of the actual purposes of the currently settled priorities of the system would suggest the need for prior congressional authorization." Office of Counsel, Department of the army, "The Role of Recreation in the Regulation of the Corps of Engineers Constructed and Operated Main Stem Reservoirs of the Missouri River" 25 (August 16, 1990).

Page xvii, Executive Summary: "The impacts as a result of the federal government acquiring lands from willing sellers to construct pallid sturgeon early life stage habitat are evaluated using two of the four planning accounts: Regional Economic Development (RED) and Other Social Effects (OSE).

Comment: The agencies must consider local impacts and payments in lieu of taxes to compensate for

the correspondent reduction in the tax base.

Comment: The agencies should use the term "flood control" instead of "flood risk management." Even current management actions do not protect citizens of the basin from life threatening floods. Witness the major floods since the System was filled: 1967, 1975, 1978, 1984, 1986, 1987, The Great Flood of 1993 (flooding that occurred below the System), 1995, 1996, 1997 (centered above the System), and The Great Flood of 2011.

Page xviii, Executive Summary: "The flood risk management impacts analysis focuses on determining if changes in river and reservoir conditions associated with each of the alternatives could result in an impact to risk of flooding. The impacts to flood risk management are evaluated using three of the four accounts (NED, RED, and OSE). An interior drainage analysis was conducted on a subset of federal levees to evaluate elevations within the landward side of federal levee areas along the Missouri River."

Comment: One of the priorities of the MLDDA is to maintain farming in the bottom lands of the Missouri River. If the agencies implement a significant spring rise, such action could result in the conversion of farmland to nonagricultural uses (7 U.S.C. §4201(5)). The Farmland Protection Policy Act was enacted to prevent such conversions. Obviously, if prime, bottom lands are too wet to plant, they are not viable for farming.

Page xix, Executive Summary: "The navigation impacts analysis focuses on determining if changes in river and reservoir conditions associated [sic] could result in an impact to service level and season length. The impacts to navigation are evaluated using three of the four accounts (NED, RED, and OSE).

Comment: The navigation impacts analysis must take into consideration shifts from waterborne commerce to rail or truck under the Intermodal Surface Transportation Efficiency Act ("ISTEA"). ISTEA requires linked connectivity between modes, productive growth, reduced energy consumption, reduced air pollution, reduced traffic congestion, and competition. A two (2) percent shift of waterborne commerce to truck correlates to a 140,000 ton increase or 5,349 additional truck trailers on the road. (1 barge= 1,500 tons, 1 large semi-truck (45') = 26 tons.) Waterborne commerce is the most energy efficient mode of transportation. Trucks consume 3,483 BTU per ton/mile compared to 403 BTU per ton/mile for waterborne commerce. Transportation Energy Data Book; Edition 12, Oak Ridge National Lab, prepared for the Department of Energy, ORNL-6710, pp.6-13.

Page xxviii, Executive Summary: "[U]nder Alternative 3, USACE would create ESH through mechanical means at an average rate of 391 acres per year in the Garrison, Fort Randall, and Gavins Point river reaches in years where construction is needed. This amount represents the acreage necessary to meet the bird habitat targets after accounting for available ESH resulting from System operations. Alternative 3 would also include the provision for a one-time spawning cue test release from Gavins Point Dam if the results of Level 1 studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important."

Comment: The public, i.e. USACE, must assume liability for damages to private land and crops due to any alteration to flood control structures. A revetment has the potential to do the most damage to private property. A revetment is a blanket of stone in the river bank ostensibly to protect the river bank from eroding and sloughing. Sloughing takes place because the footing of the river bank is washed away and the bank falls into the river for lack of support. Continued sloughing can destroy adjacent levees. If a revetment is breached, a chute will develop downstream as a result of the floodplain segment eroding all levee and drainage works until it discharges back into the river. Such a breach of revetment occurred during the 1993 flood on the property of the late Bill Lay in Howard County,

Missouri. The entry of flood waters onto his property created a natural chute for the entire length of his property before discharging back into the river. Unfortunately, Bill Lay was unable to show a positive Benefit: Cost Ratio for USACE Title 84-99 flood damage repairs and was forced to sell his property. It is now the Lisbon Bottom Unit of 2014 acres at river mile L 214 to 218.

Bank notching is the second most damaging type of project. Bank notching has been done on public property like the Big Muddy National Wildlife Refuge. Great lengths of the bank downstream (1,000 feet or more) can be washed away in the river's attempt to reconnect with the flood plain.

We have been living with Dike Notching for a couple of decades. As long as the water flows back into the river near the notch, this type of project should not significantly affect navigation.

Page 1-2: "Dams also trap suspended sediments and closure of the dams coincided with a decline in suspended sediment loads in downstream reaches."

Comment: Thank you for including sediment redistribution in the scoping process for the MRRMP DEIS at Section 2.5.1.14. The Lewis and Clark Lake Sediment Management Study (USACE 2013) concluded that additional scenarios exist that warrant examination.

As a part of Phase II of this study, we request that the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service implement a pilot project utilizing beach nourishment technologies¹ to transfer sediment from past a main stem dam into a downstream reach of the Missouri River. As the agencies are aware, stream bed degradation in certain reaches of the Missouri River below the dams is an issue that must be addressed in the coming decades. See MLDDA comments dated April 15, 2017 on Sediment Redistribution.

Page 1-19: "Currently, the criteria necessary for the interior least tern to be removed from the endangered species list as stated in the 1990 Recovery Plan is a range-wide population of at least 7,000 individuals (USFWS 1990). According to the 2013 5-year review (USFWS 2013), the population has not only reached 7,000 individuals but has exceeded this number for the years 1994-2012, resulting in a recommendation of de listing for interior least terns. However, most of the population increases that achieved the population criteria are located within the lower Mississippi River populations, not the Missouri River. Interior least terns within two of three Missouri River reaches have been stable compared to the criteria set in the 1990 Recovery Plan. A 2013 adult census on the Missouri River counted a total of 742 interior least tern and 827 piping plover individuals (USACE 2014a)."

Comment: The MLDDA supports the delisting of the interior least tern so that resources are directed to where they are truly needed.

Page 1-19: "As part of the interior least tern delisting process, under the conservation mandate of Section 7(a)1 of the ESA, there are efforts underway to develop conservation plans throughout the least tern population range. Section 7(a)1 of the ESA requires federal agencies to use their authorities to develop and carry out conservation programs for listed species. USACE Mississippi Valley Division on the lower Mississippi River, the Louisville District for the lower Ohio River, and the Southwestern Division for the Red and Arkansas rivers are developing 7(a)1 plans with post-delisting management commitments. After USACE management strategies are drafted, there will be a 7(a)1 consultation with the relevant USFWS office. When these management plans are finalized, nearly all of the interior least tern population will be covered under post-delisting management commitments."

2.5.1.1 "Flows that are high relative to the elevation of existing sandbars have the potential to mobilize

and deposit sediment at high enough elevations to create new sandbars when water levels recede (Buneau et al. 2016b)."

Comment: Key word here is potential. If it does not work, then stop.

2.5.1.4 "Off-Channel" Habitat Creation/Mechanical Creation of Hydrologically Connected non-ESH Habit on River Segments

Comment: P. 2-17. The MLDDA supports funding a pilot project for the development of "off channel" habitat areas.

2.5.1.14 Sediment Redistribution. Generally involves transporting sediment from reservoirs to the river reach downstream of the dam.

Comment: P. 2-22. The MLDDA supports further research on sediment redistribution to include beach nourishment technologies. See MLDDA comments dated April 15, 2017.

2.5.2.2 Evaluate Fish Passage at Intake on Yellowstone River

Comment: P. 2-26: "The hydrology, thermal conditions, and sediment regime are relatively undisturbed in the Yellowstone River, thereby potentially providing supporting habitat conditions for pallid sturgeon. Also, the additional drift distance is expected to better allow for adequacy of larval drift, which is currently hypothesized to be a requirement to support natural recruitment in the upper basin. According to the effects analysis, available drift/dispersal distance emerged as a fundamental limitation on pallid sturgeon recruitment in the upper river (Jacobson et al. 2016b)." P. 2-27: The MLDDA supports the bypass channel and expanded monitoring and assessment of migration, spawning, hatch, drift, and recruitment at Intake Diversion Dam.

2.5.3.1 Channel Reconfiguration

Comment: P. 2-28: It is imperative that projects not adversely affect the authorized purposes of the Missouri River, including flood control and navigation.

2.5.3.3 Alter Flow Regime at Gavins Point

Comment: P. 2-30: "The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning (Doyle et al. 2011)."

2.5.4 Habitat Development and Land Management on MRRP Lands

Comment: P. 2-31: Land acquisition programs should include sale-leaseback. In this way, portions of prime farmland could be kept productive while conservation plans are devised and implemented.

Comment: P. 2-31: "Based on an assessment of past pallid sturgeon SWH projects implemented by USACE, it was determined that an average of 7.7 acres of land are acquired for every 1 acre of pallid sturgeon habitat needed." Another argument for sale leaseback. A lot of land is not used for habitat.

Table 2-6. Pallid Sturgeon Framework for Lower River

Comment: P. 2-37: Research and monitoring are imperative first steps to ensure that river management has a large degree of economic certainty and that implementation will have a population-

level biological response.

2.7.2 Initial Iterations of Habitat-Creating Flow Releases

Comment: P. 2-39: "Downstream flow limits and criteria are defined in the Master Manual (USACE 2006a). For purposes of formulating habitat-forming flow releases, downstream flow limits are the flows at specific downstream locations, which if exceeded, would trigger a reduction in the magnitude of the release. Downstream flow limits were set to: Omaha-71 kcfs; Nebraska City-82 kcfs; Kansas City-126 kcfs." Flood control could be influenced by local rain events such as the Flood of 1993. We respect the result that "[t]he iteration of model runs resulted in very few implemented habitat-forming releases over the POR due to termination of the releases because downstream flow limits were exceeded or System storage fell below the flood control zones or "full-service" levels as described previously. Therefore, these initial iterations of habitat-forming flow releases were not effective at contributing towards meeting the bird habitat targets and therefore the species objectives."

2.7.7 Round 2 Alternatives

Comment: P. 2-44: The MLDDA supports the following finding: "The PDT was unable to identify an iteration of spring habitat-forming flow release, fall habitat-forming flow release, or a summer low flow that was effective at contributing towards meeting the bird habitat targets and could also be implemented within the operational constraints of the current Master Manual (USACE 2006a). As such, it was determined that some level of mechanical ESH construction would be required with all reservoir release and/or summer low flow actions." The MLDDA is opposed to spring pulses and low summer flows. Attention to Human Consideration proxies is appreciated.

Flood Risk Considerations

May 1, 2013

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HUMAN CONSIDERATIONS WORK: QUESTIONS FOR SMALL GROUPS

1) When the USACE reviews management actions for the Missouri River, we would like them to evaluate the impact of each management action on:

(i) Protection of human life

(ii) Homes, schools, places of worship, municipal water supply, power supply, industry, transportation

infrastructure, recreation, river terminals, railroads, and cultural resources

(iii) Flood Emergency Response

(iv) Winter releases out of Garrison

(v) Releases from Gavins Point in all seasons

(vi) Missouri River Basin Stage-Discharge-Area-Damage Curves (Master Manual)

(vii) Surface/interior drainage of farm land and water tables

(viii) Loss of Prime Farmland under the Farmland Protection Policy Act (7 U.S.C. §§ 4201 et seq.) and agriculture in the flood plain

(ix) System Storage including storage in soil (water retention)

(x) Levee maintenance and repair

(xi) Availability and cost of crop insurance

(xii) Navigation channel erosion (bank stabilization)

(xiii) Reduced conveyance due to encroachment below the dams

(xiv) Channel width and fetch (bank and levee impairment)

(xv) The self-scouring ability of the navigation channel

(xvi) River sediment loads and erosion

(xvii) Corps' ability to assimilate data and communicate consistently across the basin

(xviii) Local tax bases

(xix) National Economic Development Benefits and regional benefits

(a) The reasons we would like this evaluated are:

[Please note that the roman numerals in the sections below correspond to the evaluation requests above.]

(i) Even current management actions do not protect citizens of the basin from life threatening floods. Witness the major floods since the System was filled: 1967, 1975, 1978, 1984, 1986, 1987, The Great Flood of 1993 (flooding that occurred below the System), 1995, 1996, 1997 (centered above the System), and The Great Flood of 2011.

(ii) The items listed above largely define our quality of life.

(iii) Flood emergency response has two components here: (a) the ability for emergency responders to evacuate and reach victims; and (b) planned actions to alleviate greater harm (e.g. Bird Point, New

Madrid Spillway).

(iv) If winter releases out of Garrison are too high during a freeze-in, there is the potential to push river levels up, causing flooding. If winter releases out of Garrison are too low, there may not be enough conveyance under the ice to increase flows later, which increases the potential for ice jamming.

(v) In the winter, the reasons for evaluation of releases from Gavins Point are the same as in (iv) above and also are likely to impact water and power supply. Particularly in the spring, releases on top of downstream precipitation events may increase flooding and impede interior drainage. In the summer and fall, low flows can lower the water table and exacerbate the effects of droughts.

(vi) Citizens need to know how much land will be damaged by each management action.

(vii) When the river stage covers flap gates, interior drainage from local rainfall is halted. There are many times that local flooding occurs without the river leaving its banks or over-topping levees. The river does not have to overtop levees or leave its banks to prevent farmers from growing crops. As the river levels rise, some fields "perc" water or remain so wet that tillage and planting cannot occur. High river stages can cause land to be unworkable, even without local rain events.

(viii) We have to preserve prime farmland that has a comparative advantage over other land to enable us to feed our nation and the world. The purpose of the Farmland Protection Policy Act is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that will be compatible with state, local and private programs and policies protecting farmland. Releases from Gavins Point on top of runoff below the System that already provides for full navigation can cause flooding and loss of agriculture in the flood plain.

(ix) As a lead agency, the Corps should seek help from other agencies to reduce runoff. An example is the Natural Resources Conservation Service's no till program.

(x) Levees serve to protect assets that are essential to a good quality of life. Communities and levee districts need to know the costs to maintain and repair levees associated with each management action.

(xi) Crop insurance may be unavailable or at such high premiums that it becomes too high of a risk and uneconomical to farm ground that is no longer protected by levees or more susceptible to an increased magnitude, duration or frequency of flooding.

(xii) The navigation channel provides the first level of flood protection. Channel protection is flood protection.

(xiii) In relation to the 2011 flood, if encroachment had not occurred below the dams and between dams, the Corps would have had more flexibility to operate the system.

(xiv) Wave action erodes banks and levees. The height of waves is a function of the depth of the water as well as the fetch. Fetch is defined as the width of open water that wind can act upon.

(xv) Under full navigation seasons water is evacuated from the System such that the navigation channel is largely self-scouring. Maintaining the depth of the channel is important to flood control.

(xvi) Reduced sediment loads in the river may increase erosion of banks and levees. Reduced

conveyance due to sedimentation between reservoirs: In the delta areas of the reservoirs, particularly at Oahe and Sakakawea, sedimentation has increased the stage of water and sub sequentially, the Base Flood Elevation

(xvii) Before the spring runoff started in 2011, there was above-normal snow pack in the Dakotas and Montana. North Dakota made requests to increase releases from the dams earlier in the season. On the same day, downstream interests were calling the Corps to back off of releases due to unusually high water. The Corps needs to better assimilate these observations throughout the basin for a common understanding of situations.

(xviii) Counties (Holt County, Missouri, for example) have experienced a loss of agricultural land for flood mitigation and habitat which have reduced their traditional tax bases. The lower tax bases reduce funding for schools and services in their communities.

(xix) Under "National Economic Development Benefits" analysis, the focus is on improving the net benefit to the nation that the project or management action may generate. It is a method to measure improvement or decline. It is important to evaluate regional benefits as well, which may differ from NED Benefits.

(b) To evaluate this, the USACE can examine and report on:

(vii) Elevations of flap gate outlets compared to river stage. The Corps can then determine at what river stage drainage is impeded. Field elevations and soil types, and at what river stage the soil becomes too wet to farm.

(c) The USACE can use the following information sources to help them in their evaluation:

(v) Historical rainfall patterns, weather forecasts, soil saturation monitors.

(vii) Levee districts, drainage districts and floodplain landowners can provide locations of flapgates. A simple GPS device can be used to record location and elevation. The Food and Agricultural Policy Research Institute (FAPRI) has prepared white papers on interior drainage and agriculture in the basin.

Population growth models, food requirements, agricultural productivity and the contribution of Missouri River Floodplain agriculture to world food supplies. The United Nations FAO has data on farmland, population and future food requirements. The USDA NAS has data on agricultural production.

The economics departments of our universities in the basin, the Food and Agricultural Policy Research Institute, USDA, United States Chamber of Commerce, Chambers of Commerce in floodplain communities, and Chambers of Commerce in communities adjacent to the floodplain.

(ix) Natural Resources Conservation Service and U.S. Geological Survey programs, studies and reports

BACKGROUND INFORMATION:

Flood control is one of the key and most widely beneficial of the 8 authorized purposes. We should not risk developed areas or highly productive farmland with management actions-we should make their protection the highest priority.

Releases during higher risk periods of the year defeat the purpose and the primary impetus behind the construction of the reservoirs. It does not make sense to release high amounts of water in the spring, when planning to release that water during historically lower flow periods benefits power generation, power generation cooling, municipal water supplies, water quality, recreation, irrigation and navigation.

We need to recover fish and birds while maintaining the priority of the authorized purposes under the Flood Control Act.

With the world population predicted to grow to 9 billion by 2050, we cannot afford to waste some of the most productive farmland in the world. If the land is too wet to plant because of high water tables, or the land is flooded due to local rainfall events and impeded drainage from higher river stages, or if crops are destroyed by flooding, it impacts our ability to feed the world. We need to recover the species, but we need to be certain that we do not create the unintended consequence of starving children.

Any management action that impedes agriculture's ability to produce has widespread impacts. Agriculture provides a vital economic engine throughout the Missouri River Basin. Every rural business in the basin, from automobile dealers to appliance dealers to farm equipment, fertilizer, grain elevators, clothing stores, etc. depends on a strong agricultural base to survive. These businesses impact the nation's manufacturing base and overall economy. United Auto Workers build the cars and trucks sold in agriculturally driven areas. Others build refrigerators, farm equipment, furniture, clothing, etc.

The Flood Control Act does not immunize the government against liability for flooding that is not caused by flood-control activity (or negligence therein). *Central Green Co. v. United States*, 531 U.S. 425 (2001); *Graci v. United States*, 456 F. 2d 20 (5th Cir. 1971).

Open water and ice jam induced flooding are concerns on the Missouri River in North Dakota. Although Ice jam induced flooding can occur anywhere along the Missouri River in North Dakota, there is a heightened concern in the Bismarck/Mandan Area.

Bismarck/Mandan has had two recent incidents of note; the 2011 flood and ice jam of 2009. During the 2011 flood approximately 1,300 people and 650 households were affected in the Bismarck/Mandan area. In addition to inundation, several properties were damaged due to erosion in some cases the river undermined homes. During the 2009 ice jam homes were inundated and access was lost to several homes. Due to the extreme variability of ice jams, uncertainty caused an extremely high stress, emotionally charged situation. Because ice jams are essentially dynamic ice dams, the water surface profile, or the elevation of the water surface from upstream to downstream, is variable, unlike an open water flood.

In both scenarios, there can be issues with internal drainage. The south Bismarck storm drainage system begins to be effected when the stage at the Bismarck gage is 12 feet. If the stage continues to rise gates are shut to prevent back flow into the city from the storm sewer outlet, and pumps are placed so that internal runoff can be pumped into the river. If there are large rain events, such as some of the events in 2011 the pumps are unable to maintain internal water levels and homes can be inundated.

There are other areas along the Missouri River in North Dakota that could be impacted by high water as well, including the cities of Stanton, Price and Washburn. In addition, there are ag impacts. During the 2011 flood feedlots were inundated, irrigation intake structures were eroded, etc.

There are two locations on the Missouri River in North Dakota that the National Weather Service has determined flood impacts, Bismarck and Williston.

The following are flood impacts that the National Weather Service has identified for the Bismarck gage and its respective stages:

22 Significant number of homes and businesses on both sides of the river should be expected to flood if not protected.

20 Water begins to appear on the lowest stretches of River Road north of Bismarck.

19.25 2011 peak stage

18 Homes in the low-lying incorporated parts of Bismarck if not protected risk inundation.

17 City of Bismarck experiences flooding of streets in low-lying areas if not protected. Access to Fox Island and other rural developments becomes increasingly difficult. Access to homes in the Briardale, Hoge Island, Ponderosa, and Misty Waters developments north of Bismarck may be cutoff and some homes are taking on water if not protected.

16 Before 16 feet, older homes in the Fox Island area may experience flooding. Homes built to this level are at less risk but may have water surrounding them. Access to Fox island is difficult because of water on Riverwood Drive. No significant threat to the incorporated cities of Bismarck and Mandan.

14.5 Flooding of rural areas begins. Inundation of croplands and the potential closure of local boat ramp access is likely. Riverbank erosion rates increase and cause unstable shorelines. If water levels are the result of an ice jam south of Bismarck, water levels will be relatively higher near the jam and cause concerns for residents south of Fox Island.

12.5 Unusually high river stage for this reach of the Missouri River. Residents are encouraged to pay close attention to NWS updates, local media, and local emergency management for information concerning why the river is this high and its potential for further rises.

The National Weather Service identified the following flood impacts for the Williston gage and its respective stages:

33 Levees surrounding Williston are likely to be topped without additional measures taken to temporarily raise the flood protection levels.

32.5 Missouri river begins to overtop small stretch of levee near highway 85 bridge and Williston water treatment plant.

30.75 Missouri river begins to cover highway 85 south of Williston.

30.5 Water is near the top of highway 58 in areas between Fairview and Trenton.

30.38 2011 peak stage

30 Water covers portions of 13th avenue east and 11th avenue east along the little muddy river.

28 Water backing up into the little muddy river begins to cover 54th street northwest on the east side of

Williston.

24 Flood problems begin. Water begins to cover oil well location south and east of town. Wildlife management areas are flooded. City of Williston does not flood.

22 Low-lying farmland floods. City of Williston does not flood.

20 Ditches in the vicinity of the river will fill and wildlife management lands along the south banks will begin to flood.

March and May Spring Pulse from Gavins Point, P. 2-58.

Comment: The MLDDA is opposed to spring pulses. The Independent Science Advisory Panel report on the spring rise stated that the spring pulse in Alternative 2 is not supported by existing science.

Thank you for considering these additional comments on the MRRMP DEIS.

Respectfully submitted,

Tom Waters, Chairman

Robert J. Vincze, Attorney

(with input from Joe Gibbs)

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Re: Comments on the Missouri River Recovery Program Management Plan Draft Environmental Impact Statement

Dear Brigadier General Spellman:

The undersigned represents the Missouri River Dredgers Group (hereafter "Dredgers"). The Dredgers are the six permitted commercial sand and gravel operations conducting extraction operations on the lower river between Rulo, Nebraska and the mouth at St. Louis. The approved permittees are: Holliday Sand & Gravel Company, LLC; Capital Sand Company, Inc.; Con-Agg of MO, L.L.C.; Hermann Sand & Gravel, Inc.; Limited Leasing Company; and J. T. R., Inc. (Jotori Dredging).

The Dredgers are extremely knowledgeable regarding lower river operations and the conduct of the Bank Stabilization and Navigation Project ("BSNP"). They transport the largest amount of tonnage on the lower river. Their collective fleets are the most active navigators. Predecessor interests have been operating on the river since the early 1930's providing sand and gravel for the construction industry.

As part of the permitting process under Section 404 of the Clean Water Act, an Environmental Impact Statement was prepared at the Dredgers' expense for the lower river evaluating the impacts of commercial sand and gravel operations. Permits have been issued under that EIS and a Record of Decision issued by the Kansas City District since 2011. Their required conditions include various protections for the pallid sturgeon and sonar based bed surveys of the lower river. These surveys represent actual bed data, versus modeled presumptions, of the river bed condition. The Dredgers are actively involved in lower river analysis and impacts of various actions, including those of the Missouri River Recovery Plan ("MRRP").

As part of their involvement with the MRRP, the undersigned represents the Dredgers as the Waterway Industries representative on the Missouri River Recovery Implementation Committee

("MRRIC"). Many of the comments in this letter are influenced by that participation.

STRUCTURE OF THIS COMMENT LETTER

This comment letter is structured in three sections.

Section One, General Comments, presents general issues of concern that permeate the document, addresses concerns of policies presented, and presents items which we believe are strategic flaws with regard to the completion of the EIS.

Section Two contains specific comments based on specific sections of the DEIS. These comments may represent line-by-line errors, policy statements that we believe are inaccurate, conclusions which are not substantiated, and errors and concerns regarding the information presented.

Section Three contains Suggestions, Recommendations, and/or Conclusions regarding this document and issues relating to operation of the lower river.

SECTION ONE - GENERAL COMMENTS

There are 14 areas of general concern with the content, policy, and interpretations of the DEIS. They are:

1. The congressionally-authorized purposes establish the baseline criteria for evaluation. Failure to reasonably maintain the authorized purposes close to their current baseline will constitute a failure of this exercise. The authorized purposes and the priority purposes of navigation and flood control are under emphasized in the document.
2. Modifications in flow as presented in Alternatives 2, 4, 5, and 6 undermine the primary purposes of navigation and flood control and are, therefore, problematic. Where flow changes are proposed, we believe they are required to be within the confines of the current Master Manual, and any changes beyond the Manual must be made by following the Manual public process.
3. The states of Missouri, Kansas, Iowa and Nebraska own the bed of the lower river. As such, activities that would compromise the bed's integrity, loss of resources, and modification of the States' real estate and resource rights, all constitute issues relating to taking. The States have their sovereign right to their real estate and actions that compromise that real estate, and the decisions relating to the real estate's resources represent a federal takeover of rights related to States' real estate and resource assets.
4. We support adaptive management as a method to expedite knowledge, generate scientific information, and test hypotheses. We believe that adaptive management provides for a more nimble position for the Corps in making decisions toward protection of the endangered species. However, we find no legal premise for the adaptive management scenario to exceed the guidelines and provisions of the Master Manual on its own accord. We believe that this process does not allow or endorse changes to the Manual without appropriate Manual review, analysis, procedure, and public hearings.
5. The adaptive management governance framework isolates stakeholders and relegates them to a lower stance in the pyramid. The adaptive management process compromises the authority of the governors in the basin to a lower priority in decision making. These elected representatives of the various states should have the highest position with regard to the adaptive management governance process. At a minimum, the governors, as representatives of the citizens in each of the various states

in the basin, should have a substantially greater input than currently structured under the adaptive management governance.

6. Adaptive management actions and decisions should not contradict current regulatory paradigms and requirements. The adaptive management governance does not include the authority to change, modify or circumvent current regulations without appropriate rulemaking consistent with federal requirements. This includes attempts to modify current permits for any actions on the river.

7. The use of the HEC-RAS model on a micro level for decisions is flawed. The Dredgers continue to object to the HEC-RAS model being used for regulatory purposes relating to permits and decision making regarding bed degradation. Its use for regulatory determinations is objectionable. This position has been continually presented in MRRIC and in other Corps-related venues. The Corps repeatedly agreed in those MRRIC sessions to note that this data should not be used for regulatory purposes. The note is absent from the document and therefor skews the decision-making prospects. The agreed to note on modeling should be added.

8. Changes in flow, without enhancing sediment load delivered from the reservoir system, have no value and are a waste of precious water in the system. It appears that the DEIS and the other evaluations purposefully neglect the issue of material trapped in the system behind the mainstem dams and the dramatic reduction of material movement as a result. We believe that all the flow hypotheses are incomplete with regard to the pallid sturgeon unless additional sediment load is placed back into the system from that which is currently trapped behind the mainstem dams in their reservoirs.

9. We appreciate that this DEIS acknowledges the existence of the Middle Mississippi and that it is, in fact, integrated with the Missouri River. However, the impacts relating to the Middle Mississippi are direct and not cumulative. The relationship of the Middle Mississippi and the Missouri River pallid is not sufficiently developed. Flow and lack thereof affect the performance of the Middle Mississippi and have significant social and economic consequences to the users of the Mississippi River. The failure to directly examine the impact of alternatives to the Middle Mississippi in a direct fashion, and to ignore science indicating the pallid's potential gain, requires greater examination of the Middle Mississippi, which should be included in this document.

10. Interception Rearing Complexes are, by both the Fish & Wildlife's ("FWS") and Corps' admissions, experiments. We do not object to the advancement of hypotheticals, including IRC's, provided proper evaluations are performed and a graduated introduction taken. We believe the Corps is moving too quickly with regard to the IRC hypothesis and therefore avoiding the adaptive management process. We suggest that only one IRC be developed in the lower river, that it have constant evaluation regarding impacts on channel integrity where structures are modified to create these types of complexes, have enhanced data collection, and then evaluated by the adaptive management team for success prospects prior to implementation of other IRC's.

11. The DEIS implies that IRC's will not impact activities within the channel, which include navigation and commercial sand production. The Corps must provide to the stakeholders their regulatory strategy with regard to the IRC's. Otherwise, the economics of the river in this document are incomplete.

12. The DEIS' and the Corps' present land acquisition has an Endangered Species Act ("ESA") priority position. We do not concur and believe that the Corps' primary obligation on land acquisition is to provide mitigation for the impacts of the BSNP. The Corps' position requires the acquisition of the highest cost lands versus lower cost properties that meet the mitigation obligations.

13. The Corps agreed in the MRRIC process to identify those aspects of alternatives that would require revisions to the Master Manual. No items appeared to be called out for consideration.

14. Of the alternatives presented, preferred Alternative 3 has the fewest negative impacts and is supported. We are, however, skeptical on the caveat of a flow test in this alternative as it appears unnecessary, especially without increased and enhanced sediment loads.

SECTION TWO - SPECIFIC COMMENTS

There are several specific areas of concern for Dredgers that require elaboration from our general comments:

FLOWS

Alternatives 2, 4, 5, and 6 all include significant flow release modifications dramatically different from Alternative 1 (the no action alternative). Alternative 3, the preferred alternative, includes a flow pulse, if necessary nine years out. Alternatives 2, 4, 5, and 6 will affect navigation and the ability to float watercraft at various parts of the flow supported navigation season. The alternatives create split navigation seasons, reduced full service navigation, risks of future water volume support in subsequent years, and light haul scenarios.

Prior pulse experiments have not demonstrated any successful propagation or the creation of a desired spawning cue. Flow changes continue to be a speculative aphrodisiac for this ancient fish. In fact, the ISAP questioned the practice.

Simply put, we see no demonstration that releasing relatively clear lake water from Gavins Point results in any inducement to the pallid to reproduce. Releasing clear lake water into the channel does not appear to be a spawning cue worthy of further experimentation. This is a paradigm without success.

We concede that changing factors accompanying flow volume may have a different outcome. Increasing sediment releases from the retained material behind the mainstem dams along with flow may stimulate spawning cues. The failure to address sediment load throughout the DEIS is an inherent flaw of the entire exercise. Without additional sediment in releases the outcome is predetermined to be one thing - a waste of precious water. The Corps should develop alternative scenarios for flow releases of retained material in the reservoirs that increase sediment load downstream changing the flow cue strategy, or abandon all flow alternatives going forward.

Navigation confidence suffers with every flow release alternative. Alternative 3 provides the least risks to the majority of the authorized purposes, especially navigation.

INTERCEPTION REARING COMPLEXES

Interception Rearing Complexes (IRC's) are a new methodology proposed under all alternatives for pallid sturgeon population improvements. They are unproven and untested. They are experiments and hypothetical. Like prior shallow water habitat proposals such as chutes and channels, these experiments need to be field tested to determine their success. We believe the prospects for success of IRC's are favorable and do not object to them being introduced with proper caveats.

As presented, IRC's will be adjacent to the navigation channel, should not impact the channel or navigation, and address various early life stages of the pallid. Their development is based upon field observations. None have ever been designed. None have ever been tested. There is NO justification

presented for advancement of numerous modifications adjacent to the channel for IRC's until one or two have demonstrated success for the stated purpose.

The Corps and FWS intend to jump into IRC development with both feet based upon the DEIS and presentations at MRRJC, advancing a dozen IRC prospects. We object, not to the principal and experiment, but to what we believe is an overzealous response to an unknown idea.

The IRC's should be introduced patiently after considerable monitoring and data collection. Modifications should be made based upon the information learned and suggested and accepted through the adaptive management process. The data collection **MUST** include channel response and the impacts on navigation, bed, and hydraulic conditions. This information on performance should be collected and examined prior to any proliferation of the IRC experiments. Upon a successful result, they should be increased and only upon a successful result.

Millions of dollars have been invested in unsuccessful shallow water habitat, experiments that have yet to bear fruit. Lessons learned indicate a slow methodical effort is in the financial interest of the country. For this reason, we strongly continue to support the current and proposed efforts for hatchery population support while true in field strategies are initiated in a responsible manner.

We remind the Corps and FWS that the integrity of the channel remains the primary responsibility until obviated by Congress. Design challenges of IRC's must hold that as the primary consideration.

ADAPTIVE MANAGEMENT

We have concerns that the adaptive management governance for the Missouri River Recovery Management Plan places too much emphasis on the birds and fish and insufficient emphasis on people.

Structurally, the decision-making process appears to support the endangered species, and only the endangered species, to the detriment of all other species including humans. The authorized purposes are devalued, as is the political decision making for river management. The States' ownership and issues are relegated to a low position on the pyramid, which means the people are reduced in their operational say and participation.

We value MRRIC and its assistance to date. However, MRRIC was never intended to be perpetual or a governance substitute for elected representation. In fact, MRRIC was supposed to "go away." MRRIC under the current proposal becomes the lone arbiter of professional wildlife officials who solely believe their mission and charge is to protect one fish and two birds. Leaving MRRIC as the sole arbiter appears to stack the deck against the authorized purposes.

As much as we complain about elected officials, they are the representatives of the people. The governors are the highest level of the peoples' interest. The governance structure reduces the States' authority to protect States' interests by not providing a platform for their "direct" involvement other than participation through MRRIC. This is unacceptable.

In addition, membership in MRRIC is selected by the Corps. While we respect the current Corps leadership, a structure must be protective of the risk of the federal government choosing membership most biased to its position. For that reason alone, MRRIC cannot be presumed to represent the public interest in decisions on the management of the river. Its charter can also be revised removing key current presumptions, such as requiring unanimous consensus.

For these reasons we believe the adaptive management governance is flawed and requires revision.

SEDIMENT STARVED SYSTEM

There is no dispute by any science body, the Corps, FWS or any State conservation authority that the lower Missouri River is sediment starved. In 2010, the National Academy of Science conducted a review at the Corps' expense and verified the conclusion. The dredging EIS reached the same conclusion in 2011. The FWS took specific positions arguing that the pallid needed greater load to be successful in the NSF hearings. Ironically, after all the determinations that the river is sediment starved, the issue has disappeared.

We have spent years challenging the fact that the mainstem reservoirs create the sediment problem and force the river's reliance on tributary load to recover bed conditions and restore historical load factors.

Reservoirs in the system are filling with material. Yet the management plan perpetuates the fiction that riverine habitat must only be adjusted by flow without reintroduction of material from behind the mainstem dams. Currently, when an action is taken, load is created by compromising channel characteristics (notching and shallow water habitat) versus enhancing natural load and turbidity by allowing material to be moved from behind mainstem dams.

None of the alternatives, including the preferred alternative, address the sediment starved river due to retention behind the mainstem dams, the spawning affects related to that trapped material, and the impact on the species.

MITIGATION AS A PRIORITY

We recognize that land acquisition for mitigation purposes is an imposition on landholders in the floodplain. We do not agree with the position of the Corps focusing on high dollar lands to "double dip" to meet their mitigation requirement and their ESA responsibilities. The Corp is required to purchase 167,000 acres to mitigate for the imposition of the BSNP. They have acquired approximately 60,000 acres to meet that objective.

There are two distinct issues regarding land acquisition - mitigation and ESA. Mitigation does not require premium landholdings with direct connectivity to the river. We encourage the Corp to continue to meet the mitigation objectives from willing sellers by purchasing less costly land holdings worthy of habitat substitution for ALL species - not just those endangered.

NATIONAL SPENDING PRIORITIES

\$33 MILLION /YEAR - \$825 MILLION AND GROWING

While we understand the purpose of the MRRP and the MRRMP, it is necessary for us to comment on the cost of continuing this program. We also comprehend the current requirements of the ESA and that economics and risk are not part of that Act. The DEIS does not include the actual budgetary impact of implementing any of the alternatives. Arguably, in the Corps defense, it is probably due to the fact that they are not the budget decision maker. That responsibility falls to Congress.

However, the cost to implement has an environmental impact. Resources for habitat protection, land acquisition, wastewater projects, drinking water projects, stormwater projects, just to name some examples, are diverted by the expenditures for the alternatives presented in the DEIS.

The recovery program since 1992 has consumed in excess of \$825,000,000 or an average of \$33,000,000 per year. Assuming a constant trend over the next 15 years of the DEIS timeframe, an additional \$495,000,000 will be consumed.

The impact of this effort must be addressed, at a minimum under cumulative effects to appropriately meet the NEPA requirement regarding "impact to the human environment."

SECTION THREE - SUGGESTIONS, RECOMMENDATIONS, AND/OR CONCLUSIONS

Alternative 3 has the fewest negative consequences and is supported.

No actions should be taken under the adaptive management processes that are outside the boundaries of the current Master Manual.

Flow changes presented in alternatives 2, 4, 5, and 6 impact navigation and other authorized purposes and should be rejected.

The Corps should design a strategy to reintroduce sediment into the lower river to enhance both bird and pallid habitat and extend the life expectancy of the reservoir system.

The adaptive management governance should be reexamined to include greater participation by the governors of the States.

IRC's as a hypothesis and experiment appear to have promise and are supported. They should be patiently introduced with adequate monitoring for impacts to the channel and for their success.

The Middle Mississippi is reliant upon the Missouri River for its flow. The pallid appears to be using the Middle Mississippi to its benefit. Decisions regarding alternatives should consider the Middle Mississippi and the Missouri as one and evaluated as such.

Finally, we wish to acknowledge the hard work that has been put into this effort. Whether or not we agree with each and every element, each and every alternative or any of the proposals does not undermine our respect for the large amount of effort on the part of the Corps, the Fish & Wildlife Service, the participants in MRRIC and the many research partners in achieving this significant undertaking. There is no denying the hard work of many individuals to create the opportunity for this review and dialogue.

On behalf of the Missouri River Dredgers Group,

Very truly yours,

LATHROP & GAGE LLP

By: David A. Shorr

DAS/jf

Cc: Missouri River Dredgers Group

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Subject: Missouri River Recovery Program Draft Environmental Impact Statement

The Missouri Coalition for the Environment (MCE) and the Lower Missouri River Coalition (LMRC) are submitting the attached comments on the Missouri River Recovery Program Draft Environmental Impact Statement (DEIS) prepared by the US Army Corps of Engineers (Corps).

The Washington University Interdisciplinary Environmental Clinic prepared these comments at the request of MCE and LMRC.

LMRC is a group of national, state and regional conservation and environmental organizations dedicated to the restoration of the Missouri River and its floodplain per the Congressional authorizations within the 1986, 1999 and 2007 Water Resources Development Acts. LMRC members supporting the attached comments on the Missouri River Recovery Program - Draft EIS:

Great Rivers Habitat Alliance
Missouri Coalition for the Environment
Nebraska Wildlife Federation
St. Louis Audubon
Greenway Network
National Wildlife Federation
Sierra Club - Missouri Chapter

We want to underscore the declaration on page S-4 of the Corps 2003 Final Supplemental Environmental Impact Statement for the Missouri River Fish and Wildlife Mitigation Project the Corps stated the following:

The modified Mitigation Project is vital to reestablishment of a viable Missouri River ecosystem.

This conclusion, acknowledging the need to mitigate 166, 750 acres of the more than 500,000 acres of lost Missouri River habitat, is even more relevant today. The Corps must rework the NEPA requirements regarding the purpose and need statement, the alternatives analysis, and the impacts analysis as outlined in the attached comments in order to properly address the Missouri River species' needs and the Mitigation Project.

Brad Walker

Rivers Director
Missouri Coalition for the Environment

Comments on the Draft Missouri River Recovery and Management Plan and Environmental Impact Statement

Produced by:

The Interdisciplinary Environmental Clinic at the Washington University in St. Louis

On behalf of:

The Missouri Coalition for the Environment and The Lower Missouri River Coalition

April 21, 2017

The Interdisciplinary Environmental Clinic at the Washington University School of Law submits this comment letter on behalf of the Missouri Coalition for the Environment (MCE) and the Lower Missouri River Coalition (LMRC) (collectively, "the Coalitions"). MCE works to protect and restore the environment and has worked on Missouri River issues for decades, writing extensively on Missouri River restoration, flooding, and navigation impacts. LMRC is a group of state, regional, and national conservation and environmental organizations dedicated to the restoration of the Missouri River and its floodplain per the Congressional authorizations of the Water Resources Development Acts (WRDA) of 1986, 1999 and 2007. Five members of the Coalitions have represented their organizations on the Missouri River Recovery Implementation Committee (MRRIC).

On December 16, 2016, the United States Army Corps of Engineers (USACE or "the Corps") in cooperation with the United States Fish and Wildlife Service (USFWS) made available for public comment the Draft Missouri River Recovery and Management Plan and Environmental Impact Statement (MRRMP-EIS). 1 The MRRMP-EIS proposes to address the Corps' responsibilities under the Endangered Species Act (ESA) 2 and analyzes "major federal actions necessary to avoid a finding of jeopardy" to the threatened piping plover and endangered interior least tern and endangered pallid sturgeon. 3 The existence of those species is threatened by the Corps' operation of the Missouri River Mainstem Reservoir System ("the System") and the Missouri River Bank Stabilization and Navigation Project (BSNP).4 Pursuant to the National Environmental Policy Act (NEPA),5 the MRRMP-EIS presents the Corps' analysis of alternative projects which would purportedly meet ESA requirements for the species.

This letter raises three areas of concern regarding the MRRMP-EIS. First, the Coalitions request that the Corps reformulate its purpose and need statement to focus the alternatives analysis and clarify how the selection criteria for a preferred alternative relate to the Corps' substantive responsibilities under the ESA to restore the viability of the threatened and endangered species. The necessity to reformulate the purpose and need statement is underscored by the MRRMP-EIS's nearly dispositive treatment of "human considerations" (HCs) in selecting the preferred alternative.⁶ Second, the Coalitions oppose the Corps' preferred alternative and urges the Corps to formulate reasonable and feasible alternatives that combine the best management actions utilized among Alternatives 2 through 6. The unreasonableness of the range of alternatives is particularly demonstrated by the construction of emergent sandbar habitat (ESH) and the utilization of floodplain connectivity and flow releases (or lack thereof). Lastly, the Coalitions urge the Corps to improve the scientific integrity of the impacts analysis of the MRRMP-EIS by, among other actions, more thoroughly evaluating ecosystem services values and producing a new biological assessment (BA) prior to the selection of a preferred alternative.

I. THE PURPOSE AND NEED STATEMENT OF THE MRRMP-EIS DOES NOT COMPLY WITH NEPA.

Under Section 7 of the Endangered Species Act, the Corps must "insure that any action authorized, funded, or carried out by [the Corps] is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species."⁷ Since the Corps' operation of the System and BSNP jeopardizes the continued existence of the threatened piping plover and the endangered interior least tern and pallid sturgeon, the Corps has proposed the MRRMP to ensure the viability of the three species. Since the MRRMP is a major federal action "significantly affecting the quality of the human environment,"⁸ the Corps must comply with the requirements of NEPA by producing an environmental impact statement (EIS) evaluating alternative configurations of the MRRMP.⁹

An EIS must provide a statement that "briefly specifies) the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."¹⁰ How an agency defines the purpose of its action necessarily limits the range of reasonable alternatives to that action.¹¹ Agencies may include statutory objectives as a component of purpose and need statements,¹² but violations of NEPA have been found where agencies employ vague purpose and need statements.¹³ Like other procedural requirements of NEPA, the purpose and need statement "ensure(s) that the agency is candid about the action it is taking."¹⁴

The Executive Summary of the MRRMP-EIS provides the following statement:

The purpose of this MRRMP-EIS is to develop a suite of actions that meets ESA responsibilities for the piping plover, the interior least tern, and the pallid sturgeon. Authorities used to meet this purpose may include existing USACE authorities related to Missouri River System operations for listed species and acquisition and development of land needed for creation of habitat for listed species provided by Section 601(a) of WRDA 1986, as modified by Section 334(a) of WRDA 1999, and further modified by Section 3176 Of WRDA 2007 although alternatives formulation was not limited to these authorities.¹⁵

It is unclear whether this statement is intended to be the requisite brief framing of the Corp's goals because the Corps provides multiple formulations of the project's goals in different sections of the MRRMP-EIS.¹⁶ But even if this statement is the MRRMP-EIS's purpose and need statement, it violates NEPA by failing to provide any guiding criteria for the Corps to determine whether it has met its substantive obligations under the ESA. To correct this shortcoming, the Coalitions urge the Corps to

incorporate into the purpose and need statement the primary goals for species restoration and a brief description of the various measures that can accomplish those goals.

A. The Purpose and Need Statement Fails to Provide Guiding Criteria for the Corps to Meet Its Obligations Under the Endangered Species Act.

As written, the Corps' purpose and need statement accomplishes three things: it identifies the species requiring protection, states that their protection is mandated by the ESA, and lists nonexclusively three statutes which authorize the Corps to act in pursuit of that protection. The statement is incomplete where it fails to identify what species goals the alternatives will accomplish and how the alternatives will be analyzed. Due to the vagueness of the purpose and need statement, the MRRMP-EIS is permitted to use criteria for the selection of an alternative that have little to do with accomplishing species objectives, and much to do with ensuring that the selected alternative maximizes human consideration interests. To remedy this inadequacy, the Coalitions request that the Corps reformulate its purpose and need statement to efficiently identify the agency's BSA responsibilities and produce an EIS which properly focuses on species objectives.

1. Due to the vague purpose and need statement, the selection of a preferred alternative is not determined by species goals but by virtually boundless human considerations.

Under NEPA, an EIS must "be written in plain language and may use appropriate graphics so that decision makers and the public can readily understand [it]." 17 An EIS must "concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail." 18 As a result of the MRRMP-EIS's vague purpose and need statement, the alternatives analysis is permitted to rely on convoluted analyses of human consideration impacts which have no connection to accomplishing species objectives. This dynamic can be witnessed in the first chart of the MRRMP-EIS, which presents the alternatives in comparative form. 19 The chart violates NEPA's requirement to provide the public with meaningful analysis, making it nearly impossible for the public to understand the consequences of the alternatives for the species and for the environment. 20

First, the material in the chart fails to make meaningful comparisons among the alternatives as they pertain to species objectives. Out of about twenty impact categories listed on the chart, only two are related to the species and both are vague. For the first species criterion, "Addresses Critical EA Pallid Hypothesis," the word "yes" is simply repeated under each alternative's column. This repeated affirmation draws no distinctions among the alternatives regarding their relative effectiveness in accomplishing the pallid sturgeon hypotheses. Likewise, for the criterion "Expected to Meet Revised Bird Targets," the chart repeats the word "meets" for each action alternative besides Alternative 2, which apparently "exceeds" revised bird targets. How Alternative 2 exceeds the bird targets or by how much it exceeds the targets is not indicated.

Second, the chart employs different metrics for different impacts, complicating how the impacts are weighed within and among the alternatives. Below the two lines addressing species objectives, the chart exhaustively lists monetized impacts to human considerations. However, impacts to environmental factors are treated on a different scale using numerical indicators ranging from - 2 to 2. For example, the chart shows that Alternative 2 is the only alternative which would increase program expenditures, but it is also the only alternative with a positive Regional Economic Development (RED) value. Additionally, no other alternative besides Alternative 2 would offer "+2" to both "Fish and Wildlife" and "Other Special Status Species." How these different factors are weighed against each other is a mystery which the MRRMP-EIS never explains.

Third, there are no summations of monetary or non-monetary values that would allow the alternatives

to be compared in the aggregate. For example, the only characteristic of the chart which clearly distinguishes the preferred Alternative 3 from the others is the chart's color scheme. Alternative 3 has more green boxes and fewer red boxes than the other alternatives, but this does little to harmonize the convoluted metrics of the chart. The Executive Summary is supposed to enable the public to understand the project without reading the entire MRRMP-EIS, but the inconsistencies between the Executive Summary's graph and the purpose and need statement show how it fails to do so.

It is not until later in the MRRMP-EIS, shrouded within the lengthy alternatives analysis itself, that the selection of Alternative 3 is justified because it "has a wide range of benefits relative to Alternative 1, including certain benefits to endangered species, reduced program expenditures, and increased performance for most HCs."²¹ The MRRMP-EIS even states that Alternative 3 can be selected although it is less likely to meet species goals than Alternative 2:

Although there are uncertainties associated with its effectiveness in meeting the species objectives (in common with Alternative 4, 5, and 6), Alternative 3 clearly demonstrates it would be the least impactful means of potentially meeting species objectives across the full range of interests. ²² [Emphasis added]

This statement begs several questions. Why would alternatives be proposed which contain appreciable "uncertainties associated with [their] effectiveness in meeting" species goals?²³ Why does the chart provided in the Executive Summary distinguish effectiveness only by using the word "Exceeds" for Alternative 2's piping plover and interior least tern objectives? Why is the preferred alternative the one that potentially meets species objectives when the entire purpose of the MRRMP-EIS is to avoid jeopardy? One reason why these questions are difficult to answer is because the MRRMP-EIS does not clearly identify its goals and the means of accomplishing them in its purpose and need statement. The statement fails to bound what considerations are truly significant for accomplishing species objectives, and the alternatives analysis follows suit by confounding the analysis with virtually limitless human consideration impacts.

2. The Corps should correct the purpose and need statement and produce an environmental impact statement that more efficiently focuses on species goals.

To properly redirect the analysis of the MRRMP-EIS towards the purpose of avoiding jeopardy to and restoring the natural viability of the three species, the Coalitions urge the Corps to adopt the following purpose and need statement:

The purpose and need of this MRRMP-EIS is to develop a suite of actions to avoid jeopardizing the continued existence of the piping plover, the interior least tern, and the pallid sturgeon in accordance with the Endangered Species Act and other Congressional directives mandating the protection and restoration of the ecological health of the Missouri River. To avoid jeopardy and secure the long-term natural viability of the three species, each alternative set of management actions must at minimum accomplish the following species objectives:

- Pallid sturgeon: increase recruitment to age 1 and maintain or increase numbers of age 2 and older until sufficient and sustained natural recruitment occurs.
- Piping plover: maintain and increase a geographically distributed population with a modeled 95% probability that at least 50 individuals will persist for at least 50 years in both Regions.
- Interior least tern: it is assumed that achieving the stated objectives for the piping plover would also achieve ESA goals for the interior least tern. ²⁴

Management actions utilized to meet this purpose and need include but are not limited to:

mechanically and flow-created emergent sandbar habitat, construction of early life stage habitat, habitat-forming seasonal flow releases, floodplain reconnection, and a robust adaptive management plan.

The MRRMP-EIS provides "fundamental" and "sub objectives" for each species, but summarizing them as part of the purpose and need statement itself would properly narrow the project's goals and the means of accomplishing them. As a result, ESA goals would be clarified and prioritized over human consideration impacts. The Corps could then use a chart to compare the relative effectiveness of each alternative in accomplishing those goals. For example, the chart could display how Alternative 2 "exceeds" the goals for the piping plover and interior least tern, along with how each alternative is projected to affect pallid sturgeon recruitment. The chart could truncate human consideration impacts into a single intelligible value for each alternative, and allow the body of the alternatives analysis to explain in more detail how each alternative affects those economic interests.

B. Even if the MRRMP-EIS Gives Proper Weight to Human Considerations, the Purpose and Need Statement Does Not Provide the Public an Honest Description of the Project's Goals.

Despite the weight given to the economic impacts on human considerations in the selection of a preferred alternative, 25 the term "human considerations" is mentioned merely once in the Executive Summary- not in either the "Need for the Plan" or "Purpose for the Plan" sections but near the end of the Executive Summary under the heading "Implementation of Preferred Alternative under Adaptive Management." 26 Later in the MRRMP-EIS, the "Problem Definition" section adds to the "suite of actions" language that the plan "continues to serve the Missouri River authorized purposes and accounts for human considerations." 27 Then in Chapter 4 on implementation of the preferred alternative (about 800 pages into the MRRMP-EIS), the Corps plainly states: "[m]inimizing impacts on HC while fulfilling the requirements of the ESA is an objective of the [MRRMP-EIS]." 28

Even assuming the Corps grants permissible weight to the expansive range of human considerations in the selection of a preferred alternative, the Corps should more candidly acknowledge that weight in its purpose and need statement. The Corps' failure to identify human considerations as a component of its purpose and need statement misleads members of the public into believing that the analysis focuses primarily on alternative means of restoring the viability of the three species, when in fact the analysis attempts to meet species goals through alternative ways of minimizing human consideration impacts. For the MRRMP-EIS as currently structured to comply with NEPA, the Coalitions propose that the Corps modify the purpose and need statement to the following:

The purpose and need of this MRRMP-EIS is to develop a suite of actions that potentially meet ESA responsibilities for the piping plover, the interior least tern, and the pallid sturgeon while reducing federal program expenditures and minimizing economic impacts to stakeholders.

This version of the statement adequately reflects the uncertainty of the MRRMP-EIS in meeting BSA obligations and is sufficiently expansive to show the balancing test which the MRRMP-EIS conducts regarding species goals, program expenditures, and human considerations. While the Coalitions urge the Corps to adopt the purpose and need statement suggested in part (A)(2) of this section and thereby narrow the scope of the MRRMP-EIS's analysis to focus on species objectives, this alternative version of the statement is offered to demonstrate how the Corps can more candidly acknowledge the scope of the MRRMP-EIS as it is currently structured.

II. THE ALTERNATIVES ANALYSIS OF THE MRRMP-EIS DOES NOT COMPLY WITH NEPA.

Federal regulations require an EIS to analyze "alternatives to the proposed action."²⁹ The alternatives analysis is "the heart of the environmental impact statement."³⁰ At a minimum, the EIS must include in its alternatives analysis "information sufficient to permit a reasoned choice of alternatives."³¹ The discussion of alternatives shall be "in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public."³² The EIS need not investigate unreasonable or speculative alternatives, nor consider "every alternative device and thought conceivable by the mind of man." ³³ However, "the existence of a viable but unexamined alternative renders an environmental impact statement inadequate."³⁴ Furthermore, agencies cannot "disregard alternatives merely because they do not offer a complete solution to the problem" or because alternatives would require authorization outside the agency's authority. ³⁵

The MRRMP-EIS presents six alternatives including a "No Action Alternative" in accordance with Council on Environmental Quality (CEQ) Regulations. ³⁶ The No Action alternative is "best defined as 'no change' from current management direction or level of management intensity in situations that involve updating management plans or ongoing programs." ³⁷ The five additional alternatives can be summarized as follows:

- Alternative 2 - USFWS 2003 Biological Opinion Projected Actions: this alternative is based on the "interpretation of the management actions that would be implemented as part of the 2003 Amended BiOp RPA." The No Action Alternative and Alternative 2 are the only two alternatives that rely solely on the 2003 BiOp created by the USFWS. The difference between the two alternatives is that the No Action Alternative is the "continuation of the management actions USACE has implemented to date for BiOp compliance." As an improvement over No Action, "Alternative 2 includes additional iterative actions and expected actions."³⁸
- Alternative 3 - Mechanical Construction Only: in addition to the management actions common to all alternatives, this alternative includes the provision that "current System operations as described in the Master Manual would continue except the spring plenary pulse and reservoir unbalancing would not be implemented."³⁹ Alternative 3 also includes additional management actions such as proactive adaptive management, Level 1 and II studies, and spawning habitat construction.
- Alternative 4 - Spring ESH Creating Release: this alternative includes the management actions common to all alternatives and the additional management actions presented in Alternative 3. The only management action that is unique to this alternative is the spring habitat-creating flow release "designed to create ESH for the interior least tern and piping plover."⁴⁰
- Alternative 5 - Fall ESH Creating Release: like Alternative 4, this alternative includes both the management actions common to all alternatives and the additional actions outlined in Alternative 3. The action that is unique to this alternative is a fall habitat-creating flow release "designed to create ESH for the interior least tern and piping plover" but under different river conditions and flow specifications than the spring flow release of Alternative 4.⁴¹
- Alternative 6 - Pallid Sturgeon Spawning Cue: like Alternatives 4 and 5, this alternative includes management actions common to all alternatives and the additional actions outlined in Alternative 3, except this alternative does not include the one-time spawning cue release outlined in Alternative 3. This is because "the management action unique to Alternative 6 is a recurring pallid sturgeon spawning cue release" which would be attempted "every 3 years consisting of a bimodal pulse in March and May."⁴²

The actions that are common to each alternative are vegetation management, predator management, human restriction measures, flow management to reduce take, monitoring and research, propagation and augmentation, the Pallid Sturgeon Population Assessment Project (PSPAP), and monitoring and evaluation related to recruitment. ⁴³ Additionally, mechanical ESH creation, early life stage habitat construction, and adaptive management (AM) are utilized in each of the six alternatives but to different degrees. ⁴⁴

A. The Substantial Differences Between Alternative 2 and Alternatives 3 Through 6 Demonstrate the Unreasonableness of the Range of Alternatives.

The MRRMP-EIS does not present an adequate range of viable alternatives, rendering the statement inadequate. While each of the six alternatives share management actions to benefit the three species, the substantial differences between Alternative 2 and Alternatives 3 through 6, particularly with respect to habitat construction and the use of AM, demonstrate that the range of alternatives is unreasonable. In addition, Alternatives 3 through 6 are so similar that the only meaningful differences between the alternatives appear in the differences between Alternative 2 and Alternative 3. The MRRMP-EIS therefore violates NEPA by failing to evaluate a reasonable range of alternatives and by leaving unexamined viable and reasonable alternatives that could more effectively utilize a combination of available management actions.

1. The differences in mechanical emergent sandbar habitat construction are unreasonable.

One of the most dramatic differences separating Alternative 2 from the remainder of the alternatives is the relative amount of mechanically constructed ESH and its associated costs. Alternative 2 would have the Corps construct about nine times more ESH per year than the next highest amount of Alternative 3 (3,546 acres versus 391 acres).⁴⁵ The MRRMP-EIS states that construction amounts vary to reflect what would need to be built after accounting for ESH created by flow releases. However, the amounts of ESH created by the various flow releases of Alternatives 3 through 6 are nowhere clearly identified. In fact the Corp's 2011 EIS, which was devoted to analyzing ESH construction, affirmatively concluded based on prior Corps studies that flow releases were not an effective or certain means of ESH creation to meet the goals of the 2003 BiOp.⁴⁶ The MRRMP-EIS's reliance on flow releases in the context of required ESH construction is therefore highly questionable.

Alternative 2's ESH construction is projected to cost \$8.6 billion over 50 years (relative to No Action), which is more than half the total Alternative 2 implementation cost of \$15.8 billion.⁴⁷ Moreover, Alternative 2 is the only alternative that yields a net increase in total implementation costs, and the cost increase is 378%.⁴⁸ Table 1 below compares each alternative's ESH construction amounts, total program expenditures, and the percentage increase or decrease of program expenditures relative to the No Action Alternative:⁴⁹

[Table 1: Emergent Sandbar Habitat Construction]

Considering the expenditures necessary to meet Alternative 2's ESH targets, Table 1 shows that the range of alternatives is unreasonable under NEPA based on ESH construction alone. The Corps does nothing more than intimate that the flow releases of Alternatives 3 through 6 may bridge the gaps in ESH between Alternative 2 and the rest by creating sandbar habitat through sediment deposition: "flows that are high relative to the elevation of existing sandbars have the potential to mobilize and deposit sediment at high enough elevations to create new sandbars when water levels recede," and "the amount of habitat created depends on the magnitude and duration of the flow release and the area of sandbar present prior to the release."⁵⁰ The Corps provides no details on estimated amounts of ESH created through flow releases.

Alternatives 3 through 6 include the creation of ESH in slightly different amounts. Those differences are small, especially when compared to the differences between Alternative 2 and Alternative 3, and may not be correct due to the uncertainty of the effects of flow releases on habitat creation.

To meet the 2003 BiOp's recommended 11,886 total acres of ESH creation, the USFWS has recommended subdividing ESH construction on segments of the river:

Below Garrison Dam - 50 acres of ESH per river mile
 Below Fort Randall Dam - 20 acres of ESH per river mile
 Lewis and Clark Lake - 80 acres of ESH per river mile
 Below Gavins Point Dam- 80 acres of ESH per river mile⁵¹

The MRRMP-EIS presents the ESH data in terms of: average ESH construction in build years, average ESH construction in all years, percent of years construction is anticipated, the 2.5% construction amount, the median ESH construction amount, and the 97.5% construction amount.⁵²

When comparing all of these values for Alternatives 3 through 6, Alternative 3 has the highest value in each category and Alternative 4 has the lowest value in each category.⁵³ While these high and low values for Alternatives 3 and Alternative 4 vary greatly in comparison to each other, they barely compare to the differences between Alternative 2 and Alternative 3. That discrepancy can be seen in Table 2 below in the category of average ESH construction in build years. Alternative 2 would achieve 3,546 acres of ESH, Alternative 3 would achieve 391 acres of ESH, and Alternative 4 would achieve 240 acres of ESH.⁵⁴ Therefore there is an-160.3% difference between Alternative 2 and Alternative 3, making the difference between Alternative 3 and Alternative 4 (the alternative with the least ESH creation between Alternatives 3 through 6) negligible. Table 2 shows these extreme differences between the alternatives for ESH construction:

[Table 2: Average Emergent Sandbar Habitat Construction]

The differences in ESH creation among Alternatives 3 through 6 are negligible: "under Alternative 3-6 mechanical construction amounts vary because this management action would be used to create enough ESH to meet bird habitat targets after accounting for the amount of ESH created by System operations under each alternative."⁵⁵ Therefore, those four alternatives would be creating virtually the same amount of ESH.

2. The differences in spawning habitat construction are unreasonable.

In addition to the substantial differences in the amount of ESH construction between Alternative 2 and Alternatives 3 through 6, the differences in spawning habitat construction, a management action intended to avoid jeopardy to the pallid sturgeon, are significant and unexplained. Spawning habitat construction is not included as a management action in Alternative 2 but is included in Alternatives 3 through 6. Spawning habitat construction calls for the Corps to "construct up to three high-quality spawning habitat sites"⁵⁶ which would be continually monitored for "the relative spawning success, as determined by hatch rate, catch per unit effort of free embryos, and other indicators."⁵⁷

In theory, the use of spawning habitat sites would help protect the pallid sturgeon, but "sufficient understanding to characterize the necessary features of high quality pallid sturgeon spawning habitat does not exist."⁵⁸ Even though "sites would be constructed following initial studies to further clarify habitat specifications," there is a possibility that the sites would not provide any significant benefits to the pallid sturgeon spawning season or overall population.⁵⁹ Spawning habitat construction would be time-consuming due to waiting on initial studies to be concluded before commencing construction. It would also be expensive with a total cost of \$1,109,735 and an annual cost of \$123,304. Given the uncertainty surrounding spawning habitat construction, these funds could be put to better use on management actions that have proven benefits to the pallid sturgeon, such as early life stage habitat construction.

The use or nonuse of spawning habitat construction is a substantial difference between Alternative 2 and Alternatives 3 through 6 because Alternative 2 does not incorporate this management action at all. There are other options that are available and reasonable other than simply excluding or including the creation of spawning habitat. Since spawning habitat creation has not been sufficiently studied, it is reasonable to consider an alternative in which proactive AM, including Level 1 and 2 studies, is first used to assess the specifications of spawning habitat construction and to determine whether the action would have positive impacts on the pallid sturgeon. An alternative using a middle-ground approach to spawning habitat construction would potentially be more effective than either including or excluding spawning habitat construction.

3. The disparate treatment of shallow water habitat and interception rearing complexes is unreasonable.

Another management action that provides benefits to the pallid sturgeon is early life stage habitat construction. Early life stage habitat is defined in the MRRMP-EIS as habitat that allows for spawning, food-producing, foraging, and free embryo interception and retention.⁶¹ Early life stage habitat construction includes both shallow water habitat (SWH) and intercepting rearing complexes (IRC), which are defined below. The Corps states "the SWH restoration goal as outlined in the 2003 Amended BiOp is to achieve an average of 20-30 acres of SWH per river mile."⁶² The 2003 BiOp further states "an estimated 8,000 to 14,000 additional acres of shallow water habitat must be established."⁶³ To meet the BiOp goal, Alternative 2 and Alternatives 3 through 6 differ not only in the volume of early life stage habitat construction but also in the type of habitat that is created. SWH is utilized only in Alternatives 1 and 2 and IRCs are utilized only in Alternatives 3 through 6. Both types of habitat creation utilize channel reconfiguration to meet their early life stage habitat construction goals. IRCs are defined briefly as "interception, food-producing habitats, and foraging habitats."⁶⁴ These terms are in turn clarified:

(1) food-producing habitat occurs where velocity is less than 0.08 meters per second (m/s); (2) foraging habitat is defined as areas with 0.5- 0.7 m/s velocity and 1- 3 m depth; and (3) interception habitat has been qualitatively described as zones of the river where hydraulic conditions allow free embryos to exit the channel thalweg. A functional IRC exists where the juxtaposition of the described habitats is such that all three functions are performed and collectively contribute to survival to age-1.⁶⁵

In contrast, SWH is defined as "rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon" and is explained no further.⁶⁶ Thus, the precise differences between SWH and IRC are unclear because SWH itself is not clearly defined. Further, because the Corps still needs "research and assessment to determine whether and why IRCs contribute to increased growth and survival,"⁶⁷ it is unclear if IRCs will be better than SWH for the pallid sturgeon.

In Alternative 2, "USACE would achieve the upper end of this acreage target (i.e., 30 acres per river mile between Ponca, Nebraska, and the mouth)."⁶⁸ This means that a total of 10,758 acres of SWH must be created in Alternative 2. Of that total, "approximately 9,858 acres of in-channel SWH would be created through channel widening" while about 900 acres would be created through off-channel backwaters.⁶⁹ To meet these targets, the Corps would need to acquire 5,937 additional acres of habitat land within a total of 45,716 acquired acres.⁷⁰

The amount of land and SWH creation in Alternative 2 is drastically different than the amounts of IRC that are outlined for Alternatives 3 through 6. Those alternatives make no mention of how the acreage

of IRC relate to the 2003 BiOp's species goals, nor do they mention how many acres of habitat would actually be constructed. They do state that approximately 260 acres of channel widening would occur per year in 13 out of the 15 years, reflecting about 3,380 acres of "accommodation space for new IRC habitat."⁷¹ This amount of acreage would require 230 acres of acquired habitat land and 1,772 acres of total additional acquired land.⁷² The difference in acreage of early life stage habitat construction is large between Alternative 2 and Alternatives 3 through 6. While Alternative 2 creates almost 10,000 acres of SWH through channel widening, it is unlikely that the 3,380 acres of channel widening found in Alternatives 3-6 would create IRC in an amount anywhere close to Alternative 2.

The gap between the amounts of habitat created in Alternative 2 and Alternatives 3-6 calls for the consideration of other viable alternatives. Alternative 2 discusses how many acres of habitat would be created through channel widening but makes no mention of how many acres of channel widening would occur, and Alternatives 3 through 6 do not mention how many acres of habitat will be created but do mention how many acres of channel widening will occur. The MRRP-EIS uses different sets of units in Alternative 2 and Alternatives 3-6 and fails to explain the correlation between them. However, when describing Alternative 3 in Tables 2-20 and 2-21, the units change but the numbers stay the same. ⁷³ For example, Table 2-20 has a column with the heading "Target Acres of Channel Widening." Table 2-21 uses those same values in a column headed "Target Acres of SWH."⁷⁴ This creates confusion over the meaning of the acreage numbers and makes it impossible to assess the validity of the range of alternatives based on the early life stage habitat management action. The data is inconsistent and cannot be directly compared.

Table 3 below outlines the amount of early life stage habitat created by Alternative 2 in comparison to Alternatives 3-6, showing a 68.6% difference in target acreage. It is difficult to believe that this significant difference in acreage does not impact the alternatives' ability to meet species goals.

[Table 3: Target Acres of Shallow Water Habitat in Alternatives]

Furthermore, the MRRMP-EIS does not sufficiently discuss the differences between SWH and IRC. While the MRRMP-EIS does assess the process of channel widening, the types of needed habitat for the pallid sturgeon, and the types of structures, nowhere does it explain which types of structures would need to be utilized.

The IRC habitat also requires additional "research and assessment to determine whether and why IRC's contribute to increased growth and survival," meaning that it is possible that IRC's may not be beneficial to the pallid sturgeon. ⁷⁶ In contrast, the creation of SWH does not have the same level of uncertainty. Because of the difference, SWH and IRC should not be considered comparable or interchangeable techniques for habitat creation.

The MRRMP-EIS does not specify what would happen if the results of the research on IRC show that it does not benefit the pallid sturgeon. If the results are negative and there is no substitute action, then Alternatives 3 through 6 lose a large portion of their beneficial effects for the pallid sturgeon. It is therefore unclear why there are no alternatives in which both SWH and IRC habitat creation are proposed. While they have the same goal of providing benefits to the pallid sturgeon, they are different methods of achieving this goal and thus it would be reasonable to include variations of both in the alternatives analysis.

Along with these differences in the management actions of Alternative 2 and Alternatives 3 through 6, there is a huge cost difference between the alternatives, which leaves room for middle ground alternatives. Table 4 below shows some of the total costs associated with early life stage habitat construction for each alternative:

[Table 4: Total Costs of Early Life Stage Habitat Construction Per Alternative]

In every category, Alternative 2 is much more expensive than Alternatives 3 through 6. Alternative 2 has much greater costs than the No Action Alternative with differences ranging from about 60 to 150 percent whereas Alternatives 3 through 6 save much more than the No Action Alternative with differences ranging from about -30 to -120 percent. There is clearly room for additional reasonable and feasible alternatives to create early life stage habitat with costs that fall between the ranges of Alternative 2 and Alternatives 3 through 6.

4. The exclusion of an updated adaptive management plan from Alternative 2 is unreasonable.

There is also a substantial difference between Alternative 2 and Alternatives 3 through 6 in the ways that AM is implemented. This difference creates a large discrepancy between Alternative 2 and Alternatives 3 through 6 and leaves room for alternatives that implement the more proactive management plan.

The AM plan for Alternative 2 "is similar to the AM approach that the Corps has been implementing since 2009 and described for Alternative 1."⁷⁸ However, it appears that the current AM approach is outdated and a new AM plan has been created for the other alternatives. In fact, the Bi Op calls for a robust AM plan,⁷⁹ so it should be incorporated in all the alternatives. Therefore, even though the current AM approach in Alternative 2 "would be modified to address specific alterations to proposed management actions as described in the November 5, 2015, Planning Aid Letter from USFWS," it would only be used in connection with "management actions implemented by the Corps as part of Alternative 2."⁸⁰ In Alternatives 3 through 6, the Corps "would follow the AM Plan that was developed based on the results of the Effects Analysis," which is much more proactive.⁸¹ This new AM plan is based on more recent studies than the AM plan for Alternative 2. In addition, this new AM plan "identifies the process and criteria to implement the initial management actions, assess hypotheses, and introduce new management actions should they become necessary."⁸² The EIS does not explain why Alternative 2 retains the outdated AM approach rather than adopting the newer and more robust AM approach based on the Effects Analysis.

The new AM plan would provide more benefits to the species than the old plan because it would use new management actions if they are proven beneficial, whereas the plan in Alternative 2 only studies the management actions present in that alternative. The new AM plan for Alternatives 3 through 6 "was designed to address uncertainty related to management for the species and meet updated species objectives that were developed based on results of the effects analysis."⁸³ Its purpose is to "improve decision-making in light of uncertain future trends in habitat availability and improved understanding of various management actions."⁸⁴ These forward-looking purposes make this AM plan superior to the current plan used in Alternative 2.

Further, the Corps provides no reason for its failure to include the more recent and more effective AM plan in Alternative 2. The clear difference between the use of the older AM for Alternative 2 and the use of the newer AM in Alternatives 3 through 6 leaves room to develop viable alternatives that resemble Alternative 2 but which include the more proactive and newer AM plan of Alternatives 3 through 6.

In sum, there is an unreasonable gap concerning AM between Alternative 2 and Alternatives 3 through 6, leaving room for middle ground viable alternatives where the proactive AM plan is utilized in accordance with management actions on the scale of Alternative 2.

B. Alternatives 3 Through 6 Are So Similar That Only Alternatives 2 and 3 Contain Meaningful Differences.

As indicated above, Alternative 2 is substantially different from Alternatives 3 through 6, leaving ample room for viable alternatives that combine the most effective management actions. In addition, Alternatives 3 through 6 display no meaningful differences. As a result, the EIS practically considers only two alternatives in addition to the No Action Alternative.

Not only do Alternatives 3 through 6 share the management actions that are common to all six of the alternatives, but Alternatives 3 through 6 also include the same Level 1 and Level 2 studies, spawning habitat construction, and the construction of early life stage habitat. The only distinction among them is in the nature and timing of flow releases:

- Alternative 3 has no flow releases.
- Alternative 4 is like Alternative 3, but adds a spring ESH-creating release.
- Alternative 5 is like Alternative 3, but adds a fall ESH-creating.
- Alternative 6 is like Alternative 3, but includes a spawning-cue release instead of a spring or fall release.

The spring and fall flow releases found in Alternatives 4 and 5 do not represent a meaningful difference because their effects are virtually indistinguishable. Nor do the flow releases distinguish Alternatives 4 and 5 from Alternative 3 because they will take place too infrequently to matter. Although the flow releases are intended to "create ESH for the least tern and the piping plover," the MRRMP-EIS at no point discusses the amount of ESH that would result, stating simply that the flow releases will "be adjusted to respond to hydrologic conditions at the time."⁸⁵ Practically speaking, the years that the flow releases will not occur are far more frequent than the years in which they will occur partially or to completion.

In terms of the modeling for Alternative 4, the MRRMP-EIS indicates that during the 82-year period of record (POR), "the spring habitat-creating flow release as defined here would have been implemented 10 times and would have been partially implemented 7 times."⁸⁶ This means that the flow release is only fully implemented 12.2% of the 82-year POR. The modeling for Alternative 5 indicates that during the 82-year POR, "the fall habitat-creating flow release as defined here would have been implemented 7 times and would have been partially implemented 2 times."⁸⁷ This means that the flow release is only fully implemented 8.54% of the 82-year POR. The infrequency of the habitat creating flow release raises doubt that the ESH goals of the 2003 Bi Op will be met through utilization of flow releases. The infrequency of the flow releases and the unlikelihood that the ESH goals of the 2003 Bi Op will be met show that Alternatives 4 and 5 are neither meaningfully different from, nor more effective than, Alternative 3.

Alternative 6's recurring spawning-cue flow release likewise differs only slightly from Alternatives 3 through 5. ⁸⁸ Alternatives 3 through 5 contain a one-time spawning cue flow, which is replaced by the recurring release in Alternative 6. The recurring release requires the Corps to "attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May."⁸⁹ However, just as with the flow releases in Alternatives 4 and 5, the spawning-cue release will "be adjusted to respond to hydrologic conditions at the time."⁹⁰ The model for Alternative 6 "indicates that over the 82-year POR, the spawning-cue release as defined here would have been implemented 11 times and would have been partially implemented 33 times."⁹¹ This means that the spawning cue release is only fully implemented 13.4% of the 82-year POR.

As in Alternatives 4 and 5, the lack of frequent implementation in Alternative 6 shows that there is no evidence that the spawning cue release would have significant positive impacts on pallid sturgeon

goals. In addition, the spawning-cue release has not yet been proven to be effective to the spawning patterns of the pallid sturgeon: "the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. The Independent Science Advisory Panel (ISAP) found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning."⁹² Just as the infrequency of the flow releases and the unlikelihood that ESH would be created meant that Alternatives 4 and 5 differed only slightly from Alternative 3, the infrequency of the spawning-cue release and the consequential lack of a positive impact on the species make it very much like Alternative 3. Table 5 below outlines the years of full and partial implementation of flow releases over the 82 year POR for Alternatives 4, 5, and 6 showing the infrequency of the flow releases and ultimately the ineffectiveness of flow releases as a management action:

[Table 5: Implementation of Flows in Alternatives 4, 5, and 6]

The management actions that supposedly distinguish Alternative 3 from Alternatives 4 through 6 will occur less than 14% of the time over an 82-year period. It is also likely that the management actions will provide little assistance to the species beyond that found in Alternative 3. Furthermore, none of Alternatives 4 through 6 have additional costs associated with them because of their varying flow releases, so they purportedly cost the same as Alternative 3.⁹³ Because Alternatives 3 through 6 are essentially the same, the range of alternatives falls short of meeting the requirements of NEPA.

C. The Corps Should Produce Reasonable and Feasible Alternatives Combining the Best Management Actions Among Alternatives 2 Through 6.

Due to the lack of a reasonable range of alternatives in the MRRMP-EIS, and the large differences between Alternatives 2 and 3 through 6, there should be reasonable and feasible alternatives that combine the most cost-effective actions from each.

ESH Construction. As described above, Alternative 2 differs from Alternatives 3 through 6 in the amount of ESH construction. The amount of ESH construction proposed in Alternative 2 varies by 88.97% from Alternative 3. ⁹⁴ In addition, the cost of the proposed ESH construction for Alternative 2 is 91.7% greater than the cost of ESH construction for Alternative 3.⁹⁵ Both Alternatives 2 and 3 only create ESH through mechanical means and so it makes sense to compare them directly. The Corps should consider an alternative in which the average ESH construction in build years falls between the 3,546 acres of Alternative 2 and the 391 acres constructed in Alternative 3,⁹⁶ capturing the economy of Alternative 3 and the effectiveness of Alternative 2's ESH construction.

Adaptive Management Planning. Spawning habitat construction, spawning cue releases, and IRC for early life stage habitat construction need further study before they can be effectively implemented. The alternatives present two types of iterative actions that could be utilized to study the effectiveness of these management details: proactive AM⁹⁷ and Level 1 and 2 studies. ⁹⁸ The Corps endorses both as effective means of understanding how to prevent jeopardy to the species, but neither is included in Alternative 2. The Corps should propose at least one alternative that contains the most effective actions of Alternative 2 but also incorporates proactive AM and Level 1 and Level 2 studies.

Such an alternative could be designed to meet the species goals without immediately using spawning cue releases or spawning habitat construction as described in Alternative 2, but could utilize the new AM Plan to implement spawning cue releases and spawning habitat construction if further study finds them to be effective ways of protecting the pallid sturgeon. This alternative could make use of SWH while waiting on completion of the Level 1 and 2 studies for IRC. The immediate implementation of SWH could benefit the species while the IRC could later be implemented more fully if its effectiveness

is demonstrated. Alternatives that include a mix of SWH and IRC are viable options because they could provide the most benefit to the species without wasting time and money. Additionally, if the IRC is not found to be effective then there is already some SWH in place to provide benefit to the species.


Floodplain Connectivity. The management action of floodplain connectivity only appears in Alternative 2. In the 2003 BiOp, the USFWS states that floodplains are necessary for pallid sturgeon survival: 99

Floodplain inundation and connectivity is essential in order to maximize the production of the forage base for pallid sturgeon. The forage base production must occur at a time that coincides with larval sturgeon becoming active, free swimming feeders. Floodplains are highly productive habitats in the late spring and early summer when warm, shallow water floods over the area and produces a bloom of forage that is of the appropriate size for larval fish to eat. Since larval and juvenile pallid sturgeon feed along the river margins, the productivity must be transported from the inundated low-lying lands to the river as flows recede. Additionally, low-lying lands are an extremely important source for other floodplain spawning fish which subsequently support the forage base for adult pallid sturgeon through the summer and fall. Highly productive floodplains are necessary on a frequent annual basis to provide necessary life requisites for pallid sturgeon survival.

Moreover, the mapping done by the Corps shows that "156,480 acres of floodplain connectivity are currently present, not including the area of the main channel," and the USFWS gave the Corps criteria which "stated that this management action should maximize floodplain habitat by ensuring that 77,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance." 100 The difference in acreage shows that improving floodplain connectivity of the Missouri River is an effective tool for benefitting the pallid sturgeon. However, the MRRMPEIS does not explain how floodplain connectivity would occur within the river, instead simply stating that "it is assumed that operations would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously" for Alternative 2. 101 Alternative 2 is the only alternative that mentions floodplain connectivity, so it can be reasonably assumed that Alternatives 3 through 6 do not actually meet the floodplain connectivity goals.

It is unclear why floodplain connectivity was not considered in Alternatives 3 through 6. The MRRMP-EIS states that there is "no implementation cost" to floodplain connectivity and so there is no economic reason not to consider the management action within the other alternatives. 102 Therefore, middle ground alternatives between Alternative 2 and Alternatives 3 through 6 should include varying levels of floodplain connectivity to ensure beneficial impacts to the pallid sturgeon.

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Correspondence Text

RE: State of Iowa comments relative to the Draft Missouri River Recovery Management Plan and Environmental Impact Statement

Thank you for the opportunity to comment on the December 2016 Draft Missouri River Recovery Management Plan (MRRMP) and Environmental Impact Statement. Multiple State agencies reviewed the draft and provided input for this letter. We will comment first on support for the preferred alternative, followed by concerns regarding the selected alternative, and conclude with comments on the draft Adaptive Management Plan.

Overall, and with some points of concern, the State supports the selection of the Preferred Alternative (Alternative 3--Mechanical Construction Only).

Alternative 3 best balances the interests of all Iowans, considering the eight priorities (represented by the authorized purposes) that must be addressed in implementation of the MRRMP.

Alternative 3 has a positive impact on waterway navigation in every area that was studied as part of the analysis (NED transportation savings, RR&R costs, RED employment and income, and OSE air quality) as indicated in the Navigation Environmental Consequences Analysis Technical Report. Alternative 3 also has more positive impacts on flood risk management for Iowa than the other alternatives, as indicated by NED (and to a lesser degree, RED Jobs and Income, and OSE People At Risk) impacts for the Gavins Point Dam to Rulo reach cited in the Flood Risk Management Environmental Consequences Analysis Technical Report. This is ideal for Iowa Department of Transportation (DOT) infrastructure and Iowa landowners as it is expected to be an overall improvement from the current management practices (Alternative 1). Alternatives 2, 4, and 6 are projected to have a negative impact on navigation, particularly Alternative 2, which includes low summer flows that would limit barge traffic on the river and shorten the navigation season overall, as documented in section 3.2 of the Technical Report. Support cannot be given to Alternative 2, Alternative 4, or Alternative 6 due to the potential negative impacts on navigation and flood risk, as

well as the fact that these would require a complicated and lengthy process to update the Missouri River Mainstem Reservoir System Master Water Control Manual.

Under Alternative 3, higher river flows combined with reduced water temperatures will help provide an overall electricity generation increase compared to the No Action Alternative. These effects will provide the best mix of cost effective, reliable supply from both thermal as well as hydroelectric generation for Iowa ratepayers. Additionally, utility stakeholders who were contacted had no issues with the preferred alternative (Alternative 3). In Iowa, there are four coal fired power plants with a total capacity of approximately 2,800 megawatts located near the Missouri River. Some of these thermal generation units depend on the river for cooling water and ash handling. Without the needed stages and flows, these units do not have sufficient cooling capacity to operate, forcing the owners to generate power from more expensive units or purchase power at wholesale market rates. These plants provide year-round base load energy for Iowa industries, commercial businesses, and residential customers, and are critical to the economic well-being of the state of Iowa.

As summarized in the Hydropower Environmental Consequences Analysis Technical Report, Alternative 3 provides the best economic impact result for hydropower generators. Iowa's consumer-owned electric utilities include rural electric cooperatives (REC's) and municipal utilities. These Iowa based utilities, along with approximately 300 other consumer-owned utilities in the Missouri River Basin, also have a critical dependence on the Missouri River. The Western Area Power Administration (WAPA) supplies them with electric power generated by six hydroelectric facilities located on the river. Changes in Missouri River operations can affect Iowa consumer-owned utilities that purchase power from WAPA. When WAPA cannot generate enough hydroelectric power to fulfill its contractually obligated agreements due to low water, WAPA must go to the open market and purchase electricity, often at higher costs, which are passed on directly to the consumer-owned utilities that receive electricity from WAPA.

The selection of Preferred Alternative (Alternative 3) also generated a number concerns and comments related to the need to address all of the authorized uses, the importance of addressing a broad range of native fish and wildlife species, and concerns over water quality aspects of habitat construction.

The Missouri River is an important resource for both the citizens of Iowa, and for the wildlife that depends on it. While supportive of all eight authorized purposes, the State has a prioritized interest in flood risk reduction and efforts that are aligned with the State's Nutrient Reduction Strategy. Habitat mitigation efforts were intended to benefit a wide variety of species by providing natural areas, but they also play a role in flood risk reduction and nutrient reduction strategies (water quality). Over the past decade, there have been several Missouri River flood events on the lower river which have repeatedly caused extensive flood damage to private lands and infrastructure in Iowa. The existence of mitigation acres within the floodplain reduces flood damage costs and reduces nutrient transport. It appears that most of the focus of the Preferred Alternative is the construction of interception and rearing complexes and spawning habitat primarily in the state of Missouri. While these relatively new habitat types may be of particular importance to the Pallid Sturgeon, we believe other traditional shallow water habitat construction projects (bank notches, dike notches, revetment notches, placement of new structures, side channels, chutes, and channel widening/top-width widening) should continue to be considered throughout the lower river because of their demonstrated effectiveness in providing multiple species benefits, along with flood control and water quality improvements.

In general, the State is supportive of the Corps' efforts with regard to avoiding jeopardy of the three listed species. However, there have been documented declines of numerous other species, including a potential listing of Sturgeon and Sicklefin Chubs. The Bank Stabilization and Navigation Project

(BSNP) Fish and Wildlife Mitigation Project to develop additional acres of fish and wildlife habitat along the lower 735 miles of the Missouri River would provide benefits not only for the listed species, but other important native fish and wildlife species, some of which are included in the state of Iowa's Wildlife Action Plan species of greatest conservation need. It is stated in the draft Environmental Impact Statement (EIS) document that the mitigation program is still relevant and remains unchanged; however, current mitigation efforts have been reduced and focused solely on the listed species. It is the Corps' responsibility within the Mitigation Authority to acquire additional habitat dedicated to all Missouri River channel and floodplain native species. As stated in the executive summary, "the Missouri River and its floodplain have historically consisted of a multitude of aquatic and terrestrial habitat types that sustained rich assemblages of fish and wildlife species. These assemblages include species that live year-round within the river and its floodplain as well as migratory species for which the ecosystem provides vital seasonal habitat (e.g., wintering and breeding), movement corridors, and stopover habitats. Aquatic habitats generally include open water habitats of varying depths (i.e., main channel, secondary channels and chutes, backwaters, floodplain lakes/oxbows). Terrestrial habitats include emergent wetlands, forests, woodlands, grasslands, and shrublands." We believe the Management Plan and the Environmental Impact Statement should take a more holistic approach as to prevent additional species listings.

The big questions for the Lower Missouri River appear to be focused solely on age-0 Pallid Sturgeon. The State believes this should be expanded to the full range of Pallid Sturgeon life stages and potential management actions to meet the full range of needs, as they are likely all interrelated. Providing for the requirements of Pallid Sturgeon throughout all life stages is likely the only way to provide a successful self-sustaining population. Also, consideration of other native species should be included as to avoid listings of additional species.

In spite of concurrence that Alternative 3 represents the best presented option, the State is concerned that in the process of constructing many of the Shallow Water Habitat practices, sediment is routinely removed from parts of the river and adjacent banks only to be placed back in the main channel of the river where it is flushed downstream. This practice is counterproductive to the goals of both the Iowa Nutrient Reduction Strategy and the Mississippi River/Gulf of Mexico Hypoxia Task Force, which call for significant reductions in the transport of nitrogen and phosphorus to the Gulf from our state. We believe that state and federal agencies should be held to the same standards as our agricultural and urban constituents with respect to reducing nutrient transport by way of our rivers and streams, and that the practice of placing nutrient-laden sediment into the river channel will only add to the challenge of improving water quality in Iowa and downstream. To that end, we request that any mechanical habitat construction be undertaken in a manner that avoids, to the greatest extent possible, deposition of sediment back into the Missouri River.

In the draft Adaptive Management Plan, the State is concerned about the lack of a defined role for state fish and wildlife agencies. The General Engagement Process for Science and Development of the Work Plan does not depict a role for state fish and wildlife agencies. It is unclear how these entities would fit into the process, although they are responsible and have jurisdictional authority for fish and wildlife in their respective states. Similarly, while the statutory role of state fish and wildlife agencies is acknowledged in section 2.3.8.1, the proposed governance structure described in Adaptive Management Plan documents and Section 4.6 appear developed in large part for collaboration with the Missouri River Recovery Implementation Committee (MRRIC), and does not seem to cover duties assigned to state fish and wildlife agencies. The role of state fish and wildlife agencies in decision making could be better defined.

While we appreciate the concept of adaptive management and the need to be flexible as conditions in the Missouri River basin change over time, the State is concerned that the adaptive management

provisions laid out in the draft EIS will result in more uncertainty for landowners with respect to the impacts of water flow management and timing of pulses that may contribute to flooding on agricultural lands. Many of the evaluated alternatives include spring or fall flow pulses that could contribute to flooding of thousands of acres of agricultural land at times when farmers are either trying to plant or harvest crops. Of particular concern are the average annual NED flood risks in the Gavins Point to Rulo reach of Alternatives 4 and 6, and the full release years impacts of Alternatives 5 and 6 in the same reach, as projected in the Flood Risk Management Environmental Consequences Analysis Technical Report. Also of concern are the Interior Drainage NED risks of Alternatives 2 and 4 as projected in the area of MRLS 575-L, some of which occur beyond the release year, as reported in the Agriculture and Interior Drainage Environmental Consequences Analysis Technical Report. If these pulse flows are components of an adaptive management strategy, we are concerned that decisions made with respect to water flow management could result in spring flooding that would prevent timely planting or fall flooding that would occur before crops are ready and able to be harvested. Furthermore, many business and agronomic decisions are made by farmers well in advance of a crop year, and impacted producers will be faced with increased risks associated with land management decisions if adequate lead time is not factored into adaptive management. Therefore, we request that any implemented alternative which incorporates adaptive management include provisions that maximize the amount of time between approving and implementing flow pulses and associated water level rises, particularly in the spring and early fall. This will give states and impacted residents and businesses appropriate opportunity to weigh in on implementation decisions and prepare for potential impacts.

Thank you for this opportunity to comment on the draft Missouri River recovery management plan and environmental impact statement. We look forward to further collaboration concerning the Missouri River natural resources management.

-end-

Correspondence: 225

Correspondence Information

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Correspondence Text

April 21,2017

Major General Scott A Spellman
Northwestern Division Commander
U.S. Army Corps of Engineers
ATTN; CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellman:

When an environmentalist made the statement at a MRRIC meeting "we don't want to flood the farmers", then he understands what a major flood can do to the Habitat and its environment for survival in the floodplain. It is VERY VISIBLE from the 2011 flood that it has sit back the environment over 100's of years for the habitat, also for trees, bushes (all kinds of plant life) as well as protection areas and food plots have not been reestablished even at this time period since the flood. Agriculture areas were loss for ever and some areas will take years to get it returned to agriculture productivity, which was a food provider and cover for habitat.

You cannot have "book" educated people direct a successful environmental program, without local peoples input, who have lived with the environment and animals, fish, crops, recreation, navigation, water intakes, water waste treatment plants, floods, droughts, levees, and interests beside and in the Missouri River all their lives and generations before them . They have been intertwined with workings of indifference to the River, and have manage to made it conforming to each other in several successful ways, they have valuable information to share how it will blend and work together. A Country or humans CANNOT succeed or build without what GOD gives physically and knowledgewise. Example: if we, as members of MRRIC, U.S. Fish and Wildlife, U.S. Army Corps of Engineers, and the special advisors employed to help DO NOT equally use all interests and advice, this Restoration Project will fail, which none of us want. We cannot destroy businesses the river supports for monetary value, which in turn gives the dollars to support the restoration project and enhances our environment. The bird and fish do not pay taxes or do manual work or design or are they innovative or creative, they can only adapt to circumstances that fit them as a creature. The biggest job is to blend and adjust, and be creative for the habitat and all interests involved. All interests will, can, and do fit together for the benefit of this project, because what has been asked of us to regenerate for habitat , once was, but destroyed by poor decisions and mismanagement. The reason I so firmly believe this, is God made it possible for myself, family, friends, and those who lived beside the Missouri River and were on it from 1970's-1990's, personally witnessed and enjoyed a "Missouri River Gone By". The "Missouri River Gone By" was the " Missouri River Dreamed of Now" . This river that I speak of, was a slower moving, with dikes that slowed the water and held sandbars for birds and

places to pull a boat upon and picnic with family, families fished, swim, tubed and even water-skied, and floated on tubes, there was not near the flooding and the damage that came from such an event, navigation was routine and the dredging companies kept the main channel deeper on the river also. This river that I tell you about is truly what is being ask of the US Fish and Wildlife to recreate, but they can't without going back and putting back dikes that slowed the waters and help create the sandbars, and keep the sediment from being put into the channel, and doing practices that contribute to the river not being able to carry the amount of water it did then. (I believe that some chutes would contribute to the enhancement of the river and habitat, but the practice or experiment that was done at the start in cutting dikes everywhere, notching banks and destabilizing banks, and making levees vulnerable and in floods since then left large damage to the levees and weaken to this day. Flooding comes at lessor flood stages now than they did and more damage. Instead of this mentality of "a kid in a sand pile with a crowbar" and if the bank notching and cutting of the dikes had been organized in portions of the river and not everywhere, until visible results could be accounted for and adjustments made for the betterment of restoration projects we would not have inadequate progress and rebuilding to be done. At this time the restoration would have been ahead, now there is damage control to be done, IF some of it can even be corrected, before there is improvement of the restoration project on the Missouri River. This will take more money and time lost.

This is just another example of, if a person is moving to a different area to build a business, live, farm, fish, hunt, etc. you want to know the knowledge of the local people so you can be successful at what you want to pursue, because they have LIVED IT. Not read about it only.

The Asian carp may not eat the same food as the endangered species, but common sense and science tells us they do have an impact on the endangered species and the fish which may become endangered because of them. They are invasive and this impacts the food chain, nutrients, oxygen, space, and the invasion of territories for other species.

Along the Missouri River from St Louis, Missouri to Montana, there are different areas that deal with different segments and different circumstances. These areas could be divided up in to lengths along the river and the habitat could be enhanced in different ways, for the different circumstances. I don't believe that we can rubber-stamp each mile of the Missouri River, but have the ability to make it doable in each segment, for the best benefit of the area and what it will support, such as any of the things that are dependent upon the river habitat, recreation, industry, etc. We have a growing population in our country and in the world, so a SUCCESS is to develop projects of differences, without destroying valuable assets that support the renewing of the Missouri River and Habitat for the future generations.

IT IS ALL POSSIBLE FOR THIS RESTORATION PROJECT TO SUCCEED

I totally believe that in the past two years of MRRIC, there has been some success and knowledge gained, but on the other hand the missed or misconstrued knowledge will lead to more wasted money and lost habitat as well as other interest supported by the river. MRRIC seems to me, was put on the FAST TRACK to finish, and loss some valuable knowledge. We need more design for habitat discussions, for benefits and non-benefits for the birds, fish, and human interest values, for the building and upkeep of these projects. I believe that the human considerations and flood values were misunderstood with Graham's charting. He's a great person, but I don't believe he ever connected to the values or was misled with information for the comparisons and percentages of affects for flooding in the whole range of the Missouri River Basin. I felt like the members of MRRIC were not appropriately treated in making available materials for the MRRIC meetings of thousands of pages to read, study, and review in fewer days than a week before meetings, and for terms and wording to be changed at the US Corps whim or decision. This also complies to the time period of the DEIS material

of 6000 pages or more, even though we should have knowledge of what was written, it didn't give us enough time to read it completely word for word.

I appreciate the opportunity to give my input on the overall view of what lead up to the DEIS and the DEIS. I believe that any flooding on purpose or not controlled, damages ALL interest, including habitat, The lost to habitat is larger than the gain from flooding.

I do believe that the Agency's and members of MRRIC have contributed an enormous amount of knowledge and leadership and are near embarking on the next phase of the restoration of the Missouri River.

I ask you to please keep my interests, suggestions and thoughts in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Thank You and Respectfully,

Carla F. Markt, Representing Local Government

Correspondence: 226

Correspondence Information

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Correspondence Text

April XX, 2017

Major General Scott A. Spellmon
Northwestern Division Commander
U.S. Army Corps of Engineers
ATTN: CENWO-PM-AC-MRRMP-EIS
1616 Capitol Avenue
Omaha, Nebraska 68102

Dear Major General Spellmon:

As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

At 15 ft river stage, which is 2 feet below flood stage, MO Valley levee district where I farm begins to have challenges with drainage. SPEAK TO IMPACTS OF FARM OPERATION-I.E. AMOUNT OF PREVENTED PLANT DUMPING COSTS, ETC to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been

vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

I ask you to please keep my interests in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Respectfully,

David Nail

Correspondence: 227**Correspondence Information**

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Notes:	


Correspondence Text

We write this comment in regard to the proposed alternatives being considered for the future operation of the Missouri River. We are retired landowners and own 1093 acres protected by the Halls Levee District in Southwestern Buchanan County State of Missouri. Previous to our retirement we actively farmed in this area both owning farmland and renting farmland from others. We lived in this area and raised two daughters on our farms. I/we farmed all our lives and William and Mary Frakes; Robert's parents were farmers on some of these lands previous to their retirement. We are very knowledgeable of how the MO River affects our properties. We are very opposed to any alternative that contains any added releases to be released from the dam systems with Gavens Point being the lower most southern dam in the system. Any additional releases would cause increased problems with interior drainage, seepage, and wet soils either preventing timely farming practices to be negatively impacted. In our area mid-April through May are prime planting of corn and soybeans time frame. Also in our area normal harvesting times are from late September through mid-November. To our understanding alternative 5, 6 provide for large releases of up to 35 days and release amounts of up to 60,000 cfs from Gavens Point Dam. With these large proposed releases the potential for flooding would be very likely as this release amount would add 5.5 to 6.0 feet to the MO River at St Joseph, MO which is the closest gauge to our properties. There must be a better safer way to satisfy Fish & Wildlife needs for the plover, tern, sturgeon without damaging peoples properties and livelihoods. We depend on the income from our farmlands for our ability to live and pay our expenses in our retirement years. If mechanical means allow providing habitat that could be acceptable but we remain extremely opposed to any releases being a part of any options under your consideration. Working hard through our entire lives to make a living and better our lives and to see the production capabilities and value of our properties devalued is very difficult to think about as your alternatives directly have a long term affect on our farmlands. We are proud parents of two daughters both with children who we wish to protect their future interests in these properties.

Respectfully Submitted,
Robert Frakes
Joyce Frakes

Correspondence: 228

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Correspondence Text

Dear Major General Spellmon:

The Coalition to Protect the Missouri River (CPR) appreciates the opportunity to offer comments on the Draft Missouri River Recovery Program Management Plan and Environmental Impact Statement (DEIS). The CPR, established in 2001, represents a broad base of interests throughout the lower Missouri River, including flood control, navigation, agriculture, and public energy and water utilities. We support responsible management of the Missouri River resources and maintenance of congressionally authorized purposes of the river, including flood control, navigation, water quality and water supply. The CPR also supports responsibly managed and properly balanced, science-based habitat restoration for endangered or threatened species. Many of the CPRs members have been involved in the DEIS process through active participation in the Missouri River Recovery Implementation Committee (MRRIC).

The CPR has divided its comment letter into three sections: Section One, containing general comments and position regarding the DEIS alternatives; Section Two, containing specific comments on various sections of the DEIS and Section Three, containing specific suggestions, recommendations and conclusions.

Section One - General Comments

The CPR has identified various concerns with each of the six alternatives contained in the DEIS. To begin, all except Alternative 1 (No Action) relax flood control constraints within the current Missouri River Mainstem Reservoir System Water Control Master Manual (Master Manual). The CPR believes that any future flow changes must be implemented solely by Master Manual revision.

The CPR has long been opposed to Master Manual revisions to accommodate environmental flow experiments that could have adverse effects on lower Missouri River stakeholders. To highlight congressional interest in this topic, we wish to remind the Corps of the December 17, 2015 letter to

former Assistant Secretary Darcy, signed by 20 members of the U.S. Congress from across the basin, in which they stated: Due to our concerns regarding the current process, we strongly urge the Corps and FWS to only pursue a management plan that would not necessitate a revision of the Master Manual or incur damaging impacts to stakeholders and landowners.

The CPRs members who live and operate businesses along the lower Missouri River experience flooding each spring caused by inflows from various tributaries. In April 2017, the Missouri River has risen approximately twelve feet in a weeks time in the central Missouri reach. For this very reason, the CPR is wary of attempts to boost pallid sturgeon population by increasing flows from Gavins Point Dam. Further, no science has been developed to prove its value. The DEIS states: The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning (Doyle, et, al. 2011). Therefore, we remain opposed to the bimodal spring rise provision within Alternatives 1, 2 and 6.

The CPR believes the flow magnitude and duration contained in Alternatives 4 and 5 will create an unacceptable level of flooding risk in the spring and fall, respectively. The 60,000 cubic feet per second release from Gavins Point Dam for 35 days as specified in these two alternatives will cause severe impacts to agriculture - the largest land use sector in the basin - making it extremely difficult to plant and harvest crops as interior drainage will be impeded. If either of these alternatives would be implemented, the Corps would be abandoning a primary congressionally authorized purpose of flood control.

In addition, the CPR remains steadfast in its opposition to low summer flow provisions contained in Alternative 2. If this alternative were to be implemented, the Corps would effectively abandon a primary congressionally authorized purpose of the Missouri River by causing severe harm to the navigation industry - one thats been on the increase in recent years and serves as a vital mode of transportation as our nation grapples with continued deterioration of our roads and bridges. Further, the negative impact to the middle Mississippi River must be taken into account. As we saw in the drought of 2012, the Missouri River had a peak contribution of 72 percent of the flow to the middle Mississippi. We cannot overstate how essential the Missouri River is to our nations economy. The CPR calls on the Corps to not adopt any management action that has the potential to cause severe economic harm through the implementation of low summer flow releases.

The CPR is also very apprehensive of the impact that low summer flows would have on energy generation, water supply intakes and sewer treatment plants. We believe operational costs under a low summer flow regime are severely underestimated and should be reexamined. Further, we request the Corps to identify all potential regulatory burdens in advance of the implementation of any management plan action. In any instance in which the regulatory cost of compliance increases (i.e. modification of intakes), thorough input needs to be gathered from affected industry sectors to ensure that the impact to both utility companies and ratepayers alike remains minimal.

Regarding the Corps preferred Alternative 3, the CPR believes it strikes a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. The CPR appreciates the Corps cancellation of the current bimodal spring rise under this alternative and we applaud the Corps for their commitment to study the linkage between tributary flows and pallid sturgeon recovery.

Upon our review of the DEIS, a top-tier concern is the lack of hydrologic and economic modeling throughout the document that minimizes the potential for negative impacts that could be caused by implementation of any of the alternatives. For example, one of the most egregious errors in this document is the incomplete nature of the Corps analysis of impacts to interior drainage by only

sampling four levee sites in the entire lower Missouri River basin. Through this limited approach, we cannot have any degree of confidence in the impacts of the DEIS alternatives. The CPR cannot fully comment on the impacts until such modeling is completed.

We are troubled by the lack of hydrologic modeling of the impacts to stakeholders if a one-time spawning cue release were to be implemented. The DEIS states: The one-time spawning cue test (Level 2) release that may be implemented under Alternatives 3, 4, and 5 was not included in hydrologic modeling for these alternatives because of the uncertainty of the hydrologic conditions that would be present if implemented.

The CPR wants to be abundantly clear in our position - hydrologic modeling and peer reviewed comprehensive economic impact studies must be completed before any flow management action is implemented.

Under Alternative 3s possible implementation of a one-time spawning cue release 9-10 years in the future, we feel strongly that adequate time exists to complete a full analysis of the impacts to stakeholders. If complete hydrologic and economic modeling for the entire floodplain is not finished before implementation, the CPR will take action to prevent adverse impacts from being forced upon stakeholders.

Regarding the Adaptive Management (AM) plan included in the DEIS, the CPR is circumspect of decisions made outside of the Record of Decision (ROD) and we believe those must only be made after full NEPA analysis and independent peer review as well as separate EIS that contains complete hydrologic and economic modeling. Additionally, we have the same questions and concerns about AM plan actions that may go beyond the limitations of the current Master Manual. We also believe the AM plan fails to preserve the rights of states and their governors to sovereign and executive decisions relating to their interests in the Missouri River. Governors of each of the basin states should have much larger input than what is currently proposed under the AM plan governance and should not be relegated to a lower stance in the AM plan pyramid.

Nearly all of the DEIS alternatives call for a shift in habitat construction to the building of 12 interception rearing complexes (IRCs) over the course of six years. We do not object to the advancement of scientific theory, including IRCs, as long as they are coupled with proper evaluation and introduced gradually. If the Corps is to truly follow the AM plan process, we suggest it take a measured approach regarding IRC construction and initially develop only one in the lower river. The Corps should first prove this theory's viability with one IRC site by constant evaluation before other IRCs are constructed. As part of the evaluation, the Corps has to ensure IRCs will not negatively impact activities within the channel such as navigation and commercial sand dredging.

Section Two - Specific DEIS Sectional Comments

3.7 Water Quality

General Analysis:

1. The DEIS fails to evaluate water quality problems associated with low summer flow as contained in Alternative 2. Impacts and costs to water operators must be included.

Specific Comments:

3.7 Water Quality, Alternative 2

Low summer flows within Alternative 2 would be harmful to water quality, especially in regard to cyanobacterial or blue-green algal growth. Because Missouri River water suppliers historically operate within the current Master Manual constraints, there is little water quality data that exists for operations outside of those constraints. We know that periods of low flows equate to slower and warmer waters conducive to the potential for the formation of cyanotoxins, which can be difficult to treat. Although no firm maximum contaminant level has been established by EPA, they agency has issued health advisories on this matter. At a minimum, treatment costs would increase under low flow conditions because of additional chemicals needed to treat the water.

3.10 Land Use and Ownership

General Analysis:

1. We appreciate the Corps effort to develop empirical economic modeling. Modeling to attempt to predict job losses, sales impacts and the property tax impacts to local government due to land use and ownership changes is appropriate. However, economic modeling, especially the truncated version employed to develop the DEIS, is anything but scientific.

2. It is well known the even small data or assumption errors can create fundamentally inaccurate predictions. Inaccurate assumptions, the omission or inclusion of certain data sets and the accuracy of the data sets are just a few of the limitations of modeling. Assumptions of relationships and cause and effect of various factors must be made for the baseline or starting point of modeling.

3. Synergistic effects of interrelated economic impacts are missing from the model, causing the overall economic impacts of changes to land use and ownership for all alternatives to be substantially understated. For example, the modeling does not account for the impacts of navigation on transportation costs and agricultural profitability. There are scores of examples like this in the DEIS. Additionally, the land use modeling limits baseline assumptions to those cropland acres that will be taken out of production by the result of productive land being purchased and repurposed by the federal government. Land purchases are the only metric considered. The wide range of management actions include impediments to interior drainage that can drastically alter land use and productivity. Impacts from power generation costs, local water supply, increased truck traffic on public roads as the result of potential impacts on navigation, etc., must be considered and analyzed. Those elements and others have massive impacts on NED, RED and OSE outcomes, but they're not part of the DEIS modeling. Without inclusion of the broad impacts of critical economic interactions in the model, its outcomes are oversimplified and understated. In brief, the model is too simplistic and too limited in scope.

4. Overall economic impacts are substantially understated and modeling limitations are not delineated. We believe much of the understatement of economic impacts is due to the truncated nature of the modeling. Inadequate and incomplete resources were allocated for the modeling process and time constraints further truncated the process. The synergistic effects mentioned in point three above clearly show the effects analysis to be understated. The modeling limits itself to the loss of production on lands predicted to be acquired and does not include transportation, infrastructure, energy, water supply and the effects of economic multipliers from those impacts. These omissions and the limitations of modeling should be clearly delineated in the DEIS. The same level of resources, measurement and analysis should be applied to economic impacts that are applied to species impacts.

5. Empirical results imply scientific analysis and the ability to predict specific outcomes. This is misleading. All models, even those that attempt to encompass the maximum points of cause and effect, are subject to data and assumption errors and they require continual recalibration. For example, in the DEIS Land Use and Ownership Technical Report, inclusion of modeling data is presented as

empirical fact. The report cites: the change in employment relative to alternative 1 for all acquired lands in crop production is 18.3 additional jobs. This infers economic modeling creates precise science. Not 17 jobs, not 19 jobs, but 18.3 jobs. The economic impacts of management actions in the basin are not nearly as predictable as the DEIS tries to convince us they are. It is concerning that the DEIS contains no mention of the confidence level the public should put in economic modeling, nor does it specify the hurried, truncated and resource limited efforts of modeling of the six alternatives. This omission of serious and detailed caveats indicates that the process is tainted by substantial ineptitude or is deliberately fashioned to obfuscate the magnitude of the economic impacts of the six alternatives.

The DEIS does not specify a robust process for ongoing analysis of economic impacts of adaptive management actions. Moreover, a culture that assumes scientific validity of economic predictions can lead those managing the adaptive process to take actions that cause substantial negative results because the economic 'science' indicates the economic hardships they create will be negligible. Or, they may fail to take actions crucial to the species recovery if the models incorrectly predict the economic consequences are too severe.

To provide accurate predictions from a relative standpoint, the modeling must be complete. In fact, we asked early on in the MRRIC process that the proper resources be deployed so that comprehensive econometric modeling could be utilized. Those resources were not allocated and the truncated version that was used is almost worse than not doing any modeling at all because of the inaccurate perceptions and conclusions it creates.

For example, when we pressed for modeling of navigation outcomes and impacts, the expert panel concluded they simply didn't have the expertise to even begin to model how navigation affects transportation costs, rail loads, infrastructure impacts, public safety, etc. Yet the DEIS infers the economic study is adequate and very specific predictions about sales, jobs and tax revenues are presented. The modeling is woefully inadequate and the economic analysis is so limited in scope it's not possible to say if it's even directionally accurate.

In the process of creating a model with appropriate scope and expertise, we would have had the opportunity to investigate and better understand the degree to which certain management actions will impact the basin and land use in general. Additionally, there would be at least some level of accuracy to the relative impacts of the alternatives. But the modeling is so severely truncated we don't know what the relative impacts will be, nor has the process identified all of the issues that need to be considered. That said, it is equally illogical to consider the current review and comment period as definitive in its ability to identify economic and social impacts of management actions.

6. It is unacceptable that interior drainage impacts are not even mentioned in Section 3.10. It is telling that interior drainage impacts are not even modeled in Section 3.12, Flood Risk Management and Interior Drainage. We are told the software to evaluate impacts is not compatible with current computer operating systems, so modeling was not done.

Apparently interior drainage has been given so little thought there was not even an attempt to update the software. Instead of modeling, four sites were selected as representative of the floodplain and a cursory impact study was performed. This methodology is entirely unacceptable and proves meaningful analysis of proposed management action on land use has not been performed.

Further, the DEIS states: Extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites, Translation of damage-duration relationships between sites was not attempted and would require additional evaluation to provide a reasonable methodology and verify results. The most pervasive impact on land use-imposed interior

drainage-was not thought to be enough of a priority to perform modeling and analyze impacts. This omission is entirely unacceptable and it makes the DEIS incomplete and renders any appearance of actual NED, RED and OSE impacts improper and inaccurate.

At best, the DEIS treats interior drainage as an afterthought. To agricultural stakeholders, it is the most concerning and most economically damaging impact of all the management actions.

The federal agencies disregard of interior drainage concerns is further evidenced by their failure to even conduct NED analysis in either the land use section of the DEIS or the abbreviated interior drainage portion of this section. The agencies failure to recognize the importance and the degree of debilitating impacts of artificially high river flows, is further evidence of the lack of depth and accuracy of the studies.

The critical nature of interior drainage was brought forward frequently during MRRIC discussions. The DEIS appears to ignore the interior drainage information and the extensive concerns expressed by stakeholders during numerous MRRIC discussions. The most widespread and enduring economic impact of management actions on agriculture comes from the impedance of interior drainage. At the least, the exclusion of comprehensive modeling and analysis raises questions of whether those who managed the DEIS compilation process are qualified or competent. The Missouri River would not even exist if not for the need to drain excess water, yet the DEIS treats interior drainage as an annoying afterthought, unworthy of analysis or critical thought. The lack of comprehensive modeling and analysis of management impacts to interior drainage is egregious.

Specific Comments:

Section 3.10.1.1 - Land Use Patterns

Agricultural land often surrounds developed lands and impacts from management actions often do not discriminate between the two. Impeded interior drainage problems, for example, can lead to structural issues with expensive grain handling facilities, storage structures and important community infrastructure. The river would not even exist if not for the drainage of water from the basin. We understand that land use classifications can help in the analysis of impacts, but caution that management actions can negatively impact all classifications.

Section 3.10.1.2 - Land Ownership

This section ignores significant acres of habitat for various wildlife species and creates a false impression that wildlife habitat is limited to protected acres. It fails to mention the large acreages of privately held lands on which conservation practices are implemented and habitat is provided under NRCS guidelines or the thousands of acres of cropland on which wildlife routinely lives and feeds. The use of the term protected reinforces the incorrect perception that unless its owned by a government entity or a strident environmentally centered NGO, the land is unprotected. This conjures up images of vast areas devoid of habitat and wildlife vulnerable to the pillaging of private owners. This is not a minor point of contention. It is indicative of a pervasive attitude that things constructed by man and beneficial to man are harmful to all things natural and good. The lands are unprotected! By promoting this mindset and inflaming attitudes, the DEIS actively damages the cooperation and collaboration between stakeholders.

Privately owned lands are anything but unprotected. In addition to substantial private and unreported efforts by private landowners for which national statistics are unavailable, the NRCS offers small incentives for a wide range of conservation activities on private lands that are tracked. The Conservation Reserve Program (CRP), the Conservation Stewardship Program (CSP), the Agriculture Conservation Easement Program (ACEP), the Regional Conservation Partnership Program (RCPP)

and the Watershed Rehabilitation Program (WRP) are just a few of the NRCS sponsored efforts to improve conservation, habitat, water quality and provide a host of other environmental benefits. The CSP program alone has enrolled over 70 million acres, much of it in the Missouri River Basin. Landowner stewardship interest has been so high, in fact, that Congress had to set a limit on the number of acres that could be enrolled in both CSP and CRP.

We object strenuously to the DEIS perpetuation of the myth that private lands are unprotected and the nomenclature in the DEIS needs to be changed to eliminate the unprotected stigma. More importantly, negative culture in some federal agencies toward private landowner stewardship requires immediate correction.

Section 3.10.2.1 - Impacts Assessment Methodology

Unfortunately, the methodology employed in the DEIS is strictly limited to impacts of land acquisition. Weve already commented in detail on the truncated modeling used to assess these impacts and reiterate the impacts are substantially understated. The extraordinarily narrow focus of the DEIS on impacts to land use is unacceptable. Land acquisition is the only causal factor assessed in terms of Regional Economic Development (RED), National Economic Development (NED) and Other Social Effects (OSE). Even without one acre of land acquisition, management actions can severely impact land use.

Management actions that change flow regimens can block interior drainage and cause late planting of crops and substantial yield reductions. In some years, it can prevent planting or harvest.

Management actions that impede navigation increase transportation costs of critical and difficult to transport agricultural inputs. It can lead to increased traffic on public highways and wear and tear on that infrastructure, which in turn affects the suitability of various land uses. It can also increase loads on rail infrastructure and impact public safety.

Management actions can drastically reduce the predictability of land use. Flow actions that impede interior drainage or increase flood risk can drastically impact land values, which in turn has a negative effect on the tax base of local governments.

Management actions that impede dredging negatively impact both private and public construction costs.

Management actions that impact local water supply and quality and cost substantially impact land use everywhere from major metropolitan to rural communities.

Management actions that lead to lower levels of power generation or more expensive power generation significantly impact land use as well.

Yet, none of these factors appear in the land use assessment methodology section of the DEIS -only land acquisition. The failure of the DEIS to account for, or even consider, such obvious impacts as these raise serious questions. Do the agencies charged with developing management actions simply lack understanding of the impacts of proposed actions? Do the agencies have the expertise and resources to conduct thorough studies? The concerns called out above have been mentioned repeatedly in the MRRIC environment. Is the culture within certain agencies such that impacts to land uses are always subrogated in deference to the perceived needs of listed species under the Endangered Species Act?

Table 3-42 - Environmental Consequences Relative to Land Acquisition, 2016 Dollars

Weve already commented on the accuracy of the economic impact predictions. However, we note again that the summary table impacts only lists land acquisition as the causal factor. A change in flows is common to all six alternatives. Yet in the portion of the table devoted to Management Actions Common to All Alternatives, Table 3-42 says there are no RED impacts, no OSE impacts and no other impacts. Increased flows increase the risk of and the severity of flooding and impact interior drainage. Explicitly claiming no impact of any kind in this table brings the credibility of the entire DEIS into question.

3.10.2.4 - Alternative 1 - No Action

The economic modeling does not account for the impacts of management actions on other critical factors like transportation, traffic congestion, energy costs, water supply costs, etc. Individual economic entities do not exist in a vacuum. Its entirely possible that a seemingly inconsequential impact could be the difference between profit and loss and therefore survival or failure. It can mean the difference of whether a farmer can purchase new equipment, a fertilizer dealer can offer competitive input prices or whether a power company must raise rates. While difficult to model accurately, the failure to even consider those impacts brings the whole of the economic analysis into question. As stated earlier, management actions like changing flow regimens can substantially impact balance sheets and production.

Land acquisition by the federal government removes the property from the tax base for local government. The federal Payment In Lieu of Taxes (PILT) program is designed to offset some of the loss in revenues, but PILT payment levels can vary significantly from year to year, resulting in considerable difficulty in budgeting and planning for local governments. In any case PILT does not replace the tax revenues and is capped at \$2.64 per acre (FY 2016).

The acquisition target for the no action Alternative 1 is 5,267 acres, Alternative 2, 33,462 acres and for Alternatives 3-6, 1,417 acres. Conservative estimates for average property taxes are \$5.00-\$8.00 per acres in Missouri and \$20-\$35 per acre in Nebraska. With the PILT capped at \$2.64 per acre, property tax revenue impacts can be locally severe, especially under Alternative 2. We believe the tax impacts listed in the DEIS are understated. Additionally, the DEIS lists annual impacts, which creates a perception of smaller impacts than are really incurred. Multiply the property tax impacts for 10, 20 or 50 years, and those impacts run into tens of millions of dollars. This is especially true for Alternative 2, which could have devastating effects on local revenues.

Property taxes are not the only sources of revenues to local governments that are directly tied to productive cropland. The economic activity generated by farming impacts everything from individual and corporate federal income taxes down to local sales taxes, special use taxes, personal property taxes, etc. An analysis that limits itself to the impacts of property tax is incomplete and inaccurate and grossly underestimates the revenue impacts to local government. Further study of those impacts is necessary before management actions are taken.

The paragraph on Other Social Effects limits its analysis only to impacts of land acquisition and takes pains to point out the small percentage of land that would be acquired by the federal government. We believe the impacts are understated and reiterate that management actions can still be far more impactful than the act of acquisition.

3.10.2.5 - Alternative 2 - USFWS 2003 Biological Opinion Projected Actions

Land acquisition in Alternative 2 is six times that of Alternative 1. As stated earlier, we believe the economic impacts of land acquisition listed in the DEIS are understated because of the effects of

truncated economic modeling. Our concerns over modeling in general apply here as well. In addition, the lack of any mention of the impacts of the management actions that occur after the land is acquired is of serious concern and needs to be incorporated. The DEIS is substantially incomplete in scope and analysis. The inclusion of specific outcomes in terms of sales jobs and labor income are so specific they are misleading and are so un-researched they are inaccurate and unreliable. Because Alternative 2 results in multiple flow management actions, the negative impacts to all land uses listed in our comments on section 3.10.2.1 apply here, but to a much greater degree. In simple terms, the more often flow rises are implemented, the more negative the results to land use.

3.10.2.6 - Alternatives 3-6

All comments for Alternatives 1 and 2 apply. The only differences are in the acres acquired and the degree and severity of management actions. Land use impacts rise and fall with river stages. Therefore, the more frequently flows are raised and lowered, the greater the economic impacts and risks will be.

3.10.2.9 - Cumulative Impacts

This section is troubling from several perspectives. For the first time in the entire land use section, there is recognition that many factors beyond land acquisition impact economic and social effects. But that mention is done only in the context of attempting to downplay the potential impacts of the alternatives.

The DEIS is attempting to imply that concerns around impacts from management actions are trivial because Impacts to agricultural production can result from USACE activities and programs as well as many other policies, programs and economic influences. Thats like saying the fish and the birds could become extinct due to natural causes just like the dinosaurs so dont worry about them.

The obvious bias toward characterizing the impacts as barely worth mentioning is troubling. The only action that was studied is land acquisition, and at best, that was an abbreviated study. But after a cursory review of land acquisition, and without yet knowing what the eventual management actions will entail because of the Adaptive Management approach, the DEIS concludes impacts are negligible. Further, it adds the observation that bad things can happen as the result of causes other than management actions. The cavalier and arrogant disregard the DEIS displays toward valid concerns and objections has no place in decisions that will impact the livelihood and safety of many generations to come. It is wrong-minded and in profound conflict with what the Federal government purports to call a collaborative and fact based approach.

The DEIS representation of land use impacts is inaccurate, incomplete and unworthy of the hard work and sincere effort that stakeholders have put forth to recover the species.

3.11 - Commercial Sand and Gravel

General Analysis:

1. Modifications in flow as presented in Alternatives 2, 4, 5 and 6 undermine the primary congressionally authorized purposes of navigation and flood control, making them problematic.
2. The states of Missouri, Kansas, Iowa and Nebraska own the bed of the lower river. The states have a sovereign right to their real estate and federal actions that compromise the real estates resources are a takeover in regard to states real estate and natural resources.
3. The use of the HEC-RAS model for decision making in the DEIS is flawed. Commercial sand

dredgers have continually presented their objections to HEC-RAS being used for any permitting related decisions and the Corps has previously agreed during MRRIC sessions. In the DEIS however, this important point is missing from the document and needs to be included in the content for this section.

4. The DEIS fails to address the issue of sediment in the system and the lack of material movement. We call on the Corps to create a true sediment analysis that examines this important component for pallid sturgeon recovery. Changes in flow, without enhancing sediment load are not impactful and are a true waste of water in the system.

5. Regarding IRC construction and maintenance, the Corps must give commercial sand dredgers absolute assurance that these new habitat areas will not impact their operations by making its related regulatory strategy clear. Of utmost importance to dredgers are the issues of channel response, impacts to navigation, bed and hydraulic conditions.

3.12 Flood Risk Management and Interior Drainage

General Analysis:

1. Protecting human life and safety is paramount. We are concerned about the relaxing of flood control constraints in each of the DEIS alternatives, some by nearly as 80 percent to implement environmental flow experiments, with the potential to increase river stage by over nine feet in Omaha and five to six feet in St. Joseph. These potential stage increases do not take into account additional rainfall. Equally troublesome is the large degree of inaccuracy of predicted hydrologic conditions for more than six days in advance.

2. The DEIS is incomplete without the hydrologic modeling for impacts to interior drainage. Interior drainage impacts are downplayed and not even mentioned through much of the economic analysis. It is such an afterthought, that the agencies have not updated the software to make it compatible with todays computer operating system. Therefore, analysis of the floodplain was not performed. Instead of updating the software so that credible analysis could be performed for the entire floodplain, four representative sites were selected and a cursory impact study was performed. Again, we point to the following statement made in the DEIS: Extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology, and drainage varies between sites. Translation of damage duration relationships between sites was not attempted and would require additional evaluation to provide a reasonable methodology and verify results. This methodology is entirely unacceptable.

3. The lack of modeling for interior drainage impacts is a severe flaw in the DEIS and is, frankly, inexplicable. The most pervasive impact-imposed interior drainage-was not thought to be enough of a priority to create modeling and verify impacts. Interior drainage has a more frequent, and depending on the duration and severity of flooding, can have a greater economic impact than flooding. Therefore, the DEIS stated economic impacts are a fraction of total economic impacts because the flow management actions on interior drainage are missing from the analysis. This omission is entirely unacceptable and it makes the DEIS incomplete and renders any claim of accurately predicted impacts of all 6 alternatives invalid.

Flooding occurs sporadically. Interior drainage is an everyday requirement. While the risk of flooding increases with flow management actions, interior drainage is immediately impeded by each flow management action that affects river stage. High river stages cause high water groundwater levels and increase the time required for drainage to occur. The impacts range from ground water percolating upward through the soil profile to the closing of flap gates, holding back water from entering the river.

Groundwater levels that do not percolate to the surface still reduce the ability of local rainfall to drain through the soil, keeping agricultural fields wet and delaying or even preventing crops from being planted. Landowners are damaged by the cumulative impacts of lower yields, total crop loss due to prevented planting and loss of land value because of the unpredictability of production. To the federal agencies, interior drainage is treated as an afterthought. To farmers in the floodplain, it is the most concerning and most economically damaging impact of all the management actions.

During the MRRIC process several potential proxies for agriculture were discussed. After lengthy consideration, MRRIC and the agencies agreed that river stage was the best indicator of impacts to agriculture. This was not because of flooding, but rather because of impacts to interior drainage. River stage determines groundwater levels and whether gravity operated flap gates will function. The agriculture stakeholders agreed to this proxy because of the pervasive and wholly negative impacts of higher river stages on interior drainage. Given the magnitude of the impacts, the duration of the discussions and the attention given to reaching the proxy decision, the failure to conduct thorough analysis of interior drainage is unfathomable.

The DEIS disregard of interior drainage concerns is further evidenced by the failure to conduct NED analysis in either the land use section of the DEIS or the abbreviated interior drainage portion of this section. The failure to acknowledge the importance and the degree of debilitating impacts of artificially high river flows is more evidence of the lack of depth and accuracy of the studies.

The critical nature of interior drainage was brought forward frequently during MRRIC discussions. The DEIS appears to ignore the interior drainage information and the extensive concerns expressed by stakeholders during numerous MRRIC discussions. The most widespread and enduring economic impact of management actions on agriculture comes from the impedance of interior drainage. At the least, the exclusion of comprehensive modeling and analysis raises questions of whether those who managed the DEIS compilation process are qualified or competent. The Missouri River would not even exist if not for the need to drain excess water, yet the DEIS treats interior drainage as an annoying afterthought, unworthy of analysis or critical thought. The lack of comprehensive modeling and analysis of management impacts to interior drainage is egregious.

4. The lack of comprehensive interior drainage modeling and impact analysis means the economic impacts of the 6 alternatives are both understated and unknown. It is unacceptable that interior drainage impacts modeling and analysis was only conducted on four small areas of the floodplain. Given the pervasive reach of drainage, it is inconceivable that the modeling software was not updated. This methodology is entirely unacceptable and proves meaningful analysis of proposed management action on land use has not been performed.

The title of this section is Flood Risk Management and Interior Drainage (emphasis added). Other elements are analyzed for the entire floodplain but interior drainage gets four small plots - one in Iowa and three in Missouri.

The DEIS disregards interior drainage concerns by its failure to even conduct NED analysis in either the land use section of the DEIS or the abbreviated interior drainage portion of this section. The agencies failure to recognize the importance of, and the degree of debilitating impacts of artificially high river flows, is further evidence of the lack of depth and accuracy of the studies.

Again, this omission is entirely unacceptable and it makes the DEIS incomplete and renders any appearance of actual NED, RED and OSE impacts improper and inaccurate. The failure to conduct thorough analysis of interior drainage is unfathomable and profoundly unacceptable.

Specific Comments:

Section 3.12.1 - Affected Environment

Here, the DEIS states: High water can result in poor drainage, higher groundwater, blocked access, and associate damage an inconvenience. The DEIS fails to mention the greatest impact-delayed or prevented agricultural activity. Does the agency culture cause the most damaging management actions to be downplayed or disregarded?

Section 3.12.2.1 - Population and Property at Risk

In evaluating regional economic impacts, agriculture losses only included the change in market value of crop production In keeping with the agencies misstating negative impacts to agriculture, they were very careful to make sure they deducted any harvest costs that were not incurred because lost crops arent harvested. However, there was no inclusion of costs for rehabilitation of land, pumping costs, drainage infrastructure, repair to private levees or future yield losses due to damages to the land (sand and driftwood deposits, additional weed pressure, extra tillage requirements, etc.). Sometimes flooding causes land damage so severe the costs of rehabilitation are greater than the value of the land. Somehow those impacts are left out of the DEIS. The ongoing pattern of misstating impacts to agriculture could be construed to indicate an inherent bias in the DEIS.

Section 3.12.3.1. - Summary of Environmental Consequences

Table 3-61 - Environmental Consequences Relative to Flood Risk Management

Changes to flow regimens are a part of each of the 6 alternatives and create the most significant impacts in 5 of the 6 alternatives, yet it is never mentioned in tables with Management Actions Common to All Alternatives. The table shows no NED, RED or OSE impacts. By never mentioning flow pulses we dont tabulate the damaging impacts to production and land values. Impacts from flow changes are neatly swept away.

The table claims Alternative 2 has lower flood risk than the No Action alternative. We cannot find an Alternative 2 management action that reduces flood risk other than the low flow that occurs in summer months when significant rain events are not the norm. On the other hand, spring maximum flows during the proposed yearly spring rise in Kansas City are 16,000 CFS higher than the yearly artificial flow increases of the No Action alternative. How higher artificial flows during the rainy spring season create lower flood risk is counterintuitive and illogical.

The table claims Alternative 3 has less flood risk. We would agree that since there are no spring rises for the first nine years, the flood risk is reduced. But we refer again to the lower flood risk in Alternative 2, even though it has spring pulses. If the model is delivering opposite results for the same actions, it might be wise to recalibrate the model.

The table claims Alternative 4 modeling resulted in a -\$21 million to a \$48 million impact to NED. Thats almost a \$70 million-dollar swing in impacts to the NED. We suggest either the model needs to be calibrated or Alternative 4 needs to be broken into two alternatives to reflect impacts more accurately. It could be that the model interprets the swing in years with no spring rise to a year with a massive spring rise to create massive flooding. That could explain some of the monumental differences, especially since the peak flow of 126,000 CFS at Kansas City puts the river over flood stage downstream from Kansas City.

Any management action that deliberately floods any portion of the basin should be deemed unacceptable and be eliminated from the list of alternative actions.

Alternative 5 shows the same maximum flows at Kansas City as Alternative 4, and the same four-year timetable as Alternative 4, yet Table 3-61 shows it as having a beneficial flood risk compared to the no action alternative. Alternative 5 constrains flow at 126,000 cfs, at Kansas City, 77 percent higher than the 71,000 cfs constraint in the no action alternative. The DEIS doesn't state how this is possible—one must infer it has something to do with a fall rise versus a spring rise. But, with flow constraints so much higher, the claim of flood risk reduction would seem to require further explanation, or a recalibration of the model. We would also note that the flow constraints are identical to Alternative 4 and Alternative 4 is characterized as having more flood risk than the No Action alternative. Timing and normal rainfall can impact flood risk, but a model that excludes out of the ordinary weather events from impacting the model seems risky in and of itself.

Alternative 6 shows maximum flows at Kansas City in the 101,000-104,500 cfs range, running downstream flows to the action level, which at a minimum greatly impedes interior drainage. It is shown to have adverse flood risk compared to the no action alternative, which seems logical since the no action alternative has a 71,000 cfs restraint at Kansas City.

Section 3.12.3.3 - Alternative 1 - No Action

Here, the DEIS states under NED: In addition, these impacts result from runoff events that occur downstream of the reservoir system, large upstream runoff events that result in evacuation of flood water from the reservoirs, or the combination of the two and not from the management actions under No Action. Once again, the impacts of the bimodal spring rise are not accounted for. Interior drainage impacts and flood risk impacts are not mentioned. This cannot be accurate.

Table 3-63 - Summary of Damages for No Action

The table shows average annual losses on the river below Gavins Point to be \$15,226,753. Using 2016 dollars, the average value of the production of corn and soybeans was roughly \$570/acre. The loss figure shown, divided by \$570, means crop loss on roughly 27,000 acres of farmland which is an annual average of losses on only 1.9 percent of the farmland in the floodplain below Gavins Point. We believe the assumptions for the modeling that developed this number need further calibration.

Land Use Sensitivity Analysis

Again, the DEIS only mentions land acquired and taken out of production instead of addressing the far more damaging impacts of management actions. But this time the DEIS adds an interesting twist. First it points out that every acre that is acquired to create fish habitat will be taken off the rolls of productive land that could be flooded, thus eliminating it from flood risk. Somehow it has become logical to think that putting land underwater permanently eliminates the risk of flooding on that land. We hope this convoluted thinking is not expanded to the idea of taking all lands out of production so that no agricultural damage can be attributed to flooding. The analysis does not mention the negative impacts to interior drainage from Alternative 1 and again obfuscates the real damages to land use predictability, crop losses due to delayed or prevented planting or the negative impacts of spring and fall flow rises or summer low flows. The analysis is wholly incomplete and has little or no value because of the exclusion of interior drainage analysis.

Regional Economic Development

This section blames all flooding on natural hydrologic cycles and fails to even acknowledge that the law that created the reservoirs came about because of the incredible damages caused by natural hydrologic cycles. There's a reason it's called the Flood Control Act of 1944. This section totally avoids mention that correct management of the reservoirs under the law limits the negative impacts of high water years. In fact, there is current litigation that charges mismanagement of the flood control capabilities of the reservoir system causes the flood damage. We believe natural events can occur that can overwhelm the reservoirs and levee systems. But to explicitly claim that flood damages are unrelated to management of the reservoir system is intellectually dishonest.

This section then calls out 10 counties from South Dakota to Illinois that would have damage in excess of \$1 million. This follows the pattern of styling the DEIS in such a way as to trivialize the impacts of flooding. By calling out only 10 counties with damages in excess of \$1 million, the DEIS leaves the reader with the impression that these counties suffer the largest impacts from flooding but then only categorize the losses as over \$1 million. That's misleading. The damages could be in the tens or hundreds of millions but the DEIS does not call this out. Individual farms or businesses could easily have \$1 million in damages but the DEIS deftly, and we think deliberately, obfuscates that point.

All economic conclusions and modeling on this alternative are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. Alternative 1 is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Section 3.12.3.4 - Alternative 2 - USFWS 2003 Biological Opinion Projected Actions

Land Use Sensitivity Analysis

Here, the DEIS states: For Alternative 2, the estimated land acquisition was 45,717 acres in the lower river. In Section 3.10.2.5, the DEIS states: Total targeted acres for acquisition of lands are estimated to be 9,333 acres in the Ponca to Rulo reach and 24,130 in the Rulo to the mouth of the river reach under Alternative 2. Which is it - 33,463 acres or 45,717 acres? There's more than a 36 percent difference between these numbers. We recognize different groups probably wrote the different sections of the DEIS, but the lack of coordination and data which varies by over third of a magnitude raises even more questions about overall accuracy and credibility of the DEIS.

Convolved logic appears again. If all the acquired lands were previously in agricultural production, this means the amount of agricultural land that could be affected by flooding and the estimated agricultural losses in the lower river could be up to 3.0 percent less than the agricultural losses shown in Table 3-68. If it's not ag land any longer, the river can't flood ag land. That's just more evidence the culture that created the DEIS is anti-agriculture. They're not concerned about taking land out of production, damaging the economy, disrupting or dislocating families, eliminating jobs or threatening the food supply. The model apparently is believed to reduce some flood risk because of low summer flows. We agree that lower flows benefit flood risk, but caution that flood risk gains do not necessarily offset increased risks to navigation, public water supply, power generation or dredging. The DEIS should include caveats that direct readers and decision makers to consider the cumulative impact on all economic activity, as the activities are inherently interconnected. Unfortunately, the cumulative impacts portions of the DEIS fail to paint a cumulative picture. The DEIS should be amended to bring focus to all impacts through extensive economic modeling and analysis and the inclusion of valid studies of interior drainage impacts.

National Economic Development and Regional Economic Development

Here, the DEIS states: On average, the change in regional economic conditions would be negligible across all regions. We raised serious concerns about the truncated methodology used to predict outcomes in Section 3.10 - Land Use and Ownership, so we will not restate the concerns here, but they apply to Flood Risk and Interior Drainage in the same manner as they do land use. If anything, our concerns over flood risk and interior drainage are greater because the magnitude of impacts to the economy are greater in a major flood event and interior drainage impacts so much more land much more frequently. Our greatest concern is not accuracy at the outset (although it must be accurate both in terms of direction and relativity). Our most pressing comment is the lack of delineation of thorough review of economic impacts throughout the adaptive management process. Detailed methodology, check points, stakeholder engagement, how impacts will be agreed upon and how they will affect decision making must be spelled out.

We are concerned there is no set aside or clear opportunity for that review or for how the outcomes of such a review would influence further management actions. We don't know what will change in the AM process and there are obviously myriads of questions swirling around the accuracy and predictability of impacts from management actions.

It's OK that the predictions are not precise, or at this stage, accurate. We do not know how to cure cancer, or if the universe is finite, or what the weather will be five days from now or how to save the pallid sturgeon. Nor do we know that Alternative 2 will increase labor income \$57,000 in the Kansas City Reach to a reduction of \$29,000 in the Gavins Point Dam to Rulo, Kansas City Reach, and Hermann Reach relative to the no action alternative. We appreciate the effort to establish a baseline and make comparisons, but we were wary of the impact the inference of precise economic measurement may have on decision making. Most of all we were concerned over the lack of provisions for actual measurement, how it will be conducted and how it will inform the AM decision making process. It must be spelled out and be an integral part of the AM process. The AM process cannot be limited to adapting management actions for just one species. We should not be so cautious as to avoid experimentation and application of successful actions, nor so arrogant as to believe simple modeling accurately reflects economic impact. The DEIS must be amended to include detailed economic and social review of the AM process. Concluding that initial predictions from truncated modeling are sufficient is wholly inadequate and can lead us to employ management actions that can have severe and lasting negative impacts on all species, including humans.

Our comments on NED, RED and OSE apply to all succeeding sections of the DEIS on Alternatives 1-6.

All economic conclusions and modeling on Alternative 2 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on Interior Drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Section 3.12.3.5 - Alternative 3 - Mechanical Construction Only

We agree that the basic impacts of Alternative 3 are reduced, relative to the No Action alternative at the outset of the management actions. In general, Alternative 3 results in the least negative impacts.

However, because it still contains a provision for adjusting flow regimen, and because of the broad negative impacts of higher flows, and the possibility that annual pulses can still be adopted under the adaptive management process, Alternative 3 can still be very damaging to stakeholders. But it strikes a better balance between promising species recovery actions and negative consequences. If it eliminated the potential for spring pulses it would be the only acceptable alternative.

All economic conclusions and modeling on Alternative 3 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites. However, given that no alternatives exist outside the six offered, we believe this alternative is the least unacceptable of the six alternatives.

Section 3.12.3.6 - Alternative 4 - Spring ESH Creating Release

Table 3-77 Impacts from Modeled Flow Releases under Alternative 4 Compared to No Action

We believe the flow model may need calibration. The flow constraints during the pulse are 126,000 CFS at Kansas City. This flow level results in flooding immediately downstream from Kansas City and substantially increases flood risks during the time frame required for the pulse to clear the mouth of the river.

Further, with pulse constraints at 126,000 cfs, interior drainage issues will be significant. Its impossible to tell how many flap gates will be closed and how many fields will be inundated by percolating ground water or local rainfall that cannot escape due to the closed flap gates because modeling was not done for interior drainage. The economic impacts of such high flows for extended periods and the lack of information due to lack of modeling makes Alternative 4 intolerable.

Economic impact conclusions on interior drainage are incomplete and inaccurate. Flows are 77 percent higher at Kansas City (126,000 CFS for Alternative 4 versus 71,000 CFS for the no action alternative). Impacts to ground water, flap gates and pumping systems would be 77 percent more severe than with the no action alternative. The abbreviated analysis for interior drainage needs substantial recalibration.

All economic conclusions and modeling on Alternative 4 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Section 3.12.3.7- Alternative 5 - Fall ESH Creating Release

All economic conclusions and modeling on Alternative 5 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. In addition, translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted

and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

The fall pulse has the same high flow rates that significantly increase flood risks and cause interior drainage impedance. The difference between Alternative 4 and Alternative 5 is that under Alternative 4, many crops won't get planted or will be planted late. Under Alternative 5, they may get planted on time, but they run a higher risk of not being harvested. It provides some variety on how to go bankrupt. Delayed harvest brings on extra costs, heavier wear and tear on equipment and harvest losses due to lodging and shattering, wildlife and wind and water damage. Harvest may be delayed until the ground freezes since ground drying conditions are almost always worse (humidity, temperature, less sunshine) in the fall than in the summer.

Economic impact conclusions on interior drainage are incomplete and inaccurate. Flows are 77 percent higher at Kansas City (126,000 cfs for Alternative 5 versus 71,000 CFS for the no action alternative). Impacts to ground water, flap gates and pumping systems would be 77 percent more severe than with the no action alternative. The abbreviated analysis for interior drainage, such that it is, needs drastic recalibration.

Section 3.12.3.8 - Alternative 6 - Pallid Sturgeon Spawning Cue

All economic conclusions and modeling on Alternative 6 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage impacts. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Economic impact conclusions on interior drainage and flood risk are highly questionable. Flows are 47 percent higher at Kansas City (101,000 to 104,500 cfs for Alternative 6 at Kansas City versus 71,000 cfs for the no action alternative). Impacts to ground water, flap gates and pumping systems would be 47 percent more severe than with the no action alternative. The abbreviated analysis for interior drainage, such that it is, needs recalibration.

Section 3.12.4.2 - Summary of Interior Drainage Environmental Consequences

Table 3-95 - Environmental Consequences Relative to Interior Drainage

In the abbreviated interior drainage portion, the same occurs with Table 3-95. In the area of actions common to all alternatives no impacts were identified. Again, one must ask if the DEIS is oblivious to the effects of management actions, or if the DEIS deliberately obfuscates the substantial damages the actions precipitate.

Section 3.12.4.3 - Impacts from Management Actions Common to All Alternatives

Flow management actions are common to all alternatives, yet the DEIS fails to mention the flow management in this section. It lists all the other common actions, excludes flow management and then states none of the common actions will impact interior drainage as these actions do not affect river stage. Flow releases absolutely affect river stages.

Section 3.12.4.5 - Alternative 2 - USFWS 2003 Biological Opinion Projected Actions

Here, the DEIS contradicts itself by showing NED, totaling \$1.17 million annually for only the four levee sites that were studied. When multiplied by the hundreds of levee sites in the floodplain, if these sites are representative then annual impacts would be in the hundreds of millions annually. The assessment methodology is anything but methodical and lacks all credibility.

The DEIS then strains credibility even further by stating impacts to RED in any year would be so negligible that a full RED analysis was not undertaken on the interior drainage NED effects. NED impacts on only four levee sites were deemed to be over a million dollars annually, but RED impacts are so small that no one bothered to study them? That reasoning is unfathomable. These impacts occur with the current management actions in place, with flow constraints at Kansas City of 71,000 cfs.

The DEIS actually claims Alternative 2 has relatively small beneficial impacts relative to No Action. The flow constraint for the No Action alternative at Kansas City is 71,000 cfs. The flow constraint for Alternative 2 is 87,000 cfs at Kansas City. That's a 22 percent increase in flow, which raises the river stage above the releases of the No Action alternative. Yet, the modeling shows the NED impact to be smaller. The site with the largest impact is MRLS 488L, which would experience a decrease of \$10,214 in average annual flood impacts. According to the DEIS, higher water levels mean less flooding. That leads us to believe its manual calculations (the hydrology model doesn't run on today's computer) need to be checked for errors and the process employed to review the logic, accuracy and credibility of the DEIS needs a major overhaul. It is not logical, accurate or credible.

Section 3.12.4.7 - Alternative 4 - Spring ESH Creating Release

The DEIS says Alternative 4 has a relatively negligible adverse impact on interior drainage relative to No Action with a total increase in average annual NED impacts of \$389 or less that 0.1 percent Flow constraint in the No Action alternative at Kansas City are 71,000 cfs. Flow constraints under Alternative 4 are 126,000 cfs 77 percent higher than the No Action alternative. Yet, the impact is only \$389 a year. And, even though the flow constraints are 77 percent higher, no RED analysis was performed because the DEIS claims the impacts are so small it's not worth the effort. Again, this claim is very hard to believe.

Section 3.15 Navigation

General Analysis:

1. We do not support any alternative involving flow changes that would adversely affect navigation on the Missouri River. Because of reliable flows, barge traffic has consistently increased on the Missouri River in the last five years and most operators expect this trend to continue.
2. Flow changes in Alternatives 2, 4, 5, and 6 would negatively impact navigation on the Missouri and Mississippi Rivers. These alternatives would also negatively impact agriculture which is a primary customer of the navigation industry.
3. Low summer flow provisions in Alternative 2 will cause irreparable harm to the navigation industry by creating a split navigation season on the Missouri River. Negative impacts would also be felt in the bottleneck reach of the Mississippi River between St. Louis, MO and Cairo, IL.
4. The DEIS independent peer review must include individuals that have a firm and comprehensive understanding of the navigation economic model.

5. The DEIS analysis on Other Social Effects (OSE) of the impacts of various alternatives on navigation is incomplete and inadequate.

6. A major flaw of the DEIS is its failure to take into full consideration the principle of water-compelled rates for the Missouri and Mississippi Rivers.

Specific Comments:

Section 3.15.2.5 Alternative 2 - USFWS 2003 Biological Opinion Projected Actions

Under Alternative 2, it is highly likely that the decreasing releases from the Gavins Point Dam in Alternative 2 during the summer months would drop flows below the Construction Reference Plane (CRP) levels and halt navigation. Navigation would once again become unreliable and the navigation community and the users of the commercial navigation system would suffer severe negative economic consequences.

In this section, the DEIS states: Although split navigation seasons would adversely affect navigation NED, RED, and OSE under Alternative 2, the impacts would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas. This contradictory and flawed conclusion demonstrates a fundamental misunderstanding of Missouri River navigation by the study team. The navigation industry needs regulatory certainty in the form of consistent reliable flows.

Section 3.15.2.8 Alternative 5 - Fall ESH Creating Release

Table 3-173

This table shows that under Alternative 5, years in the 82-year period of record that have full or partial releases do not have an impact on navigation benefits. The DEIS justifies this assertion because in this case the releases would be in the fall when the navigation season is almost complete. Here, the DEIS fails to take into account the fall harvest season on both the Missouri and Mississippi Rivers.

Also, Table 3-173 makes the incorrect assumption that Missouri River navigation automatically stops when the navigation season officially ends. In actuality Missouri River shippers do not follow arbitrary season length dates but instead operate as long as adequate flows and weather conditions permit.

Section 3.15.2.11-Cumulative Impacts

This section concludes that navigation could experience adverse impacts from low-summer flows and states the following: Adverse impacts could result in the reduction of the navigation season length for years with the low summer flow, and the potential reduction in service level provided that could occur in the years with the spawning cue pulse. When combined with other past, present and reasonably foreseeable future actions, the cumulative impacts on navigation associated with Alternative 2 would result in a large reduction in navigation benefits. The majority of the relatively large, long-term adverse impacts would be caused by the low summer flow which would shorten the navigation season and prohibit navigation during the important months of the year. While shippers may be able to plan around the low summer flow period, the reliability of the of the Missouri River would be reduced and shippers would begin to transition to other modes of transportation. Over time as more shippers switch to other modes, the overall navigation benefits on the Missouri River would be largely reduced.

Further, Alternative 2 would also implement a bi-modal spring release from Gavins Point. In Alternative 2, the first pulse would begin on March 15 and would be as high as 31,000 cfs and the second pulse

would start on May 1 and would be as high as 60,000 cfs. Both pulses would negatively impact navigation for roughly four weeks.

If the river is already at high levels, which is often the case in the spring months, any increase in flows could cause negative impacts to navigation, farms, industries, and communities along the river. Releases in the 60,000 cfs range would most likely halt navigation due to high velocities. Towing companies operating on the Missouri River are concerned about releases from Gavins Point in May that exceed 50,000 cfs because they believe this amount of extra water has the potential to stop navigation on the Missouri River and cause elevated navigational risks on the middle Mississippi River. The month of May is typically a time of high water on both the Missouri and Mississippi Rivers without the addition of a spring pulse.

At the November 2016 MRRIC meeting, the Independent Socio-Economic Technical Review (ISETR) panel admitted their lack of understanding of navigation. In response to a question as to whether the ISETR was comfortable with the analysis of water-compelled rates in the navigation model, the leader of the ISETR stated they panel wasnt familiar with water-compelled rates and transportation savings and quite simply, that the ISETR is not made up of transportation economists.

At the same meeting, the ISETR panel leader stated they would have to punt on the navigation model, after being asked if the panel was confident of the models impacts of the alternatives on Mississippi River navigation. Despite professional concerns, the ISETR recommended that the Corps proceed with these models for use in the DEIS, including the navigation model.

Water Compelled Rates

There is no mention of water-compelled rates in either Sections 3.15 Navigation-Affected Environments et al., nor is there any analysis of water-compelled rates in Section 3.24 Mississippi River Impacts. Instead, the Corps devotes roughly one-half of one page to this critical concept in the Navigation Environmental Consequences Analysis Technical Report to the DEIS.

Air Quality

The navigation analysis for OSE in the DEIS only considers changes in air quality if commodities moving on the waterway could potentially shift to land because of any of the alternatives. In fact, air quality is the only OSE considered in the DEIS for any of the alternatives. The DEIS makes no mention of increased fatalities or congestion if goods move to truck and/or rail. It also fails to account for revenue diversions from other federal and state budgets to repair roads and bridges along with increased expenditures for concrete and asphalt. The OSE does not account for lost time and productivity due to the increased amount of time spent in traffic due to modal shifts caused by these alternatives. By failing to include these other social effects and costs, the DEIS grossly understates impacts.

Section 3.17 Thermal Power

General Analysis:

1. Significant reductions in energy as a result of shutdowns of baseload thermal power plants caused by lower summer flow in Alternative 2 could lead to problems with system reliability.
2. The DEIS analyzes impacts from only a cost perspective, assuming offset energy is available. The Corps has not conducted the analysis needed to determine if this energy would be available from the

market or if the transmission facilities could deliver the needed replacement energy.

3. The NED and RED analysis indicate significant financial impacts to thermal power generating facilities below Gavins Point from an energy and capacity perspective and are likely underestimated.

4. The DEIS analysis of impacts to thermal power does not seem to be representative of actions within the various management plan alternatives. This could be because of a small number of years analyzed from a temperature and operational perspective, inappropriate modeling assumptions or both.

Section 3.18 Water Supply

General Analysis:

1. Interruption of water supply for even one day would be disastrous for people who live and work in the Missouri River Basin. The Corps should quantify the impact of communities being without a water supply for a day and include such risk assessment in each of the DEIS alternatives and it must continue to place the congressionally authorized purpose of water supply among its highest priorities.

2. Public water suppliers rely on fixed intake structures to divert water from the Missouri River and its major tributaries. These intakes rely on the channel created and maintained by the Bank Stabilization and Navigation Project (BSNP). Most public water suppliers have limited or no access to alternative water sources.

3. Water supply intakes were designed and constructed with the Corps advice, consent and approval. It is either extremely expensive or impossible to adjust these intakes to accommodate major changes in river levels. As management plan alternatives are considered, the Corps must make sure these intakes are capable of continuous operation.

4. The DEIS fails to recognize and address Missouri River bed degradation, which is impacting water supply intakes. The Corps has the key responsibility to correct this problem, which has taken place over the last 25 years. Regulatory cost of compliance must be detailed in the DEIS.

5. The DEIS is inadequate in identifying the current, actual operating and shut-down elevations for Missouri River water supply intakes. Some of the data used in the models appears to be inaccurate or incomplete. The Corps should undertake a systematic process to collect and verify data.

6. The DEIS wrongly assumes that water access problems can be solved by rental of supplemental pumps on a temporary, reactive basis.

Specific Comments:

Section 3.18.2.4 - Alternative 1- No Action

Here, the DEIS states: The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1. The DEIS constitutes the first public report documenting that Missouri River basin communities could be in danger of losing their water supply. The Corps must address this catastrophic scenario for those that rely on the Missouri River as their water source.

Further, the DEIS states: &the impacts modeled do not account for the ability of water management to adapt to changing conditions on the system to serve authorized purposes, such as water supply. It also does not account for what activities may be implemented in the future relative to bed degradation which may be influencing model results. Another very alarming statement found on the same page is: The project team did not attempt to evaluate the cost of intake modification that may occur due to bed degradation or prolonged drought conditions.

The NED analysis states: &focused on actions that water supply operators can adapt by&using different-sized portable submersible pumps. Water supply operations are a mission-critical, non-stop business and it would be unacceptable and irresponsible to wait until water levels are at critical levels and then hurriedly go out and rent pumps. The DEIS wrongly assumes there would be an adequate supply of pumps in the size and quantity needed to operate the 55 intakes on the river. Further, the DEIS makes the incorrect assumption that temporary pumps can easily be connected to Missouri River intakes, which they cannot. This is a head in the sand approach which must be corrected.

The NED analysis details another incorrect assumption in the DEIS, stating that 55 water suppliers could acquire portable pumps for a cost of \$376,000 per year, which is very low and based upon inaccurate facts.

Bed degradation already requires winter flows much higher than Master Manual flows. For example, about 10,000 cfs in additional releases are now required from Gavins Point to maintain the stage elevation at Kansas City than when the Master Manual was drafted. The DEIS fails to recognize this reality which skews the modeling results, making them inaccurate.

Section 3.18.2.5 - Alternative 2 - USFWS 2003 Biological Opinion Projected Action

This is the worst possible alternative for water supply because of its inclusion of a summer low flow provision. Because Alternative 2 relies on the USFWS 2003 Biological Opinion (BiOp), which lacks scientific basis and is deeply flawed. Since then, most of the hypotheses relied upon in the BiOp have been disproven.

Section 3.18.2.6 - Alternative 3

This alternative appears to have the least impact on water supply operators as it applies the latest science toward species recovery. Even though this is the best alternative available, it would result in 22 intakes experiencing an average of 14 days below shut down elevations. There is not a single water utility that has enough storage or access to alternative sources to be able to operate for 14 days without a water supply.

Section 3.19 Wastewater Facilities

General Analysis:

1. We are concerned with the DEIS findings that five wastewater treatment plants (two in Iowa, three in Missouri) could be affected by low flow conditions specified in Alternative 2. Section 3.19.2.5 states: Impacts of the habitat construction management actions on wastewater facility outfalls could range from negligible to large, long-term and adverse on wastewater facilities compared to Alternative 1, depending on the proximity of the constructed habitat site to wastewater facilities

2. The DEIS wrongly assumes that wastewater authorities will be able to make improvements as needed to account for management changes such as low flow. This assumption cannot be reliably

made because it depends on too many variables, such as funding, changing requirements, local logistics and permitting.

3.24 Mississippi River Impacts

General Analysis:

1. Due to the critical impacts that Missouri River flows have on the Mississippi River, any future flow change could negatively impact commerce and the nations economy.
2. Pallid sturgeon are using the middle Mississippi and DEIS alternatives should consider the middle Mississippi and the Missouri Rivers as one and be evaluated as such.
3. We are concerned that the geographic scope of the DEIS does not include the middle Mississippi River from St. Louis, MO to Cairo, IL. The failure to include the middle Mississippi River in DEIS geographic scope raises questions about the Corps ability to accurately analyze the impacts of the alternatives on the Mississippi River.
4. The economic modeling and analysis of the DEIS alternatives on Mississippi River flood risk management and navigation is flawed and missing key data.
5. We believe the hydrological impacts of the proposed alternatives on Mississippi River navigation and stage levels are significantly understated.

Specific Comments:

In this section, the DEIS indicates that the impacts to flood risk management were evaluated using two of the four economic account models: NED and OSE. By only using these two accounts to evaluate the impacts to flood risk management, the DEIS has omitted key data points resulting in a major understatement of the costs and impacts to Mississippi River flood control interests. The failure to perform a comprehensive RED analysis to measure the impacts to flood risk management on the Mississippi River is very concerning. In addition to this, the DEIS does not indicate the reason an RED impact analysis was not performed. A comprehensive RED analysis for the Mississippi River, if done properly, would illustrate the negative impacts of these alternatives on local and regional economic conditions, such as employment, labor income, sales, sales tax revenue, flood damages, and other potential costs.

In terms of the impacts of the alternatives on Mississippi River navigation, the DEIS evaluation does not use any of the four accounts: Environmental Quality Methodology (EC), NED, RED, or OSE. Instead, the Corps measures the impacts of the alternatives on Mississippi River navigation by analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the HEC-RAS Model for the entire period-of-record for each alternative. Therefore, the Corps has been using the four accounts (EC, NED, RED, OSE) throughout the DEIS, and then utilizes a completely different methodology to measure the alternatives impacts on Mississippi River navigation. Once again, the DEIS fails to explain the reason for this abrupt change in methods. The failure to perform a comprehensive RED analysis to measure the alternatives impacts on Mississippi River navigation is inexcusable and unacceptable. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the local and regional economic conditions (jobs, income, revenues). Finally, the failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the Mississippi Rivers major contribution to the nations economy. By failing to conduct and NED, RED, OSE, and EQ

analysis in its modeling, the DEIS is significantly understating the economic, environmental, and social impacts of the alternatives on Mississippi River navigation.

The methodology used for the analysis of the impacts on the hydrology in the middle Mississippi River from the alternatives is similar to the methodology used for analyzing the impacts for the Missouri River. Regarding the methodology used for the analysis of Mississippi River impacts, the DEIS states the following: Specifically, the analysis of the flow alterations under the six alternatives was largely based on the HEC-ResSim and the HEC-RAS Modeling for the 82-year period of record.

The DEIS concludes that, despite the massive spring and fall releases from the Gavins Point Dam in Alternatives 2, 4, 5, and 6, there would be no significant impacts to middle Mississippi river navigation from any of these alternatives. The DEIS also concludes that there would be no significant impact to middle Mississippi river navigation from the significantly lower summer flows contained in Alternative 2. These conclusions are hard to justify given the fact that the DEIS also states that the Missouri River contributes almost half the flow in the middle Mississippi River. The DEIS also claims that the spring and fall flow releases in Alternatives 2, 4, 5, and 6 would be partially to largely attenuated by the time they reach Hermann, Missouri, but does not provide any detailed analysis as to why this would be the case. Does the Corps just expect the large amount of extra water released from Gavins Point to stay in the Missouri River and not flow downstream into the Mississippi River?

The DEIS subsection Impact from Management Actions Common to All Alternatives states: It is anticipated that there will be no impacts to biological resources in the middle Mississippi River from the management actions common to all alternatives. The listed activities would occur on the Missouri river and would not impact the stage or flow on the middle Mississippi River.

We cannot understand how the DEIS can draw this conclusion when it states in two different subsections of Section 3.24 - Mississippi River Impacts that the Missouri River contributes almost half of the flow to the middle Mississippi river. These conclusions in the DEIS are illogical.

Section 3.24 further states that the impacts of Alternatives 2, 4, 5 and 6 on stage and flow in the middle Mississippi River would be small or negligible. This section also concludes that the impacts to flood risk management in the middle Mississippi River are not anticipated to be significant under Alternatives 3 through 6. Finally, this section claims that the impacts to navigation in the middle Mississippi River would not be significant under Alternatives 2 through 6. We strongly disagree with these conclusions in Section 3.24. We believe that the impacts to stage, flood control and navigation on the middle Mississippi River are significantly understated due to the flaws in the hydrological and economic models.

While the DEIS claims that these impacts on the middle Mississippi River will be small to negligible, the Corps own data concludes that the lower summer flows in Alternative 2 would result in a lower stage of approximately two feet in July and August . Such reduction in stage on the middle Mississippi in the busy summer months is not a small to negligible impact, especially during times of drought. A two-foot reduction would have severe consequences for shippers and consumers. The DEIS further concludes that the massive spring and fall releases in Alternatives 2, 4, 5, and 6 would increase the stage and flow on the middle Mississippi by one to three feet. Once again, these increases are not small or negligible, especially when they occur during peak flood season.

Even the minimum low flow of 25,000 cfs for several weeks would have significant effects on navigation on the Mississippi River below St. Louis. These impacts would come in the form of reduced draft and tow sizes. Should the navigation industry have to reduce draft out of St. Louis to the Gulf because of insufficient flows, the cost to the nation would be, at a minimum, in the millions.

In periods of high water on the Mississippi River, increasing the amount of water flowing in from the Missouri River and raising the stage by two to three feet would have serious impacts to the shippers, farmers, consumers, and communities along the river.

Section 4.0 Adaptive Management Plan

General Analysis:

1. By definition and design, adaptive management (AM) means the management actions are not yet identified. We can only speculate on the direction of impacts because we only know the direction of management actions. It is impossible to provide the appropriate quality and scope of comments on management actions when not even the Corps or the FWS knows what actions they will take. AM plan decisions made outside of the ROD and Master Manual must go through full NEPA review and a separate EIS and must include independent peer review of the science and be coupled with full public review and comment before finalized.
2. The Corps should communicate what actions they believe to be implementable under AM. If stakeholders are to participate in a meaningful way, no decisions should be made in a vacuum or come as a surprise.
3. The Corps should commit to the use of two independent panels in AM plan independent review. We believe socio-economic impact review and analysis to be a key part of AM and it should continue to be utilized. As we've pointed out, the DEIS modeling and assessment of human impacts is woefully inadequate, highlighting the important need for review by both panels.
4. Governors of each of the basin states should have much larger input into AM than what is currently proposed and the AM governance structure should be reexamined to accommodate this.
5. Just as adaptive management employs hindsight to compensate for the inability of existing science to predict outcomes for the species, it must also provide detailed and adaptive processes for reviewing, commenting and changing the impacts and outcomes for social and economic consideration. If the process for analyzing social and economic impacts has been developed it must be included in the DEIS so it can be evaluated. If it has not been developed, the process is incomplete and the DEIS is incomplete. Impacts and outcomes on an incomplete process cannot be determined or and comments and considerations cannot be adequately informed. The complete process must be developed and the plans for its deployment and execution must be clearly delineated in the DEIS.
6. Were sincere in our engagement to recover the species. If we were not, the lack of complete and serious planning and analysis would be sufficient to call a halt to our involvement. But even though these voids are substantial, we believe they can be corrected. We have concluded that we should not be so cautious as to avoid experimentation and application of successful actions, nor so arrogant as to believe simple modeling accurately reflects economic impacts and provides a reasonable basis on which to proceed. The human species, and the impacts to its condition, must be given the same consideration, thought, data based reviews and adaptation of the process as are the species to be recovered.
7. The DEIS does not specify a robust process for ongoing analysis of economic impacts of adaptive management actions. Just as adaptive management hypothesizes, tests actions and then assesses outcomes on the species, it must allow for the inclusion of economic outcomes to inform the process and inform decisions regarding changes to management actions. Adaptive management recognizes

that we do not yet know what management actions are required or how those actions will impact the species. We will not argue against the logic of taking an adaptive management approach to recovery. The MRRIC process of independent scientific review has revealed that what was once represented as science was, at best, informed hypotheses. Proceeding forward with unproven theories on spawning cues, recruitment and habitat is foolish and greatly increases the potential for doing more harm than good.

Specific Comments:

The lack of oversight for administrative decisions in the AM Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional EPA requirements.

The DEIS gives the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. Though the DEIS states there is a governance structure for the AM Plan, it simultaneously permits actions that are not part of the preferred alternative, if those options are warranted and feasible. Yet, the DEIS fails to clarify what constitutes warranted and feasible, beyond that which yet-unknown science deems necessary. As a result, the DEIS and the AM Plan open the door to actions that go beyond the established ROD without automatically triggering a full NEPA process to produce a supplemental EIS, as is required by law.

The DEIS admits "a supplemental NEPA process may be necessary prior to the end of the 15-year period." Yet, it then fails to clarify the kind of action which would trigger this requirement, such as going beyond the dictates of the Master Manual. Instead, the DEIS permits the Corps to take actions that have not been fully vetted or even proposed, without a supplemental EIS and input from stakeholders. Though scientific monitoring requires a flexible approach, the present AM plan goes well beyond reasonable flexibility and that it fails to adhere to legislative requirements clearly established under NEPA and reaffirmed by the courts. Under the guise of scientifically necessary, the DEIS is suggesting the Corps have unfettered ability to go beyond reasonable limitations of the ROD or Master Manual without the accountability of a supplemental EIS.

Section Three - Suggestions, Recommendations and Conclusions

1. The CPR objects to any alternative that fails to recognize Master Manual constraints. We also object to any alternative that contains a low summer flow provision that would severely harm river navigation and public utility operations.
2. Hydrologic and economic modeling must be completed before any flow management plan is implemented. The Preferred Alternative allows adequate time to complete a full analysis of the impacts to stakeholders.
3. Flood risk management and interior drainage models must be completed for the entire floodplain, as opposed to the miniscule effort in studying only four levee sites along the entire lower river. Given that agriculture is the largest land use sector in the basin, these two items deserve much larger attention that what they've been given in the DEIS.
4. The RED section blames all flooding on natural hydrological cycles. There should be some mention of management of the reservoirs that has the potential to cause flooding events.
5. The DEIS calls out 10 counties from South Dakota to Illinois that would have damages in excess of \$1 million. This leads the reader to believe that only 10 counties would suffer any sort of notable damages and flooding impacts are miniscule. One individual farmer could have a loss that exceeds \$1

million. This deserves a much harder look.

6. The Land Use section of the DEIS is completely inadequate and fundamentally flawed. This section only examined impacts of future government land purchases and did not research at all private landowners inability to utilize their land because of impacts to interior drainage. This must be taken into account.

7. Operational costs under a low summer flow regime are severely underestimated and should be reexamined. The Corps must identify all potential regulatory burdens in advance of the implementation of any management plan action.

8. Regulatory costs to water supply operators is wholly inadequate. The Corps needs to conduct a much more serious examination on the economic impacts to the basin of even one day of interruption to residential and industrial water users.

9. Regarding navigation, the Corps needs to better study the linkage between the Missouri and Mississippi Rivers in terms of flow support and flooding impacts. The Missouri River can greatly affect the middle Mississippi and its contributions, positive or negative, should be clearly delineated in the DEIS.

10. DEIS modeling needs to incorporate the principle of water-compelled rates for the Missouri and Mississippi Rivers and the independent peer review must include economists that have a firm understanding of the navigation economic model.

11. The Corps should truly follow the AM plan process by slowing down IRC construction plans and commit to studying the species and human effects of one IRC site before building all 12 as planned in the DEIS. Further, the Corps needs to fully explain what impacts IRCs will have on the navigation channel, bed and hydrologic conditions.

12. The DEIS should specify a robust process for ongoing analysis of economic impacts of adaptive management plan actions to be able to inform the process and decisions regarding changes to management plan actions, while ensuring compliance with the Master Manual.

13. We are concerned about the massive cost to the nation incurred to date by the MRRMP. Since 1992, this program has consumed over \$825 million in taxpayer funds. The DEIS does not include the budgetary impact of implementation of the alternatives. The impacts to the human environment in this effort must be addressed.

Once again, the CPR is appreciative of the opportunity to comment on the DEIS. We thank you and your staff for the hard work that has gone into this massive effort that will guide Missouri River operations for the next 15 years.

Our members have a vested interest in the continue economic viability of the Missouri River basin and we respect the federal mandate of the Endangered Species Act to recover the species.


We believe recovery can be achieved in a manner thats science-based and balanced with stakeholder interests. It is our sincere hope that our comments can be of assistance to you in that effort. We look forward to continued engagement in reasoned dialogue with you and your staff in the future as we work toward common interests in protecting and promoting the Missouri River for a variety of uses.

Respectfully,

Dan Engemann
Executive Director
Coalition to Protect the Missouri River
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Contains Request(s): No Type: Letter
Notes: See the attached PDF for enclosures to letter

Correspondence Text

April 24, 2017

U.S. Army Corps of Engineers
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ATTN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

RE: Comments on the draft Missouri River Management Plan and Environmental Impact Statement (MRRMP-EIS)

The Nature Conservancy (TNC) would like to thank the U.S. Army Corps of Engineers (USACE) for the opportunity to comment on the draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS).

TNC is a global non-profit organization whose mission is to conserve the lands and water upon which all life depends. We have chapters and programs doing on-the-ground conservation work in all 50 U.S. states and have approximately 85,000 members residing in the Missouri River basin states. We pride ourselves on being science-based and in seeking practical solutions that meet the needs of people and nature. TNC believes the Missouri River Recovery Implementation Committee (MRRIC) is an important example of a collaborative, consensus-based, natural resource forum that can embody this approach. Its potential to achieve science-based, practical solutions that meet the needs of people and nature is why TNC has had its staff participate on MRRIC since its inception.

On MRRIC, TNC has represented the stakeholder interest category of Fish and Wildlife and logically most of the comments below reflect that interest category. This focus is not intended to diminish the needs of people in association with the draft MRRMP-EIS and we encourage and trust USACE to fully

consider the comments and needs of the tribes, states and other stakeholder interests in this comment process.

TNC appreciates the efforts by USACE and its contractors in creating the draft MRRMP-EIS. A tremendous amount of important and high-quality work was completed over the last three years. TNC strongly supports the process and involvement that could be termed non-standard for USACE in EIS efforts. TNC believes the high stakeholder involvement through MRRIC and use of an Effects Analysis (EA) as the best available science and the basis of the Adaptive Management Plan (AMP) coupled with the Independent Science Advisory Panel's (ISAP) and Independent Social Economic Technical Review Panel's (ISETR) independent review of the science applied is a model of what a federal decision making process at this scale should include. TNC encourages USACE to apply this model to its other large scale water resource planning efforts nationwide. TNC is very supportive of the contents and structure of the AMP and agrees with the tiered approach to some management actions given some of the current uncertainty surrounding their effectiveness. This draft MRRMP-EIS marks a significant advancement in USACE Missouri River Recovery Program and U.S. Fish and Wildlife Service endangered species planning for the Missouri River. However, TNC does have an overarching concern and some more specific concerns with the draft MRRMP-EIS.

Overarching Concern:

USACE is selecting what it believes to be possible and not what it has been directed to do previously by Congress and what needs to be done for the Missouri River.

Section 5018 of Water Resources Development Act of 2007 states USACE shall conduct a study in consultation with MRRIC: "to mitigate the losses of aquatic and terrestrial habitat; to recover the federally list species under the Endangered Species Act; to restore the ecosystem to prevent further declines among other native species."

To contrast, the draft MRRMP-EIS is a document to only provide:

"a programmatic assessment of 1. major federal actions necessary to avoid a finding of jeopardy to the pallid sturgeon (*Scaphirhynchus a/bus*), interior least tern (*Sterno antillarum atha/assos*), and the Northern Great Plains piping plover (*Charadrius melodus*) caused by operation of the Missouri River Mainstem and Kansas River Reservoir System and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSN P) in accordance with the Endangered Species Act (ESA) of 1973, as amended; and 2. the Missouri River BSNP fish and wildlife mitigation plan described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Act (WRDA) of 1986".

A directive to assess how to mitigate losses of habitat, recover the listed species and restore the ecosystem was selectively narrowed to identify actions to only avoid jeopardy and evaluate an already established plan. The draft MRRMP-EIS cannot and should not be viewed as fulfilling the study directive detailed in Section 5018.

TNC acknowledges the Missouri River Ecosystem Restoration Plan effort was stopped by factors largely outside of USACE's control, but it does not eliminate the directive or the need for a broader plan. The draft MRRMP-EIS's focus on the currently listed species is warranted and should advance their recovery if the AMP is diligently followed, but this sole focus will also come at a cost.

If USACE does not identify and implement actions to restore the ecosystem to prevent further declines among other native species, it will ensure further declines and eventually other federally listed species.

TNC requests that USACE - in consultation with MRRIC - begin a broader Missouri River ecosystem assessment. Ideally this assessment would fulfill the directive of Section 5018 and evaluate how different levels of restoration of the ecological structure (e.g. riverine/floodplain ecosystem, flow regimes, sediment regimes) can also address and modernize dated aspects of infrastructure and operations associated with the authorized purposes.

For example, TNC has long been a proponent of coupling river/floodplain restorations at the known lower river "pinch points". These areas are where at high flows infrastructure located too close to the river increases local river stages. Levees with repetitive failures due to placement over historic river channels are also areas where both ecological and infrastructure restoration could take place. These are just two examples of science-based, practical solutions that meet the needs of people and nature a broader assessment could identify.

Specific Concerns with the draft MRRMP-EIS:

TNC is concerned "Implementation of Preferred Alternative Under Adaptive Management" is too narrow to allow for cost-effective, efficient, and effective Adaptive Management Program.

TNC recommends USACE capture the current full contents of the AMP (it attachments and appendices) in the final MRRMP-EIS and the approval of their contents in the Record of Decision (ROD).

The creation and use of an EA as the basis of the Adaptive Management Plan (AMP), involvement of the

Missouri River Recovery Implementation Committee (MRRIC) and its ISAP and ISETR have greatly enhanced the draft MRRMP-EIS. Given these enhancements, and the quality content and effort put into the EA and AMP it is imperative to capture the complete contents of the USACE-authored AMP in the final MRRMP-EIS and the approval of its contents in the Record of Decision (ROD).

Volume Four of the draft MRRMP-EIS is titled "Implementation of Preferred Alternative under Adaptive Management" and contains only select components of the larger AMP. Volume 4 also labels the AMP as a "companion document" to the MRRMP-EIS. The AMP is much more than a companion document; it is integral and its full contents should be recognized and its acceptance documented by the ROD. The ROD should also acknowledge the living nature of these documents as Volume 4 does. The ability to draw readily from the other alternatives fully analyzed in this NEPA process and the entire AM Plan should not be hindered by a limited ROD.

TNC is concerned by the lack of environmental flows contained in the current Preferred Alternative in the draft MRRMP-EIS.

The inclusion of an "Experimental Flow Release - if required" in 2025 as identified in the Preferred Alternative is a small step in the right direction, but hardly reflects Fish and Wildlife as an authorized purpose in the operation of the Missouri River mainstem system. TNC has a long history of working on environmental flows and over a decade of it with USACE through the Sustainable Rivers Project. To supplement these comments, we are attaching a 2014 letter and report by the Chief of Engineers Environmental Advisory Board and the 2015 response by the Chief of Engineers. TNC understands the challenges and constraints USACE faces on the Missouri River in terms of implementing environmental flows, but TNC does not believe they are insurmountable and would propose two

approaches for inclusion in a MRRMP-EIS preferred alternative:

1. To enhance the research surrounding "Big Question 1: Spawning Cues" TNC recommends inclusion of Level 2 Experimental Flow Decreases from Gavins Point Dam in addition to (not replacing) the proposed release. These decreases would be timed to coincide with high flow events at appropriate water temperatures (spawning) occurring on the tributaries near Gavins Point Dam to attempt to enhance localized temperature and turbidity- known factors impacting pallid spawning behaviors. These managed decreases would appear to be already within the Master Manual, should be complementary to the other authorized purposes given timing with increased tributary inflows, and could benefit the research already identified in the Preferred Alternative.

2. Given long known negative environmental impacts and a recent publication in Bioscience (Kennedy et al. 2016) further documenting them, TNC recommends USACE alter (not eliminate) hydropeaking practices on the Missouri River mainstem system. TNC believes this directly applies to the primary biotic response of food availability in both the upper and lower river pallid sturgeon exogenously-feeding larvae conceptual ecological models. And the ecological response of area of suitable foraging habitat in the piping plover conceptual ecological models. TNC offers no specific flow prescription at this time, only that USACE begin evaluating and implementing low stable flows during known periods of peak aquatic-insect laying. TNC believes this can and should be done in ways that minimally affect hydroelectricity generation while still obtaining the goal of improving aquatic-insect egg laying and rearing. TNC also believes evaluation of the impacts on these same insects by "harassment flows" to discourage bird nesting a low sandbar elevations should be considered.

TNC believes these minor water management adjustments could bring important ecological and informational benefits, be acceptable to a broad range of stakeholders, and thus, make important additions to the MRRMP- EIS preferred alternative. TNC also wants to emphasize it recommends these adjustments because it trusts USACE to implement these water operations safely.

TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study.

TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region. TNC acknowledges USACE lacks the authority to directly act on the alkali lakes region, but the information being presented at the 2017 Missouri River Natural Resources Conference and in other forums related to the metapopulation study for piping plovers appears compelling enough to be captured or caveated in the AMP. Robust exchange and use by plovers between the alkali lakes, reservoirs, and river segments could have significant management implications impacting not only bird actions, but added budgetary and management flexibility in regards to the pallid sturgeon.

TNC is concerned with the lack of specific actions related to acquiring and developing lands associated with the Bank Stabilization and Navigation Project (BSNP) Mitigation Project authorities in the draft MRRMP-EIS and current Preferred Alternative.

Although the Preferred Alternative does note the inclusion of " riparian habitat development on any acquired land", the MRRMP-EIS seems to lack any detail on the amount of acquired land would occur or the types of habitat development. TNC has been and remains supportive of the acquisition and development of lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986 and modified by Section 334(a) of WRDA 1999 and agrees with the USACE characterization in Volume 1 of these authorities being obligations of the Fish and Wildlife Coordination Act. TNC observed at the

public comment meeting held in Omaha on the draft MRRMP-EIS two out of the three self-identified agricultural based landowners who provided public oral comments described how they wanted and were willing to participate in restoration activities along the river.

Accompanying this MRRMP-EIS, TNC recommends USACE request MRRIC revise their May 2013 recommendation (also considering the MRRIC August 2014 response) on "Options for Easements". TNC believes a revised recommendation making clear and focusing the easement recommendation to only

MRRP policy and not national USACE policy would aid further consideration by USACE and help any acquisition activities in the future by enabling landowners to retain fee title ownership of their lands while at the same time participating in restoration activities along the Missouri River.

TNC is concerned at the characterization of the Alternative Development process throughout the draft MRRMP-EIS.

As stated at the beginning our comments, TNC has been and is supportive of this unique EIS process and its products, and believes USACE should apply the process in other appropriate areas. TNC believes it is important to accurately capture the alternative development process as it pertains to MRRIC involvement in the MRRMP-EIS and requests USACE do this by addressing inadequacies parts of Section 2.1- Overview of Alternative Development Process and the Pallid Sturgeon and Bird Alternative Development sections. Instead of detailing the inaccuracies, TNC believes a basic and accurate overview of the alternative development process involving MRRIC would contain:

An initial set of alternatives were developed by the MRRMP-EIS Product Development Team (PDT) and the Effects Analysis Teams. This initial set of alternatives was shared with MRRIC members through a series of Human Consideration Proxy Webinars. After the webinars, the initial set of alternatives was revised by MRRMP-EIS PDT and presented and discussed to MRRIC at the May 2015 Plenary meeting. At this meeting MRRIC members could share their initial reactions verbally and could provide written feedback and ranking of alternatives if they chose to. No specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the May 2015 meeting the MRRMP-EIS PDT revised the initial and developed a second set of alternatives which were presented and discussed at the August 2015 MRRIC Plenary meeting. Again, no specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the August 2015 Plenary meeting, the MRRMP-EIS PDT analyzed the second set of alternatives and forwarded six "plan" alternatives (including a No Action alternative) for detailed evaluation in the draft MRRMP-EIS. All determinations for inclusion of the six alternatives were made by USACE as was the designation of Alternative Three as the Preferred Alternative in the draft MRRMP-EIS.

TNC does not find the use of "collaboration" or "ProACT process" or " ProACT discussions" accurate in describing alternative development involving MRRIC. As Section 1.2 states "USACE and USFWS collaboratively have tailored the generic ProACT approach to meet the needs of this MRRMP-EIS planning process." USACE and USFWS may have applied an approach fully internally, just not with MRRIC.

Thank you for taking these comments under consideration.

Sincerely,

Todd Strole

Associate Director, Floodplain Management
Mississippi River Basin Project
The Nature Conservancy
*MRRIC Stakeholder Member representing Fish and Wildlife

Jason Skold
Director of Land Protection - Nebraska
The Nature Conservancy
*MRRIC Alternate Stakeholder Member representing Fish and Wildlife

CC: USFWS Region 6 Ecological Services
Encl: 2014 EAB Letter and Report
2015 Chief of Engineers Letter Response

References

Theodore A. Kennedy, Jeffery D. Muehbauer, Charles B. Yackulic, David A. Lytle, Scott W. Miller, Kimberly L. Dibble, Eric W. Kortenhoeven, Anya N. Metcalfe, Colden V. Baxter; Flow Management for Hydropower Extirpates Aquatic Insects, Undermining River Food Webs. *BioScience* 2016; 66(7): 561-575. doi: 10.1093/biosci/biw059

[see attached: 2014 EAB Letter and Report; 2015 Chief of Engineers Letter Response]

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Contains Request(s): No Type: Letter
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Correspondence Text

TO WHOM IT MAY CONCERN:

The city of Nebraska City, its citizens and businesses support the USA CE implementation of MRRMP Alternative 3 and is opposed to any plans which involve creating an additional flow release from Gavins Point Dam, increasing the risk of flooding that would affect our community. We believe this alternative best fits the USACE Planning Account objective to evaluate species objectives including consideration for the effects of each action or alternative on a wide range of human considerations including economic, social and cultural values associated with the natural resources of the Missouri River.

Nebraska City has been damaged by flooding before. Throughout the spring of 2011, USACE implemented release in addition to higher than normal spring runoff and rainfall resulted in devastating flooding throughout our region causing loss of homes, businesses and commerce. The resulting closure of HWY 2 and the Missouri River bridge was an economic burden on our economy for five months, which led to the failure of multiple businesses.

While we have no issues with attempts to support reestablishing habitat for protected species, we would like to see evidence that these efforts have been successful. We also request any and all efforts be made without increasing the risk of flooding. Flooding of any significant magnitude results in the closure of HWY 2 and separates our community from a substantial portion of our customer base, many of which must cross the river for work and commerce.

SINCERELY,

City of Nebraska City
Grayson Path,
City Administrator


Nebraska City Tourism and Commerce
Tonya Ottemann, President

Nebraska City Area Economic Development Corporation
Dan Mauk, Executive Director

Cc: Sen Deb Fisher, Sen Ben Sasse, Ref Jeff Fortenberry, Gov Pete Ricketts

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Attention: Mark Harberg, Missouri River Recovery Program Manager CENWO-PM-AC

RE: Great Plains Tribal Water Alliance - Comments on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement

Dear Col. Henderson:

Enclosed please find the Report of the Great Plains Tribal Water Alliance on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement. We jointly submit this report as the comments of the Tribes of the Great Plains Tribal Water Alliance on the Draft EIS. We expect the Corps of Engineers to consult with our Tribes in order to address the concerns articulated in this report. We challenge you to address our concerns in earnest, rather than providing boilerplate non-responses and conducting business as usual by the Corps of Engineers.

The Draft Environmental Impact Statement and the process by which it was developed are significant concerns. We take note that our participation in the collaborative process known as MRRIC is misrepresented as full Tribal consultation and participation in the Recovery Management Plan. That is untrue. Tribal participation in MRRIC and meetings with low-level Corps officials constitute neither government-to-government consultation, nor compliance with National Historic Preservation Act section 106. The misportrayal of our participation in regional stakeholder dialogues jeopardizes our future participation, and undermines the government-to-government relationship between our Tribes and the Department of the Army.

As articulated in the attached report, the Draft EIS addresses none of our concerns. Impacts on our Tribes from the Pick-Sloan plan and then alternatives in the Draft EIS are neither addressed nor mitigated. Accordingly, we reject the Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

Sincerely,

Dave Archambault II, Chairman
Standing Rock Sioux Tribe

William Kindle, President
Rosebud Sioux Tribe

Scott Weston, President
Oglala Sioux Tribe

Anthony Reider, President
Flandreau Santee Sioux Tribe

Enclosure

Report of the Great Plains Tribal Water Alliance on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement
April 24, 2017

The Great Plains Tribal Water Alliance consists of the Standing Rock Sioux Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe and Flandreau Santee Sioux Tribe, working together to preserve and protect our Treaty-based water rights in the Missouri Basin. The Alliance submits this report to the Army Corps of Engineers as our comments on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement ("Draft EIS"). We reject the Draft EIS for the following reasons -

- (1) The Draft EIS fails to disclose and consider impacts on the Treaty rights of the Great Plains Tribal Water Alliance.
- (2) The Draft EIS infringes on Indian reserved water rights.
- (3) The Corps of Engineers failed to engage in timely and meaningful government-to-government consultation with the affected Indian Nations.
- (4) The Corps failed to comply with section 106 of the National Historic Preservation Act.
- (5) The Draft EIS fails to properly calculate the cumulative environmental impacts of the Recovery Management Plan with other Corps programs on important Tribal resources.
- (6) The Corps continues to ignore the disproportionate adverse impacts of the Pick-Sloan program on the Tribes, and fails to mitigate these impacts.
- (7) The scope of the Draft EIS is too narrow, and significant alternatives were improperly omitted from consideration.
- (8) The preferred alternative will not prevent jeopardy to the pallid sturgeon.

These concerns are addressed in detail, as follows.

1. THE DRAFT EIS FAILS TO DISCLOSE AND CONSIDER IMPACTS ON TREATY RIGHTS

The entire study area of the Draft EIS is within the Treaty and aboriginal boundaries of the Great Plains Water Alliance Tribes. The habitat for the least tern, piping plover and pallid sturgeon that has been destroyed by the Missouri Basin Pick-Sloan program, was Treaty land and water. The Draft EIS totally ignores the Treaty rights of the Great Plains Tribal Water Alliance.

"Agencies shall respect Indian self government and sovereignty, honor treaty and other rights, and strive to meet the responsibilities that that arise from the unique legal relationship between the Federal

Government and Indian tribal governments." Executive Order 13175 (65 Fed. Reg. 67250). The requirement to honor Treaty rights applies to the Corps of Engineers with the Recovery Management Plan. Consequently, the Draft EIS must include a description of the Indian Treaty rights in the study area, and describe how the Corps of Engineer will comply with the dictates of Executive Order 13175 to honor Treaty rights. It fails to do so.

The study area is Lakota and Dakota Treaty and aboriginal land. Article II of the Fort Laramie Treaty of April 29, 1868, established the Great Sioux Reservation as follows:

The United States agrees that the following district of country, to wit, viz: commencing on the east bank of the Missouri river where the 46th parallel of north latitude crosses the same, thence along low-water mark down said east bank to a point opposite where the northern line of the State of Nebraska strikes the river, thence west across said river, and along the northern line of Nebraska to the 104th degree of longitude west from Greenwich, thence north on said meridian to a point where the 46th parallel of north latitude intercepts the same, thence due east along said parallel to the place of beginning; and in addition thereto, all existing reservations of the east bank of said river, shall be and the same is,

set apart for the absolute and undisturbed use and occupation of the Indians herein named, and for such other friendly tribes or individual Indians as from time to time they may be willing, with the consent of the United States, to admit amongst them; and the United States now solemnly agrees that no persons, except those herein designated and authorized so to do, and except such officers, agents, and employees of the government as may be authorized to enter upon Indian reservations in discharge of duties enjoined by law, shall ever be permitted to pass over, settle upon, or reside in the territory described in this article. (15 Stat. 635).

Thus, our Treaty Reservation comprised of all present-day South Dakota west of the Missouri River. The low water mark of the east bank is the Reservation's eastern boundary - placing the Missouri River within the exterior boundaries of the Great Sioux Reservation. Under Article XVI of the 1868 Fort Laramie Treaty, the Sioux Nation retained aboriginal lands previously recognized as Sioux territory in the 1851 Fort Laramie Treaty -

The United States hereby agrees and stipulates that the country north of the North Platte river and east of the summits of the Big Horn mountains shall be held and considered to be unceded Indian territory, and also stipulates and agrees that no white person or persons shall be permitted to settle upon or occupy any portion of the same; or without the consent of the Indians, first had and obtained, to pass through the same. (15 Stat. 639).

The current-day Reservations of the Tribes of the Great Plains Water Alliance are a small part of our vast Treaty territory. The United States Supreme Court ruled that the taking of Sioux Nation treaty lands under the Act of February 2, 1877 violated the 5th Amendment of the United States constitution, and stated "(a) more ripe and rank case of dishonorable dealings will never, in all probability, be found in our nation's history;" United States v. Sioux Nation of Indians, 448 U.S. 371, 387 (1980).

The boundaries of the Lakota and Dakota aboriginal lands were adjudicated in Sioux Nation case, and affirmed by the Supreme Court. The study area for the Draft EIS on the Recovery Management Plan is within this area.

The Council on Environmental Quality regulations require that an environmental impact statement "shall include discussions of... Potential conflicts between the proposed action and the objectives of... Indian tribe... land use plans, policies and controls for the area covered." 40CFR§1502.16(c). Sioux Nation Treaty rights are clearly a major issue requiring disclosure of impacts in the Draft EIS. The

Corps of Engineers failed to do so, in violation of the 1868 Fort Laramie Treaty, Executive Order 13175 and the CEQ regulations.

2. THE DRAFT EIS INFRINGES ON INDIAN RESERVED WATER RIGHTS

Moreover, Indian water rights are Treaty rights. The waters managed for habitat restoration in the Draft EIS are subject to the Winters Doctrine water rights claims of the Tribes.

The Draft EIS appears designed to justify the continuation of the Corps' current water management under the Missouri River Master Manual. The Corps' operations under the Master Manual infringe on Indian reserved water rights, by degrading Tribal water supplies in favor of downstream navigation flows. This includes the water rights of the Great Plains Water Alliance Tribes.

The Draft EIS contains erroneous findings with respect to the impacts of the preferred alternative and other alternatives on Indian water rights. By imposing new demands for water management in the Missouri River main stem, the Recovery Management Plan continues the Corps' long-time practice of managing water flows subject to Tribal claims under the Winters Doctrine, for the benefit of non-Tribal interests.

The Draft EIS explains -

This document is a programmatic assessment of... major federal actions necessary to avoid a finding of jeopardy to the pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sterna antillarum* athalassos), and the Northern Great Plains piping plover (*Charadrius melodius*) caused by operation of the Missouri River Mainstem and Kansas River Reservoir System ... (Draft EIS, p. 1-1).

The Corps of Engineers fails to consider changes in the operation of the main stem system - that is a fatal flaw in the Draft EIS. In order to avoid jeopardy of the pallid sturgeon, and in order to "honor treaty rights" as required in E.O. 13175, the Corps of Engineers must revise the Missouri River Master Water Control Manual.

The Winters Doctrine establishes when the Treaties and agreements between the United States and Indian Nations established Reservations, they also reserved the water needed to fulfill the purpose of the Reservation. *Winters v. United States*, 207 U.S. 564 (1908). Article XV of the 1868 Fort Laramie Treaty explains the purpose of the Great Sioux Reservation: "The Indians herein named agree that... they will regard said reservation as their permanent home." (15 Stat. 639). Thus, the Treaty establishes the purposes of our Reservations to be our permanent homeland. The homeland purpose expands the Tribes' water rights to encompass all present and future beneficial uses of water. Accordingly, the Great Plains Tribes possess extensive reserved water rights to the Missouri River, its tributaries, and groundwater, pursuant to the Fort Laramie Treaties.

In the Draft EIS, the Corps opines that -

The MRRMP-EIS does not attempt to define, regulate, or quantify water rights or any other rights that the Tribes are entitled by law or treaty. (Draft EIS, p. 6-5).

However, with respect to the water supply impacts of the preferred alternative, the Corps acknowledges that -

Several Tribes are served by water supply intakes along the Missouri River including the Assiniboine

and Sioux, Three Affiliated, Standing Rock Si01Jx, Cheyenne River Sioux and Lower Brule Sioux. The Mni Wiconi Pipeline project supplies water to several reservations that are not located on the Missouri River including the Oglala Sioux Tribe and Rosebud Sioux Tribe ... Water supply access in the upper river, including Tribal intakes, would experience more impacts under Alternative 3 than locations in the lower river. (During periods of low water) costs would increase to access in the upper river. (Draft EIS, pp. 3-501, 3-513).

Indian reserved water rights rely in part on the economic feasibility of Tribal water projects. (Department of the Interior, Notice, Working Group in Indian Water Settlements: Criteria and Procedures for the Participation of the Federal Government for the Settlement of Indian Water Claims, 55 Fed. Reg. 9223). The preferred alternative potentially diminishes the feasibility of Indian water projects by increasing the costs, as acknowledged by the Corps on page 3-513 of the Draft EIS. Thus, the Draft EIS infringes on Indian reserved water rights.

The Corps of Engineers tries to downplay the adverse impacts of its operations on the Tribes. "Although the six alternatives could affect the elevations in the reservoirs to a varying extent throughout the year, these variations are small compared to natural variations." (Draft EIS, p. 3-28). In truth, the natural variations are small compared to the variations caused by water releases at Garrison and Oahe Dams for downstream navigation and intakes, pursuant to the Missouri River Master Water Control Manual.

Under the Master Manual, in releasing water at the dams, the Corps gives priority to downstream navigation flows and water intakes over Indian water supplies in the upper basin, even though Indian water rights are senior and paramount. For example, the Master Manual states -

Oahe's primary water management functions are (1) to capture plains snowmelt and localized rainfall runoffs... that are then metered out at controlled release rates to meet System requirements ... (2) to serve as a primary storage location ... (for) major downstream flood control regulation ... and (3) to provide the extra water needed to meet project purposes that draft storage during low water years, particularly downstream water supply and navigation. (U.S. Army Corps of Engineers, Northwestern Division, Missouri River Mainstem Reservoir System Master Water Control Manual (2006) p. VII-1.

Section 2 of the Western Water Policy Review Act of 1992 provides that "the Federal government recognizes its trust responsibilities to protect Indian water rights and assist Tribes in the wise use of these resources." (106 Stat. 4694). Nevertheless, the Master Manual establishes priorities of "downstream flood control" and "downstream water supply and navigation." There are no provisions to protect the water supplies of Indian Tribes in upper basin, whose water rights are senior. The Corps' Missouri River operations pursuant to the Master Manual degrade Indian waters and create uncertainty for the availability of water, thereby violating the trust responsibility and infringing on Indian reserved water rights.

As acknowledged by the Corps on page 3-28 of the Draft EIS, all of the alternatives will adversely impact the water supplies of the Great Plains Water Alliance Tribes in the upper basin. The adverse effect on Tribal water caused by the Recovery Management Plan compounds the impacts caused by Missouri River Master Manual. Neither the current damage nor the compounded harm is recognized or disclosed in the Draft EIS. Accordingly, the true environmental impacts on Tribes are not properly considered by the Corps of Engineers in the Draft EIS.

The Draft EIS proposes alternatives for the restoration of wildlife habitat that involve the use and management of water subject to our Winter Doctrine claims. This pits our water rights against threatened and endangered species recovery. We reject this management paradigm, and call upon

the Corps to substantially revise the Missouri River Master Manual, in order to avoid jeopardy to the listed species and to mitigate the impacts of the Pick-Sloan program on the Tribes.

The current operations under the Master Manual degrade Tribal water supplies and impact the Tribe's ability to put water to beneficial use. The Corps' current operations on the Missouri River also destroys the habitat of the listed species. Yet the stated purpose of the Draft EIS is to continue the status quo in the operation of the Missouri River main stem system under the Master Manual, through the limited adaptive management and mechanical construction prescribed in the preferred alternative.

The Draft EIS establishes new demands for water, but proposes no changes to current Missouri River operations under the Master Manual in order to fulfill the increased demand. None of the downstream water users who benefit from the Corps' water management will be impacted. The Corps acknowledges in the Draft EIS that it is Tribal water supplies that will be the source for the downstream fish and wildlife uses that are proposed. (Draft EIS, p. 3-28). The Tribes did not cause the decline of these species, but under the Recovery Management Plan, we pay the price of habitat restoration - however inadequate it may be.

The Draft EIS fails to acknowledge that the exercise of Tribal rights in the future could affect the Corps' ability to implement the preferred alternative. There is an assumption that Tribes will not exercise our reserved water rights in the future. Consequently, the Draft EIS violates the Winter Doctrine. The Recovery Management Plan should propose alternatives that involve revisions to the Master Manual in order to recreate a natural hydrograph for the lower Missouri River, and for the protection of future Indian water uses in the upper basin.

3. THE CORPS OF ENGINEERS FAILED TO ENGAGE IN GOVERNMENT-TO-GOVERNMENT CONSULTATION WITH THE AFFECTED TRIBES

The right of Tribes to government-to-government consultation is also a Treaty right. Article XI of the 1868 Fort Laramie Treaty explicitly contemplates consultation in the development of "works of utility or necessity, which may be permitted by the laws of the United States." (15 Stat. 638). The Draft EIS contains rhetoric with respect to Tribal consultation; however, it makes no mention of Article XI, or of any other Treaty rights of our Tribes.

The Treaty right of consultation is to be implemented pursuant to Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments. Under E.O. 13175, the Corps of Engineers must -

... work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self government, tribal trust resources (and) Indian tribal treaty rights ... Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies ... (65 Fed. Reg. 67249-67250).

The term "meaningful" suggests that Tribal views will be incorporated into the decision-making process. The term "timely" requires that Tribal views be solicited at the beginning of the decision-making process. With respect to the Draft EIS, the Corps of Engineers did none of this.

The Corps' inaction speaks for itself. Form letters were sent to the Tribes on October 20, 2016 and December 16, 2016, inviting consultation. The Draft EIS and preferred alternative were published on December 16, 2016. The consultation process was not initiated in a timely manner. All alternatives were selected, the preferred alternative was identified, and the environmental impacts were

supposedly evaluated before government-to-government consultation was even initiated.

The Draft EIS explains on page 5-4 that "The intent of government-to-government consultation is to provide for identification and resolution of issues relating to the alternatives being evaluated in this draft EIS." That demonstrates the lack of timely consultation for the selection of the alternatives.

Appendix H to the Draft EIS includes a list of meetings identified as "Alternatives Development Meetings," with the names of Tribes and dates of meetings. The Draft EIS contains no record of the participants or the discussions - the list is meaningless and does not demonstrate that Tribal concerns were included in the alternatives.

Significantly, the Oglala Sioux Tribe Natural Resources Regulatory Agency documented the discussion referenced "7/11/2016 - Oglala Sioux Tribe." Tribal meeting minutes reveal that there was no discussion of the alternatives to be published in the Draft EIS. The description by the Corps of the July 11, 2016 meeting with the Oglala Sioux Tribe as an "Alternatives Development Meeting" is false. The veracity of the entire list of "Alternatives Development Meetings" must be questioned.

The Draft EIS states on page 2-1, "An interdisciplinary planning team made up of experts from multiple federal agencies in collaboration with basin stakeholders and Tribes participated in alternatives development." The "interdisciplinary planning team" never met with any of the Tribal governments of the Great Plains Water Alliance. There was no government-to-government consultation with any Tribes on the Draft EIS.

The narrative in the Draft EIS combines Tribal consultation with "Agency and Public Involvement" and implies that MRRIC substitutes for compliance with the government-to-government consultation requirements in E.O. 13175. (Draft EIS, p. 5-1). MRRIC is a collaborative stakeholder group with which the Great Plains Alliance Tribes have cooperated. The implication that good faith Tribal participation in region-wide collaborative processes satisfies the Tribal consultation requirement is wrong and will discourage Tribal participation in the future. The Corps of Engineers should not make false statements in a Draft EIS about what was discussed in meetings, and should not misportray stakeholder discussions as Tribal consultation.

Ultimately, the lack of government-to-government consultation in the preparation of the Recovery Management Plan is evidenced by the fact that none of the Tribes' concerns are addressed in the plan. For example, Appendix E of the Draft EIS identifies "Special Status Species" of the states of Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas and Missouri. The Tribes have identified riparian plant species of extreme concern, due to historical medicinal and nutritional uses of these species. However, these species are not identified in the Draft EIS. Species of concern to the states are included, but species of concern to the Tribes are totally ignored.

Had the Corps of Engineers consulted with the Tribal governments, this important information would be disclosed in the Draft EIS and the impacts to these resources properly evaluated. Instead, Corps merely continued the longstanding practice of the Omaha District to engage Tribes as a formality, only after decisions have been made.

The Corps of Engineers failed to comply with Article XI of the 1868 Fort Laramie Treaty, E.O. 13175, the DoD American Indian and Alaska Native Policy, the National Environmental Policy Act and the CEQ regulations, all of which require timely and meaningful government-to-government consultation in the preparation of the Recovery Management Plan.

4. THE CORPS FAILED TO COMPLY WITH SECTION 106 OF THE NATIONAL HISTORIC

PRESERVATION ACT

The Draft EIS violates section 106 of National Historic Preservation Act because (1) the surveys of cultural sites utilized for the impacts analysis are outdated and incomplete; (2) the Corps failed to consult with the THPOs on traditional cultural properties, and the Corps' NHPA section 106 procedures in Appendix C violate the Advisory Council requirements at 36 CFR Part 800; and (3) the assumptions in the computer model are flawed.

The Tribes of the Great Plains Water Alliance administer Secretarially-approved Historic Preservation Offices pursuant to section 101 of the National Historic Preservation Act. 54 U.S.C. §302702. Accordingly, our THPOs must be consulted on the direct and indirect impacts on traditional cultural properties of the alternatives in the draft EIS, as well as their cumulative impact with other Corps programs, including the Missouri River Master Water Control Manual. The Corps of Engineers has not done so. The Corps' procedures for implementing the NHP A section 106 consultation requirement are widely viewed as violating the applicable regulations of the Advisory Council on Historic Preservation, in any event.

Significantly, the calculation of impacts to cultural resources from the alternatives in the Draft EIS is erroneous. The number of sites inputted into the model are based on outdated cultural resources surveys. The surveys are incomplete. Table 3-24 on page 3-209 of the Draft EIS is not accurate and does not establish a basis for the proper identification of impacts to cultural resources.

The CEQ regulations require the Corps to comply with NHP A section 106 coextensively with the Draft EIS. "To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental analyses and related surveys required by.... the National Historic Preservation Act." 40 CFR § 1502.25. Thus, as part of the environmental review, the Corps must identify historic properties potentially impacted by the Recovery Management Plan and evaluate their significance, in consultation with THPOs of the Great Plains Alliance and other Tribes. 36 CFR §§800.2-800.5. Adverse effects must be mitigated, and there must be a dispute resolution process to resolve these issues. 36 CFR § 800.6-800. 7.

The Draft EIS suggests there will be significant impacts on Native American cultural resources, especially at Oahe Reservoir. Cultural Resources Environmental Consequences Technical Report, pp. 19-20. Consequently, the Corps is obligated to fully consult with the THPOs. As intoned by the Advisory Council-

Section 101(d)(6)(B) of the act requires the agency official to consult with any Indian tribe or Native Hawaiian organization that attaches religious or cultural significance to historic properties that may be affected by the undertaking. The requirement applies regardless of the location of the property. 36 CFR §800.2(c)(2)(ii).

Further-

Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes or Native Hawaiian organizations and should consider that when complying with this part. 36 CFR §800.2(c)(2)(ii)(D).

None of this has occurred. The surveys used for the computer models are outdated, and were not conducted in compliance with the consultation requirements for traditional cultural properties. 36 CFR §800.2(c)(2)(ii). The Great Plains Water Alliance Tribes are not signatories to the Missouri River Programmatic Agreement, and thus full compliance with section 106 and the implementing regulations

at 36 CFR Part 800 is mandatory.

The Corps has not done so with respect to the Draft EIS. The Corps admitted this on page 8 of the Technical Report -

It is understood that there are many unknown cultural resource sites existing on the landscape, as well as important cultural resources that do not meet the definition of a cultural resources site used in this study. The inventory of known cultural resource sites used in this analysis is intended to serve as a representative sample.

That does not constitute compliance with the identification requirements of 36 CFR 36 CFR §§800.2-800.5. Consequently, the Draft EIS violates the National Historic Preservation Act and its implementing regulations.

The Advisory Council permits agencies such as the Corps to develop agency specific procedures for NHPA section 106, "if they are consistent with the Council's regulations." 36 CFR §800.14(a). The Corps has promulgated section 106 procedures which are codified at 33 CFR Part 325 App. C. The Corps' section 106 procedures are widely considered to violate 36 CFR Part 800. According to the Advisory Council -

Appendix C is not approved by the ACHP as a program alternative, as required by 36 CFR §800.14. Therefore, the ACHP considers Appendix C as an internal Corps process that does not fulfill the requirements of Section 106 of the NHP A... (T)his arrangement often leads to the Corps' failure to adequately consult with federally recognized Tribes regarding the identification of, and assessment of effects on, historic properties of religious and cultural significance. (Letter of Reid J. Nelson, Advisory Council on Historic Preservation, to David B. Olson, U.S. Army Corps of Engineers, August 1, 2016).

That is exactly what has happened with the Draft EIS for the Recovery Management Plan.

Moreover, the computer simulations used to calculate impacts to cultural resources are based on inaccurate assumptions. According to the Corps, "The analysis assumes that the HEC-RAS and RESSim models reasonably estimate river flows and reservoir levels over the 82-year period of record." (Cultural Resources Environmental Consequences Technical Report, p. 8). The use of the entire 82-year period of record to determine impacts on cultural resources ignores the effects of reservoir construction, and will result in underestimating the actual impacts of water level fluctuations at the reservoirs today.

In addition, the assumption fails to consider evidence of diminished stream flows in the tributaries to the Missouri River, and predictive modeling for long-term drought in the central plains. According to Cook et al, "(u)ltimately, the consistency of our results suggests and exceptionally high risk of a multi-decadal megadrought occurring over the Central Plains and Southwest regions ... " (Cook et al, JOURNAL OF AMERICAN Assoc. OF ADVANCEMENT OF SCI. (2015)).

In the Draft EIS, the Corps mistakenly assumes that the environmental impacts of all alternatives will be equal in light of climate change. It states on page 3-227 -

Extremes in climate will likely also magnify periods of wet or dry weather, resulting in longer, more severe droughts, and larger more extensive flooding. Likely impacts to cultural resources would follow from increases to variability of reservoir water surface elevations ... However, it is assumed that the conclusions described would be similar under each alternative.

The degree of water elevation fluctuation determines the magnitude of impact to cultural resources at the main stem reservoirs. Each alternative will cause different levels of fluctuation. As acknowledged by the Corps, climate change will intensify both catastrophic rain events and droughts. Consequently, the water level fluctuations will increase exponentially, not arithmetically. The assumption that the impacts of climate change are equal under all alternatives is erroneous.

The fluctuations in reservoir elevations contemplated in chapter 3.18 of the Draft EIS will likely be more dramatic than the modeling suggests, resulting in greater impact to cultural resources. If the Corps' overall analysis has any merit, this will especially impact cultural resources at Oahe Reservoir. Nevertheless, the long-term forecast of diminished in-flows to the Missouri main stem, and long-term drought in the central plains caused by climate change, will cause greater adverse impact to cultural sites than forecast by the Corps in the Draft EIS.

In sum, the Corps has failed to comply with the required process under NHP A section 106. The findings in the Draft EIS are based on false or incomplete assumptions used in the determination of impacts to cultural resources. The Draft EIS is fatally flawed for lack of compliance with the National Historic Preservation Act and its implementing regulations.

5. THE DRAFT EIS FAILS TO PROPERLY EVALUATE THE CUMULATIVE IMPACTS OF THE RECOVERY MANAGEMENT PLAN AND OTHER CORPS' PROJECTS AND PROGRAMS

The alternatives in the Draft EIS, in combination with the construction of the main stem dams, the pattern of water releases pursuant to the Master Manual, and the management of Pick-Sloan project lands for oil and gas pipelines, have a significant, adverse and disproportionate impact on the Indian Nations of the Missouri Basin. The adverse impacts include socioeconomic distress and trauma caused by the forced relocation of Tribal communities, as well as the use of Tribal water for the exclusive benefit of non-Indian economies. The adverse effects also include the public health impacts caused by the degradation of drinking water supplies, and the environmental risk caused by the permitting of oil pipelines in Indian lands and waters. Important issues facing the Tribes such as noxious weeds and invasive species on Indian lands caused by the Corps' Missouri River operations are totally ignored in the Draft EIS.

The CEQ regulations require the Corps of Engineers to evaluate the cumulative environmental impact of the proposed action with other past and foreseeable future actions. 40 CFR § 1508. 7. The CEQ requires an "analysis and precise description of identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether... (the) alternatives may have a continuing, additive and significant relationship to those effects." (Memorandum from James L. Connaughton, Chairman, Council on Environmental Quality, to Heads of Federal Agencies, June 24, 2005). Adequate consideration of the cumulative impacts of agency projects requires "some quantifiable or detailed information" on the overall impacts. (Coggins et al, PUBLIC NATURAL RESOURCES LAW (2nd ed.) §17.35).

This is especially important in the Missouri River Basin, where the Pick-Sloan program destroyed Tribal riparian bottomlands along the Missouri river, and caused adverse impacts to Tribal resources and water supplies on the tributaries to the Missouri. The eminent scholar Vine Deloria, Jr., an enrolled member of the Standing Rock Sioux Tribe, described Pick-Sloan as "the single most destructive act ever perpetuated on any tribe by the United States." (Deloria, Introduction to Michael L. Lawson, DAMMED INDIANS: THE PICK-SLOAN PLAN AND THE MISSOURI BASIN SIOUX, 1944-1980 (1982)). The construction and operation of the dams on the Missouri River and its tributaries in the

upper basin have caused extremely significant impacts that must be included in the cumulative impact analysis.

The most significant adverse impacts of the Pick-Sloan program were suffered by Tribal communities in the Missouri River bottomlands. The U.S. Senate Committee on Indian Affairs recently reported -

...seven reservations were strategically located along resource-rich the Missouri River. The Missouri River's wooded bottomlands provided the reservation economies with fertile agricultural lands, timber for lumber and fuel. ... seasonal fruits, habitat for wild game, medicines ... and plentiful supplies of clean water. These lands were also an important part of the tribes' social, cultural and spiritual lives. Much of the tribes' community infrastructure was located along the river, including tribal homes, schools, hospitals, government buildings, churches, graveyards, and roads... Relocated to the upland plains ... the remaining reservation lands were less suitable for sustaining the Tribes' economic base, including ranching and agriculture, due to poor soil and water quality... (P)romises to compensate the Tribes, in part, with discounted electricity went unfulfilled. (S. Rep. 111-357 (2010), p. 1-2, 4).

Many Tribes remain impacted by Pick-Sloan authorized projects on tributaries to the Missouri River. The Committee on Indian Affairs reported Pick-Sloan's impacts on the Oglala Sioux Tribe, as follows -

The Angostura Unit is located about twenty miles upstream from the Pine Ridge Reservation. Notwithstanding the economic benefits provided by the Angostura Unit to the people of southwestern South Dakota, the operation of the unit provides no economic benefit to the Oglala Sioux Tribe, which experiences extremely high rates of unemployment and poverty. Additionally, the operation of the Angostura Unit has had an adverse impact on water quality and fish and wildlife resources within the Oglala Sioux Tribe's reservation. (S. Rep. 110-506 (2009), p. 2).

The Pick-Sloan program has resulted in diminished abundance of cottonwoods in the riparian environments of the Great Plains Water Alliance Tribes. Nearly one-half million acres of on-Reservation bottomlands were destroyed along the Missouri main stem. The capture of sediment at tributary projects such as Angostura, Whitney Dam and Belle Fouché has altered the depths of river channels and impacted groundwater levels needed for cottonwood regeneration. Riparian species such as cottonwood and willow have important ceremonial uses for the Lakota and Dakota, but are less abundant due to Pick-Sloan.

These impacts matter, and should be fully disclosed in the Draft EIS. The construction and operation of the Missouri River main stem dams by the Corps of Engineers has an extremely significant and on-going impact on the water supplies, economies, culturally-significant and medicinal plants, fish and wildlife and historic properties of the Tribes of the Great Plains Water Alliance. The Recovery Implementation Program will exacerbate these negative impacts, by supplying Indian water for habitat recovery.

There is a cumulative impact to Tribal water supplies in the upper basin, from current Corps' operations under the Master Manual, which will be made worse by the proposed alternatives in the Draft EIS. The Corps admits on page 3-28 that water levels in the upper basin will diminish due to the preferred alternative. As described above, the Corps' current water management violates the Treaty water rights of the Tribes - the added water demands imposed by the Recovery Management Plan will cause cumulative impact to Indian water.

Appendix E to the Draft EIS lists related projects for cumulative impacts analysis. It does identify "Missouri River Mainstem Reservoir System Construction" as a related project for cumulative impact

analysis. However, there is no analysis of the extremely harmful impacts the projects have had on Indian land, water and communities. Although the Corps mentions the Missouri River Master Manual, the Draft EIS totally fails to disclose the significant adverse impact of the construction of the dams or the on-going harm caused by the Master Manual on Indian water.

These impacts are very well documented. Lawson, DAMMED INDIANS: THE PICKSLOAN PLAN AND THE MISSOURI BASIN SIOUX, 1944-1980 (1982); Marc Reisner, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER (1986); Peter Capossela, THE LAND ALONG THE RIVER: THE ON-GOING SAGA OF THE SIOUX NATION LAND CLAIM, 1851-2012 (2015); Final Report and Recommendations of the Garrison Unit Joint Tribal Advisory Committee: Joint Hearing of the S. Comm. on Indian Affairs., the S. Comm. on Energy and Natural Res., and the H Comm. on Interior and Insular Aff., 100th Cong., (1987); Peter Capossela, Impacts of the Army Corps of Engineers' Pick-Sloan Plan on the Indian Tribes of the Missouri River Basin, J. ENV'T'L LA W AND LIT. 30:143 (2015); John H. Davidson, Indian Water Rights, the Missouri River and the Administrative Process: What are the Questions? 24 AMERICAN INDIAN L. REV. 1 (2000). Yet the Corps fails to disclose or analyze them in the Draft EIS.

The adverse impacts to plant species relied upon by our Tribes for healing, medicinal and ceremonial purposes is especially problematic, and should be fully analyzed and disclosed in the Draft EIS. The diminished abundance of our important plants is caused by the dam-building and operation by the Corps and Bureau of Reclamation under the Pick-Sloan program. As stated above, the study contains information on special-status of the states, but omits any information on impacts to Tribal medicinal plants. Our concerns with the loss of our medicinal plants is ignored by the Corps of Engineers, even though Corps projects cause harm to these riparian plant species.

The Draft EIS includes an "Other social effects" analysis, and the Corps argues that this includes an evaluation of impacts on Tribal subsistence activities. (Draft EIS, chapter 3 .20). However, the document contains no baseline data on important Tribal species. The Corps merely theorizes about the extent of woody habitat under various alternatives, and makes unsubstantiated generalizations about the abundance of important Tribal species. "While a variety of physical conditions are required for recruitment and establishment of cottonwoods, the presence of habitat could be beneficial to the abundance of species important for traditional cultural practices, including cottonwoods." (Draft EIS, p. 3-545). That does not support a finding of no impacts. It certainly does not constitute an "analysis of identifiable impacts" as required by CEQ.

There is a cumulative socioeconomic impact as well. The historical costs of the destruction of Tribal land, resources and life ways in the inundated bottomlands remains unresolved. (S. Rep. 111-357, a Report on the Pick-Sloan Tribal Commission Act). In recent years, Tribes have had to expend millions of dollars to expand and rehabilitate drinking water and irrigation intakes on the Missouri River, due to diminished water elevations caused by water releases by the Corps for downstream navigation. (Missouri River Master Manual: Hearing Before the Committee on Indian Affairs, US. Senate, 108th Cong. (2003)). The Corps acknowledges that Tribes will incur increased costs to access water in the future, upon implementation of the alternatives in the Draft EIS. (Draft EIS, p. 3-28). These cumulative adverse impacts on Tribal economies must be disclosed and considered by the Corps.

Appendix E also identifies "Oil and Natural Gas Production" as a related project to the Recovery Management Plan. The cumulative impacts summarized in Table 3-1 identify oil and gas production as a related cumulative action affecting Tribes. However, the approval of the Dakota Access Pipeline and the Presidential Permit for the Keystone XL Pipeline pose significant environmental risk to the Missouri River, and there is no quantitative analysis of this risk. Table 3-1 simply is not an adequate disclosure of the cumulative impacts of oil and gas pipelines and the Recovery Management Plan on the

Tribes.

Finally, Appendix E fails to consider the potential impacts of the Corps' Notice of Proposed Rulemaking, Use of US. Army Corps of Engineers Reservoir Projects for Domestic, Municipal & Industrial Water Supply (81 Fed. Reg. 91556, December 16, 2016). The proposed rule could result in water fees and affect Tribal economies, and consequently it should be included in the cumulative impacts analysis.

Ultimately, the failure by the Corps of Engineers to disclose the adverse impacts of dam construction and operation on the Tribes, and their cumulative impact with the Recovery Management Plan, is a fatal flaw in the Draft EIS.

6. THE CORPS IGNORES THE DISPROPORTIONATE ADVERSE IMPACTS OF ITS ACTIVITIES ON THE GREAT PLAINS TRIBES

The Draft EIS fails to properly account for the alternatives' effects on Indian Tribes, and fails to acknowledge the overall disproportionate impact of the Corps' Missouri River operations on Indian Tribes. This reflects the institutional racism against Native Americans that continues to permeate the Corps' decision-making today.

Executive Order 12898 requires -

(E)ach Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low income populations. (59 Fed. Reg. 7629).

The CEQ has developed guidance for the implementation of E.O. 12898. The Environmental Justice Guidance requires application of the Executive Order to Tribes. "Each Federal agency should analyze the environmental effects, including human health, economic and social effects of Federal actions, including effects on minority populations, low income populations, and Indian tribes, when such analysis is required by NEPA." (p. 4). Thus, NEPA documents must analyze disproportionate impacts on both minority communities generally and Indian Tribes. Impacts on Tribes automatically trigger the rigorous analysis and mitigation requirements of E.O. 12898.

The Draft EIS states "For this analysis, the state and/or county in which the block group is located were used as the reference area. Therefore, census block groups whose minority population is ten percentage points higher than the state or county average... are identified as environmental justice populations." (p. 3-563-3-564). The Corps may have performed an analysis of impacts on minority populations, but failed to do so on Tribes, as required in the CEQ Guidance. Moreover, the impacts assessment methodology "qualitatively" evaluated whether there are disproportionate impacts on minority communities, using the general impacts analysis. Since the general impacts analysis fails to identify Pick-Sloan's impact on Indian land and water, the assumptions used in the qualitative analysis are incorrect, and the conclusions in the Draft EIS with respect to Tribal impacts are erroneous.

The Corps alludes to the impacts on the Tribes on page 3-545 of the Draft EIS, as part of "other social impacts" of the no action alternative. The Corps states "Alternative 1 is not anticipated to have significant impacts on subsistence hunting, fishing and gathering, or traditional Tribal practices and educational opportunities." This alternative reflects the status quo, in which the Corps of Engineers operates the dams pursuant to the current Master Manual, with limited mechanical habitat restoration projects and periodic spring rise. As stated above, the operation of the dams have a significant

adverse effect on the Tribes. Consequently, Alternative 1, which is no action, adversely affects the Tribes. The findings on page 3-545 of the Draft EIS are invalid.

The adverse impacts were demonstrated dramatically at Standing Rock in 2003 when the community drinking water intake malfunctioned during a period of low water. Notwithstanding the drought, the Corps continued the significant water releases for downstream navigation, and the elevation of Oahe Reservoir declined precipitously, causing the deposition of silt at the intake structure in Fort Yates. On November 23, 2003, three Reservation communities lost their drinking water supplies for 10 days. The Corps of Engineers water releases contributed to adverse environmental conditions, which led to a public health crisis on the Standing Rock Reservation. (Missouri River Master Manual: Hearing Before the Committee on Indian Affairs, US Senate, 108th Cong. (2003)). Similar impacts have been experienced on other Reservations in the upper basin, as well.

The magnitude of impacts to Native American cultural resources likewise gives rise to disproportionate impacts on the Tribes of Great Plains Water Alliance. The Corps has explained the impacts of its operation of the Master Manual -

Sites located within the zone of lake fluctuation suffer inundation effects, and, in addition, are eroded by wave action. Materials such as pottery and bone deteriorate rapidly in this zone because of the repeated wetting and drying. (Army Corps of Engineers, Final Environmental Impact Statement, Missouri River Master Water Control Manual Review and Update (2004) 3-168).

Native American human remains and cultural objects on federal land (and state Title VI) lands within the boundaries adjudicated by the Indian Claims Commission as the aboriginal land of the Sioux Nation, which includes the Missouri River corridor and the Draft EIS study area, are presumptively owned by the Tribes of the Great Plains Water Alliance, with a right of repatriation. This right is recognized in section 3 of the Native American Graves Protection and Repatriation Act (NAAGPRA), 25 U.S.C. §3002(a)(2)(C)(I). These resources include human remains and cultural objects of the Rosebud Sioux Tribe at the abandoned Spotted Tail Agency site, and of the Oglala Sioux Tribe at the Whetstone Agency along the Missouri River.

The Corps acknowledged on page 8 of the Cultural Resources Environmental Consequences Analysis Technical Report that "there are many unknown cultural resource sites existing on the landscape." The Corps admitted on page 3-168 of the Final EIS Missouri River Master Water Control Manual Review and Update that its actions cause erosion and deterioration of Native American human remains and cultural objects. These are admissions of impacts. Nevertheless, the Corps concludes in the Draft EIS that the Tribes are not impacted by current Pick-Sloan operations, and the Recovery Management Plan.

The computer models used by the Corps to estimate impacts to Tribes are supposedly included as "Tribal interests," and as an aspect of "human considerations." The manner in which these impacts were supposedly quantified is not explained in the Draft EIS. Although pre-dam conditions are included in the assumptions for river and reservoir simulation models, pre-dam conditions on the Reservations are not taken into account as part of the Tribal interests. The negative impacts to Tribes from construction and operation of the dams are not identified. The costs incurred by the Tribes as a result of the Pick-Sloan program are ignored.

The negative impacts experienced by Tribes far exceeds any negative impacts on non-Indian communities, because the Corps of Engineers located the main stem reservoirs in Indian Country, and the Bureau of Reclamation projects adversely impact Tribal waters and resources on the tributaries. With respect to overall "Human Considerations," Tribal impacts are not given sufficient weight as

compared to "agriculture, irrigation, hydropower, local government, navigation, recreation " (Draft EIS, p. 3-5). For example, the Human Considerations analysis suggests that the destruction of Tribal resources is on a par with the inconvenience fishermen may face due to habitat restoration. The Human Conditions analysis totally downplays Tribal concerns with the disproportionate and long-term negative impacts suffered by the Tribes.

The Tribes of the Great Plains Water Alliance informed the Corps of Engineers and MRRIC of its concerns with the concept of Human Considerations impacts as developed by the Corps. A written submission on Human Considerations of the Standing Rock Sioux Tribe/Rosebud Sioux Tribe/Oglala Sioux Tribe/Flandreau Santee Sioux Tribe, as the Great Plains Tribal Water Alliance, has been totally ignored in the Draft EIS.

The actions by the Corps of Engineers under the Missouri River Master Water Control Manual and the proposed Recovery Management Plan demonstrate a lack of agency commitment to respect Tribal rights and disclose impacts of the Corps' projects on the Tribes. As one Tribal leader testified to the Senate Committee-on Indian Affairs in 2003-

We have corresponded, attended meetings, and been visited by officials of the Corps of Engineers ... and all has been to no value of the Standing Rock Sioux Tribe. The Corps of Engineers has proven it cannot analyze our environmental impacts, much less impacts on our valuable water rights. (Missouri River Master Manual: Hearing Before the Committee on Indian Affairs, US. Senate, 108th Cong. (2003), p. 27, statement of Mike Claymore).

Thirteen years later, nothing has changed with the Corps of Engineers.

7. THE SCOPE OF THE DRAFT EIS IS TOO NARROW

For its part the CEQ has issued Guidance on determining the impacts of agency actions on minority and Tribal communities. The CEQ Guidance emphasizes the need for Tribal community involvement in scoping -

If an agency identifies any potentially affected ... Indian tribes, the agency should develop a strategy for effective public involvement in the agency's determination of the scope of the NEPA analysis. Customary agency practices for notifying the public of a proposed action and subsequent scoping and public events may be enhanced through better use of local resources, community and nongovernmental organizations, and locally targeted media. Agencies should consider enhancing their outreach through the following means:

- Religious organizations
- Newspaper, radio and other media, particularly media targeted to... Indian tribes...
- Minority business associations;
- Legal aid providers...
- Tribal governments...
- Community and social services organizations;
- Universities, colleges, vocational and other schools...
- Public health agencies and clinics...

(Council on Environmental Quality, Environmental Justice: Guidance Under the National Environmental Policy Act (1997), p. 11).

The Corps of Engineers has done none of this. The CEQ Guidance makes clear that environmental

impacts on Tribal communities require rigorous scoping efforts. The Guidance outlines the steps to be taken for scoping on Indian Reservations. The Draft EIS contains erroneous information on the impacts of the Pick-Sloan program and Recovery Management Plan on Tribes, in part because the Corps never conducted the required scoping as prescribed in the CEQ Guidance.

The lack of adequate scoping in Tribal communities, as well as the lack of government-to-government consultation with Tribes, necessitates an extension to the public comment period on the Draft EIS. The Great Plains Tribal Water Alliance hereby calls upon the Corps of Engineers to reopen and extend the public comment on the Draft EIS for an additional 90 days.

The CEQ regulations tie scoping to determining the breadth of the issues to be evaluated in an environmental impact statement. "There shall be an early and open process for determining the scope of issues to be addressed and for identifying the issues related to the proposed action." 40 CFR §1501.7. Moreover, "As part of the scoping process the lead agency shall... invite the participation of... any affected Indian tribe." 40. CFR § 1501.7(a)(1).

The scope of issues discussed in the Draft EIS is too narrow. It excludes important concerns of Tribes with the Corps' current Missouri River operations, the impacts to plant species used by Tribes and the need for mitigation of impacts. Important alternatives relating to avoidance of jeopardy, such as a dam removal alternative, have not been considered by the Corps. The need to modernize water management with reforms to the Master Manual is totally ignored. In light of the significant omissions of factors relevant to habitat recovery, the reliance on tiering is misplaced.

Scoping is designed to ensure the concerns of Tribal communities are considered. With respect to the Draft EIS, the Corps never conducted the proper scoping, and the Draft EIS fails to identify or address Tribal concerns as a result.

8. THE PREFERRED ALTERNATIVE WILL NOT PREVENT JEOPARDY TO THE PALLID STURGEON

The Draft EIS states on page 1-1 that the purpose is to avoid jeopardy for the three listed species, whose habitat is degraded by the Corps' Missouri River operations. Nevertheless, the mechanical construction and limited adaptive management prescribed in the preferred alternative are unlikely to avoid jeopardy to the pallid sturgeon.

According to USGS, "Results indicate that reproductive readiness and spawning in pallid sturgeon is the result of a complex interaction between internal physiological conditions and environmental factors or 'cues.' Day length and temperature appear to be the most important of the cues that trigger reproductive readiness." (USGS 2010). The data on pallid sturgeon reproduction in the lower Missouri and the upper basin demonstrates limited success. "(R)ecruitment of pallid sturgeon to the adult population is rare or non-existent throughout most of the Missouri River." (USGS 2014).

The Corps of Engineers has not demonstrated an ability to influence water temperature in the lower Missouri with releases from the main stem reservoirs, for the range of temperatures required for successful reproduction and survival of pallid sturgeon. Data from USGS and elsewhere indicate that climate influences water temperature in the lower Missouri far more than the release of water from main stem or tributary dams. Mean temperatures of the Missouri River at Sioux City and Omaha tend to be comparable, while temperatures below Nebraska City have averaged 1 degree Fahrenheit cooler, probably due to Platte River inflows, and temperatures increase significantly further downstream. The temperature data undermines the implication that the limited adaptive management contemplated in the Draft EIS will avoid jeopardy. The substantial revision of Missouri River Master

Water Control Manual is needed.

9. CONCLUSION - THE GREAT PLAINS TRIBAL WATER ALLIANCE REJECTS THE DRAFT MISSOURI RIVER RECOVERY MANAGEMENT PLAN AND EIS

Ultimately, the Draft EIS fails to establish that the preferred alternative will meet the reproduction requirements for the pallid sturgeon. The alternatives are not adequate for the requisite hard look and comparative analysis required by the National Environmental Policy Act. At the very least, a dam-removal alternative should be included, for baseline analysis of a full range of opportunities for restoration of water temperature needed for sturgeon reproduction. The determination of impacts was flawed by inadequate inputs into the computer models. The scope of the Draft EIS must be broadened to include mitigation of the on-going negative impacts of the Pick-Sloan program on the Indian Tribes of the Missouri Basin.

The Corps of Engineers should start all over. The Corps should establish a meaningful consultative relationship with the Indian Nations on the Recovery Management Plan and other concerns of Tribes relating to Pick-Sloan. The Corps must review the Missouri River Master Manual, and make changes as needed to fulfill Tribal water rights in the upper basin.

The Corps of Engineers intentionally targeted Indian land for inundation by the Pick-Sloan reservoir system, and it operates the system in a manner that degrades Tribal waters. Its operations have also destroyed habitat for the three listed species. The main problem with the Draft EIS is that it purports to resolve the habitat issue, without addressing the impacts to Tribal resources, and without addressing the need for equitable access to the hydropower and other benefits of the Pick-Sloan program. A full evaluation of Pick-Sloan's impacts on Tribes, and the mitigation of those impacts, remains lacking.


For these reasons, the Standing Rock Sioux Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe and Flandreau Santee Sioux Tribe, together as the Great Plains Tribal Water Alliance, reject the Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

Prepared for the Standing Rock Sioux Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe and Flandreau Santee Sioux Tribe by the Board of Directors of the Great Plains Tribal Water Alliance, for submission to the Army Corps of Engineers on the Draft Missouri River Management Plan and Environmental Impact Statement

Reno Red Cloud, Oglala Sioux Tribe, Chairman
Doug Crow Ghost, Standing Rock Sioux Tribe, Vice Chairman
Elizabeth Wakeman, Flandreau Santee Sioux Tribe, Secretary/Treasurer
Syed Huq, Rosebud Sioux Tribe, Member

Correspondence: 233

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Status: Reviewed Park Correspondence Log:
 Date Sent: 04/24/2017 Date Received: 04/26/2017
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Correspondence Text

Re: Draft Missouri River Recovery Management Plan and Economic Impact Statement Comments (MRRMP-EIS)

I would like to take this opportunity to thank the U.S. Army Corps of Engineers (USACE) for allowing me to present comments to the Draft MRRMP-EIS. The City of St. Louis Water Division provides drinking water to customers within the city of St. Louis as well as wholesale customers in St. Louis and St. Charles counties. Our Utility provides water for businesses, hospitals and residential customers, to name a few. Our Utility supports hundreds of millions of dollars in commercial and residential revenues by providing safe drinking water for public health and safety. A 2017 report by the Value of Water Campaign entitled "The Economic Benefits of Investing in Water Infrastructure" documents that water service disruptions puts \$43.5 billion in daily economic activity at risk. This impact will ripple throughout the nation and world with what services and goods our region offers.

The USACE has the obligation to meet all the Eight (8) Authorized Purposes, Water Supply being one of these Authorized Purposes. The Draft MRRMP-EIS affects not only the Missouri River but also the Mississippi River as approximately 60% of the flow of the Mississippi River comes directly from the Missouri River. Since our Utility has water intakes on both rivers, any change to flows directly impacts our ability to produce drinking water to our customers. We have serious concerns regarding flows and water quality about each of the six (6) alternatives proposed in the Draft MRRMP-EIS, and the data present in the December 2016 Water Supply Environmental Consequences Analysis Technical Report. In both documents, the USACE states there will be times where some intakes will not be able draw water from the Missouri River. If this were to occur at our Missouri and Mississippi River intakes, there would be a catastrophic effect for our Utility and jeopardize public health and safety to our customers. If water interruption is expected to average 14.7 days, as stated in both reports, residential and commercial customers would lose confidence in our Utility's ability to provide reliable, basic services which would likely result in relocation to a city with more reliable water services. The reported national and regional economic development impacts are grossly underestimated if a water utility is unable to provide water for one day, let alone 14.7 days.

In reviewing the proposed alternatives, Alternative #2 could potentially interrupt water intake usage for a substantial timeframe depending on the needed water levels in the reservoirs to meet the Missouri River Mainstem System Annual Operating Plan (AOP). In addition, the Draft MRRMP-EIS does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations. The proposed low flows in the summer would certainly have a negative impact on water quality with high delivered water temperatures and potential for toxic algal blooms with warmer river temperatures to increase growth of any organic organism in the water. If these conditions were present, we would have to deploy additional chemical treatment to combat these organic organisms in higher concentrations.

April 24, 2017 Letter to USACE - Draft (MRRMP-EIS) Page 2

Low flow releases in the summer may where water and power utilities may have to anchor barges with pumping facilities in the River's navigation channel to reach water. Full releases from Gavin's Point in the spring could increase the potential for flooding, if a substantial rain event occurred and the USACE did not decrease releases from Gavin's Point to manageable levels. These high releases could further increase degradation of the river bank, bottom and channel in already compromised locations due to higher velocities.

We will also be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternative Nos. 4, 5, and 6. If rainfall or snowfall did not meet annual expectations, as was experienced in early 2000, the AOP would decrease winter releases to prevent dropping into the Carryover Multiple Use Pool to the 2007 level experienced in the entire Missouri River Basin. Intake structures would be at risk or being unable to draw water from the River during potential low releases in the winter.

The USACE has a duty to meet water management guidelines designed to meet the reservoir regulation objectives of the Missouri River Master Water Control Manual (Master Manual) as proposed in each AOP as close as possible without violating the Eight (8) Authorized Purposes. Alternative Nos. 1 and 3 are the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

From the Technical Report, we have serious concerns that the information you have presented may not be the most accurate on location and low water shut-off elevation of our river intake. Also, the information on the size of pumps and costs necessary to draw water from the river are underestimated as we have previously discussed this subject with a contractor. Locating pumps larger than 7,000 gpm to rent will be a difficult task, especially if many electric and water utilities along the Missouri River are having similar issues and looking for these large pumps to rent. It is doubtful that a utility would be able to receive these auxiliary pumps in time to prevent a water outage. If a water outage would occur, the Missouri Department of Natural Resources (MDNR) will most certainly require a Boil Order Notice to be issued.

We do not feel this Technical Report allows for the seven (7) recommended actions made by the MRRIC in 2012, to evaluate the effects analysis. Consideration needs to also include the degradation that is ongoing for portions of the Missouri River. As the river beds degrade to lower elevations, additional water must be released to provide service levels as our intake.

Of the alternatives presented in this Draft MRRMP-EIS, our Utility feels that Alternative No. 3 has the least impact to the Eight (8) Authorized Purposes which includes impacts to water supply and water quality.

Sincerely,

Curtis B. Skouby, P.E.
Director of Public Utilities

Correspondence: 234

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/26/2017
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Correspondence Text

I write this letter in regards to the proposed alternatives for the operation of the Missouri River. My dad and grandfather farmed together for years and after my grandfather passed away my dad continued farming the ground. My parents are now retired but still own this (1093 acres) farmland in the Halls Levee District in Southwestern Buchanan County State of Missouri. I grew up on these farms and have interest in the land. I co-own 40 acres with my sister and my husband, daughter and I also purchased 19 acres all within the Halls Levee District. I understand how the river effects this farm ground. We are very opposed to any alternative that contains any added releases to be released from the dam systems with Gavens Point being the lower most southern dam in the system. Additional releases would cause increased problems with interior drainage, seepage, and wet soils preventing timely farming practices.


In our region, March through May are the main months for fertilizing and planting of corn and soybeans. Normal harvest is September thru November. To our understanding these are additional proposed large release of water from Gavens Point Dam. These releases would add an additional 5 ½ to 6 feet to the Missouri River in St. Joseph, Missouri, which is the closest guage to our properties. I understand fish and wildlife (plover, tern and sturgeon) need protected but it upsets me that the Corp would even consider putting wildlife above citizens means of income and devaluation of our ground. Dealing with Mother Nature can be bad enough without the additional water being released from the dam. We strongly oppose these proposed alternatives as this looks like this would have long-term effects on our farms.

We hope to continue to keep our farms in our families for years to come. Many family memories are attached to these farms. Please reconsider this proposal.

Thank you!
Susan Matney

Correspondence: 235

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Correspondence Text

Dear Major General Spellmon,

The Carroll County Commission does hereby go on record as being in favor of the present method of operation of the Missouri River.

Many of the proposed options of operation would unnecessarily contribute to flooding problems, as well as seep water problems.

The Carroll County Commission respectfully requests that operation of the Missouri River continue with flood control and navigation as top priority.

THE CARROLL COUNTY COMMISSION

Nelson Heil, Commissioner


Bill Boelsen, 1st District Commissioner

David Marin, 2nd District Commissioner

Ccc:nls

Correspondence: 236

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Contains Request(s): No Type: Letter
Notes:

Correspondence Text

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AC - Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

Re: US. Army Corps of Engineers Missouri River Recovery Management Plan and Environmental Impact Statement

The State of Montana (State), represented by the Montana Fish, Wildlife & Parks (FWP) and the Department of Natural Resources & Conservation (DNRC), appreciate the opportunity to provide input to the U.S. Army Corps of Engineers (USACE) on the draft Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS). These comments primarily address the conservation and management of the Missouri River Basin and its associated biota particularly those listed under the Endangered Species Act (ESA; 16 U.S.C. § 1531 et seq.).

The Missouri and Yellowstone rivers in Montana support the most genetically pure Pallid Sturgeon population in the world and provide habitat for the most diverse fish community in the state. Montana has a significant interest in the MRRMP-EIS because it impacts our ability to achieve our mission statements and meet our statutory and policy mandates. Under statute, the State is mandated to promote wise use of its water resources for the fullest benefit of its citizens and with the least degradation of the aquatic ecosystems §85-2-101(3), MCA. Furthermore, it is FWP's authority to manage all of Montana's fish species, including those designated as endangered, and it is the State's policy that those species and their waters be protected and preserved §87-5-103(2)(b), MCA; §87-1-201 (9)(a)(ii), MCA; §87-5-501, MCA.

Montana Fish, Wildlife and Parks is proactively developing Montana's Pallid Sturgeon Management Plan to outline explicit conservation priorities and monitoring objectives that will not only

guide the State in its management of this species but also assist our federal partners in the cooperative species recovery process. Through this document, we are preparing a consistent foundation for the State to assess new developments involving Pallid Sturgeon management and further exercise our responsibility to manage the entire aquatic community in the Missouri and Yellowstone rivers. Montana Fish, Wildlife and Parks expects to finalize the Pallid Sturgeon Management Plan in 2017. This document will be available to our federal partners as we address Pallid Sturgeon conservation issues in Montana. However, prior to that document's completion, we include several priority concerns within the MRRMP-EIS that will affect future management actions in Montana below:

- Ultimately, the sequential approach in the Preferred Alternative (Alternative 3) further delays meaningful conservation of Pallid Sturgeon in the Upper Missouri River Basin through unnecessary reliance on Level 1 and Level 2 studies; research that has already been conducted and ecosystem-understanding that already exists. More emphasis should be placed on ensuring available empirical information is utilized in the process of evaluating hypotheses and developing alternatives for management and implementation. Working with the State to utilize our expertise and local knowledge of the connected Missouri River Yellowstone River ecosystem would substantially improve the effectiveness of recovery actions and would be far more cost-effective. The Science and Adaptive Management Plan (SAMP) was developed to " ... address the uncertainty associated with potential Pallid Sturgeon limiting factors," (p. 1-17, sec. 1.3.1, Volume 1, MRRMP-EIS). Unfortunately, the document arbitrarily ignores uncertainties associated with attaining successful two-way fish-passage at the Intake Diversion Dam (a structure not operated by the USACE) while postponing needed improvements to Fort Peck Dam operations that are inexplicably deemed infeasible. The predecisional opposition to modify discharge or correct thermal pollution at Fort Peck Dam is surprising, given that the 2003 Biological Opinion (BiOp) clearly states, "In the Upper Missouri River, continued operation of Fort Peck Dam as proposed will continue to significantly impair the reproduction and recruitment of Pallid Sturgeon in this reach. These factors affect the production of forage fish which are important to the overall survival of Pallid Sturgeon," (p. 179, 2003 Amendment to the 2000 BiOp). Selective withdrawal devices are operational at other USACE-operated projects, including Libby Dam in western Montana, and their implementation has greatly benefited the federally-listed Bull Trout and other native fishes. Addressing Pallid Sturgeon limiting factors objectively (e.g., in parallel approach) in the connected Missouri River Yellowstone

River ecosystem would serve to more effectively avoid jeopardy to Pallid Sturgeon and would exemplify the " ... demonstrated need to develop a management plan comprised of actions informed by best available science," (p. 1-17, sec. 1.3.1, Volume 1, MRRMP-EIS). As such, the State recommends that the MRRMP-EIS address the Missouri and Yellowstone rivers as connected Pallid Sturgeon habitat and work in parallel to develop alternatives for management and implementation. Specifically, the State requests that efforts to improve Fort Peck Dam operations for the benefit of Pallid Sturgeon and the downstream Missouri River ecosystem not be conditioned on the success of Pallid Sturgeon passage at Intake Diversion Dam in the MRRMP-EIS.

- The State has made significant contributions to Pallid Sturgeon recovery in the Upper Missouri River Basin for decades, implementing the USACE's Pallid Sturgeon Population Assessment Program and leading research in describing the relationship between flow, adult Pallid Sturgeon movement, and larval Pallid Sturgeon drift dynamics. As such, Montana must be actively engaged in planning and implementation to develop and address any decisions involving monitoring, research, and implementation of management strategies. Close collaboration would ensure seamless coordination and cooperation between agencies. We continue to work cooperatively with the U.S. Fish and Wildlife Service (USFWS) under ESA Section 6(c) to conserve Pallid Sturgeon within Montana and we have remained financially committed to cost-sharing opportunities with the USFWS and other sources of private funding. Furthermore, the State continues to manage the aquatic

community (e.g., sport fishes, species of concern, and potential candidate species) in a manner that helps avoid listing and impairment. Our institutional knowledge and local expertise in the connected Missouri River-Yellowstone River ecosystem is unmatched. Yet, the State has not been included in the development of fundamental objectives in the MRRMP-EIS; particularly, to "avoid jeopardizing the continued existence of the Pallid Sturgeon from the USACE actions on the Missouri River." We recommend that the USACE, through the MRRMP-EIS and integrated SAMP, does more to collaborate with the State to develop conservation and management strategies. The USA CE, in concert with the State, must develop guidance on how mitigation in the connected Missouri River Yellowstone River ecosystem will avoid jeopardy to Pallid Sturgeon as well as mitigate for impacts to other native fish and wildlife species. This should be included in the alternative analysis of the MRRMP-EIS prior to its finalization. Mitigation efforts could easily be established as part of the SAMP and their inclusion could be justified as Level 3 and Level 4 studies in answering Big Question 2 (Flow Naturalization and Productivity), Big Question 3 (Temperature Manipulations at Fort Peck), and Big Question 5 (Passage, Drift and Recruitment). Doing so would provide consistency with the goal of the Missouri River Recovery Program to create a sustainable ecosystem supporting thriving populations of native species while addressing major impacts of current and past river uses.

- The designation of the upstream extent of the action area at Fort Peck Dam ignores effects of USACE operations on Pallid Sturgeon in the Missouri River upstream of the impoundment in the section of the Great Plains Management Unit, formerly known as Recovery Priority Management Area 1 (RPMA 1). The 2000 Bi Op explicitly states that USA CE operations affect "... the area of the Missouri River and its reservoir system from the headwaters of Fort Peck Lake in Montana," and the subsequent absence of this designation in the current BiOp, as amended, has not been justified. As the 2000 BiOp notes, "... the point furthest upstream where the Corps [USA CE] regulates Missouri River flows is at [U.S. Bureau of] Reclamation's Canyon Ferry Dam in Montana,". Under the Flood Control Act of 1944 the USACE has regulation requirements for two non-USACE projects, Canyon Ferry Reservoir and Lake Elwell (Tiber Reservoir), that influence flows in the Marias River and Missouri River in RPMAI.

Under 33 CFR 208.11 (b): Responsibilities ... The basic responsibilities of the Corps of Engineers regarding project operation are set out in the cited authority and described in the following paragraphs:

(1) Section 7 of the Flood Control Act of 1944 (58 Stat. 890, 33 US. C. 709) directs the Secretary of the Army to prescribe regulations for flood control and navigation in the following manner:

Hereafter, it shall be the duty of the Secretary of War to prescribe regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided on the basis of such purposes, and the operation of any such project shall be in accordance with such regulations ...

As recently as 2011, the USA CE exercised its operations authority of Tiber Reservoir for flood control and navigation in waters downstream of Tiber Dam and likely outside of Montana. During this event, flows in the Marias River were held back which caused massive flooding in the Tiber Dam forebay. Had the USACE not intervened, the flows in the Marias and Missouri rivers in RPMA 1 would have been much higher and would have mimicked the natural flow regime during normal spawning periods for Pallid Sturgeon and a host of native fishes. As such, it is clear the USA CE has water flow operational authority in RPMAI and those actions have influenced the natural habitat of Pallid Sturgeon. Determination in avoidance of jeopardy to Pallid Sturgeon through USA CE actions in the MRRMP-EIS is incomplete without accounting for impacts to the species in RPMA 1. Under their respective obligations to avoid jeopardy to the species and to ensure instances of "take" are accounted for under the restrictive management and protections of the ESA, the USACE and the

USFWS need to evaluate these effects. Considering these factors, the State recommends the MRRMP-EIS include the Missouri River upstream of Fort Peck Dam.

- Under the Fish and Wildlife Coordination Act (FWCA), FWP is provided with a framework to have fish and wildlife conservation measures considered for incorporation into federal water development projects; however, this opportunity is unavailable to other state agencies (e.g., DNRC). The State supports efforts to broaden the opportunity for input outside of the FWCA and outside of the Missouri River Recovery Implementation Committee (MRRIC) to ensure the State's perspective is fully considered. As such, the State of Montana, in collaboration with other Missouri River Basin state government agencies, developed the following suggested replacement language for the section pertaining to the roles that basin states, other federal agencies, and tribes would be afforded outside of the MRRIC collaborative process (p. 103, sec. 2.3.8.1, SAMP, MRRMP-EIS):

Each state has responsibilities through various federal and state statutory and constitutional authorities, for management of water quantity, water quality, and fish and wildlife resources within their boundaries that could be affected in this process (in either a positive or negative way). As previously stated this governance structure does not change or impede any of the rights and responsibilities of a state codified by law.

Historically, it has been the role of the state fish and wildlife agencies to assist in putting projects on the ground. The USA CE and USFWS will continue to plan site-specific projects with State input and will continue to coordinate with the appropriate state agency on any and all legal requirements for comment, collaboration, certification, permitting, etc. One statutorily protected consultation role of note is the Fish and Wildlife Coordination Act (FWCA). Under the FWCA, USA CE is required to coordinate with the state fish and wildlife agencies and the USFWS for site specific projects. USA CE will continue to execute the FWCA in accordance with the National MOU between the USFWS and the USACE. As described in the National MOU the USFWS will coordinate with state fish and wildlife agencies and provide consolidated comments to the USA CE via a planning aid letter as required by the FWCA.

With regard to the regulation of the Missouri River Mainstem Reservoir System, the USA CE will continue to provide a draft and final Annual Operating Plan (AOP) each fall that describes the planned operation of the reservoir system within the conditions of the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) for the coming year under a variety of runoff conditions. The States will have the opportunity to provide comments on the draft and final AOP at the fall public meetings or by providing written comments during the comment periods. If at any time during AM Plan implementation actions are proposed to the proposed draft AOP actions would occur outside of the conditions of the Master Manual, the Corps will first consult with all the Basins States, their designated representatives and/or other interstate organizations (as long as they consist of representatives of the Governors of Missouri River Basin States) before making any substantive modifications. Additionally, states retain the opportunity right to comment or request consultation outside of MRRIC, FWCA, and ADP processes on any issue related to the Management Plan or ongoing AM process via official letter which can be submitted to the USA CE at any time.

The AM plan contemplates that the States will have an additional role through their representation at MRRIC. It is imperative that MRRJC State representatives are able to effectively relay information presented as MRRIC to interested state agencies and bring their concerns back to the MRRIC table. MRRIC representatives will be able to reach a broader group of interests than the outside statutory structure contemplates being able to inform decisions. State agency expertise also has a potential role to play on various work groups.

The State has concerns with what the USACE has included in their compilation of the "best available science" to inform their implementation of an adaptive management strategy. Much of the current science on Pallid Sturgeon in the Upper Missouri River Basin has not been consistently applied within the MRRMP-EIS and the State's institutional knowledge has not been utilized in the development of meaningful alternatives. To further this concern, the justification for excluding RPMA 1 in the MRRMP-EIS is poorly conveyed and a lack of coordination with the State has perpetuated the issue. The State asserts that any determination of avoidance of jeopardy to Pallid Sturgeon in the Upper Missouri River Basin is incomplete without fully including USACE operational impacts above Fort Peck Dam. As it is the State's policy to protect and preserve Montana's fish and waters within the State, we feel that it is imperative that the State is accepted as an active participant in any future decisions that might affect not only Pallid Sturgeon, but all of Montana's fish and wildlife and their habitats.

Thank you for your consideration and response to our concerns. We look forward to collaborating with you to protect the future of the connected Missouri River-Yellowstone River ecosystem in Montana.


Sincerely,

Martha Williams
Director

C: Eileen Ryce, FWP Fisheries
Zach Shattuck, FWP Fisheries

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Correspondence Text

Re: Draft Missouri River Management Plan & EIS released in December, 2016.

Dear Mr. Harberg:

As the agency responsible for managing the public trust fish and wildlife resources of Nebraska, the Nebraska Game and Parks Commission supports Alternative 2 - the U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions as best meeting the needs of the Pallid Sturgeon and the other native fish and wildlife species of the Missouri River. We believe that Alternative 2 would be greatly enhanced by the addition of the new Science and Adaptive Management Plan (AM Plan) that has been developed based on the effects analysis. Our agency values the effort that the U.S. Army Corps of Engineers has committed to avoiding jeopardy for Pallid Sturgeon, but feel that it is imperative that any plan should manage, mitigate and restore critical components of the physical environment along with the associated biological community to be successful. Pallid Sturgeon as a top predator cannot survive without a substantial prey base and critical habitat necessary to support both predator and prey.

The following comments summarize Nebraska Game and Parks support for Alternative 2 with the addition of the new Science and Adaptive Management Plan and with clarification on individual components:

Habitat

The Nebraska Game and Parks Commission believes that habitat is the most critical component impacting Pallid Sturgeon on the Missouri River. We firmly believe that the loss of 100,200 acres of aquatic and 67,800 acres of terrestrial habitat acres in the channel below Sioux City has had the greatest impact on Pallid Sturgeon and other native fish species on the channelized Missouri River. This does not count the 354,000 acres of habitat lost in the adjacent meander belt of the river.

The shortening and narrowing of the channel for navigation intentionally eliminated almost all shallow water, most slow water; all channel sandbars, most bank line sandbars, and all islands. The remaining channel habitat is almost all deep and fast, lacking in fine sediments and enclosed between high banks that have eliminated almost all floodplain connectivity with border areas within the meander belt zone. These changes have resulted in well documented declines in almost all native fish species over the last 50 years, including Pallid Sturgeon (U.S. Army Corp of Engineers 1980, National Research Council, 2002; U.S. Fish & Wildlife Service, 2000 and 2003; Nebraska Game and Parks Commission, numerous scientific publications; Gallat and others, 2005, in addition to many other publications and reports). This loss and subsequent need to restore habitat was recognized by Congress when it authorized and funded the Missouri River Bank Stabilization and Navigation Mitigation Project and again by the U.S. Fish and Wildlife Service and the U.S. Army Corp of Engineers with the 2000 Missouri River Biological Opinion and the 2003 revised Biological Opinion.

Pallid Sturgeon do not and cannot live in isolation, they are a part of and supported by the ecosystem within which they evolved. As a predator at the very top of the Missouri River aquatic food chain they are even more intrinsically linked to the health of the ecosystem within which they live than many of the species upon which they depend. Therefore, the Nebraska Game and Parks Commission believes that any plan to avoid jeopardy for Pallid Sturgeon should include a significant habitat restoration and management plan targeted at the specific habitat needs of all of the life stages of Pallid Sturgeon (spawning, drift, interception, and rearing) and that this plan would be inadequate if it did not also include habitat restoration and management to support the native fish community necessary to support a healthy, reproducing population of this top predator.

The Nebraska Game and Parks Commission believes that the habitat goal of 20 to 30 acres of aquatic habitat per mile remains the most fundamental critical need of Pallid Sturgeon and the native fish community upon which they depend. We do believe that this effort could be improved by targeting specific habitat needs for both Pallid Sturgeon and the native fish community that they depend upon. Interception habitat should be described and quantified to determine if there is an adequate amount available throughout the river, not just below Kansas City. Rearing and feeding habitats for all life stages of Pallid sturgeon should also be described and quantified throughout the river to guide restoration efforts where they are most needed. These same efforts should be carried out for native fish species critical to the life history of Pallid Sturgeon and to the overall health of the Missouri River ecosystem. The Nebraska Game and Parks Commission strongly believes that much of the main channel habitat work, specifically those bends that had dike notching and removal, to increase top with and create shallow water habitat actually have less shallow water habitat in their in-completed state than they had prior to modification. Because these actions have occurred on nearly 40% of the bends in the channelized reach in Nebraska, if these shallow water habitats projected remained uncompleted, we would be in much worse shape than if this work had never been started.

Emergent Sandbar Habitat (ESH)

Emergent sandbar habitat is a component of habitat restoration and is critical for maintaining bird populations in certain reaches of the river but also plays a critical role in floodplain connectivity, shallow water habitat and system productivity throughout the entire river. We support maintaining the amount of ESH necessary to support targeted population levels for least terns and piping plovers. We strongly support creating ESH by spring habitat-forming flows rather than mechanical means whenever possible. These flows would not only create ESH but also provide important benefits to Pallid Sturgeon and the entire Missouri River ecosystem that mechanical creation cannot. While higher level sandbars provide nesting and rearing habitat for birds for several years, these same bars provide early life stage habitat for Pallid Sturgeon and other native fish species by creating aquatic habitat with

various depths and velocities. As sand bars vegetate and are subsequently either flooded thereby providing floodplain connectivity or as they are eroded back into the river, they provide critical nutrients to fuel primary productivity which is sorely lacking in the current river. With managed low summer flows, these same sand bars create shallow, slow water areas critical for the early life stages of many native fish species and develop into highly productive areas for aquatic insects, biofilm and even aquatic vegetation, all of which provide critical resources for the Missouri River aquatic food chain thereby contributing to the overall health and productivity of the ecosystem.

Mechanical ESH Construction

We do not support constructing an average of 3,536 acres of ESH annually across the Garrison, Fort Randall, Gavins Point and Lewis and Clark Lake reaches as projected in Alternative 2. This amount of annual construction is neither warranted nor feasible and would cause major impacts on the remaining actions under Alternative 2 due to the high cost of these construction activities and anticipated USACE MRRP budget limitations. As previously stated, the Nebraska Game and Parks Commission supports creating ESH whenever possible by releases provided by the Spring Pallid Sturgeon Flow Release as described in Alternative 2 or by specific Spring ESH Creating Releases as described under Alternative 4 and only use Mechanical ESH Construction as needed. This same spring release would also provide Floodplain Connectivity as described in Alternative 2 which would benefit system productivity and other native riverine species.

Flow

We fully support the Spring Pallid Sturgeon Flow Release and Low Summer Flow described in Alternative 2. The bimodal spring release would support pallid sturgeon spawning aggregations, synchronicity, and ultimately their success, as well as creating ESH. Low Summer Flows would provide benefits to drifting larval sturgeon by decreasing drift speeds and distances and potentially increase their likelihood of being intercepted into hospitable habitats thereby decreasing mortality rates. Low Summer Flows would also provide many ecological benefits including creation of shallow water habitats, providing nursery habitats for age-0 fishes, including age-0 sturgeon species, and result in increased survival and recruitment of many native species of fish and invertebrates. If pallid sturgeon successfully spawn and hatch, these lower summer flows would decrease water velocities which would increase habitat availability and decrease bioenergetic demands.

The Fall ESH Creating Release described in Alternative 5 is not supported by the Nebraska Game and Parks Commission due to high probability that these high flows and associated higher velocities would result in low survival and recruitment of native fishes including Pallid Sturgeon.

Floodplain Connectivity

The Nebraska Game and Parks Commission highly supports Floodplain Connectivity on the mainstream Missouri River. The entire fisheries community would benefit from regular connectivity because it would increase food availability, increase availability of spawning habitat and increase the area of refuge habitat for young fishes thereby increasing survival. Because of the current river configuration (e.g., highly incised river channel), floodplain connectivity generally takes fairly extreme flow events.

We recommend the construction of lower elevation habitats along the channel border which would be more easily inundated providing benefits for fish and wildlife more frequently.

Monitoring, Research and Adaptive Management

Rather than continuing the existing monitoring and research efforts and the adaptive management approach identified under Alternative 2, we would support adopting the new Science and Adaptive Management Plan that was developed through the Effects Analysis process. The Nebraska Game and Parks Commission has been involved with and fully supports the Effects Analysis process which bases

management actions, monitoring and research on current scientific findings and priorities. We believe that the emphasis for monitoring and research should target the most critical information needs and be reevaluated on a regular basis.

Pallid Sturgeon Propagation and Augmentation

The Nebraska Game and Parks Commission supports the continuation of Propagation and Augmentation of pallid sturgeon as long as pallid sturgeon are genetically confirmed "pure" pallid sturgeon, the numbers stocked are based on the best available science and that stocking is only considered a temporary measure as we work to reestablishing the necessary levels of reproduction and recruitment.

Economic impacts

Alternative 2 as currently written requires approximately a 300 percent increase in the MRRMP & EIS budget. We believe these costs would be substantially lowered by using the more realistic ESH acreage goal described in Alternative 4, which credits ESH created by spring flows and only utilizing ESH mechanical construction to address any shortfalls,

In addition, if Preferred Alternative 3 is approved, at the end of 15 years with just the minimal amounts of spawning and interception habitat added, the BSNP Congressional authorization of 166,750 acres would still need to be met. According to the 2015 Biennial report to Congress on the status of the Missouri River BSNP Project by the Assistant Secretary of the Army for Civil Works in Accordance with Section 4003 (e) of the Water Resources Reform and Development Act of 2014, 66,616 acres have already been acquired. That leaves a little over 100,000 acres left to meet Congressional authorization. Since a Final Supplemental EIS was already completed in March 2003 for this project, it is paramount that Congressional intent be followed to compensate the States for the loss of 522,000 acres of aquatic and terrestrial habitat. We believe creating habitat and avoiding jeopardy to the pallid sturgeon can occur concurrently. Concurrently pursuing habitat and avoiding jeopardy to pallid sturgeon as described above would seem to be a prudent path to follow. The Nebraska Game and Parks Commission fully believes that systematic top-width widening is the only practical means to create the amount of functional habitat necessary to support Pallid Sturgeon and the ecosystem on which they depend.

While this plan is looking specifically at avoiding jeopardy for Pallid Sturgeon, the Nebraska Game and Parks Commission believes that a systematic plan of top-width widening for the entire channelized reach in Nebraska would provide huge positive economic benefits to the Missouri River system not considered in any of the alternatives presented. The 2011 flood on the Missouri River resulted in an estimated \$2 Billion dollars in damage (Dept. of Commerce, 2012), much of that occurred along the Nebraska reach of the river, while the U.S. Army Corp of Engineers spent over \$500 Million to repair flood control works in the Missouri River Basin (Blechinger, comments to MRRIC, 2012). The 2011 flood was the result of decisions made in the name of navigation that has resulted in a Missouri River channel in Nebraska that lacks channel capacity and has intentionally eliminated the habitat diversity that is necessary to support Pallid Sturgeon and the ecosystem upon which they depend. The 2011 event should not have resulted in a flood, it was simply the channel capacity in the upper channelized river below Sioux City which was engineered out of the system to provide a 9 foot deep self-scouring channel to support a navigation industry that has not substantially developed. With the capacities of the large main stem and tributary reservoir system in the basin that have subsequently developed, a systematic widening of the channelized Missouri River in Nebraska would substantially decrease, if not eliminated, the impacts of another 2011 event. If \$2.5 Billion would or could be spent on increasing channel capacity and habitat diversity and availability, both the citizens of the basin as well as Pallid Sturgeon and the Missouri River Ecosystem would benefit.

Project Costs

While the preferred alternative, Alternative 3, and other new Alternatives, 4, 5, and 6, cost less than the Alternative 2, in our agency's opinion other than for IRC and spawning habitat, they lack action to address the previously identified habitat losses that we believe are necessary to support all life stages of Pallid Sturgeon as well as a substantial prey base upon which they as a top predator ultimately depend. As stated previously, the Nebraska Game and Parks Commission believes that the habitat goal of 20 to 30 acres of aquatic habitat per mile remains the most fundamental means to address the critical needs of Pallid Sturgeon and the native fish community upon which they depend. And rather than just building habitat of general design, this effort could be greatly improved by targeting specific habitat needs for both Pallid Sturgeon and the native fish community. Functional habitat can be built on the Missouri River as has been demonstrated at Deer Island on the main channel and at the Upper and Lower Hamburg Bends and Deroin chutes off channel. Means to develop a targeted habitat restoration program have recently been developed by biologists at Nebraska Game and Parks and the Missouri Department of Conservation. We also believe that the costs to implement Alternative 2 would be substantially reduced by replacing the impracticable target of 3,546 acres per year with the much more reasonable target described in Alternative 4.

Thank you for the opportunity to comment on this important document.


Sincerely,

Tim McCoy
Deputy Director

Cc: Jim Douglas, Director
D. Rosenthal, Fisheries
A. Hardin, Wildlife
M. Stryker, Planning and Programming

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Correspondence Text

April 24, 2017

U.S. Army Corps of Engineers
Omaha District
ATIN: CENWO-PM-AC-Management Plan Comments
1616 Capitol Avenue
Omaha, NE 68102

RE: Missouri River Recovery Management Plan and Environmental Impact Statement
(MRRMP-EIS)

To Whom it May Concern,

Thank you for the opportunity to submit comments on the Draft Missouri River Recovery Management Plan and Environmental Impact Statement (hereafter MRRP-EIS). Defenders of Wildlife is a nonprofit organization dedicated to the protection and restoration of wildlife and plants in their natural communities, with 1.2 million members and supporters nationwide.

The MRRP-EIS lays out major federal actions for the Missouri River with the intent of avoiding jeopardy for three species listed under the Endangered Species Act: pallid sturgeon, interior least tern, and Northern Great Plains piping plover. Here, we concentrate our comments on the pallid sturgeon. We feel that the described actions are not sufficient to protect this species, especially in the Upper Missouri River Basin (including the Yellowstone River).

Summary:

The current population status of the pallid sturgeon, particularly in the upper Missouri River Basin, is tenuous. Most scientific evidence suggests that the decline of the species was caused by the construction of reservoirs along the river by the U.S. Army Corps of Engineers (Corps). Dams have

reduced the timing and extent of flows, the drift distance necessary for recently hatched pallid sturgeon,¹ and the spring cues² required for the success of the pallid. ³

Current estimates suggest only a few thousand pallid sturgeon remain, fewer than 200 upstream of Lake Sakakawea⁴ (including those upstream of Fort Peck Reservoir) and between 2,000 to 4,000 in the Middle Mississippi. ⁵ A similar species, the shovelnose sturgeon, is also declining and has been extirpated or is at risk of extirpation from parts of its native range.⁶ Most of the surviving pallid sturgeon population is stocked, and reproductive adults are rare.⁷ Though spawning does occur, recruitment is limited or non-existent in the Missouri and Middle Mississippi Rivers and in the Middle Mississippi River.⁸ It is for the above reasons that the Corps should prioritize river restoration and modifications to reservoir operations to support recovery of the pallid sturgeon.

The federal agencies believe two key goals would be most relevant to recovery of the pallid sturgeon:

- Increase pallid sturgeon recruitment to age 1.
- Maintain or increase numbers of pallid sturgeon of age 2 and older until sufficient and sustained natural recruitment occurs.

Our comments below evaluate the MRRP-EIS with these goals in mind. Where possible, we include additional factors that may be important for the species based on the current state of the science. While the two stated goals are important, the metrics outlined in this DEIS for assessing success in meeting them are insufficient. As an example, the stated goal of increasing pallid sturgeon recruitment to age 1 is too simplistic in nature to understand the mechanism behind the metric and thus insufficient to meet the goals of the Adaptive Management Plan. In this specific example, the Corps should develop sub-metrics of the overall goal to support revised management actions. Specific sub-metrics could include prey species abundance, competitor abundance, type of substrate and habitat, turbidity and other factors considered important in the conceptual models.

The second basis for our comments is the implementability of the proposed alternatives. The Corps has a history of implementing structural changes to the river, such as shallow water habitat (SWH), yet has failed to achieve mandated changes in flows from the reservoirs that could benefit pallid sturgeon recovery. The Corps has failed to fully implement any flow related Reasonable and Prudent Alternative (RP A) as legally required for the pallid sturgeon in the 2000 and 2003 Biological Opinions from their sister agency, the U.S. Fish and Wildlife Service.

Many wild adult pallid sturgeon appear to be nearing the end of their lifespans⁹ and wild spawning is rare, ¹⁰ though has been demonstrated, particularly in the wake of high flow events. Additional limits placed on available habitat will likely continue the species on the path to extirpation. Not only would implementation of flow modifications potentially benefit pallid sturgeon, but it will benefit the entire fish community, including paddlefish, sauger, goldeye, blue sucker, and a vast array of other native species - a benefit that would contribute to the substantial recreational fishery. The Corps has instead decided to place downstream needs first, leaving the pallid sturgeon and other native fish to struggle to reproduce. We ask the Corps and sister agencies to take a hard look at their ability to implement the alternatives as stated. The Corps could 1) assess the likelihood that they will implement each alternative, 2) establish a set of criteria that would place the needs of pallid sturgeon on - at a minimum - equal footing with downstream water users and 3) establish a set of performance criteria that would ensure accountability with the final alternative. To do this, the Corps will need to conduct additional analyses to inform the alternatives and their viability and scientific validity.

The preferred alternative would benefit from additional measures, some of which are described in

more detail below.

-Habitat: Creation of IRC or other hydraulic roughness in the Upper Missouri section. The preferred alternative includes the creation of IRC habitat in the lower Missouri River. However, the scientific studies on the Yellowstone and Upper Missouri River indicate that drift distance is insufficient to support survival of young pallid sturgeon. The EIS could consider additional steps to improve anoxic conditions at reservoir arms which also tend to serve as nursery habitat.

-Modifications at Fort Peck could be put in place to support flows, warmer temperatures, and hydraulic roughness.

1) The Use of the Shovelnose as Surrogate Species Lacks Support

For much of the EIS, where data are unavailable or scarce on the pallid sturgeon, life history characteristics of the shovelnose are used. A number of reasons exist that could undermine the credibility of this approach, including differences in drift rates and distance, diet, and habitat use. For these reasons, the Corps should consider shifting the alternatives to rest solely on what is known about pallid sturgeon, rather than use the surrogate species approach. Specifically:

-The transition from the drifting to the benthic life stage occurs in only 6 days after hatch for shovelnose sturgeon and at 11-17 days after hatch for pallid sturgeon.¹¹

-Drift simulations have found that average larval shovelnose sturgeon may drift from 94 to 250 km and the average larval pallid sturgeon may drift from 245 to 530 km. ¹²

-While both fish consume larval caddisflies, the diet and thus feeding position in the river differ greatly. Pallid sturgeon consume fish in the water column, including chubs, shad, and other minnows. Shovelnose sturgeon were benthic feeders, mostly eating insects that live on the river bed or in the drift. ¹³

-Pallid sturgeon used sandy substrate, midchannel bars islands, and areas with riparian vegetation more often than shovelnose sturgeon. ¹⁴

2) The Implementability and Viability of Proposed Alternatives is Questionable:

The No Action Alternative and Alternatives 3 and 6 include flow modifications to Corps-operated reservoir releases to support the pallid sturgeon. These would require the Corps to implement minor, discrete changes in water releases from the reservoir to support spawning and reproductive cues. However, to date the Corps has not successfully implemented changes in reservoir operations to support pallid sturgeon recovery. As stated in the introduction, implementability is a key factor not considered in the EIS, as discussed below.

Since 2000, FWS has required a series of RP As from the Corps that would allow for recovery of a minor section of the natural hydrograph, including an approach that depended on concurrent, holistic implementation of flow regime modifications, habitat restoration, and the purchase and restoration of floodplain easements.¹⁵ In doing so, FWS set up a scientific experiment that, with full compliance, might have provided river managers and the Army Corps with critical information to modify reservoir operations for the benefit of not just the pallid, but also many native species and game fish in the Missouri River system. These RPAs would have addressed some of the gaps in knowledge of the pallid sturgeon's life cycle by specifically implementing adaptive management practices, modifying flow to increase spring flows, decreasing summer flows, and implementing test flows from Fort Peck to understand the impacts of increasing temperature and flows concurrently. However, because the Corps has failed to implement most of the RP As, the FWS, and other scientists have been hamstrung

and unable to adequately conduct scientific studies necessary for the recovery of the pallid sturgeon. Additionally, throughout the EIS the Corps incorrectly interprets and truncates the expert opinion of their own panel of independent scientists. For example, in Volume 2, p. 3-71, the Corps states:

"The Missouri River Independent Science Advisory Panel (ISAP) considered the available information on the efficacy of flow pulses in relation to pallid sturgeon spawning and concluded "the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning in pallid sturgeon."

The statements and recommendations from the Independent Science Advisory Panel are stated below and clearly support enhanced flows and a number of other actions to support pallid sturgeon recovery. This resistance by the Corps to implement even a baseline set of recovery strategies for the pallid sturgeon was reflected in the 2013 Missouri River Recovery Program's Independent Science Advisory Panel's (ISAP) Report:

There is " ... no evidence that managed spring pulses have improved ecological conditions for native fish, invertebrates, or other species, consistent with the observation that the pulses have been of such limited magnitude and durations that they appear to be unable to generate the specific habitat features and conditions that are believed to be important for those species" (emphasis added). 16

ISAP further suggested the need for higher magnitude flows than even FWS had requested. Eleven years after the first Biological Opinion requesting modified flows from reservoirs, the ISAP, a group of nationally renowned river scientists selected by the Corps, stated:

- An integrated management plan, to be effective, should include managing flows, temperature and sediment, and implementing floodplain easement purchases and restoration. Without such an approach, where all three actions are taken, the Pallid Sturgeon would likely continue to decline.
- An adaptive management plan should be developed below Gavin's Point, a plan originally set as an RPA, but never implemented by the Corps; and
- A need for restoration practices to prevent declines in listed and other desired species ... include providing flows higher than those currently prescribed spring pulses, lower baseflows, and increased sediment.¹⁷

Unfortunately, FWS' proposal to protect the pallid sturgeon was not implemented during the 10 years before ISAP's conclusion and has not yet been implemented three years later. The Corps focused primarily on managing flows for downstream navigation, while attempting to fit all other uses into prescribed navigation targets. However, the expected amount of navigation was never achieved, and most navigation on the Missouri is limited to small barge trips of about a mile used to mine sand and gravel from the river and transport it to the shore.¹⁸ The Corps rejected the implementation of low summer flows and the connection to the floodplain, stating that these were not feasible objectives under other project authorizations.¹⁹ Despite the opportunity to implement an adaptive management plan, the Corps instead kept fish and wildlife at the bottom of the barrel.

As of 2016, the Corps is below target on all flow-related RP As for the pallid sturgeon.²⁰ Since some researchers have suggested that the pallid will be extirpated by 2018²¹ without further action, the Corps has effectively allowed the pallid to slide ever-closer to this fate. Since the original 2000 listing, the Corps has only fully implemented three spring pulses, and never to the levels requested in the Biological Opinion.²² Warm water discharges from Fort Peck were not implemented during the 8-year period following the Biological Opinion, and were eventually shuffled aside as fisheries managers

pursued other possible options that would protect the pallid sturgeon.²³ Experts focused instead on fish passage on the Yellowstone River, requiring the Corps to allocate funds authorized for this purpose from the Water Resource Development Act of 1999.²⁴ However, this project does not provide evidence that it will adequately support the pallid sturgeon as currently designed.

Until the Corps can provide a level of accountability necessary to provide reasonable assurance to the public, none of the alternatives should be implemented. Given that the Corps has not implemented these flow-based RP As for more than a decade, the Corps should identify what checks and balances are in place to ensure these requirements will be implemented. The Corps could implement a good faith reallocation of reservoir uses to better serve the needs of endangered fish and native warm water fish. This recommendation may be the most needed action to ensure the Corps will fully implement any alternative selected, and not just some portions. Examples of how this could be accomplished are discussed briefly below:

-Reservoir Reallocation is needed to support implementation

Although there appear to be vast amounts of water available in the basin, significant water deficits continue to occur:

"Shifting population concentrations, and increasing numbers of industrial and agricultural developments across the state have resulted in a situation where North Dakota's ground and surface water resources are becoming more fully appropriated. Thus, the presence or absence of water has become one of the primary factors in locating industrial plants, or any other developments requiring large amounts of water." ²⁵

Per the Water Supply Act of 1958, storage in Army Corps reservoirs may be reallocated, or new storage may be added, for municipal and industrial (M&I) water supply. The Corp Chief's approval authority for reallocations is limited to 50,000 AF or 15% of the total usable storage, whichever is less. Otherwise, the Assistant Secretary of the Army must approve the plan. Reallocation may occur under one or more conditions: 1) Temporary use of storage allocated for future conservation purposes and sediment; 2) Storage made available by change in conservation demand or purpose; 3) Seasonal use of flood control space during dry seasons; 4) Reallocation of flood control space; 5) Modification of reservoir water control plan and method of regulation; 6) Raising existing dams; 7) System regulation of Corps and Non-Corps reservoirs; 8) Use of water supply storage not under contract. Lastly, a basin wide approach could be taken to regulate flows throughout the basin.²⁶

A number of these options could be used to enhance fisheries populations in Missouri River reservoirs. Additional space is available for reallocation to support pallid sturgeon. The Corps notes that sedimentation has not occurred at the rate expected in the reservoirs,²⁷ and additional water is available from an under-utilized Bureau of Reclamation water right allocated to irrigation. These allocations could be immediately used to develop an effective plan to enhance and conserve native riverine and reservoir fisheries in the region. Though only seven dams are controlled by the Corps, another 70 exist in the basin, many owned by the Bureau of Reclamation. Managing this system holistically would be beneficial to fisheries.

An effective reallocation plan should include the cumulative impact of any reallocation, an assessment of the current status of the authorized uses, and an indication of whether they are currently being met. Flows for downstream fisheries, particularly for the pallid sturgeon, have not been implemented as required by the 2000/2003 Biological Opinion, and full navigation downstream has not been met in the past 13 years. If surplus water is available, it could be reallocated to fish and wildlife and recreation, as

these are the most important uses in the Upper Missouri (instead of transportation in the Middle Missouri). Without reallocation of reservoir storage, successful implementation of flow modifications under the alternatives outlined in the EIS are unlikely to occur.

3) Flow modeling for the alternatives is incomplete and not accurate

The No Action Alternative is not accurate and does not serve as an appropriate baseline: The basis for all of the Alternatives in the EIS rests on the comparison to the No Action Alternative, or the existing conditions in the Missouri River system. As utilized in the EIS, the No Action alternative is a simulation of how the system is currently operated, including current MRRP actions, "but does not and cannot take into account the numerous minor adjustments to basic rules that the Corps actually makes to reasonably address critical short-term situations (e.g., increase releases for water supply, reducing releases for ice jams, etc.)."²⁸ Therefore, modeling results of the No Action alternative do not reflect actual past or future conditions but serve as a reasonable basis or "baseline" for comparing the impacts of the action alternatives on resources. This approach sets false expectations for future management scenarios and inflates the value of the baseline alternative to the pallid sturgeon. To serve as an accurate representation of the No Action alternative, the Corps should consider modeling the alternative based on actual historic conditions and operations of the reservoirs. Doing so will encompass the actual variability in flows and allow for a more realistic implementation, set of alternatives, and adaptive management plan.

Modeling Spawning Cue Release for Pallid Sturgeon: For the purposes of modeling the No Action alternative, the Corps assumed implementation of the plenary spring pulse as described in the Master Manual would occur. This action would include a March and May spring pulse from Gavins Point Dam. However, the EIS states that a one-time spawning cue was not incorporated in hydrologic models. The Corps stated in the EIS that they are unable to model this discrete release. Because the Corps will need to understand the impacts of releases, even short ones, on the operations and downstream water availability, this calls to question the ability to implement this component of the alternative. If the Corps is unable to model this release based on their existing modeling software, they should either explore other resources for modeling or develop a set of decision-criteria so that the public can have confidence in the implementation of this flow release.

4) Proposed frequency of enhanced flows is not supported by scientific evidence and is likely insufficient for pallid sturgeon recovery

The Corps proposes flow modifications that would likely be of too little frequency to support pallid sturgeon recovery. If evidence exists to the contrary, the Corps should include them in the EIS. Examples of the limited flow releases are highlighted below. Each of these should be justified with statistics and data on historic flows to allow the public to assess the scientific validity and usefulness of the proposed approach to pallid sturgeon recovery. The EIS states that naturally high flow pulses may trigger migration and aggregation of pallid and that other scientific studies of sturgeon species support this hypothesis. Additionally, a number of migratory species depend on pulse flows to trigger migration. Yet, the Corps states a "high degree of uncertainty is associated with this management action and it is possible that there could be no effect on pallid sturgeon."²⁹ It remains unclear how the Corps defines levels of uncertainty for pallid sturgeon recovery in light of the science supporting naturalized and pulse flows. Lastly, the Adaptive Management Plan states that pallid sturgeon adults will be tracked over a range of flow conditions over a period of nine years. After nine years, the Corps may then consider implementing spawning cues from Gavins Point.

Implementing Dow-based modifications are critical for pallid sturgeon and native fish in the basin. Streamflow is viewed as a master variable,^{30, 31} one that shapes many fundamental ecological

characteristics of riverine ecosystems. Entire foodwebs are altered as flows change, and in general less species survive in stressful low flow conditions. For fish, flow doesn't just influence oxygen levels, it influences all of life's necessities: temperature, habitat for spawning and escaping predators, and flushing sediment from the rocks on which many fish lay eggs. Scientific studies evaluating timing and duration of flows find fewer young-of-year fish, a disruption in spawning cues and an increased frequency of recruitment failures when the hydrograph is modified.³² Reservoirs in the Missouri River system have nearly reversed the timing and amount of water flowing through the river. Because flow is a controlling variable, it is critical that the Corps adopt and implement an alternative that takes flow into account.

Since their construction, reservoirs on both the mainstem and tributaries of the Missouri River have tamed flows to produce a flat, controlled hydrograph that eliminates spring pulses from plains and mountain snowmelt,³³ and leads to a decline in native fish and their prey.³⁴ Potentially important low flows in the Missouri River in the late summer and fall and winter disappear as water is used for downstream navigation and hydropower.³⁵ The dams also hold back nearly 80% of the historical sediment load, an important loss in a river dominated by native fish preferring turbid, warm waters.³⁶ The National Research Council of the National Academy of Sciences has recommended a more natural flow system, including a spring pulse to begin the recovery process. ³⁷ However it is recognized that this pulse may be insufficient³⁸ and the hope of inundating floodplains for fisheries would require a combination of higher flows, in-river and bank restoration, and selective floodplain easements.

Spring bimodal spawning cues: As stated in the EIS spawning cue releases with both March and May pulses would occur 20 percent, 12 percent, and 13 percent of the time under Alternatives 1, 2, and 6, respectively. Deliberate spring flow releases under Alternative 4 would occur 12 percent of the time, while deliberate fall flow releases under Alternative 5 would occur eight percent of the time. Flow release levels under Alternatives 4 and 5 would be achieved "naturally" during normal project operations in eight years (10 percent of the time) during spring and fall, based on the 82-year record. The Corps should provide evidence that the frequency of spawning cue releases is sufficient to support pallid sturgeon or at the very least a comparison with both current, actual operation and historic, pre-reservoir hydrographs. The Corps should also provide a decision tree highlighting the future changes in operations that could occur if the spawning cue releases are shown to benefit pallid sturgeon recovery.

-The above proposed changes in reservoir releases to support spawning cues is the outcome from the best-case scenario. The Corps notes in the EIS that these spawning cue releases would not be started or would be terminated whenever downstream flow limits are exceeded. For instance, the Corps states in the EIS that they would initiate a March pulse once navigation releases were met at downstream target locations. The peak Gavins Point release would be two times the navigation release on the pulse initiation day. Further the Corps states that "When conditions and rules allow, pallid sturgeon spring flow releases

under Alternative 2 would consist of two pulses of water released in spring from Gavins Point Dam-one pulse in March and a second pulse in May. If both pulses meet their flow design specifications, a low summer flow would be initiated." These conditional statements provide a level of uncertainty not supported by the Biological Opinion.

- The Corps should conduct a scenario analysis, develop decision criteria and performance metrics to communicate the likelihood the proposed flow modifications will occur given the conditional statements cited above. The need for this was highlighted in the Adaptive Management Plan, which stated, "At present, there are no programmatic-level triggers for the introduction of new management actions."

5) A holistic watershed approach should be a core component of the EIS - Tributaries should be considered in the EIS and in Alternatives Development, including Fort Peck.

According to the EIS, five dams were deemed critical to the success of the upper Missouri reservoir modeling effort. The Corps modeled non-Corps managed dams, including: Canyon Ferry Dam, Tiber Dam, Buffalo Bill Dam, Boysen Dam, and Yellowtail Dam.³⁹ However, the EIS excludes these reservoirs from the development of alternatives. In addition and perhaps even more important, the Corps excludes Fort Peck reservoir from the development of alternatives, even with its importance to the survival of the pallid sturgeon. The Adaptive Management Plan states the geographic scope includes those portions the Great Plains Management Unit (GPMU) below Fort Peck Lake, stating the Corps has jeopardy responsibilities for pallid sturgeon in this portion of the river. The need to address areas of the river above Fort Peck and to include additional tributaries in the EIS are stated in the section below. Further they could be better supported through the designation of critical habitat within these sections to include habitat that support prey species and address the influence of reservoirs on anoxic conditions.

Management actions should be designed to support native prey species. Tributaries and side channels in the Missouri River watershed provide some of the best natural flows, water temperature regulation, and water quality regulation in the basin.⁴⁰ Of 85 species studied in the basin, 77 spawn in tributaries of the Missouri River, while 25 spawn in tributaries or the mainstem.⁴¹ These habitats serve as refugia for juvenile fish and provide water quality benefits such as warm water, turbidity, and preferred substrate.⁴² Sediment input from these tributaries, now lacking due to dam construction, is important to fisheries and in providing sediment to develop or augment sandbars and in-channel islands.⁴³ Essentially, without tributary habitat, the prey species the pallid sturgeon depends on would disappear. A holistic watershed-based approach should quantify the habitat needs of important prey species as well as the pallid sturgeon and develop management actions to enhance habitat for the most important prey species.

-Fort Peck Reservoir is integral to pallid sturgeon survival The EIS does not consider the Fort Peck reach in the development of alternatives or management actions, even though it is part of the MRRP. The Adaptive Management Plan states that the Effects Analysis included the Upper Missouri River main stem from Fort Peck Dam to the headwaters of Lake Sakakawea, the Yellowstone River upstream from the confluence with the Upper Missouri River for an unspecified distance. One of the key challenges is that the Corps fails to admit that sufficient data are available in the upper Missouri River to take action. For instance, page 25 (32/40) in the Development of Working Hypotheses- Pallid Sturgeon states:

"However, it should be noted that despite the large and increasing knowledge base on pallid sturgeon reproductive ecology, research has yet to prove one or more critical processes that are responsible for lack of population growth. "

Additionally, the preferred alternative only commits to Level 1 and 2 research but not to implementation of management actions that adaptive management research demonstrates are required for pallid sturgeon recovery in Montana. If Level 3 and 4 actions are not implemented, no population level changes are to be expected, therefore jeopardy will still exist, as limiting factors are not alleviated or mitigated. It is both biologically unsound and inconsistent with the purpose of the Endangered Species Act for the FWS to not require the Corps to address pallid sturgeon limiting factors in both the Missouri and Yellowstone rivers, including the reach of the Missouri River upstream of Fort Peck Reservoir which is designated as a recovery priority management area by the FWS.

Information below provide sufficient evidence to begin testing approaches in the upper portion of the river.

-The Upper Missouri River pallid sturgeon population is unique and important to a genetically secure population. According to a review of the science of the pallid sturgeon and subsequent development of conceptual models, the pallid sturgeon in the upper river may be a genetically distinct population. According to the scientists working on the river, few hybrids between the pallid and shovelnose sturgeon have been found in the upper river, but are common in the lower river. One genetic group has been identified that is characteristic of the Upper Missouri River in Montana and North Dakota, another group is prominent in the Middle Mississippi and Atchafalaya Rivers, and a third genetically intermediate group is prominent in the Lower Missouri River, downstream from Gavins Point Dam (Schrey and Heist, 2007). The Upper Missouri River group was most distinct, and less genetic differentiation was observed between the Lower Missouri River and the Middle Mississippi and Atchafalaya Rivers groups.⁴⁵ For this reason, resources should be dedicated to preserve this source population.⁴⁶ This includes investing in actions below Fort Peck to increase water temperatures, turbidity and habitat to enhance relative drift distance.

-Warmer temperatures would support improved survival of pallid sturgeon. Supporting appropriate releases from Fort Peck dam should be part of the EIS, as the reach is currently part of the 2016 Biological Opinion. The Fort Peck reach supports 29 of Montana's 56 native species, including the pallid sturgeon and six Species of Special Concern, including the shortnose gar, sicklefin and sturgeon chub, sauger, blue sucker, and paddlefish. To support spawning, warm water flows of 20,000 to 30,000 cfs with water temperatures of 64° F were meant to be sent over the spillway between the middle of May and the end of June to stimulate spawning response. ⁴⁷ However, these releases have not occurred because the drought has so severely limited water levels in the Fort Peck Reservoir.⁴⁸ From 2001-2009, the U.S. FWS and USGS monitored water temperature above and below the dam and in the Yellowstone to determine optimal conditions for the pallid sturgeon. These studies found that water temperature upstream of Fort Peck was nearly 12° warmer upstream than downstream (67° vs. 54° F) and maximum temperatures were 19° warmer above Fort Peck (79° vs. 60° F).

Temperature impacts spread as much as 180 miles downstream, nearly the entire reach before the Yellowstone confluence. Without releases from the dam, temperatures reached target values twice in 2005 and 2007, driven by warm water from the Milk River and the Yellowstone River. When the Milk River contributed to warm water flows in the Missouri River, a significant shift in sturgeon populations occurred, increasing from less than 5% to 30% of the population above Lake Sakakawea.⁴⁹ In addition to spawning and migration cues, higher temperatures contribute to faster growth rates. These higher growth rates could benefit young pallid sturgeon by supporting faster growth of newly hatched pallid sturgeon, which are susceptible to drift and mortality. While the Corps proposes to complete a temperature study at Fort Peck, the evidence already exists that the Fort Peck dam has substantially affected water temperatures. Water temperatures were modelled in the EIS. However, the Corps only used two years of water temperature data to model downstream, of Fort Peck and stated this reach did not require further analysis as it was not part of the management plan.

Additionally, the EIS states the importance of sediment in the health of native fish species in the river. Riverine fish species in the Missouri River are adapted to warm, turbid waters. Any adjustments to Fort Peck should also include considerations for life cycle needs and turbidity. The EIS notes that sediment, turbidity, and phosphorus concentrations downstream from Fort Peck Dam are much lower than upstream concentrations. The natural level of turbidity does not recover until the Upper Missouri River meets with the Yellowstone River.⁵⁰

-A holistic watershed approach should maintain recovery priorities upstream of Fort Peck. The Missouri River basin is a watershed, not a series of disconnected tributaries. Sacrificing the Fort Peck RPA for the Yellowstone Intake project again limits the scope of recovery efforts. Given that the Upper Basin is one of the least disturbed regions of the Missouri River, efforts should be focused here. Again, evaluating federal projects at the watershed scale was a requirement of the Principles, Requirements and Guidelines for federal investments in water infrastructure.

Historically, the pallid sturgeon has been documented in both the Upper Missouri and Yellowstone rivers in Montana and has been found in tributaries such as the Milk River and Tongue River. Currently, 50 wild adult pallid sturgeon are estimated to exist in the Missouri River upstream of Fort Peck Reservoir⁵¹ and 125 wild pallid sturgeon remain in the Missouri River downstream of Fort Peck Dam to the headwaters of Lake Sakakawea as well as the lower Yellowstone River.⁵² Additionally, during high flow events, pallid sturgeon have been found in the Matias River, stressing the importance of maintaining access to additional river miles for this species.⁵³ RPM.A #1 above Fort Peck reservoir is an important reach for the maintenance of genetic diversity for the pallid sturgeon. The Bureau of Reclamation states this area "is considered a 'heritage' population because of its relative genetic purity and large body size."

The geographical range of the DEIS should include the reach of the Missouri River above Fort Peck Reservoir since this reach of river is designated as Recovery Priority Management Area 1. The reservoir is operated by the Corps and efforts to alter operations downstream of the reservoir will ultimately impact immediately upstream of the reservoir.

6) Habitat creation (e.g. IRCs) metrics should be better defined and approach expanded to the upper Missouri population

According to the EIS, where alternatives focus on the creation of IRC habitat, performance metrics could be more defined and provide additional certainty. The EIS includes two conditional statements about the performance of IRC habitat that call into question whether IRC construction will be implemented. In the first, the EIS states "In the event that results are positive or equivocal, additional IRC sites would be constructed in the following years to accelerate determinations regarding these uncertainties." The Corps should both define equivocal and the range of results that would be considered positive and in particular whether statistical significance would be required for the Corps to move to the next phase of IRC construction. Second, the Corps states that if some Shallow Water Habitats (SWH) potentially serve a dual role as IRCs, that the Corps could instead rehabilitate existing SWHs instead of creating new IRC habitats. This determination appears to be double-dipping, by depending on mandated habitat construction to support new habitat.

None of the alternatives in the EIS support IRC construction in the upper river segments. However, the conceptual model for the pallid sturgeon in the upper river support "Optimization of spawning patches to increase retention of newly hatched free embryos or reconstruction of channel morphology to enhance interception of drifting free embryos could serve to decrease time and distance in the drifting stage, in either river." Additionally, the development of the conceptual model states that floodplain and lateral connectivity are "critical" to creating food resources for pallid sturgeon and possibly to increase retention of young pallid.⁵⁴

The EIS provides evidence that drift distance is important for pallid sturgeon embryos in the Yellowstone and Upper Missouri rivers. Given the importance of pallid sturgeon recovery in the upper river, the Corps should consider testing and implementing IRC habitat in the upper river, which could enhance hydraulic roughness and slow down drift of embryos and potentially provide additional food for young of year pallid.

7) The Corps should re-examine the cumulative impacts of watershed use on the pallid Sturgeon

Navigation is given a disproportionately high weighting. The Corps maintains reservoir releases to support navigation south of Sioux City, Iowa to maintain a navigation channel measuring nine feet deep and 300 feet wide. At one time the Missouri River supported regional or national transportation of commercial products, but since 2000, sand and gravel has represented greater than 85 percent of the commodities shipped on the Missouri River, which only travels as much as 10 miles.⁵⁵ For example, sand and gravel dredging supports primarily home construction and state transportation department and is the primary reason for these short navigation trips. As shown in Figure 3-58 of the EIS (below), navigation for commercial purposes declined drastically from the 1980s to today. The Corps should consider this change in their reservoir allocations and whether the change in use is reflected in the authorizing purposes. Navigation now only serves local interests, and the proportion of use for navigation could be better used for decision-making.

The EIS does not adequately address potential cumulative impacts from groundwater use, oil and gas production and grazing (Table 3-1). In the EIS, the Corps makes the assumption that actions taken on the land and use of groundwater are not relevant to the recovery of the pallid sturgeon.⁵⁶ The science does not support this assertion. Additionally, the cumulative impacts analysis finds that depletions, snag removal, floodplain grazing and pasturing, oil and gas and groundwater withdrawals do affect fish and wildlife habitat, other special status species and water quality. Given this conflict between the effects of land use and groundwater on fish and wildlife habitat, but exclusion from impacts to pallid sturgeon, the Corps should consider:

- Assessing the potential impacts of spills from the oil and gas industry on pallid sturgeon survival.
- Provide evidence that pallid sturgeon survival is not impacted by surface water-groundwater interactions and thus are not affected by groundwater use.
- Provide evidence that pallid sturgeon and their primary prey are not impacted by snag removal.
- Provide justification for why pallid sturgeon would be impacted by floodplain development but not animal grazing in the floodplain.

Tributaries along the Missouri River are prone to loss of water with drought and groundwater withdrawals. These changes in hydrology could impact flows in the upper Missouri River. Streams surrounding Lake Sakakawea and in the Powder River Basin are draining, ⁵⁷ and may go dry as Groundwater declines. Additionally, the region south of Lake Sakakawea is an important groundwater recharge zone.⁵⁸ Groundwater is similarly limited with the nearest aquifer, Fox Hill, currently losing 1-2 feet per year. Though much is known about the aquifer itself, the impacts of groundwater withdrawals on rivers, streams, and wetlands remain poorly understood.

While a focus on water quantity is important, understanding the impacts of water quality is critical as well. Significant oil and gas development has occurred along North Dakota's portion of the Lower Yellowstone River and Missouri River, from the Confluence to Lake Sakakawea (known as the Williston Reach). More than 20 oil wells and numerous pipelines line the active floodplain, and are occasionally submerged during periods of high river flow or high lake levels. In 2013, approximately one million gallons of oil and saltwater spilled onto the landscape from more than 450 uncontained leaks.⁵⁹ Protection from spills is rather limited, with most attention focusing on the impacts to people rather than wildlife. If a domestic or agricultural water user within 0.5 mile of oil or gas activity or one mile of a well site has "disrupted or diminished" water quantity or quality, the owner is entitled to

recover the loss from the oil and gas company.

Conclusion

We find that the described actions are insufficient to avoid jeopardy for the pallid sturgeon. In general we find the utilization of the current state of science on the species lacking. We also feel that the best way to protect this species in the Upper Missouri River is through a combination of actions on both the Yellowstone and the Missouri rivers. Furthermore, actions which do not result in substantial changes in the field (e.g. Level 1 and 2 research actions) are insufficient and not likely to enhance survival and reproduction of pallid sturgeon. While these studies are important, Level 3 and 4 actions should also be implemented which will result in population level changes.

Please contact me if you have additional questions regarding our comments. Thank you for the opportunity to comment.

Sincerely,

Aaron Hall, PhD
Rockies and Plains Representative
Defenders of Wildlife

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Correspondence Text

The following comments are specific to the Draft Missouri River Recovery Management Plan and Environmental Impact Statement, Volume 1.

Section & Page Number: 1.2.1, p. 1-13

Comment: The "Problem Definition" inset makes no reference to the Flood Control Act of 1944. Continued service to the Missouri River authorized purposes in accordance with the Flood Control Act of 1944 should be included in the Problem Definition.

Section & Page Number: 1.5.2, p. 1-23

Comment: The USFWS proposes using acres of ESH as a target to ensure a resilient population of birds on the Missouri River. Acres of ESH would be calculated in two ways: (1) Standardized ESH, and (2) Available ESH. It is not clear from the EIS and supporting documents why tracking Standardized ESH is necessary. For the Garrison Reach, the definition for Standardized ESH states that it is the area above water when releases from Garrison Dam are 23.9 kcfs. Releases from Garrison Dam do not always reach 23.9 kcfs in a given year. If the "standard" release does not occur in a given year, it is not clear how Standardized ESH is determined if it is not measured.

Section & Page Number: 1.5.2, p. 1-23

Comment: The geographic scope for the piping plover is described as the Missouri River from Fort Peck Lake, MT to Fort Randall Dam, SD (Northern Rivers Region); and the Missouri River from Fort Randall Dam, SD to Ponca, NE (Southern Rivers Region). The U.S. Geological Survey is conducting a piping plover metapopulation study. The study evaluates the degree of connection between certain breeding regions, mainly the connection between Lake Sakakawea, Lake Oahe, Garrison Reach, and the alkali lakes in Montana, North Dakota, and South Dakota. Understanding the degree of connection

between the breeding areas is critical because bird abundance in one area may be substantially affected by movement between areas. The state strongly supports this study as it will improve future population modeling efforts and provide a better understanding of actions to implement for the recovery of the piping plover.

The USFWS and USACE should not confine the geographic scope for the piping plover to the mainstem Missouri River only, but also consider other habitat (i.e. non-ESH habitat) to assist in achieving their goals. If science confirms that there is a significant connection between the Missouri River and alkali lakes, we request consideration of implementing actions in the alkali lakes region to help achieve the Missouri River goals.

Section & Page Number: 1.6.1, p. 1-26

"To facilitate plan development, an implementation timeframe of 15 years was chosen for this planning process and EIS. This is a reasonable timeframe for identification of actions which, based on the current state of the science, may provide meaningful biological responses while recognizing the potential, based on AM, that substantive changes to the suite of actions identified in this MRRMP-EIS may be necessary in 15 years."

Comment: Please see General Comment on Master Manual-Related Concerns and Comment on Section 2.3.8.1 regarding our demand for additional procedures prior to implementing any adaptive management changes to or deviations from the current Master Manual.

Section & Page Numbers: 1.6.2, p. 1-27; 2.1, p. 2-1; 2.2, p. 2-2; 2.10.2, p. 2-93

Comment: In a number of places, the MRRMP-EIS omits references to the states and fails to recognize state governments as sovereign entities that have authority to manage natural resources within their boundaries. We request that the document include specific references to the states and their authorities in this regard. Instances where this is needed include:

"AM and NEPA are similar in that each emphasizes collaboration principles and working with stakeholders and Tribes." (1.6.2, p. 1-27)

"The goal was to formulate a set of reasonable alternatives to meet the species objectives described in Chapter 1.0 and clearly articulate the effects of those alternatives to provide necessary information to decision makers, stakeholders, Tribes, and the public." (2.1, p. 2-1)

"CEMs are frequently cited as a necessary step in formal adaptive management (AM), in which stakeholders, Tribes, and scientists jointly develop a shared understanding of what influences an ecosystem or population, and then apply the model to predictions of system behavior (i.e., hypotheses) under management scenarios." (2.2, p. 2-2)

"This action would require extensive coordination with the Tribes in developing site-specific plans for construction in the Garrison Reach in order to avoid sensitive areas." (2.10.2, p. 2-93)

Section & Page Number: 2.3, p. 2-9

"USACE did not consider Fort Peck dam removal reasonable for consideration within the scope of this EIS because of the uncertainties regarding the effectiveness of this management action towards meeting pallid sturgeon objectives and the availability of other actions that would be less impactful."

Comment: This section should state that the USACE does not have the authority to remove Fort Peck Dam.

Section & Page Number: 2.4.3, p. 2-12

The third paragraph of the section briefly describes the model that was used to simulate erosion and deposition of ESH. The paragraph references a report written by Fischenich et al. (2014) that has additional information regarding how changes in ESH was modeled. The "References" section cites this report as the following:

Fischenich, J.C., R. McComas, D. Meier, J. Tripe, D. Pridal, P. Boyd, S. Gibson, J. Hickey, T. Econopouly, and L. Strong. 2014. Habitat Analyses for the Missouri River Effects Analysis - Geomorphic Team Integrative Report.

Comment: The Effects Analysis reports are the basis for the AMP and the alternatives evaluated in the EIS. The Fischenich et al. report is a crucial document underpinning the geomorphic analysis. This report was not made available to the public along with the other Effects Analysis reports that were released with the MRRMP-EIS. It was only disclosed (in an incomplete version) after February 16, which was halfway through the 120-day comment period. This compromised our ability to conduct a full and rigorous review of the material. Not releasing this report at the beginning of the comment period is the opposite of being open and transparent, and is at odds with the spirit and requirements of NEPA and the Administrative Procedures Act that the agency provide a meaningful opportunity for review and comment on the technical bases being relied upon by the agency. Additional comments are included in the section of this document dedicated to this report.

Section & Page Number: 2.5, p. 2-14

"It should be noted that eliminating a management action from further consideration for the alternatives in this draft EIS, which is identifying alternative plans to guide the MRRP over the next 15 years, does not exclude the action from being the subject of further research or study as part of the AM Plan."

Comment: See General Comment on Master Manual-Related Concerns and Comment on Section 2.3.8.1 regarding our demand for incorporation of additional procedures prior to implementing any adaptive management changes to or deviations from the current Master Manual.

Section & Page Number: 2.5.1.1, p. 2-14 - 2-15

Comment: This section states that the ESH-creating flow release was retained as a management action for consideration in the MRRMP-EIS. This management action involves releasing high flows from the dams for the purposes of creating sandbar habitat for the piping plover and least tern. The ability of the Garrison Reach, and the river in general, to continuously create sandbar habitat with flows over the long term is questionable. Since construction of the dams, the geomorphic trend of the Garrison Reach is erosion at the upstream end, and aggradation on the downstream end.

Skalak et al. (2013) showed that Garrison Dam exerts considerable morphological control on the channel until the backwater effects of the Oahe Dam and reservoir begin to influence the channel. The paper suggested that there would be a continued loss of islands in the upper portion of the Garrison Reach and management of habitat in this area would become more difficult. The paper also suggests that management of habitat in the downstream portion of the Garrison Reach, especially in the Bismarck-Mandan area, would increase conflict between birds and people recreating on the river.

Skalak et al. (2016) confirmed that large hydrologic pulses, such as the 2011 flood, do not revert the geomorphic pattern created by Garrison Dam and Oahe Reservoir, nor do they uniformly impact the different river zones or geomorphic features. Ultimately, the paper suggests that a change in conditions other than high-magnitude flooding would be required to return the Missouri River to its pre-dam condition, or restore the ecosystem to a self-maintaining state.

Skalak, K.J., Benthem, A.J., Schenk, E.R., Hupp, C.R., Galloway, J.M., Nustad, R.A., and Wiche, G.J., 2013, Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River: *Anthropocene* 2 (2013): 51-64.
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Skalak, K.J., Benthem, A.J., Hupp, C.R., Schenk, E.R., Galloway, J.M., and Nustad, R.A., 2016, Flood effects provide evidence of an alternate stable state from dam management on the upper Missouri River: *River Research and Applications*. <http://onlinelibrary.wiley.com/doi/10.1002/rra.3084/full>

Section & Page Number: 2.5.1.2, p. 2-15 and 2.8.1.1, p. 2-48

Comment: Due to the extremely temporal nature of existing sandbars in the Garrison Reach, North Dakota has long questioned the costs versus benefits of constructing artificial islands or sandbars in this area. Additionally, several of North Dakota's natural resource agencies have consistently opposed dredging or fill activities in the Garrison Reach (since the early 1990s), except for those public works projects that are of an emergency nature. As a result, regulatory agencies have taken a fairly conservative approach to issuing permits for projects of this nature. Implementing ESH projects that require dredging or fill would also no doubt create considerable new interest among private riparian property owners.

North Dakota is in favor of mechanical creation as it relates to vegetation removal from existing ESH for the free-flowing stretches of the Garrison Reach. Should mechanical creation by buildup of sand in the river be necessary, to promote longevity of the project we recommend it only occur in the aggradating reach and in the Lake Oahe delta, but not between River Mile (RM) 1310 and RM 1325, and that the material used come from within the existing channel or preferably from the Oahe delta - pending approval of required state permits.

Any action, such as mechanical ESH construction, which results or is likely to result in dredge or fill in the Missouri River or any tributary to the Missouri River will require a section 401 permit and possibly a general storm water construction permit as well.

Additionally, North Dakota's sovereign lands are those areas, including the beds and islands, lying within the ordinary high water mark of navigable lakes and streams. The State Engineer is responsible for administering the state's non-mineral interests on North Dakota's sovereign land. A sovereign land permit application and review by the Office of the State Engineer would be required for ESH construction on the Missouri River in North Dakota.

Section & Page Number: 2.5.1.4, p. 2-16 - 2-17

Comment: This section states that "off-channel" habitat creation was eliminated as a management action for the MRRMP-EIS. The USFWS and USACE should not confine the geographic scope for the piping plover to the mainstem Missouri River only, but also consider other habitat (i.e. non-ESH habitat) to assist in achieving their goals. If science confirms that there is a significant connection between the Missouri River and alkali lakes, consider implementing actions in the alkali lakes region to help achieve the Missouri River goals.

Section & Page Number: 2.5.1.6, p. 2-18

Comment: This section states that vegetation maintenance was retained as a management action for the MRRMP-EIS. Vegetation maintenance on ESH for the piping plover and least tern has been occurring for at least a decade on the Garrison Reach. The State of North Dakota is supportive of continuing this management action on existing sandbars - pending approval of required state permits.

Section & Page Number: 2.5.1.9, p. 2-19

"(2) the reduced flow can potentially decrease the rate of erosion of existing ESH."

Comment: It should also be noted that the reduced flow can potentially increase the rate of erosion as the reduced flows will likely result in higher flows later in the year to evacuate flood storage in the reservoirs, the increased erosion would be even more likely if the higher flows occur under ice cover.

Section & Page Number: 2.5.1.12, p. 2-20 - 2-21

Comment: This section states that human restriction measures were retained as a management action for the MRRMP-EIS. This action is already implemented in the Garrison Reach. The State of North Dakota is not supportive of restricting human access to sandbars in areas of high human use, such as the Missouri River in the Bismarck-Mandan area. Also, any requests to restrict human access on Missouri River sandbars in North Dakota would require the issuance of a sovereign lands permit from the Office of the State Engineer.

Section and Page Number: 2.5.2.1, pg 2-26

Comment: Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative analysis due to the "high level of uncertainty" of the actions' ability to achieve the desired result. How can these actions be considered in any section of the AMP if the actions were not analyzed in the EIS?

Section & Page Number: 2.5.4, p. 2-31 - 2-32

Comment: This section is about habitat creation in accordance with WRDA 1986, 1999, and 2007, and only describes habitat development for pallid sturgeon in the lower basin of the Missouri River. Section 3176 of the Water Resources and Development Act (WRDA) of 2007 authorizes the Secretary of the Army to use recovery funds in the upper basin of the Missouri River, including the states of Montana, Nebraska, North Dakota, and South Dakota. It is our understanding that guidance has not been developed for this section of the WRDA of 2007, which may prove vital in expanding the geographic scope of the MRRMP-EIS. Guidance should be developed for Section 3176 of the WRDA of 2007 that allows the USACE to implement actions which, based on science, will avoid jeopardy and contribute to recovery of the listed species - regardless of whether or not the action is on the mainstem of the Missouri River.

Section & Page Number: 2.7, p. 2-37 - 2-38

Comment: This section on "Bird Alternatives Development" states that the bird alternatives were refined with consideration of MRRIC feedback. As a member of MRRIC, the State of North Dakota does not know how its feedback was utilized to refine the alternatives. The state had made it clear early on that it had serious reservations about any action outside of the current Master Manual,

especially given the uncertainty regarding how states would be involved in those high-consequence decisions. This feedback is not reflected in the current version of the MRRMP-EIS.

Section & Page Number: 2.8.1.1, p. 2-48

Comment: The alkali lakes region of North Dakota should be included in the scope of the document as it relates to piping plovers. Recent work by the USGS Northern Prairie Wildlife Research Center has shown a stronger connection between populations of piping plovers on the Missouri River and alkali lakes region than once believed. Including these birds in the overall evaluation of population health could change the implementation of the MRRMP, including the target acreage of ESH needed in any given year. This would give a better overall picture of population health and increase the ability of the USACE's goal of avoiding jeopardy for piping plover on the Missouri River.

Section & Page Number: 2.8.1.1, p. 2-49

Comment: The first paragraph references Section 2.5.1.5. It should be Section 2.5.1.2.

Section & Page Number: 2.8.1.1, p. 2-49

"Alternative 6 includes a flow release for the intended benefit of pallid sturgeon but of a magnitude that creates ESH."

Comment: It is not clear from this sentence if the magnitude of the bimodal spawning cue in Alternative 6 is at all based on the needs of the pallid sturgeon.

Section & Page Number: 2.8.1.1, p. 2-53

Comment: Regarding the monitoring program for the piping plover, the State of North Dakota strongly encourages the USACE to make improvements as outlined in Shaffer et al. (2013). This study determined that adult numbers were substantially underestimated and the detection rate varied from area to area. Improvements are necessary so that resources (i.e. money, water, etc.) are used more efficiently in implementing recovery actions.

Shaffer, T.L., M.H. Sherfy, M.J. Anteau, J.H. Stucker, M.A. Sovada, E.A. Roche, M.T. Wiltermuth, T.K. Buhl, and C.M. Dovichin. 2013. Accuracy of the Missouri River Least Tern and Piping Plover Monitoring Program--Considerations for the future: U.S. Geological Survey Open- File Report 2013-1176, 74 p., with 4 appendixes, <http://pubs.usgs.gov/of/2013/1176/>.

Section & Page Number: 2.8.4.1, p. 2-66

"Under Alternative 3, the USACE would follow the AMP that was developed based on the results of the Effects Analysis. The AM Plan is a companion document to the MRRMP-EIS. The AM Plan identifies the process and criteria to implement the initial management actions, assess hypotheses, and introduce new management actions should they become necessary."

Comment: See General Comment on Master Manual-Related Concerns and Comment on Section 2.3.8.1 regarding our demand for incorporation of additional procedures prior to implementing any adaptive management changes to or deviations from the current Master Manual.

Section & Page Number: 2.8.7, p. 2-73

"After the first occurrence of a March pulse, the preclude for System storage would change to 40.0 MAF."

Comment: It is not clear what is meant by "the preclude" and this should be clarified. It is also not clear what the preclude would be before it changed to 40.0 MAF.

Section & Page Number: 2.9.2.1, p. 2-78

"Alternative 1 does not meet the species objective of providing a 95 percent chance of persistence for piping plover over the 50-year modeled period."

Comment: The piping plover actions in the Preferred Alternative are the same as in Alternative 1. It is disingenuous to assert that Alternative 1 does not meet the needs of the birds when the only justification provided in the EIS for that assertion is that Alternative 1 includes an annual average of 107 acres of mechanical ESH construction. Page 2-49 states that the 107 acres is based on past average annual ESH construction in the Gavins Point Dam and upper Lewis and Clark Lake segments from 2004 through 2010. It further states that Alternative 1 represents continued implementation of that acreage of ESH, but in the Garrison and Gavins Point reaches. In the Garrison Reach, from 2004 to 2010, mechanical construction did not occur because the sole focus was vegetation maintenance on existing ESH. The 107 acres of ESH construction under Alternative 1 does not include the acres gained due to vegetation maintenance and misrepresents and underestimates the actions that are currently being implemented.

Section & Page Number: 2.9.2.3, pg 2-81

"Under Alternative 3, USACE would create ESH through mechanical means at an average rate of 391 acres per year in the Garrison, Fort Randall and Gavins Point river reaches."

Comment: Further explanation of how the ESH acres would be distributed between the reaches should be included.

Section & Page Number: 2.9.2.4, p. 2-83

"After the higher release period is completed, the upper three reservoirs have less water than they otherwise would have, and they must recover. During this phase, releases are lower than they otherwise would have been, allowing more water to accumulate in the reservoirs."

Comment: It is not clear if the phrase "releases are lower than they otherwise would have been" means that the reservoirs are refilling according to the current Master Manual. If the USACE is operating outside the Master Manual when refilling the reservoirs after the ESH-creating release then that change in operations needs to be described in the EIS.

This comment also pertains to Alternative 5 (Section 2.9.2.5, p. 2-86) and Alternative 6 (Section 2.9.2.6, p. 2-88), where similar statements are made.

Section & Page Number: 2.10.2, p. 2-93

"This action would require extensive coordination with the Tribes in developing site-specific plans for construction in the Garrison Reach in order to avoid sensitive areas."

Comment: Similar to the Tribes, the state would also require coordination and consultation on

mechanical ESH construction. This is another instance, as mentioned previously in these comments, where the USACE has not recognized state governments as sovereign entities that have authority over managing natural resources within their boundaries.

For at least the last decade, the USACE has met annually with the North Dakota Interagency ESH Team to discuss their planned actions in North Dakota for the MRRP. We expect this annual consultation to continue as it allows an opportunity to discuss regulatory issues and other concerns related to the MRRP. State involvement as a part of the ESH Team has been a positive partnership in the past and important to maintaining a good working relationship on Missouri River issues with the USACE.

The following comments are specific to the Draft Missouri River Recovery Management Plan and Environmental Impact Statement, Volume 2.

Section & Page Number: 3.1.1, p. 3-3

Comment: This section states that the cross sections for the HEC-RAS model were based on 2012 channel geometry. As the 2011 flood scoured the channel and moved the reservoir deltas downstream, and we are already seeing the effects of sedimentation, the 2012 geometry will generally underestimate the water surface profile. While this does not prevent comparison of the alternatives, it should be noted that the water surfaces will likely be higher than modeled.

Section & Page Number: 3.1.1, p. 3-4

"The 'rules' governing System operation during periods of drought and high runoff for the action alternatives are generally the same as current System operation under the No Action alternative. Therefore, the effects of the action alternatives on reservoir elevations and releases are relatively small compared to the variation caused by the extreme hydrologic events in the POR."

Comment: It is agreed that the action alternatives do not substantially affect operations during climate extremes, such as floods and extended drought. However, some of the action alternatives, in particular Alternatives 4 and 5, cause significant changes in reservoir elevations and releases from Garrison Dam. Tables 1 and 2 display the volume released from Garrison Dam and reservoir elevation changes of Lake Sakakawea for each instance in the modeled period of record when a full ESH-creating release was implemented (values were calculated from the Hydrovisualization Tool, version 2.27).

[Table 1 - Alternative 4: Spring ESH-Creating Release; Table 2 - Alternative 5: Fall ESH-Creating Release]

First and foremost, when a full ESH-creating release is implemented, the volume of water released is not insignificant. For purposes of comparison, the consumptive water use for the entire State of North Dakota in 2015 was about 343,000 acre-feet. The volume of water released to create ESH is up to nearly eight times the annual consumptive water use for our entire state.

For both ESH-creating releases, Lake Sakakawea drops up to 10 feet in 5.5 weeks. Among other things, this could negatively affect boat access to the reservoir, and access to water for irrigation and municipal water supplies.

Data from NDGFD shows that reservoir fishery health is also dependent on water levels. Correlation analyses of the total catch rate of young-of-the-year (YOY) fish (all Sakakawea) and environmental

variables show significant positive correlations between catch rates of YOY fish and spring rise, total rise, and the change in maximum water levels from the previous year (Table 3). These data indicate the importance of water level management to the overall reproduction of fish in Lake Sakakawea.

[Table 3. Results of correlation analysis for the catch rate of YOY fish in frame and hill nets combined and environmental variables, Lake Sakakawea, 1972-2013]

The importance of timely water level manipulation for fish and wildlife resource management cannot be over-emphasized, nor can the destructive capacity of untimely manipulation be underestimated. Information gained from more than forty years of Missouri River surveys and investigations can now be used to outline the methods and highlight the importance of a system approach to water level management as a tool to enhance fishery resources. Every attempt should be made to develop workable water level scenarios which will promote those objectives on a more frequent basis.

Section & Page Number: 3.1.1, p. 3-4

"Depletions consist of water use by irrigation, municipal, evaporation, etc."

Comment: This should be changed to "Depletions are estimates of water use by irrigation, municipal, evaporation, etc."

Section & Page Number: 3.2.1.3, p. 3-16

Comment: In Table 3-2, channel capacity based on hydraulic model results for the various Missouri River reaches are displayed. The Fort Peck to Lake Sakakawea Reach and the downstream portion of the Garrison Reach have estimated channel capacities of 35,000 to 40,000 cfs. Flows for any alternative should be managed to be at or below this level, unless impacts are mitigated.

Section & Page Number: 3.2.1.4, p. 3-19

"Primary geomorphological processes that are relevant for the proposed management actions consist of degradation and bank erosion, reservoir sediment deposition and aggradation, reservoir shoreline erosion, and ice dynamics."

Comment: What is not mentioned in this sentence is sandbar erosion and deposition, which is a critical part of river geomorphology and is relevant to all of the proposed alternatives.

Section & Page Number: 3.2.1.4, p. 3-20 - 3-22

Comment: The geomorphology of the Garrison Reach is discussed within these pages in the "Degradation and Bank Erosion" and "Reservoir Sediment Deposition and Aggradation" sections. While the description is not inaccurate, it is written as if the degradation and aggradation occurring in the Garrison Reach are two separate and independent processes. Skalak et al. (2013) stated that Garrison Dam exerts considerable morphological control on the channel until the backwater effects of the Oahe Reservoir begin to influence the channel. The following figure from Skalak et al. (2013) clearly demonstrates that concept.

[Channel Capacity Graph]

The study proposed a conceptual model for channel morphology, called an "Inter-Dam Sequence", comprised of the following morphological zones: Dam Proximal, Dam Attenuating, River-Dominated

Transitional, Reservoir-Dominated Transitional, and Reservoir (see following figure).

[Figure 11. Conceptual model of channel morphology that results from dam interaction along a river reach. Removal of islands occurs just below the dam in the Dam Proximal zone (bed degradation and bank erosion are also likely). The eroded sediment may be locally deposited in new islands and sand bars downstream. These sand bars and islands are stable in the Dam attenuating zones but erosion and deposition are likely less episodic due to the controlled releases from the dam. In the Transitional reaches all sediment that has not been locally deposited will accumulate here. This results in large distributary islands and deposition of large wood. Finally, in the downstream reservoir, the historic channel is completely submerged.]

The study determined the following general characteristics for each morphological zone in the Garrison Reach:

1. Dam Proximal Zone:

- River Mile 1390 to 1359 (Garrison Dam to Washburn)
- Characterized by erosion
- 57% of sandbars were lost from 1950 to 1999

2. Dam Attenuating Zone:

- River Mile 1359 to 1328 (Washburn to Sundown Acres)
- Erosion, but not as severe as Dam Proximal
- 16% increase in sandbar area from 1950 to 1999
- All major 1950-islands were still present in 1999

3. River-Dominated Transitional Zone:

- River Mile 1328 to 1303 (Sundown Acres to Little Heart Bottoms - through Bismarck-Mandan)
- Increase in islands and sandbars, minimal change in cross-sectional area
- 150% increase in sandbars from 1950 to 1999
- Sandbar islands become more attached to the riverbank

4. Reservoir-Dominated Transitional Zone:

- River Mile 1303 to 1272 (Little Heart Bottoms to Fort Rice Boat Ramp)
- Aggrading islands, delta formation occurs and depends on elevation of Lake Oahe
- 50% decrease in cross-sectional area

5. Reservoir:

- River Mile 1272 to 1072 (Little Heart Bottoms to Oahe Dam)
- Very little deposition, relatively stable

Skalak et al. (2013) predicted that the boundaries of each zone would migrate. The Dam Proximal Reach would migrate downstream as sediment supply continues to be limited and erode the Dam Attenuating Reach. The River-Dominated Interaction Reach would migrate upstream from sediment eroded upstream. The Reservoir-Dominated Interaction Reach would extend both upstream and downstream due to sediment transported from upstream and reduced velocity from reservoir backwater effects.

The geomorphology pattern established by the interaction of Garrison Dam and Oahe Reservoir will impact the effectiveness of management actions performed for the least tern and piping plover over time (same for other inter-dam reaches).

Skalak, K.J., Benthem, A.J., Schenk, E.R., Hupp, C.R., Galloway, J.M., Nustad, R.A., and Wiche, G.J., 2013, Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River: *Anthropocene* 2 (2013): 51-64.
<http://dx.doi.org/10.1016/j.ancene.2013.10.002>

Section & Page Number: 3.2.1.4, p. 3-23

Comment: The "Ice Dynamics" section lacks detail on the effect of ice on river flows and stages in North Dakota. Ice jam-induced flooding is a concern on the Missouri River. Although ice-induced flooding can occur anywhere along the Missouri River in North Dakota, there is heightened concern in the Bismarck-Mandan area. At the beginning of winter when ice cover is forming, river stage usually rises between 5 and 7 feet in a short period of time (measured at the Missouri River at Bismarck USGS gage). During the ice-out period, there is a high risk of ice jams and river stages can fluctuate drastically with little to no warning. Typically, the USACE will temporarily reduce releases from Garrison Dam to prevent ice-induced flooding during freeze-in and ice-out periods as conditions permit.

Section & Page Number: 3.2.2.3, p. 3-28

"Overall, the elevations in the reservoirs are dominated naturally by precipitation (i.e., rainfall and snowmelt) in the watershed of the upper river (aside from System operation by the USACE). Although the six alternatives could affect the elevations in the reservoirs to varying extent throughout the year, these variations are small compared to natural variations."

Comment: It is agreed that the effect of the alternatives on reservoir elevations is small compared to natural variations; however, that does not mean that the effect itself is insignificant. For example, the effect of the ESH-creating release on the elevation of Lake Sakakawea is a drop of up to 10 feet (discussed further in comment regarding Section 3.1.1, p. 3-4). In addition, some of the alternatives (2, 4, 5, and 6) cause lower reservoir levels during historic drought periods and the incremental effect during a drought (or flood) can be devastating. Plots of the three upper reservoirs during the historic drought periods are attached.

Section & Page Number: 3.2.2.3, p. 3-34 - 3-37

"Spring releases for ESH creation (Alternative 4) would start April 1 and would last between 35 days (at 60,000 cfs) and 175 days (at 45,000 cfs). Fall releases (Alternative 5) would be similar to spring releases, except they would start on October 15." Within the same section on page 3-37 it also states, "Impacts to hydrology are not anticipated to be significant under Alternatives 4 and 5."

Comment: Besides the effect of the ESH-creating releases on reservoir elevations, which have been already discussed, any flows above the channel capacities identified in Table 3-2 (p. 3-16) would cause flooding. The channel capacity for the Fort Peck to Lake Sakakawea Reach and the downstream portion of the Garrison Reach is between 35,000 and 40,000 cfs. When the ESH-creating releases occur, the corresponding flow out of Garrison Dam is 17,500 cfs less than what is released from Gavins Point. This equates to releases ranging from 42,500 cfs (for 35 days) and 27,500 cfs (for 175 days). Any flows above 35,000 cfs, as determined by the hydraulic modeling, would exceed channel capacity in parts of the river and cause flooding. Saying that this change in hydrology is insignificant is disingenuous.

In addition, implementing the fall ESH-creating release for 175 days would be infeasible. 175 days is nearly 6 months, making it last the entire winter. Typically, ice forms on the Garrison Reach in early to mid-December. As stated earlier, ice cover formation causes an increase in river stage of about 5 to 7 feet. High flows throughout the winter are unacceptable due to the increased risk of ice-induced flooding. In addition, ice cover on the river increases velocity for a given flow. Increased flows under ice conditions with the resulting increased velocities would increase erosion and negatively affect the longevity of sandbars.

Section & Page Number: 3.2.2.4, p. 3-44

Comment: Fort Peck Lake is referred to as "(Port Peck Lake)"

Section & Page Number: 3.2.2.4, p. 3-39 - 3-46

Comment: On page 3-39, this section regarding the "Impacts on Geomorphology from the Alternatives" states that effects to geomorphology due to Alternative 3 are not discussed because they would be similar to Alternative 1. Alternatives 1 and 3 do not include ESH-creating releases, so the hydrology is similar. They primarily rely on mechanical ESH construction.

While mechanical ESH construction may not have a system-wide effect on geomorphology, that is not the case on a smaller, local scale. Constructing a sandbar could have morphological effects, such as shifting the thalweg of the river, which could cause a change in riverbank or sandbar erosion further downstream. A sandbar constructed in the upstream portion of the Garrison Reach would most likely erode and end up in the Oahe delta.

On page 3-40 in the discussion on degradation and bank erosion in the Garrison Reach it states the following:

"Alternatives 4 and 5 could result in flow releases at Garrison Dam of 42,000 cfs for approximately 1 month. Considering the observations after recorded flows in 1996 and 1997, degradation of the river channel from the much shorter Alternatives 4 or 5 flow releases would perhaps be on the order of up to 0.5 foot in the mid-section of the Garrison Dam to Lake Oahe reach for each release. Considering the temporary impacts from individual releases and because Alternatives 4 and 5 full flow releases would occur only approximately every 10 or 7 years (Table 3-4), respectively, long-term impacts from additional degradation and streambank erosion under Alternatives 4 and 5 would be considered small."

Degradation of 0.5 feet for each release is not small. Over the long-term, this degradation would accumulate and shift the water surface profile by several feet. Also, the ESH-creating releases would continuously move sediment from upstream to downstream, perpetuating (not reversing) the geomorphic pattern that already exists in the Garrison Reach. (See comments pertaining to "Inter-Dam Sequence" for Section 3.2.1.4, p. 3-20 - 3-22.)

Skalak et al. (2016) studied the effect of the 2011 flood on the Garrison Reach. While the flows during the 2011 flood were much higher than the proposed ESH-creating releases, the results of the study still demonstrate that high flows can cause significant changes in geomorphology. The 2016 study determined the effects of the flood for each morphological zone of the Inter-Dam Sequence (see Skalak et al. 2013) for the Garrison Reach. The effects were as follows:

1. Dam Proximal Zone:

- River Mile 1390 to 1359 (Garrison Dam to Washburn)
- 40% of islands were eroded - equates to 44 years of work performed by the flood

2. Dam Attenuating Zone:

- River Mile 1359 to 1328 (Washburn to Sundown Acres)
- 13% increase in islands - equates to 43 years of work performed by the flood

3. River-Dominated Transitional Zone:

- River Mile 1328 to 1303 (Sundown Acres to Little Heart Bottoms - through Bismarck/Mandan)
- 25% increase in islands - equates to 8 years of work performed by the flood

4. Reservoir-Dominated Transitional Zone:

- River Mile 1303 to 1272 (Little Heart Bottoms to Fort Rice Boat Ramp)
- Change in islands was not measured

On page 3-46 the final sentence of Section 3.2.2.4 states, "Impacts to geomorphology would not be significant under any of the alternatives." This statement is incomprehensible, especially in consideration of the fact that all of the alternatives affect the geomorphology of the river. The sole purpose of the ESH-creating releases is to cause significant change in the geomorphology of the river.

Skalak, K.J., Benthem, A.J., Hupp, C.R., Schenk, E.R., Galloway, J.M., and Nustad, R.A., 2016, Flood effects provide evidence of an alternate stable state from dam management on the upper Missouri River: River Research and Applications. <http://onlinelibrary.wiley.com/doi/10.1002/rra.3084/full>

Section & Page Number: 3.2.2.5, p. 3-46 - 3-47

"The flow release magnitude exceeds the power plant capacity at all projects except Big Bend. Past operations experience has shown that using the spillway or flood tunnels to release flow for a prolonged period results in the need for additional maintenance of these features and adds cost to operating the system. Long-term reliability of flow release features (spillway and/or flood tunnel) may also be affected. Finally, minor changes in dam safety risk from the use of additional release mechanisms and pool levels may occur. These risks have not been quantified at this time and would require a Monte Carlo analysis to evaluate changes in operation frequency and pool probability."

At the end of this section on page 3-47, the following conclusion is made: "Impacts to river infrastructure would not be significant under any of the alternatives."

Comment: First of all, understanding the changes in dam safety risk is critical. If the flows proposed under Alternatives 2, 4, 5, and 6 increase the use of the spillways, affecting long-term reliability, not quantifying that risk is irresponsible. Second, concluding the section by saying that impacts would not be significant is premature because the risk to dam safety has not been assessed.

Section & Page Number: 3.4.1, p. 3-85

Comment: This section reiterates the geographic scope for the piping plover and least tern. The USFWS and USACE should not confine the geographic scope for the birds to the mainstem Missouri River only, but also consider other habitat (i.e. non-ESH habitat, and alkali lakes) to assist in achieving their goals.

Section & Page Number: 3.4.2.4, p. 3-98

Comment: Vegetation management is North Dakota's preferred method to obtaining target habitat acreages for piping plover and least terns in the Missouri River.

Furthermore, the State of North Dakota recommends that the USACE maintain the agreed upon moratorium of management actions in the Bismarck-Mandan area where management actions for piping plover and least tern are not implemented as decided upon by the North Dakota Interagency ESH Team. This would be from RM 1310 to RM 1325. Also, it is necessary to maintain a buffer of 1 mile around boat ramps with the same restrictions. This stretch of river supports a high volume of recreation. The attraction of piping plovers and least terns to the area by implementing management actions brings unnecessary human/bird conflicts. These conflicts would do more harm to the public perception of tern and plover recovery than the benefits the management actions would bring.

Section & Page Number: 3.4.2.8, p. 3-102

"Tern and plover population dynamics following high flows in 1997 and 2011 indicate that sufficiently high flows produce population increases in subsequent years. The spring emergent sandbar habitat-creating reservoir release modeled as part of Alternative 4 would have longterm, relatively large beneficial impacts from the creation of new sandbars that could occur following flows."

Comment: First, this statement contradicts the conclusion of Section 3.2.2.4, which said that Alternative 4 would not have significant impacts on geomorphology. The statement says that the release would have long-term, relatively large beneficial impacts from the creation of new sandbars. Second, the long-term benefit of the ESH-creating release would only last until the sediment supply was exhausted, or for the inter-dam reaches, until all of the sediment was flushed into the reservoir deltas. Third, the ESH-creating release would have an adverse effect by increasing the flood risk of birds nesting on sandbars. When discussing the effect of the spawning cue releases for Alternative 2 (Section 3.4.2.6, page 3-101) and Alternative 6 (Section 3.4.10, page 3-104), this risk of flooding nesting birds is recognized. It should also be recognized for Alternative 4.

These comments also apply to the fall ESH-creating release (Alternative 5), which is discussed in Section 3.4.2.9 (page 3-103), with the exception of the comment on flooding nesting birds. The fall release as described would occur after nesting season.

Section & Page Number: 3.4.2.12, p. 3-104

Comment: The first paragraph of this section describes how the dams have modified river flows to the detriment of the piping plover and least tern by limiting sediment supply and maintaining higher flows during the summer, which increases the potential to inundate nests. It is agreed that the dams shut off the sediment supply to the river and affect the sustainability of sandbar habitat. This conclusion, however, completely disregards the dams' influence on the historical hydrograph that is a benefit to the birds. The dams have greatly reduced the once-normal floods that occurred due to plains and mountain snowpack runoff. Piping plovers arrive on the Missouri River around mid-April every year, hatching occurs within late May to early July, and they begin to leave the breeding grounds as early as mid-July. The plains snowpack normally melts around March and April and mountain snowpack typically melts between May and July. Before the dams, runoff from these two snowmelt events caused an increase in flow on the Missouri River during the same critical breeding time period for the piping plover. The effects analysis by Buenau (2015) shows that the existence of the dams, with no operations, resulted in a lower extinction probability for the piping plover than no dams at all.

Buenau, K.E., 2015, Modeling to Support the Development of Habitat Targets for Piping Plovers on the Missouri River.

Section & Page Number: 3.5.1.7, p. 3-111

Comment: The USACE should be aware of North Dakota's Aquatic Nuisance Species (ANS) policy that is in place when working on waters within our state, and ensure that it is being followed in the implementation of the MRRMP.

Section & Page Number: 3.7, p. 3-181

Comment: With the increasing presence of Zebra Mussels in the Missouri River, facilities with freshwater intakes may use chlorine as a form of control/treatment to prevent system damage. This could result in wastewater discharges with higher chlorine content, which could increase chlorine

interaction with trihalomethanes from mobilized organic matter.

Therefore, it is important to recognize there are emerging risks to recovering the pallid sturgeon associated with Zebra Mussels and other ANS. The risks include modification to substrate, changes in ecological trophic status, and additions of pollutants and poisons into the system to combat ANS.

Section & Page Number: 3.7, pp. 3-181 - 3-191

Comment: The document assessed the physiochemical water quality parameters of temperature, dissolved oxygen, nutrients, sediment and turbidity, and other pollutants including metals/metalloids, but not pH. pH is a common and important metric used to track the health of the ecological community and human uses of the river. We recommend it be added to the list of physiochemical parameters monitored.

Section & Page Number: 3.7.1.2, p. 3-183

"Approximately 100 miles downstream from Garrison Dam the temperature is still low."

Comment: From the context it appears "Garrison Dam" should be "Fort Peck Dam".

Section & Page Number: 3.9, p. 3-209 - 3-228

Comment: Alternatives that involve increasing flows have the potential to irrevocably harm significant cultural resources (i.e., archaeological sites) at the point of origin or in downstream settings. Increased flows that result in corresponding higher water surface elevations saturate cutbanks and promote conditions for long-term or permanent soil instability that often warrant extensive solutions to correct them. Double Ditch Village State Historic Site, a National Register of Historic Places listed property administered by the State Historical Society of North Dakota, is a current example of an archaeological site that experienced said effects as the result of cutbank saturation from increased flows in 2011.

In Lake Sakakawea there is at least one case where ESA habitat corresponded with a significant archaeological site that became exposed during low-pool elevations. Proposed archaeological investigations of that site were rescheduled as a result of nesting concerns. Fluctuating pool elevations dropping to low levels may offer limited or rare windows of opportunity for investigations to cultural resources. If other suitable habitats occur in off-channel settings then the potential conflict between competing management goals (biological vs. cultural) almost certainly would be drastically lessened or negated.

Vegetation maintenance and mechanical construction ESH has the least potential to impact cultural resources in the overall scenarios as proposed.

Section & Page Number: 3.9.3, p. 3-215

Comment: What is the reason for the order of the lakes in Table 3-27? It would be more logical to list them from upstream to downstream.

Section & Page Number: 3.11.1.2, p. 3-248

"According to commercial dredgers and industry research, the primary area served by existing dredging operations is generally 2,050 miles from the sand plants."

Comment: As 2,050 miles is nearly the entire length of the Missouri River this appears to be an error.

Section & Page Number: 3.11.2.5, p. 3-252; 3.11.2.6, p. 3-253; 3.11.2.7, p. 3-254; 3.11.2.8, p. 3-256; 3.11.2.9, p. 3-257; and 3.11.2.10, p. 3-258 - 3-259

"...each project will be designed to not impact other authorized purposes including sand and gravel dredging."

Comment: Sand and gravel dredging is not an authorized purpose.

The following comments are specific to the Draft Missouri River Recovery Management Plan and Environmental Impact Statement, Volume 3.

Section & Page Number: 3.12, p. 3-261 - 3-327

Comment: This comment pertains to the entire section regarding the evaluation of "Flood Risk Management and Interior Drainage." It is not understood how the term "floodplain" is defined. The USACE should make it clear if floodplain is referring to those areas that are determined by FEMA National Flood Insurance Program studies or if they are defining it using other methods. Overall, any action that adversely affects the integrity of the dams or causes the river channel capacity to be exceeded is unacceptable, unless those flood impacts are mitigated.

Section & Page Number: 3.12.3.1, p. 3-269

Comment: Table 3-62 presents the "Frequency of Releases Simulated to Equal or Exceed Channel Capacity." It should be acknowledged in the table that the "releases simulated", in other words the model, does not take into account the effects of ice, and therefore likely underestimates the frequency of exceeding channel capacity.

Section & Page Number: 3.12.3.4 and 3.12.3.6, p. 3-279 and 3-290

Comment: Page 3-279 states that under Alternative 2 Hughes and Walworth counties in South Dakota would have the largest increase in structural damages on the Garrison to Oahe reach. Page 3-290 states that Campbell County in South Dakota would have the greatest increase in structural damages on the Garrison to Oahe reach for Alternative 4. This does not make sense; these counties are located on the reservoir where the structures are located above the flood pool elevation. It would seem much more likely that Burleigh and Morton counties in North Dakota which have the largest population on the Garrison reach, and are located at the headwaters of Lake Oahe, where the delta formation has already increased flood risk, would have greater structural damages. If this is an error it should be corrected, if it is not an error it should be explained. See also our comments on the Flood Risk Management Environmental Consequences Analysis Technical Report.

Section & Page Number: 3.12.3.5, p. 3-283

"For ESH, an average of 391 acres per year would be distributed between the Garrison, Fort Randall, and Gavins Point reaches. No impacts to flood risk management are anticipated from this amount of ESH construction."

Comment: Alternative 3 decreases flood risk the most compared to the other alternatives. However, there is potential to increase risk over time due to mechanical ESH construction. For inter-dam reaches such as the Garrison Reach, construction activities would disturb the sediment

in the river, causing it to flow downstream and accumulate in the delta. This action, over time, would increase aggradation in the delta, thereby increasing the backwater effect and river stage. If a sandbar was constructed in the upstream portion of the Garrison Reach, based on what is known about the geomorphic pattern of the reach one could conclude that the sandbar sediment would erode and end up downstream in the delta. It is suggested that if mechanical construction of sandbars occurs on inter-dam reaches, the sediment come from the downstream delta to alleviate this concern.

This comment also pertains to the rest of the alternatives because mechanical ESH construction is included in all of them.

Section & Page Number: 3.13, p. 3-328 - 3-356

Comment: Regarding the entire section on hydropower, any action or alternative that adversely affects hydropower production and increases costs for the consumer is undesirable. Hydropower is the only authorized purpose that provides revenue directly to the federal government.

Section & Page Number: 3.13.2.3, p. 3-336 - 3-337

"Mechanical construction of ESH is not anticipated to impact hydropower under any of the alternatives. Actions that do not affect the flow through the dams or the elevations at the reservoirs are unlikely to have an impact on hydropower."

Comment: If ESH construction causes more sediment to accumulate over time in the delta regions of inter-dam reaches, it would affect hydropower production. In the Garrison Reach, this is the case if ESH was constructed in the upper part of the reach and eroded, ending up downstream, or if ESH was constructed directly in the delta region.

On page 3-22 the channel capacity change due to aggradation of the Garrison Reach is described as the following:

"At the time Garrison Dam was constructed, the open water channel capacity at the City of Bismarck, North Dakota, was approximately 90,000 cfs for a stage of 13 feet; however, aggradation decreased the channel capacity to approximately 50,000 cfs for the same stage by 1997 after 42 years of reservoir operation (USACE 2006a). This trend was temporarily decreased in 2011 when high flows scoured out the channel."

According to this, channel capacity at the downstream end of the Garrison Reach has decreased about 40 percent. Implementing additional actions that exacerbate the aggradation will affect hydropower production over time. As sediment accumulates in the delta, releases will have to decrease in order to avoid exceeding channel capacity, especially during the winter when river ice cover causes a 5- to 7-foot stage increase.

Section & Page Number: 3.14.1, p. 3-357

Comment: The second sentence of the second paragraph on this page references "State Water Commission records." It should be "North Dakota Office of the State Engineer records."

Section & Page Number: 3.14.1, p. 3-357

"Irrigators in 42 counties in Montana, North Dakota, South Dakota, and Nebraska hold permits to use water from the Missouri River for the purpose of agricultural production. This generally includes the

area extending from Fort Peck Reservoir to Rulo, Nebraska. No irrigation permits were identified for counties from the states of Iowa, Kansas, or Missouri. The state of Iowa does not require surface water users to file for a permit for withdrawals under 25,000 gallons per day (gdp). No intakes for irrigation are currently permitted in states located on the Missouri River reach from Rulo, Nebraska, to the mouth of the Missouri River. The irrigation intakes permitted on the Missouri River are a mix of semi-permanent (portable) and permanent structures."

Comment: The statement is confusing. Does it imply that there are no irrigation intakes, that intakes are not permitted, or that permitting is not required? The last sentence seems to contradict the previous statements. We suggest moving the last sentence: "The irrigation intakes permitted on the Missouri River are a mix of semi-permanent (portable) and permanent structures," to right after "This generally includes the area extending from Fort Peck Reservoir to Rulo, Nebraska." Also, specify if you are assuming one intake per permit (i.e. clarify the relationship between permits and intakes).

Section & Page Number: 3.14.1, p. 3-357, Table 3.132 & p. 3-359, Table 3.133

Comment: The estimate within the EIS of permitted irrigated acres is inaccurate. The EIS estimate for the Missouri River mainstem is 89,105.8 for ten North Dakota counties. Permitted acreage in the Office of the State Engineer's database (same year) is 61,959 acres, a 30% difference.

[Table DEIS/ND Office of State Engineer Water Permit Database]

Section & Page Number: 3.14.1, p. 3-359, Table 3-133

Comment: The number of irrigation intakes for North Dakota is listed as 265. There are 328 points of diversion for 251 surface water permits on the mainstem of the Missouri River in North Dakota, each of which has one or more pumps. If pump movement is the objective of the study, the EIS estimate may be low.

Section & Page Number: 3.14.2.1, p. 3-361

"No county in the research area relies exclusively on the Missouri River for irrigation. Counties were included in the impact analysis if a significant percentage of irrigated acres in the county used water from the Missouri River and if the alternatives showed noticeable changes in access to water."

Comment: This statement implies that irrigators have other reliable sources of water. The Missouri River comprises over 90% of the surface water supply in North Dakota. Groundwater is sparse in western North Dakota and tributaries can be intermittent, especially during drought periods.

And what constitutes a "significant percentage?" If half or even a quarter of the irrigators in Williams, Mercer, and Emmons Counties are negatively impacted - is that acceptable to the USACE? It is not acceptable to North Dakota.

Section & Page Number: 3.14.2.4, p. 3-365, Table 3-137

Comment: The baseline (Alternative 1) case for Williams County (-\$8,8140,000) is strange. The footnote refers to losses under irrigated wheat production, which seems to indicate that the EIS is basing its economic baseline on irrigated wheat. An assumption that producers would consistently use a losing practice doesn't make sense. Is the assumption based on irrigated wheat, and if so, how was the wheat criterion chosen; and was it based on county crop averages? Irrigated acreage and crops grown are reported annually to the Office of the State Engineer on annual use forms (AUFs). The 2012

Irrigation AUFs for Williams County reported 446 Irrigated Acres of Wheat (1.93% of 2012 Irrigated Acres). The 2015 AUFs reported 921 Irrigated Acres of Wheat (4.19% of 2015 Irrigated Acres). There is very little wheat acreage irrigated in Williams County. Of greater concern would be irrigated corn (13,453 acres) or sugar beets (11,800 acres) in 2012. If the \$8.8 million loss was based on irrigated wheat, it is likely that the baseline (Alternative 1) farm income loss is unrealistically low, and if the same assumption is made in assessing projected losses, they may cause a low bias on loss estimates. Please re-examine the assumptions leading to the Alternative 1 figure and evaluate what the impact of those assumptions would have on the impact assessment values.

Section & Page Number: 3.14.2.5/3.14.2.7/3.14.2.8/3.14.2.9, p. 3-366 - 3-380

Comment: This comment pertains to the sections that describe the impacts to irrigation due to Alternatives 2, 4, 5, and 6. The conclusion portion for each of those sections contains a statement that says the alternative is "not expected to have significant impacts on irrigation operations." Each of those alternatives negatively affects irrigation in North Dakota more than any other evaluated region. Williams County, the most adversely affected, shows a decrease in net farm income of 15.3%, 53.9%, 12.6%, and 24.9% for Alternatives 2, 4, 5, and 6, respectively. Those numbers reflect substantial changes in farm income.

Section & Page Number: 3.14.2.9, Table 3-150, p. 3-378 & Conclusion p. 3-379

[Irrigators] "experience temporary, relatively small, and adverse impacts under Alternative 6 relative to Alternative 1. Most impacts would occur in years when drought conditions follow a spawning cue release."

Comment: This is an inaccurate statement. A 7% to 25% net negative change in total farm income relative to Alternative 1 is hardly "relatively small." There is also an equity problem in that North Dakota, and particularly Williams County, absorbs almost all of the net losses.

Section & Page Number: 3.14.2.5-10., p. 3-368 - 3-380

Comment: The distribution of overall effects on irrigation needs to be discussed in relation to "equity." The tables in current form are sufficient to outline the issue, but the discussion is uneven, mentioning the equity problems in some conclusions, and not in others. A major issue with North Dakota is that in options other than Alternative 3, North Dakota, and particularly Williams County, absorbs most of the relative losses. Alternatives 4 and 6 are particularly concerning, with losses ranging from 5% to 54%, and 7% to 25% in Emmons and Williams Counties, respectively. Where large negative changes are predicted, and particularly where there is a large imbalance of impact, the issue of equity, subsequent loss coverage and distribution, and compensation mechanisms or distribution of financial impact should be discussed in the document and considered in both the choice and the management of the choice of alternatives.

Section & Page Number: 3.15.1.3, p. 3-389

"Each year a water-in-storage check for navigation season length is taken on March 15, to determine if a navigation season will occur, and on July 1, to determine the length of the season."

Comment: The system volume check on March 15 determines navigation service level, which could be full service, minimum service, no service (or a service level in between). The July 1 system volume check determines season length and service level for the remainder of the navigation season.

Section & Page Number: 3.15.2.4, p. 3-395

Comment: In this section and following for other alternatives, the benefits associated with the value of commercial sand and gravel is discussed. Sand and gravel dredging has its own section, Section 3.11, so by including it in navigation, is it not being double counted?

Section & Page Number: 3.15.2.6, p. 3-404

"Similar H&H profiles for Alternative 3 and Alternative 5 means the tonnage estimated to move off the water is the same for both alternatives, so the OSE results summarized in Table 3-168 are the same for both alternatives."

Comment: It is not clear how Alternatives 3 and 5 have similar hydrologic and hydraulic (H&H) profiles. Alternative 3 includes no flow management actions, while Alternative 5 includes a fall ESH-creating pulse from Gavins Point Dam that could last between 35 days (at 60,000 cfs) and 175 days (at 45,000 cfs). This comment also pertains to a similar statement made in Section 3.15.2.8 on page 3-411.

Section & Page Number: 3.16, p. 3-421 - 3-463

Comment: ESH creation, whether it is through mechanical means or flows, will affect boat navigation on the Garrison Reach, which is heavily used during the open-water season for recreation. The latest creel survey by the NDGFD revealed that from April 1 to October 31, 2015 anglers expended over 355,000 hours of fishing effort on the Garrison Reach of the Missouri River.

Section and Page Number: 3.16.1.2 Comment: "...the inter-reservoir reaches pass through a variety of Tribal, state, municipal, and private lands. River access is limited and usually restricted to designated access points at recreation sites. Partner agencies and local businesses manage most of the river accesses and recreational facilities within these reaches."

It is agreed that Missouri River access is limited and usually restricted to designated access points as is the situation with nearly all water bodies, including the reservoirs. The demand for additional Missouri River access points continues to grow and be accommodated where practicable.

"Most recreation sites within the riverine reaches are "low density use" sites, with relatively low visitation and few facilities."

This is a mischaracterization of the situation in North Dakota. Even with "limited" access, recreational use during the open water period can be quite high with crowded available facilities, and watercraft densities that can at times be dangerously high. Public demand for additional Missouri River access points and facilities continues to grow.

Section & Page Number: 3.16.2.3, p. 3-434

Comment: The USACE should include the agreed upon moratorium of management actions for least tern and piping plovers within the Bismarck-Mandan (RM 1325- RM 1310) stretch, including human restriction measures agreed upon by the North Dakota Interagency ESH Team. This stretch of river supports high volumes of recreation. The attraction of piping plovers and least terns to the area by implementing management actions brings unnecessary human/bird conflicts. These conflicts would do more harm to public perception of tern and plover recovery than the benefits the management actions would bring.

Section & Page Number: 3.16.2.5, p. 3-441

"As drier conditions are alleviated with typical rainfall and snowpack, System storage would be replenished, and annual average changes in RED benefits would become small to negligible when compared to those under Alternative 1."

Comment: While this will be true in some cases, it does not consider those cases where the lower water levels would result in fish kills. If either the forage fish or game fish populations are significantly reduced as a result of low water levels, it takes years for the population to recover. As stated under our comments for Section 3.1.1 (p. 3-4), the importance of timely water level manipulation for fish and wildlife resource management cannot be overemphasized, nor can the destructive capacity of untimely manipulation be underestimated.

Section & Page Number: 3.16.2.8, p. 3-453

Comment: The last paragraph on this page states the reservoirs could be up to 5 feet lower than under Alternative 1, impacts would be temporary, and they would typically dissipate within a year. Again, if the lower reservoir levels result in fish dying it will take years to recover. The impacts of a fish kill will not dissipate within a year.

Section & Page Number: 3.18, p. 3-500 - 3-524

Comment: This comment is a general comment in regards to the lack of Regional Economic Development (RED) analysis for the water supply evaluation. Because there was no RED analysis to determine the local effect on water supply, the whole evaluation is skewed in favor of the lower basin. It is understood that the population is higher in the lower basin, making total costs higher. However, this means that the costs are also spread out over a larger population. For smaller populations, like many of the communities in the upper basin, the cost for modifying an intake is spread out over less people. A RED analysis, or some kind of local analysis, would potentially paint a different picture when it comes to water supply impacts.

Section & Page Number: 3.18.1.1, p. 3-500, Table 3-229

Comment: The table shows an incorrect number of intakes in Lake Sakakawea and the Garrison Dam to Lake Oahe Reach (Garrison Reach). The table lists one intake each for Lake Sakakawea and the Garrison Reach for commercial/industrial use. The Office of the State Engineer water permit database lists 27 commercial/industrial intakes in Lake Sakakawea and seven in the Garrison Reach. It appears as though the EIS does not classify oilfield use as industrial/commercial. This table also misrepresents the number of municipal water intakes in Lake Sakakawea and the Garrison Reach at nine and one, respectively. The Office of the State Engineer water permit database shows 15 municipal/rural water intakes in Lake Sakakawea and seven in the Garrison Reach.

Section & Page Number: 3.18, p. 3-501

"There are an estimated three commercial/industrial water supply intakes operating along the Missouri River, two in North Dakota and one in Iowa (USACE 2015c; USACE 2006a; USACE 2012; Personal communication with water supply intake managers and operators, November 2015 through March 2016). The North Dakota intakes are the Great Plains Synfuels and Blue Flint Ethanol Refinery."

Comment: This paragraph does not include the Tesoro Refinery in Mandan as well as the numerous other industrial intakes in Lake Sakakawea for oilfield use.

Section & Page Number: 3.18.1.1, p. 3-502

Comment: The title of Table 3-230 says the table contains information regarding flows and elevations associated with water supply intakes, however, the table only includes elevations.

In addition, for intakes above Gavins Point Dam, Table 3-230 shows that the operating range is 2160 to 1194 and the shutdown range is 2160 to 1192. The operating and shutdown ranges both start at elevation 2160. The shutdown elevation should be less than the operating elevation. It is also pointless as the elevation of the intake only matters in relationship to the water surface elevation at the intake. Grouping them this way makes no sense. Also, providing them in the 1988 vertical datum is fine for the river, but the reservoir elevations are referenced to the 1929 vertical datum.

Section & Page Number: 3.18.2.4, p. 3-507

Comment: The first paragraph under the "National Economic Development" section describes the methodology for determining impacts to water supply intakes. While it is understood that the methodology was chosen to simplify the evaluation, it underestimates and oversimplifies the effect to water supply intakes on reservoirs.

Section & Page Number: 3.18.2.5, p. 3-509

"In addition, 22 of the 55 intakes would experience on average 14.4 days when water surface elevations are below shut-down elevations under Alternative 2. While on average, these impacts would be small in nature, there would be some years when access to water supply, especially in the lower river, would experience larger impacts."

Comment: Having water surface elevations below shut-down elevations is never a small impact, regardless of how large or small the population is that relies on that intake. Characterizing that effect as small in nature makes it sound trivial. During real-time operations, the USACE releases water above and beyond what is required by the Master Manual to keep intakes on the riverine sections of the Missouri River operable. For example, during the 2012- 2013 winter, releases were scheduled to be 12,000 cfs from Gavins Point, as specified in the Master Manual. Due to bed degradation and low tributary flows, actual releases were held at 14,000 cfs. The volume of water released from the upstream reservoirs collectively due to the increased flow was approximately 400,000 to 500,000 acre-feet. The EIS should acknowledge the actual operations of the Missouri River System by the USACE and quantify the impacts of the alternatives based on that operation.

Section & Page Number: 3.18.2.5, p. 3-510

"Water supply access in the upper river, including Tribal intakes, would experience smaller impacts under Alternative 2 than in the lower river."

Comment: When comparing total costs this is the case, however, Table 3-233 (page 3-510) shows that the percent difference from Alternative 1 is greater for the upper river than the lower river - about 60% greater.

Section & Page Number: 3.18.2.11, p. 3-522

Comment: Climate change discussion is clearly required, but long-term predictions are purely speculative.

Section & Page Number: 3.19.2.1, p. 3-528

"The scope of analysis included facilities in Iowa, Nebraska, Kansas, and Missouri. Facilities in North Dakota and South Dakota were eliminated from further analysis because state water quality regulators indicated that low-flow conditions in the Missouri River do not drive effluent limits for facilities in these states."

Comment: Current low-flow conditions in the Missouri River will not impede the ability for permitted facilities to discharge to the river. However, reductions to the flow regime due to adaptive management or the building of new facilities may affect the ability to discharge wastewater to the Missouri River in the future.

Section & Page Number: 3.22.1, p. 3-566

"Twelve census block groups that intersect the Missouri River floodplain in North Dakota comprise potential environmental justice populations. These block groups are all located in the Bismarck, North Dakota, metropolitan area and exhibit high concentrations of minority populations."

Comment: It is difficult to understand how the Three Affiliated Tribes and the Standing Rock Sioux Tribe are not considered an environmental justice population. An explanation of why they are not considered should be included in the document.

Section & Page Number: 3.24, p. 3-585 - 3-630

Comment: Regarding the Mississippi River evaluation, it is understood that effects to the Mississippi River must be documented in the EIS for NEPA purposes. It should be noted in the EIS, however, that the USACE is not authorized to operate the mainstem Missouri River dams for the Mississippi River.

Section & Page Number: 3.28, p. 3-642

"The use of water resources associated with flow actions under the alternatives would not represent an irreversible or irretrievable commitment of resources because water resources would be restored during the winter months as part of the annual precipitation cycle."

Comment: This statement assumes that there will be sufficient runoff into the Missouri River reservoirs every spring to replenish the volume of water that was released the previous year. One of the reasons why the mainstem Missouri River dams were constructed is because runoff can vary drastically from year to year. There have been two extended droughts since the dam system has been in operation. That statement is valid when looking at the water cycle from a large-scale point of view, but it should never be assumed that water used will be restored the following year in the Missouri River Basin.

The following comments are specific to the Draft Missouri River Recovery Management Plan and Environmental Impact Statement, Volume 4.

Section & Page Number: 4.4.2, p. 4-7

Comment: Figure 4-4 presents AMP initial actions in the Preferred Alternative. The major area of concern and in need of clarification is Big Question 5: Passage, drift and recruitment Level 2 initial action "drift experiments, Fort Peck flows and drawdowns." North Dakota has serious concerns and lacks understanding of what if any sideboards or constraints are placed on flow modification and

drawdown. The AMP does not adequately define what types of flow modification or drawdowns are under consideration.

Flow modification out of Fort Peck Dam has been a topic of discussion for a long time and identified in the 2003 Amended Biological Opinion as a need. Restoring flows to a more natural hydrograph and thermal regime certainly would benefit not only the pallid sturgeon but also many other native species and important sportfish in the river and upper regions of Lake Sakakawea. This proposed action has potential to improve the overall fish community.

Of great concern is the unclear reference to 'drawdowns.' It is assumed, but unclear that this is a reference to previous discussion to significantly draw down the permanent pool of Lake Sakakawea to increase larval drift distance and theoretically lead to pallid recruitment. It is highly questionable if lake drawdown would restore desirable riverine habitat needed for larval pallid survival on anything but a geological timeline. Certainly, not within the timeline of this MRRMP and AMP. Since the closure of Garrison Dam over 60 years ago, over 570,000 acre-feet of sediment have been deposited in the upper portions of Lake Sakakawea (USACE 2014). Simply dewatering this depositional zone would not undo decades of sedimentation and restore a naturally functioning river.

Aside from the questionable benefits to larval pallid sturgeon, significant drawdown of Lake Sakakawea would have devastating consequences to the fishery, recreation and local economies. Sixty years of fisheries research by NDGFD has confirmed that maintaining an adequate water level (absolute minimum of 1825 msl) and having a rising pool during the spring spawning and egg incubation period are critical for maintaining the number one most used fishery in North Dakota - Lake Sakakawea.

Data collected by NDGFD over the decades have shown conclusively that a rising pool level and the lake elevation are the two strongest environmental variables that correlate with annual production of all young of year fish (Fryda et al. 2014; Fryda et al. 2010,). Lake elevation is also critical for the maintenance of cold water fish habitat in Lake Sakakawea. Low lake elevations in past drought periods have caused reduction/elimination of cold water habitat, caused hypoxia in the hypolimnion, and devastated the chinook salmon and rainbow smelt populations. Additionally, the headwaters region of Lake Sakakawea that would be dewatered is a critical rearing area for juvenile paddlefish. The Yellowstone/Sakakawea stock of paddlefish is one of the most scientifically understood paddlefish populations in North America. Extensive research has shown good inflows combined with high lake levels are crucial for recruitment to this nationally important self-sustaining paddlefish population (Scarnecchia et al. 2008).

Lake Sakakawea is typically the most heavily utilized fishery in North Dakota and annually accounts for over 30 percent of all fishing effort in the state. In 2015 alone, anglers expended over one million hours of angling effort on Lake Sakakawea (Fryda and Gangl 2016). Expenditures generated by these anglers are vitally important to the regional economy. Significant drawdown of Lake Sakakawea would have major impacts to these economies due to impacted fish populations and poor to non-existent access caused by low lake elevations.

The Missouri River System Fisheries Management Plan identifies specific water management recommendations that are critical for maintaining a sustainable and productive fishery (Fryda et al. 2010). Select recommendations presented below would be at best vastly compromised or more likely never met under a significant Lake Sakakawea drawdown. The NDGFD, under no circumstance, could support such a Level 2 or above action in the MRRMP-AMP.

Fishery Recommendations for Lake Sakakawea:

1. An absolute open-water minimum lake elevation of 1825 ft. msl for drought periods and 1832 ft. msl for all other years is recommended. Below these specified elevations, the following detrimental impacts occur to the fishery resource or affect its use: dramatic declines in reservoir productivity, a substantial loss of walleye and smelt spawning substrate (gravel/cobble) and coldwater habitat (for rainbow smelt and Chinook salmon); critically needed water becomes less available to the Garrison Dam National Fish Hatchery for production; and boat access/recreation use becomes limited.

2. Other than years in which severe drought or flood conditions prevail, a maximum lake elevation window of 1838 to 1846 ft. msl is requested in order to maintain flexibility in annual recommendations and to reduce impacts from wave erosion.

3. The spring water level rise must inundate good spawning substrate (i.e. cobble and/or terrestrial vegetation) by April 20 and continue to rise during spawning-incubation (April-May). A target increase of two to three feet between April 20 and May 20 should occur during a filling cycle. Even during a drawdown cycle or during drought conditions, a rising lake elevation should be attempted during this critical time period.

Fryda, D. and S. Gangl. 2016. Angler Use and Sportfishing Catch Survey on Lake Sakakawea, May 1 Through September 30, 2015. ND Game and Fish Dept. f-2R-61, Study 4, Number 1.

Fryda, D., F. Ryckman, R. Kinzler and P. Bailey. 2014. Aquatic Investigations of the Missouri Mainstem in North Dakota. ND Game and Fish Dept., Div. Rpt. 90. 105 pp.

Fryda, D., F. Ryckman, P. Bailey, R. Kinzler and S. Gangl. 2010. Fisheries Management Plan: Missouri River System (2010-2015) N.D. Game and Fish Department., Internal report. 94pp.

Scarnecchia, D.L., L.F. Ryckman, B.J. Schmitz, S. Gangl, W. Wiedenheft, L.L. Leslie. 2008. Management Plan for the Paddlefish Stocks in the Yellowstone River, Upper Missouri River, and Lake Sakakawea

USACE. 2014. Garrison Dam-Lake Sakakawea Headwaters Aggradation Evaluation of the Missouri River and Tributaries

Section & Page Number: 4.5.3.2, p. 4-21 - 4-22

Comment: This is a reiteration of the comments made for Section 2.8.1.1 (p. 2-53) about the monitoring program for the piping plover. The State of North Dakota strongly encourages the USACE to make improvements as outlined in Shaffer et al. (2013). This study determined that adult numbers were substantially underestimated and the detection rate varied from area to area. Improvements are necessary so that resources (i.e. money, water, etc.) are used more efficiently in implementing recovery actions.

Shaffer, T.L., M.H. Sherfy, M.J. Anteau, J.H. Stucker, M.A. Sovada, E.A. Roche, M.T. Wiltermuth, T.K. Buhl, and C.M. Dovichin. 2013. Accuracy of the Missouri River Least Tern and Piping Plover Monitoring Program--Considerations for the future: U.S. Geological Survey Open- File Report 2013-1176, 74 p., with 4 appendixes, <http://pubs.usgs.gov/of/2013/1176/>.

Section & Page Number: 4.7, p. 4-31

"The AM Plan lays out how different types of decisions could be made that are outside the scope of

real-time water management."

Comment: This statement should be clarified, does it mean the AMP does not apply to water management (which we assume means water release from the dams), or does it mean the AMP will be used to decide on releases outside the bounds of the current Master Manual.

Section & Page Number: 4.9, p. 4-33

"The MRRMP-EIS establishes an AM plan for the next 15 years (approximate) that is flexible and should allow many of the management actions specified within the Preferred Alternative to proceed without additional NEPA analysis. Information gathered through the adaptive management process will be used to adjust operations within the range of the impacts analyzed in this EIS."

Comment: This statement illustrates how broad and open-ended the AMP is. As framed, it is difficult to understand what substantive limits govern the range of allowable adaptive adjustments. And, after reviewing the EIS, the limit of the Preferred Alternative itself is not clear. The actions contained in the Preferred Alternative are outlined in Section 2.10, but then that section has the following sentence regarding pallid sturgeon actions in the upper basin:

"After this research and monitoring the intent is to follow the decision criteria and governance process described in Chapter 4 of the AM Plan to guide implementation of subsequent activities."

Figure 4-4 (page 4-7) lists actions to be implemented within the next 15 years for the pallid sturgeon in the upper basin. The table includes actions such as "Fort Peck Flows" and "Drawdowns." Based on a review of the AMP, it is assumed that "Drawdowns" means a drawdown of Lake Sakakawea. It is not clear if the USACE considers all of these actions as part of the Preferred Alternative. If they are part of the Preferred Alternative, it is even more unclear if the USACE considers the effects of these actions to have been evaluated in this EIS. A drawdown of Lake Sakakawea was not simulated in the hydrology and hydraulics models; however, in consideration of how this is framed in the EIS, it could be interpreted to be inherently a part of the Preferred Alternative that is proposed. The adaptive management portion of the Preferred Alternative is severely lacking in clarity and boundaries.

To be clear, the State of North Dakota opposes any action outside the constraints of the current Master Manual - unless there is meaningful consultation specific to such action with the state government (apart from the MRRIC, FWCA, and AOP processes). Commenting on an EIS or other NEPA document will not satisfy the need for such direct consultation. This applies to any flow management action that could be interpreted as inherently part of the Preferred Alternative (i.e. Fort Peck flow changes, Lake Sakakawea drawdowns), any flow management action outside the Preferred Alternative but evaluated in this EIS (i.e. ESH-creating flows), and any flow management action beyond this EIS that is a result of future adaptive management.

Section & Page Number: 6.2.1, p. 6-2

"Coordination will also continue to occur during implementation of the recommended plan after the Final MRRMP-EIS and ROD."

Comment: This coordination must include continued consultation with the North Dakota Interagency ESH Team.

Section & Page Number: 6.5, p. 6-4 - 6-5

Comment: The "Water Rights" section does not mention state water rights. Each state has its own way of addressing water use and control. In the Enabling Act, Congress provided for the people of the Dakota Territory to form constitutions and state governments and be admitted into the union on an equal footing with the original states.¹ In North Dakota, the constitution provides that "[a]ll flowing streams and natural watercourses shall forever remain the property of the state for mining, irrigating and manufacturing purposes."² This constitutional language was adopted through the Enabling Act by proclamation of the President when North Dakota was declared a state in 1889.³ "A right to appropriate water can be acquired for beneficial use only as provided in [chapter 61-04]. Beneficial use shall be the basis, the measure, and the limit of the right to the use of water."⁴

Throughout history, Congress and the Supreme Court have spoken with a clear and consistent voice regarding state deference with respect to water allocation. As the Court observed in the landmark *California v. United States* decision:

The history of the relationship between the Federal Government and the States in the reclamation of the arid lands of Western States is both long and involved, but through it runs the consistent thread of purposeful continued deference to state water law by Congress.⁵

1 Enabling Act of 1889, 25 Stat. 676, ch. 80.

2 N.D. Const. art. XI, § 3.

3 See Enabling Act of 1889, 25 Stat. 676, ch. 180, § 8.

4 N.D.C.C. § 61-04-01.2.

5 438 U.S. 645, 653 (1978).

Section & Page Number: 8.0, p. 8-9

Comment: The definition for "stage" lists the Action Stage, Minor Flood Stage, and Moderate Flood Stage for the Missouri River at Bismarck. It is assumed that this is included in the definition as an example of the concept of stage. While this may only serve as an example, the description for Moderate Flood Stage in the definition is inaccurate. The National Weather Service's Advanced Hydrologic Prediction Service provides the following description for flood impacts at a stage of 16 feet (Moderate Flood Stage) on the Missouri River at Bismarck:

Before 16 feet, older homes in the Fox Island area may experience flooding. Homes built to this level are at less risk but may have water surrounding them. Access to Fox Island is difficult because of water on Riverwood Drive. No significant threat to the incorporated cities of Bismarck and Mandan.

Available online: <http://water.weather.gov/ahps2/hydrograph.php?wfo=bis&gage=biwn8>

Section & Page Number: 8.0, p. 8-10

Comment: The definition for "Upper Missouri River" is as follows:

"Mainstem of the Missouri River between Fort Peck Dam and the headwaters of Lake Sakakawea, and the Yellowstone River for an unspecified distance upstream of the confluence with the Missouri River."

This definition is confusing. Between this definition and the one for "Lower Missouri River" (p. 8-5), the Missouri River between the headwaters of Lake Sakakawea and Gavins Point Dam is not accounted for, which is the area primarily reserved for bird management actions. This definition seems to pertain only to fish management actions in the upper basin and should be modified to include the bird management region.

Elevation Plots of Upper Three Reservoirs for Each Alternative During Historic Drought Periods

Charts:

[Fort Peck- Water Surface Elevation Comparison January 1931 - January 1944]
[Fort Peck- Water Surface Elevation Comparison January 1954 - January 1966]
[Fort Peck- Water Surface Elevation Comparison January 1987 - January 1994]
[Fort Peck- Water Surface Elevation Comparison January 2001 - January 2011]
[Garrison- Water Surface Elevation Comparison January 1931 - January 1944]
[Garrison- Water Surface Elevation Comparison January 1954 - January 1966]
[Garrison- Water Surface Elevation Comparison January 1987 - January 1994]
[Garrison- Water Surface Elevation Comparison January 2001 - January 2011]
[Oahe- Water Surface Elevation Comparison January 1931 - January 1944]
[Oahe- Water Surface Elevation Comparison January 1954 - January 1966]
[Oahe- Water Surface Elevation Comparison January 1987 - January 1994]
[Oahe- Water Surface Elevation Comparison January 2001 - January 2011]

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Correspondence Text

III. THE IMPACTS ANALYSIS OF THE MRRMP-EIS DOES NOT COMPLY WITH NEPA.

NEPA requires that an EIS contain an analysis of all foreseeable direct and indirect environmental impacts of a proposed action, 103 including a "reasonably thorough discussion of the significant aspects of the probable environmental consequences" of the action.¹⁰⁴ An EIS must also contain accurate scientific analysis. 105 Agencies implementing NEPA must "insure the professional integrity, including scientific integrity, of the discussions and analyses in [EIS's]."¹⁰⁶ Likewise, the ESA requires agencies to use "the best scientific and commercial data available" when performing Section 7 consultations. 107

The Corps has failed to adhere to the rigorous methodological and scientific requirements of NEPA because the MRRMP-EIS relies on outdated scientific information and analysis, selects a preferred alternative without the benefit of an updated biological assessment, fails to give values to ecosystem services, and overstates impacts to navigation and sand and gravel dredging interests.

A. The MRRMP-EIS Relies on Outdated Information Rather Than the Best Available Scientific Information.

The alternatives contain variations on two management actions that have not been shown to be scientifically effective: spawning cue releases and low summer flow. These actions should not be considered fully developed and, until proven by the Corps and USFWS, should not be assumed to help meet the species goals.

The MRRMP-EIS includes spawning cue releases as a management action without adequately explaining their effects and without adequate knowledge of what the specific beneficial impacts of the actions would be on the species. The spawning cue releases in Alternative 2 must have two

prerequisite characteristics: "(1) flows to cue spawning that are sufficiently high for an adequate duration; and (2) flows that provide for connection of low-lying lands adjacent to the channel."108 Alternatives 3 through 5 "would include a one-time spawning cue test release from Gavins Point if Level 1 studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important." 109 In Alternative 6, "USACE would attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May."110

Each of these spawning cue releases could potentially be ineffective because "the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning."111 Therefore, the use of these potentially ineffective spawning cues would waste money and time that could be utilized on other management actions. It might be that the spawning cue is effective and that it will aid the pallid sturgeon. But the spawning cue should be analyzed over time while other management actions are being used to meet the species goals until the release is established as a viable management action.

Similarly, the low summer flow found in Alternative 2 has not been shown to be effective. The only explanation of its effects on the pallid sturgeon is that "the USFWS 2003 Amended BiOp (USFWS 2003) also called for the modification to System operations to allow for flows that are sufficiently low to provide for SWH as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon."112 The MRRMP-EIS does not explain the benefits of low summer flow in terms of how much SWH would be created and thus does nothing to prove that it is a beneficial management action for the pallid sturgeon.

In addition, low summer flow "would only be implemented in the two years following implementation of a complete bimodal spring pallid sturgeon flow release." 113 This would make the implementation of low summer flow infrequent because "modeling based on an 82-year POR, indicate that in practice the bimodal spring pallid sturgeon flow releases would likely only meet the conditions for implementation once in every eight years," meaning that the complete implementation of these flows would occur even less frequently than this. 114

The lack of explanation about the benefits of low summer flow, along with its infrequent implementation, show that the Corps provides no evidence of the effectiveness of this management action. It is possible that because there is a lack of evidence showing a positive effect of the low summer flow on the pallid sturgeon, the low summer flow could be ineffective. NEPA requires use of the best available scientific information, which in turn necessitates the consideration of other viable alternatives.

In sum, neither low flow nor spawning cues have been demonstrated to be effective means of benefiting the species. If, after further research, these management actions are determined not to be beneficial to the species, then the foregone costs can be used toward more effective management actions. If further research demonstrates their effectiveness, then they can be added to the suite of management actions after the research is complete.

B. The Corps Should Produce a New Biological Assessment Before Selecting a Preferred Alternative.

The ESA requires agencies to reinitiate formal consultation when "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered."115 The Corps cannot rely on a patchwork of scientific data far-removed from the consultation process because "[i]t is well settled that a previous agency determination in a Biological Opinion cannot be amended or supplemented with post-determination analysis or evidence without

reinitiating the consultation process." 116

In the "Need for the Plan" section of the EIS, the Corps stresses the substantial amount of scientific data that has been generated on the species since the 2003 BiOp, including effects analyses for all three species produced between 2014 and 2016. 117 The Corps recognizes that the "emergence of this new information created a need for its evaluation an integration into USA CE management actions on the Missouri River for the listed species and the associated AM Plan." 118

The Corps' management actions would be better informed by synthesizing this information through the production of a new biological assessment for submission to the USFWS prior to a full EIS. This would help ensure use of the best scientific information available. 119 Indeed, the acquisition of significant data shortly before the issuance of the 2000 BiOp appears to have motivated the production of the 2003 Biological Assessment:

The 2003 Biological Assessment was provided because of new information concerning the effects of USACE actions that had previously not been considered and because USACE believed certain components of the RPA did not comport with the regulatory criteria for an RP A (USACE 2003a). Additionally, critical habitat had been designated for the piping plover, new information on the mortality of interior least terns and piping plovers was available, and an updated hydrology and hydraulics analysis indicated that some flow modifications could erode more emergent sandbar habitat than they would create. 120

Yet nowhere in the MRRMP-EIS does the Corps explain why thirteen years of data-collection since the 2003 Bi Op does not create a clear impetus for a new biological assessment. Rather than conduct a new round of formal consultation in uniformity with Section 7, the Corps jumps immediately to the analysis of alternatives through the MRRMP-EIS, and an updated biological assessment is rendered an afterthought:

After the public comment period, the MRRMP-EIS and its supporting technical analyses and reports will serve as an information base for a Biological Assessment (BA) to be prepared by the USACE and a subsequent Bi Op to be prepared by the USFWS. The actions described in the BiOp will be reflected in the final MRRMP-EIS and ROD. 121

The Corps even admits that Alternative 2, the most beneficial alternative in terms of species protection, was produced based on old data:

Alternative 2 was designed to address listed species concerns and, while not necessarily completely aligned with the latest scientific priorities (it was designed more than 15 years ago and before the large-scale effects analysis was undertaken for this plan), it is sufficiently effective for endangered species to be a viable alternative in the MRRMP. 122

Nowhere in the MRRMP-EIS is use of this outdated information justified. The Corps does not, for example, state that reinitiation of Section 7 consultation would be prohibitively costly, time-consuming, or would not provide better information. In light of some of the most dramatic differences in the management actions, especially between Alternative 2 and Alternative 3 through 6, the Corps should not wait until after the selection of an alternative to reinitiate consultation. Rather, consultation should serve to narrow the range of reasonable alternatives based on updated scientific data (while of course maintaining the flexibility associated with a robust AM plan). It is therefore reasonably assumed that the MRRMP-EIS would not only benefit from an updated BA and subsequent BiOp containing new RPA's before any decision on the EIS is rendered, but that the MRRMP-EIS violates both the ESA and NEPA by failing to initiate consultation until after the Corps decides which course of action to take.

C. The MRRMP-EIS Inadequately Values Ecosystem Services.

Authorizing statutes and implementing regulations require the Corps to consider the benefits which humans derive from functioning ecosystems. 123 The Water Resources Development Act of 1990, for example, mandates that "The Secretary [of the Army] shall include environmental protection as one of the primary missions of the Corps of Engineers in planning, designing, constructing, operating, and maintaining water resources projects." 124 NEPA itself requires agencies to "identify and develop methods and procedures ... which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations." 125 Corps regulations in turn recognize that "[b]alancing economic and environmental interests is a major requirement to be considered in the planning of all Corps projects." 126

The MRRMP-EIS defines ecosystem services as broadly beneficial:

The Missouri River and related terrestrial areas create a complex and biologically productive aquatic ecosystem. Although areas of the Missouri River have been modified, the Missouri River ecosystem continues to provide a steady flow of environmental benefits that sustain life and bestow values for humans. These benefits include tangible goods and intangible services that are often collectively referred to as ecosystem services.

Ecosystem services are defined as socially valued aspects or outputs of ecosystems that depend on self-regulating or managed ecosystem structures and processes (Murray et al. 2013). Ecosystem services provided by the Missouri River, and its related terrestrial lands, support economic activity and contribute to regional quality of life. These environmental goods and services contribute to human well-being in ways that may or may not be considered in market transactions or economic activity. 127 [emphasis in original]

Despite the apparent broad scope of ecosystem services, the Executive Summary uses the -2 to +2 scale to show that each of the five action alternatives would generate + 1 to ecosystem services, providing no meaningful differentiation among the alternatives. 128 In the discussion of each action alternative the MRRMP-EIS states, with no concurrent analysis, that ecosystem services will be negligibly or slightly positive:

- Alternative 2 may yield "small but unquantified benefits to ecosystem services." 129
- Alternative 3 may yield a "small increase in ecological services." 130
- Alternative 4 may yield "small benefits to ecosystem services." 131
- Alternative 5 may yield "small but unquantified benefits to ecosystem services." 132
- Alternative 6 may yield "small ecosystem services." 133

The MRRMP-EIS also does not make clear what is or is not included within the category of ecosystem services. The Executive Summary states that "notable ecosystem services" include: "natural resource goods ... water supply, water quality, waste assimilation and nutrient regulation ... , flood attenuation, recreation, and other cultural services." 134 However, most of those services also constitute their own categories which themselves are quantified. Impacts to cultural resources and recreation, for example, have significant quantitative variation among the alternatives, and that variation is also reflected in the color scheme in the chart of the Executive Summary. 135 Since the full range of ecosystem benefits are not summarized within their own impact category, this separation obfuscates the MRRMP-EIS's analysis of ecosystem services.

The Corps attempts to correct this confusion by limiting the category of ecosystem services to "climate

regulation and carbon sequestration, other cultural resources, and non-use values,"¹³⁶ yet nowhere quantifies those impacts for comparison of the alternatives. The closest the MRRMPEIS comes to giving meaning to ecosystem services is Table 3-261 which lists "Environmental Consequences for Ecosystem Services," but even there, the alternatives are vaguely and qualitatively compared. ¹³⁷

The Corps should correct these inconsistencies by giving values to ecosystem services as its own category and presenting them to the public in a quantified and comparative form. From this, the MRRMP-EIS can draw meaningful comparisons among the alternatives as to how they promote self-sustaining environmental services for the benefit of the public.

D. The MRRMP-EIS Overstates Impacts to Navigation and Sand and Gravel Dredging.

The Corps "operates the System to serve eight congressionally authorized project purposes of flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife."¹³⁸ The Missouri River is also used for sand and gravel dredging, which is not statutorily authorized. Since navigation is one of the System's eight authorized purposes, ¹³⁹ an analysis of the Alternatives' impacts on navigation is a permissible consideration. However, the Corps overstates those impacts where it analyzes sand and gravel dredging under the topic of navigation as well as under its own category, particularly since the conclusions of the MRRMP-EIS in the section on sand and gravel dredging conflict with the conclusions in the navigation section.

Navigation impacts are also overstated due to the low volume of actual commercial navigation on the Missouri River. Figure 1 below, which is provided in the MRRMP-EIS, shows that the commercial barge traffic volume on the Missouri River falls far below the navigation target of five million tons of commercial barge traffic. ¹⁴⁰ In addition, the scale and weight of navigation and sand and gravel dredging are misleadingly inconsistent. Furthermore, the Corps overstates impacts to the sand and gravel dredging industry because it is not a congressionally authorized use of the river.

1. The importance of sand and gravel dredging is overstated because it is not an authorized use of the Missouri River.

The primary use of dredged sand and gravel is for the "construction industry, including road and highway construction," and "the Missouri Department of Transportation is one of the largest customers of sand from the Missouri River."¹⁴¹ Dredging operations are centered around the sand and gravel companies' on-shore processing plants, typically taking place no more than 7- 10 miles upstream and no more than 3- 9 miles downstream from a plant. ¹⁴² The average production volume of sand and gravel dredged from the Missouri River between the years 2010 and 2015 was 3,763,577 tons. ¹⁴³ Figure 1 below shows that in recent years, sand and gravel barge traffic volume has fallen below the five million ton goal for navigation on the Missouri River, even when combined with commercial navigation. In addition, it shows a large difference between commercial navigation and sand and gravel dredging. This difference shows that actual commercial navigation on the river is negligible in comparison to sand and gravel dredging, and that the navigation statistics reported in the MRRMP-EIS rely mostly on sand and gravel barge traffic: ¹⁴⁴

[Traffic graphic]

The sand and gravel dredging industry is regulated through permits, and "every five years the dredgers must reapply for Department of the Army permits."¹⁴⁵ In 2003 and 2004, the Corps "received 10 applications from commercial sand and gravel companies for permits to extract sand and gravel from the [Lower Missouri River]. In August 2007, the USACE Kansas City District authorized four applicants to continue existing dredging operations."¹⁴⁶ Thus the Missouri River dredging

industry is relatively small. But despite its size, the industry manages to be quite environmentally destructive: "the reaches of the river most degraded- Kansas City, Jefferson City, and St. Charles- were found to coincide with areas where commercial sand and gravel dredging was the greatest."¹⁴⁷ The dredging industry may even have its own adverse impact on the species because "dredging and associated river bed degradation could be contributing to impacts on habitats of federally listed threatened or endangered species."¹⁴⁸

When discussing the impacts that the ESH construction of Alternative 2 would have on the sand and gravel dredging, the Corps erroneously states "each project will be designed to not impact other authorized purposes including sand and gravel dredging as described in Section 2.5.3.1."¹⁴⁹ But even if the impacts were stated consistently throughout the MRRMP-EIS, sand and gravel dredging is not a congressionally authorized use of the Missouri River and should afford no special protection in the development of alternatives. Therefore, the sand and gravel dredging industry should not be given undue consideration in the MRRMP-EIS. If anything, reducing dredging activity would seem to accrue benefits to species protection.

2. The conclusions reached on impacts to navigation sand and gravel dredging are conflicting.

Both the navigation and sand and gravel dredging sections of the MRRMP-EIS include a breakdown of how each alternative would impact the industries relative to the No Action Alternative. The conclusions reached for each of the alternatives in each of the industries are confusing and self-contradictory, rendering the analysis virtually useless.

Below, Tables 6 and 7 show the impacts of each alternative on the navigation and sand and gravel dredging industries. Table 6 clearly shows that there are no significant impacts to the sand and gravel dredging industry from any of the alternatives. The only quantifiable difference between the analyses of each of the alternatives can be found in their National Economic Development (NED) values. Each alternative is less than 1 % different from the No Action Alternative, which itself allegedly has negligible impacts on sand and gravel dredging.

[Table 6: Impacts to Sand and Gravel Dredging Relative to No Action]

However, when the section on sand and gravel dredging impacts is compared to the section on navigation impacts, there are many contradictions. The types of commodities that travel along the Missouri River are broken "into four broad categories . . . commercial sand and gravel, waterway improvement materials, other commercial cargo, and oversized goods."¹⁵⁰ Of these four categories, "since 2000, sand and gravel has represented greater than 85 percent of the commodities shipped on the Missouri River."¹⁵¹ However, there is a difference between "commercial sand and gravel" and "other commercial cargo" navigation on the river. The sand and gravel navigation was already considered in its own section, so it should be excluded from the analysis in the navigation section.

Since the MRRMP-EIS treats the majority of navigation on the Missouri River as sand and gravel dredging, one would think that the navigation sections of the MRRMP-EIS would reach a conclusion similar to that reached in the sections on sand and gravel dredging - that the impact is negligible. Under the sand and gravel dredging section, a NED value was calculated "based on impacts related to transportation of material" where one of the values was "navigation transportation savings."¹⁵² Under the navigation portion, a NED value was also "calculated by subtracting the change in non-routine repair, replacement, and rehabilitation (R, R, & R) costs from the transportation savings."¹⁵³ By using the same metrics to calculate each of the NED values, both industries should show a substantially similar impact among the alternatives. While the No Action Alternative seems to have similar results for both navigation sand and gravel dredging, the other alternatives have conflicting NED values.

Table 6 above shows that the Corps has determined that the NED effects for Alternative 2 when compared to No Action are negligible with only a 0.5% difference. However, the analysis of NED effects found in the navigation section reaches a different conclusion about sand and gravel dredging:

Alternative 2 would have an adverse impact to navigation by reducing NED by \$0.028 million annually, approximately four percent of annual NED benefits, due to the low summer flow reducing navigation season. There would be relatively large adverse effects to commercial sand dredging jobs and income in years with low summer flows, but negligible impacts to regional economic conditions. 154

The difference between the two NED analyses on the impacts of Alternative 2 to the two industries is unexplained because the same factors were used to calculate both and a clear majority of materials currently transported on the Missouri River is performed by the sand and gravel industry (typically transporting its products fewer than ten miles each trip).

Regarding Alternative 3, Table 6 shows that the NED difference for the sand and gravel industry differs from Alternative 1 by 0.1 %. Table 7 below, which outlines the impacts of each alternative on navigation compared to Alternative 1, shows a difference of \$0.002 million in NED from Alternative 1, a difference of 0.28%. While the percentage values for Alternative 3 in Tables 6 and 7 are similar (0.1 % difference on Table 6 compared to 0.28%, on Table 7), the results are presented in conflicting manners.

According to the section on sand and gravel dredging, "any NED impacts to the commercial sand and gravel dredging industry under Alternative 3 would be negligible due to the measurable but very small percentage change from Alternative 1."155 However, the navigation section states that "Alternative 3 would have a slightly beneficial impact on navigation compared to Alternative 1,"156 even though the values differ by less than two-tenths of a percent. How can there be a negligible impact on one industry (sand and gravel dredging) but a benefit impact to the other industry (navigation) where the two are extremely similar?

[Table 7: Impacts to Navigation Relative to No Action]

The same factors are at work in the comparison of Alternatives 4 through 6 in the navigation and sand and gravel sections. The discussion of Alternative 4 in the two sections is like that of Alternative 2. In Table 6, sand and gravel dredging shows a -0.2% "negligible" difference between Alternative 4 and Alternative 1, while in Table 7, navigation shows an "adverse" difference of approximately 6%, "decreasing the annual NED by \$0.045 million. 157 The navigation section further contradicts the sand and gravel section by stating that "relatively large adverse effects to commercial sand dredging from shortened navigation seasons would occur in some years." 158 Again, it is important to note that "commercial sand dredging" differs from commercial navigation, which does not include the sand and gravel industry's barge traffic.

Like the discussion of Alternative 4, the discussion of Alternative 5 shows differing results in the navigation and sand and gravel sections. Table 6 shows a 0.5% difference in NED between Alternative 5 and Alternative 1, then considers it a negligible impact for sand and gravel dredging. However, as shown in Table 7, "Alternative 5 would have a relatively small adverse impact on navigation benefits compared to Alternative 1 because it could reduce the annual NED by \$0.006 million, approximately 1 percent of annual NED benefits."159 While these percentage differences are not as significant as some of the other alternatives, they show conflicting results (negligible impact versus a small adverse impact).

For the last alternative, Alternative 6, there is also a discrepancy between the two NED values found in

each section. The sand and gravel industry section shows a negligible 0.4% difference in the NED between Alternative 6 and Alternative 1, as indicated in Table 6. Table 7 below, summarizing the navigation section, shows that "a relatively large adverse impact would occur to navigation under Alternative 6 by reducing annual NED by \$0.042 million, approximately six percent of annual NED benefits."¹⁶⁰ Once again, the two sections reach contradictory conclusions despite the similarity of the activities. Table 8 below compares the percentage difference in NED for each alternative relative to No Action for each industry.

[Table 8: Alternative NED Values Compared to No Action for Navigation and Sand and Gravel Dredging]

3. The navigation analysis is improperly designed to favor the selection of Alternative 3.

The MRRMP-EIS shows conflicting results among the alternatives as they pertain to navigation impacts. Each conclusion is summarized in Table 6 but explained in more detail here. The Corps first concludes that "impacts to navigation under Alternative 1 are not anticipated to be significant."¹⁶¹ Therefore, the conclusions within the other alternatives are basically the same as what they would be if they had not been compared to Alternative 1.

Each alternative after Alternative 1 has conflicting claims between the first and last sentences of their concluding paragraphs. The first and last sentences of each concluding paragraph are outlined below for each alternative:

Alternative 2:

First: "In comparison to Alternative 1, Alternative 2 would have an adverse impact to navigation by reducing NED by \$0.028 million annually, approximately four percent of annual NED benefits, due to the low summer flow navigation season."¹⁶²

Last: "Although split navigation seasons would adversely affect navigation NED, RED, and OSE under Alternative 2, the impacts would not be significant because the NED decrease in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in nonattainment areas." ¹⁶³

These two sentences are confusing and conflicting because the first sentence states that there would be an adverse impact to navigation, but the last sentence states that those impacts are not significant. This inconsistent and confusing language puts a focus on the fact that the small impacts from Alternative 2 are adverse and creates a negative bias in how Alternative 2 is understood even if the impacts are not significant.

Alternative 3:

First: "In comparison to Alternative 1, Alternative 3 would have a slightly beneficial impact on navigation compared to Alternative 1 because it could improve the annual NED by \$0.002 million and increase average annual jobs of 3 and \$33 K in labor income although there would be negligible impacts to regional economic conditions."¹⁶⁴

Last: "Overall, Alternative 3 would not have significant impacts to navigation because the analysis indicates a slight relative benefit would occur in comparison to Alternative 1."¹⁶⁵

Just as with Alternative 2, the two sentences above convey conflicting meanings. The first sentence

gives the impression that Alternative 3 is beneficial for navigation, whereas the last sentence reveals that the impacts of Alternative 3 on navigation are not significant. These messages are conflicting and show a bias favoring Alternative 3.

Alternative 4:

First: "In comparison to Alternative 1, Alternative 4 would have an adverse impact on navigation benefits by decreasing the annual NED by \$0.045 million, approximately six percent of annual NED benefits."166

Last: "Although the spring releases would shorten navigation seasons and adversely affect navigation NED, RED, and OSE under Alternative 4, the impacts would not be significant because the NED decrease in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas."167

These sentences are almost the same as those written for Alternative 2. Thus, they exaggerate the adverse impacts of this alternative. This makes Alternative 3 look like the best choice among the alternatives for the navigation industry.

Alternative 5:

First: "Alternative 5 would have a relatively small adverse impact on navigation benefits compared to Alternative 1 because it could reduce the annual NED by \$0.006 million, approximately 1 percent of annual NED benefits." 168

Last: "Impacts to navigation under Alternative 5 are not anticipated to be significant because the overall impact is expected to be relatively small."169

Alternative 5 is also cast in a negative light by first introducing it as having adverse impacts to the navigation industry, then concluding that those same impacts would not be significant. It reinforces the positive impacts outlined in Alternative 3 even though they are still small.

Alternative 6:

First: "Modeling indicates a relatively large adverse impact would occur to navigation under Alternative 6 by reducing annual NED by \$0.042 million, approximately six percent of annual NED benefits."170

Last: "Although the spawning cue releases would shorten navigation seasons and adversely affect navigation NED, RED, and OSE under Alternative 6, the impacts would not be significant because the NED decrease in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas."171

Alternative 6 shows the largest impact on navigation, yet it is still ultimately considered to have no significant impact on navigation. The way that this is communicated effectively puts a negative bias on Alternative 6 because there is a large adverse impact in the first sentence. It is hard to believe that anything with a large impact would not be considered significant.

Each of the alternatives begins their concluding paragraph with a sentence that says the alternative is negative for Alternatives 2, 4, 5, and 6 or positive for Alternative 3.

Each Alternative's conclusion then ends with a sentence saying that those impacts are not significant. However, it is hard to believe that this conflicting information is accurate because each adverse impact is either slightly adverse, adverse, or largely adverse. In addition, the fact that Alternative 3 is the only alternative with positive impacts shows the bias towards that alternative, furthering demonstrating an unreasonable range of alternatives.

4. The Corps should not abandon habitat construction because of minor impacts to navigation.

As previously mentioned, the "navigable portion of the mainstem of the Missouri River stretches 735 miles, from Sioux City, IA at the northern reach to St. Louis, Missouri, in the south,"¹⁷² or about 31 % of the total length of the river. ¹⁷³ Due to the relatively large portion of the river that is used for navigation, it is reasonable to assume that mechanical habitat construction, such as early life stage pallid sturgeon habitat and ESH, may affect navigation in some form. However, the Corps simultaneously argues that there are no impacts from mechanical habitat construction in any of the 6 alternatives, but that if ESH were to impact navigation, the ESH would be deconstructed

The MRRMP-EIS describes the relationship between early life stage pallid sturgeon habitat and navigation, writing in each alternative's section as follows:

Generally, these actions involve physical manipulation of the river bed, bank, and/or channel structures. Despite the potential to affect channel structures, these actions are assessed as not likely to impact navigation because each project will be designed to not impact other authorized purposes including navigation. Prior to any site-specific construction project, monitoring will be conducted to detect any issues such as shoaling in the navigation channel. If issues are detected then adjustments will be made to restore the authorized 9 foot deep by 300-foot wide navigation channel. ¹⁷⁴

As a result, navigation is given priority over ESH construction because the design of the habitat itself is supposed to prevent any impacts to navigation. But the Corps states that if effects to navigation do occur, then the habitat construction would be undone to return to the original use of the channel. This is significant because it means that potentially far less early life stage habitat could be created than each of the alternatives suggest, and that pallid sturgeon goals may not be met.

The discussion of mechanical habitat construction in the navigation section also highlights the effects of ESH on the navigation industry. As it did with the early life stage habitat, the Corps claims that ESH will not have an impact on navigation. More specifically, the Corps claims that each alternative's ESH construction "would not occur in the navigable portion of the river so no impacts to navigation would occur."¹⁷⁵ It is unclear how this would be implemented because the USFWS has outlined a goal of 80 acres of ESH per river mile below Gavins Point Dam, all of which is within the navigable portion of the river. ¹⁷⁶ It is unlikely that there would be no ESH construction within that portion of the river given the species goals. But even if the constructed habitat would have some incidental impact on navigation, the Corps should not abandon this management action because it is essential to meet species goals.


Conclusion

For these reasons, the Coalitions strongly oppose the preferred alternative selected by the MRRMP-EIS. The Coalitions urge the Corps to reinitiate Section 7 consultation and produce an EIS that properly focuses on species goals.

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Correspondence Text

The undersigned chapters and divisions of the Izaak Walton League of America (League) appreciate this opportunity to provide comments on the Missouri River Recovery Management Plan Draft Environmental Impact Statement (MRRMP-DEIS). We also endorse the detailed comments submitted separately by the Izaak Walton League of America.

The League is a conservation organization founded in 1922. Today, we have over 42,000 members and 230 chapters nationwide. Nearly 13,000 of our members live within the Missouri River basin states and recreate on or along the river.

The river is home to a tremendous variety of fish and wildlife. It provides world class recreational opportunities and is an important quality of life component for residents of the basin and the tens of thousands of visitors who enjoy many outdoor activities. The Missouri is also a critically important engine for the local, regional, and national economies. Activities on and along the river support many businesses and manufacturers. The Missouri River is the source of drinking water to millions of people.

Over the past 150 years, a host of man-made alterations have greatly changed the Missouri River. The river was transformed from a wide, shallow, slow moving river, to one dominated by channelization on the lower third and impounded by six large reservoirs in the upper basin. The river also suffers from loss of flood plain connectivity due to the Bank Stabilization and Navigation Project (BSNP) and a series of levees. These changes have contributed to a drastic decline in the overall health of the river.

With respect to the draft plan, we do not support adoption of any the proposed alternatives - and the League strongly opposes Alternative 3. We urge the Corps to formulate a new alternative in the final EIS that incorporates recovery actions that will:

- Reconnect the river to its floodplain
- Restore wetlands

- Provide quality habitat for self-sustaining populations of fish and wildlife
- Incorporate BSNP Mitigation in all recovery actions
- Utilize natural processes for habitat restoration whenever possible

We believe these actions will also provide additional benefits, such as improved water quality, flood risk reduction, and increased recreational opportunities.

We wholeheartedly support increased monitoring and research on the river and for habitat recovery projects. We support aspects of the proposed Adaptive Management Plan that allow for any needed modification of recovery actions. We also back robust future funding for all of these efforts.

We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns the proposed alternatives do not go far enough to restore the river and its aquatic and terrestrial habitat. We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

For decades the Missouri River has not been allowed to be itself. The man-made changes have, for the most part, kept the river in a straightjacket. The League urges inclusion of recovery actions that allow the river to resume a more natural state, in selected areas such as on state and federally owned lands and on land acquired from willing sellers , and let it heal itself.

We want to see actions that restore wetlands and backwater areas to reconnect the river to its floodplain. We also favor additional top width widening projects such as Deer Island to create slow, shallow water habitat. We strongly support the inclusion of the Bank Stabilization and Navigation Project Mitigation in the recovery process. We also want to see the removal of man-made pinch points on the lower river. This can be done with more levee setbacks, reducing flood risk and lowering the river's stage, especially during high flow events.

We favor actions that provide the best opportunities for recovery of the pallid sturgeon, piping plover, and least tern, as well as leading to self-sustaining populations of other native fish and wildlife. We support actions that bring back aspects of the natural river and the historic Missouri River flows. We believe these efforts will be good for the health of the river, the listed species, native fish and wildlife, and all the people of the basin.

We also request that we are kept fully apprised of all future updates, meetings, hearings, and comment opportunities on the MRRMP as this process moves forward. The chapters and divisions truly appreciate the effort of the authors on the MRRMP-DEIS. We also thank you for the opportunity to provide comments. Recovery of the Missouri River won't be easy and it will take time. However, we believe that once a recovery plan is selected and communicated to people in the basin, the recovery effort can be successful.

Sincerely,

Jack Johnson
President
Iowa Division IWLA

Lurlie Campbell
President
Nebraska Division IWLA

Kelly Kistner
President
South Dakota Division

The Izaak Walton League of America's state Divisions in Iowa, Nebraska and South Dakota are comprised of 67 chapters and over 10,000 members. The chapters signing on to this letter include:

Iowa
Ames
Anamosa
B.F. Carroll-Bloomfield
Boone Valley-Webster City
Chicaqua-Washington
Clinton County-Clinton
Davenport
Des Moines
Dickinson County-Spirit Lake
Ding Darling-Des Moines
Dragoon Trail-Elkhart
Dubuque
East Fork-Algona
Emerson Hough-Newton
Emmet County-Estherville
Floyd County-Charles City
Green Bay-Fort Madison
Grundy-Tama-Reinbeck
Indian Creek-Nevada
Iowa County-Victor
Keokuk County-Sigourney
Linn County-Cedar Rapids
Louisa County-Wapello
Mahaska County-Oskaloosa
Maquoketa Valley-Maquoketa
Marshall County-Marshaltown
Muscatine
Oakdale-Renwick
Ottumwa
Powershiek County-Grinnell
Red Cedar-Vinton
Rice Lake-Lake Mills
Rock Creek-Newton
Sabula
Three Rivers-Waverly
Wapsi Valley-De Witt
Warren County-Indianola
Waterloo
West Central-Denison
Woodbury County-Salix
Worth County-Kensett

Nebraska
Arapahoe
Columbus
Crete
Freemont
Grand Island
Jesse Benton-Freemont
Lancaster
Lincoln
Platte Valley-Grand Island
Ravenna Loup Valley-St Michael
Seward County-Seward
Southwest-Imperial
Thayer County-Deshler
Wayne

South Dakota
Beadle County-Huron
Bon Homme County-Springfield
Day County-Webster
Deuel County-Toronto
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Madison
McCook Lake
Rapid City
Rosebud-Winner
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Sunshine-Pierre
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Background

The Izaak Walton League of America (League) appreciates this opportunity to provide comments on the Missouri River Recovery Management Plan Draft Environmental Impact Statement (MRRMP-DEIS). The League is a conservation organization that was founded in 1922. Today we have over 42,000 members in 230 chapters nationwide. Nearly 13,000 of our members live within the Missouri River basin states and recreate year-round on or along the river.

The Missouri River system provides over \$2 billion in annual benefits to the American people. The river is home to a tremendous variety of fish and wildlife. It provides world class recreational opportunities and is an important quality of life component for residents of the basin and the tens of thousands of visitors who enjoy its many outdoor activities. The river is a critically important economic engine that's vital to local, regional, and the national economies. Activities on and along the river support many businesses and manufacturers. The Missouri River is the source of drinking water for millions of people.

Over the past 150 years, a host of man-made alterations have greatly changed the Missouri River. The river was transformed from a wide, shallow, slow moving river, to one dominated by channelization on the lower third and impounded by six large reservoirs in the upper basin. The river also suffers from loss of flood plain connectivity due to the Bank Stabilization and Navigation Project (BSNP) and a series of levees. These changes have contributed to a drastic decline in the overall health of the river.

With respect to the draft plan, we do not support adoption of any the proposed alternatives - and the League strongly opposes Alternative 3. The League has serious concerns with the Corps' preferred Alternative 3 which we'll detail later in these comments. We strongly urge the Corps to reformulate a new alternative in the final EIS to include recovery actions that:

- Reconnect the river to its floodplain
- Restore wetlands

- Provide quality habitat for self-sustaining populations of fish and wildlife
- Incorporate BSNP Mitigation in recovery actions
- Utilize natural processes for habitat restoration whenever possible

We believe these actions will also provide additional benefits, such as improved water quality, flood risk reduction, and increased recreational opportunities.

We wholeheartedly support increased monitoring and research on the river and for habitat recovery projects. We support aspects of the proposed Adaptive Management Plan that allow for any needed modification of recovery actions. We also back robust future funding for all of these efforts.

We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns we don't feel the proposed alternatives go far enough to restore the river and its aquatic and terrestrial habitat. We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

For decades the Missouri River has not been allowed to be itself. The man-made changes have, for the most part, kept the river in a straightjacket. The League wants the Corps to select recovery actions that allow the river to resume a more natural state, in selected areas such as on federal and state land and on land acquired from willing sellers, and let it heal itself.

We want to see recovery actions selected that restore wetlands and backwater areas to reconnect the river to its floodplain. We also favor additional top width widening projects such as Deer Island to create slow, shallow water habitat. We strongly support the inclusion of the Bank Stabilization and Navigation Project Mitigation in the recovery process. We want to see the removal of man-made pinch points on the lower river. This can be done with more levee setbacks, reducing flood risk and lowering the river's stage, especially during high flow events.

We favor actions that provide the best opportunities for recovery of the pallid sturgeon, piping plover, and least tern, as well as leading to self-sustaining populations of other native fish and wildlife. We support actions that bring back aspects of the natural river and the historic Missouri River flows. We believe these efforts will be good for the health of the river, the listed species, native fish and wildlife, and all the people of the basin.

After reviewing this very complex MRRMP-DEIS we respectfully ask you to consider our comments and questions on the following:

- The proposed alternatives
- Pallid sturgeon
- Least terns and piping plovers
- Water quality
- Bank stabilization and navigation project
- Mitigation of the BSNP
- Recreation
- Fish and wildlife
- Invasive Species
- Land Use
- Flood Risk
- Missouri River Recovery Implementation Committee (MRRIC)
- Suggested edits and corrections

The Proposed Alternatives

Alternative 1 - No Action (Current System Operation and Current MRRP Implementation)

Alternative 2 - U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions

Alternative 3 - Mechanical Construction Only

Alternative 4 - Spring ESH Creating Release

Alternative 5 - Fall ESH Creating Release

Alternative 6 - Pallid Sturgeon Spawning Cue

The overall size and complexity of the MRRMP-DEIS depicts the immensity of the process before the U.S. Army Corps of Engineers (Corps) to restore habitat along America's longest river. As specified in the DEIS (V2-page 111), the past 150 years has seen many man-made alterations that have greatly changed the Missouri River. The river was transformed from a wide, shallow, slow moving river, to one that's now dominated by channelization on the lower third and impounded by six large reservoirs in the upper basin. The river is also suffering from the loss of flood plain connectivity from the Bank Stabilization and Navigation Project (BSNP) and a series of levees. These changes have contributed to a drastic decline in the overall health of the river. The river's floodplain, once rich with fish and wildlife habitat, has been converted to agriculture, urban areas, and huge open water reservoirs.

The League vigorously supports recovery actions that will reconnect the river to its floodplain, restore wetlands, and provide habitat for self-sustaining populations of fish and wildlife. These actions will also provide additional benefits including improved water quality, reduced flood risk, and increased recreational opportunities.

We wholeheartedly support increased monitoring and research on the river and on the habitat recovery projects. We support aspects of the proposed Adaptive Management Plan (AM or AMP) that allows for any needed modification of recovery actions. We also back robust future funding for all of these efforts.

In the DEIS there are numerous references to the Missouri River Master Manual. We question what happened to the provision in that manual that called for a 3,000 foot floodplain above Kansas City and a 5,000 foot floodplain below Kansas City. If this provision would be implemented in selected areas of the lower Missouri, the river could heal itself in those locations with little or no continuing cost to the taxpayer. We believe the final EIS should also state that according to the Master Manual, the Missouri River cannot be managed to benefit the Mississippi River.

We support that the DEIS anticipates the role of climate change and unpredictability of changing weather patterns in the basin. Weather events can cause river and reservoir conditions to change rapidly, too quickly to be captured by flow or flood risk models. Extremes in climate will likely also magnify periods of wet or dry weather, resulting in longer, more severe droughts, and more extensive flooding (V2-page 52).

Although we feel the range of alternatives is very narrow, all the proposed alternatives contain management actions designed to benefit piping plovers, least terns, and pallid sturgeon. We urge the Corps to select actions that will also provide benefit to a wide variety of other Missouri River fish and wildlife species.

Our specific comments and questions on the six proposed alternatives are below.

Alternative 1 - The DEIS states the No Action Alternative will be the baseline against which the other alternatives are measured. Alternative 1 is said to be insufficient for piping plovers and it is not a

complete plan (V1-page 174). We're pleased to see the Corps agree that current recovery efforts are not adequate and more than status quo needs to be done. The League does not support Alternative 1.

Alternative 2 - Alternative 2 (V1-page 16) states, "Actions would ultimately be implemented through AM as impediments to implementation were removed". Greater clarification is needed as to how the AMP would respond to changing implementation conditions. The DEIS states the Corps has management discretion in achieving acreage goals and whether those goals are accomplished through mechanical construction or river flows. The Corps can also achieve the acreage goals listed in Alternative 2 incrementally.

The League supports the exploration of lowered flows during the nesting season, as mentioned in Alternative 2, to gauge the benefit to bird species, as well as the possible benefits to pallid sturgeon and native other fish species. We also support restoring or mimicking a more normalized river hydrograph below Gavins Point Dam and urge that this be closely monitored to gauge the biological response from native species.

We also support recovery efforts that achieve the high end of habitat goals for pallid sturgeon of at least 30 acres per river mile between Ponca and the mouth. This is needed to replace the hundreds of thousands of acres of habitat that has been destroyed through the construction and ongoing operation and maintenance of the BSNP.

We support the floodplain connectivity listed in Alternative 2 (V1-page 16) and in table 2-11. We urge that floodplain connectivity be incorporated and explored in all future management actions. Floodplain connectivity would benefit native species, improve water quality, provide habitat for other fish and wildlife, reduce flood risk, and increase recreational opportunities.

Alternative 2 also provides the most benefits for flood risk management. We strongly urge the Corps to factor potential savings from reduced flood risk to offset the estimated costs of this alternative (V3-page 11-Table 361).

Alternative 2 has the largest increases for recreation in the lower river. There would be some adverse impacts at the upper three reservoirs under Alternative 2, especially during dry or drought conditions (V3-page-184-185).

The DEIS says a 300% increase in federal funding would be needed for Alternative 2. This was based on a 74M annual budget for the Recovery Program. The DEIS estimated up to a 338M per year cost for Alternative 2 for ESH construction and land acquisition. We want to see more analysis on the additional year-round jobs and other economic activity that would be created in the recreation industry and how ecosystem benefits of the increased habitat created under Alternative 2 would offset these stated increased estimated costs in the final EIS.

The DEIS (V2-page 244) fails to account for the positive effects of increased recreation and outdoor spending in the Other Social Effects section of Alternative 2. Ignoring economic gains that would come from increases in ecosystem function and floodplain connectivity paints an incomplete picture of Alternative 2's overall economic benefits.

The DEIS says the Regional Economic Development (RED) impacts are likely overstated (V2-page 241). This should be clearly stated in this section in the final EIS. As listed in Table 3-44, the reductions in property tax receipts would not occur at one time and would be spread over the 15-year implementation period. So the adverse impacts to local governments associated with property tax reductions would be incremental.

Under Alternative 2, the DEIS states the largest increases in total program expenditures over the 50 years, as compared to Alternative 1, would include channel-widening projects for early life stage habitat and mechanical ESH construction.

We believe Alternative 2 provides the best opportunities for recovery of the three priority species. This alternative recognizes the critical importance of floodplain connectivity and the need for acquiring land for habitat restoration for mitigation of the BSNP. We think Alternative 2 comes closest to bringing back more aspects of a natural river and the historic hydrograph. We believe these efforts will benefit the overall health of the river, the listed species, and other native fish and wildlife.

We urge the Corps to reevaluate the estimated costs of Alternative 2. Please reexamine the amount of mechanically created habitat included and factor in the economic benefits derived from improved ecosystem services including flood risk reduction, improvements to water quality, increased recreation, and benefits to native fish and wildlife. The League supports these aspects of Alternative 2 as the best of the six proposed alternatives.

Alternative 3 - The Corps Preferred Alternative

The League has grave concerns with Alternative 3. Alternative 3 leaves recovery efforts extremely vulnerable to federal budget cuts. Previous Missouri River programs, such as the Missouri River Ecosystem Restoration Plan (MRERP) and Missouri River Authorized Purpose Study (MRAPS), have been completely defunded. Without continued and robust federal funding, Alternative 3 efforts would fail and recovery goals for habitat and species recovery would be unobtainable.

Alternative 3 does include pallid sturgeon spawning habitat construction, with up to 3 sites selected. However, the DEIS does not say how large the site would be, where they would be located, or when their construction would be completed. The DEIS is also unclear about what scientific criteria will be used in the selection of sites and other aspects of this process. More details on these concerns should be addressed in the final EIS.

Alternative 3 also includes Early Life Stage Habitat Construction or Interception Rearing Complexes (IRC) proposed for 12 sites in the first 6-7 years. This would include monitoring of these shallow water habitat sites. The League urges much more communication on IRCs with the Missouri River Recovery Implementation Committee (MRRIC), as well as the general public. Very little information and communication on IRCs has been done thus far. This concept has promise for pallid sturgeon recruitment, provided that adequate drift distance for free embryos exists. We would like to see more on the IRC concept and believe it needs much more communication and collaboration with MRRIC and the public.

Another concern with Alternative 3 is that according to Table 50 (AMP 2-page 439), mechanical construction of ESH is "very unlikely" to help pallid sturgeon reproduction. We feel that whenever possible, the Corps should select recovery actions that also provide benefits to the listed species and other native fish and wildlife.

Spawning Habitat Construction (Page 162 2.8.4.3) refers to using the Yellowstone River as a reference for the lower Missouri River for pallid sturgeon spawning habitat. We urge recovery efforts to focus on known spawning sites in the lower river to replicate or enhance that habitat type to increase spawning success.

We do support channel widening projects, such as Deer Island, and urge further development of this type of SWH. We applaud the use of new approaches in habitat creation. The Deer Island project near

Omaha is an excellent example of the type of shallow and slow water habitat we would like to see more of on the lower river. However, in Alternative 3, 619 fewer acres of channel reconfiguration, and no backwater areas, would be constructed (V2-page 134).

The DEIS (AMP 2-page 221) states that the budget will determine the extent to which management actions can be implemented. Mechanical habitat construction and modification are most likely to be constrained by budget, and other management, monitoring, and research activities may also be constrained. Again, this is the primary flaw with Alternative 3. The League is sensitive to the probability of future funding being jeopardized by Congress, bringing recovery efforts to a complete halt. The Corps should address these funding concerns in the final EIS. The League does not support Alternative 3.

Alternative 4 - The League is concerned with this alternative's focus on how far to draw down water stored in the reservoirs. Lack of water in the system impacts seven of the eight authorized purposes. We also have concern over the potential long refill time for reservoirs after the planned large release. The DEIS states that refill time for the reservoirs could take "months to years." Additionally, the second planned release outlined in the alternative may begin before the reservoirs can refill, drawing them down to even lower elevations. We believe most of the impacts from this alternative would be negative. For example, the DEIS says the levels on Lake Oahe and Lake Sakakawea could drop by as much as 5 feet. This would impact many of the authorized purposes. We feel the benefits this alternative provides do not outweigh its many negative impacts. The League does not support Alternative 4.

Alternative 5 - The League has concerns with Alternative 5. This alternative is contrary to the natural historic hydrograph of the river. Alternative 5 would have large flow releases in the fall instead of the spring, as in the natural hydrograph. We believe any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds far south of the Missouri River. We also have concerns with this alternative's potential impacts on pallid sturgeon and other native fish species, with such a large release at an unnatural time of year for the Missouri River. The League does not support Alternative 5.

Alternative 6 - This alternative attempts to mimic a spring spawning cue for pallid sturgeon with a large flow release every three years. The League questions how many large spring flows occurred on the river on three year intervals over the eighty-two year Period of Record. The League is also concerned with the impacts to the other authorized purposes if this alternative is selected. Reservoirs could be drawn down up to 7 feet under this measure (V3-page 202), causing severe impacts to fish and wildlife, recreation, hydropower, water supply, and other purposes. The League does not support Alternative 6.

Pallid Sturgeon

The pallid sturgeon is an iconic large riverine species we feel best represents why restoration efforts are needed on the Missouri River. The Endangered Species Act requires the Corps to "ensure the operation of the Missouri River is not likely to jeopardize the continued existence of threatened and endangered species or adversely modify critical habitat".

Currently hatchery-raised pallids are stocked in the upper and lower Missouri River. The League supports efforts to maintain genetic diversity in the upper pallid population. We also support the target goal of 5,000 adult pallids within each management unit along the river.

The Corps estimates a need to acquire 7.7 additional acres of land, on average, for every one acre of

pallid sturgeon habitat created (V1-page 9 -sub objective 2) as a buffer for neighboring lands. This is to be done "until sufficient and sustained natural recruitment occurs". The final EIS should define the parameters of "sufficient and sustained natural recruitment" and identify the metrics that will be used to measure this standard.

In regards to the Intake Project on the Yellowstone River (V1-page 122), we have concerns about the project's proposed fish passage. The final EIS should articulate how the Corps will measure if pallids are successfully bypassing the intake and spawning. The Intake Project is a tremendous expense (57-60M) from the MRRP. This amount demands more than just an assumption that it will work.

The AMP (AMP 2-page 375) states that without successful passage at Intake, a transplant experiment could be conducted. This would entail capturing pallids below Intake and hauling them above the diversion to be released. We have concerns that this will likely place high stress levels on the fish and could possibly lead to the loss of individuals in a population that is already teetering on the edge of extinction. Please provide more information about this in the final EIS.

The AMP (AMP 2-page 382) also mentions that post-construction monitoring of Intake would need to continue until results indicate whether or not the project has resulted in successful recruitment. The final EIS must address how long monitoring would continue before AM is implemented to make the needed adjustments to assure the project becomes successful for pallid recruitment.

Table 2-5 refers to the fitness of adult pallids. We believe this needs much closer examination. The existing population in both the upper and lower river must be healthy in order to have a chance to reproduce and expand recruitment. The data provided to the Corps from the Nebraska Game and Parks Commission in 2015 revealed some alarming findings on the condition of adult pallids in the lower river. We urge more research be done to find the cause and help identify what can be done to increase the health and productivity of these fish.

The DEIS (V1-page 150) focuses on hatchery practices. The League is concerned that the Corps places too much emphasis on hatchery raised pallids for the Missouri River. Stocking creates a population that is not self-sustaining. Our concerns about stocking also include disease and water quality issues in the hatcheries and the effects on the health of the fish raised. If hatchery pallids are transporting disease to wild fish, then restoration efforts are going backward. We also have concerns about the high cost of raising pallids in the hatcheries. We encourage more habitat restoration in the upper and lower river to ensure natural production and recruitment.

The AMP (AMP 2-page 446) addresses monitoring of pallids. We agree that accurate estimates of population size are very important. We wonder how an accurate population estimate will be done. What criteria will be used? How extensive a search will be made? How big an area will the geographic scope of the pallid monitoring be? The final EIS should address these questions so that accurate data about the population is ascertained.

Low Summer Flows (V1-page 77) - "may increase temperatures and residence times during the summer and fall that would increase productivity and, in turn, growth and survival of age-0 pallid sturgeon, and decrease velocities that would decrease energetic demands on age-0 pallid sturgeon by decreasing foraging energy expenditures or altering the drift dynamics of food items." We would like to see this explored in future recovery actions and response monitored.

The DEIS also says that pallid sturgeon growth rates could also be influenced by warmer water temperatures as free embryos and larvae develop faster at higher water temperatures (V1-page 85). We encourage looking at a return to a more natural hydrograph to assure this occurs.

Scientific information is lacking on what is needed to support functional spawning habitat for pallids (Volume 2 Page 79). We support robust funding for research and monitoring effort to improve understanding of the pallids reproductive cycle and what is missing from spawning habitat requirements. Currently, drifting free embryos have limited or no opportunity to get out of the thalweg in the navigation channel. We encourage more research to determine if the high turbulence of the navigation channel is fatal to free drifting embryos.

The Platte River, referenced in the DEIS (AMP 2-page 320), is utilized by pallid sturgeon and the spawning information from the Platte River could be very beneficial to the recovery of the pallid sturgeon on the lower Missouri River. We are disappointed that the Platte as well as the other tributaries are not within the geographic scope of the MRRMP. We believe the proposed alternatives and recovery actions are too narrow. Key tributaries should be included, as intended by the Missouri River Ecosystem Recovery Plan (MRERP). The Missouri River is a complex ecosystem. The condition of the tributaries is part of the problem so we strongly believe it needs to be included in the recovery of the Missouri River.

We also have serious concerns with hybridization of pallids and shovelnose sturgeons (AMP 2- page 327). We believe this is an additional complicating factor for pallid recovery. What will be done to address this and what additional research is needed to learn more?

According to the 2003 BiOp, SWH may be restored through flow management, increasing the top width of the channel, restoring chutes and side channels, manipulation of summer flows, or any combination of the fore mentioned actions. (AMP 2-page 411). Some modification of in-channel structures, top-width widening, and creation of chutes and backwaters are restoration measures that have been implemented on the river. We support keeping these actions as part of the future recovery actions.

Significant increases in Interception Rearing Complex (IRC) habitat could be achieved by modifying non-functional or underperforming chute projects (AMP 2-page 415). The League supports continuing the current chute projects. We agree many of them need maintenance to perform fully and provide habitat for the species, but this action should remain in recovery program.

Another concern we have in the AMP in regards to pallids is in AMP 2-page 436. "This could mean that additional engineered spawning habitat needs to be in place (see section 4.2.6.5), but presently available spawning sites may suffice to address behavioral metrics." This is a great concern for the League. Available sites cannot "suffice" when there has been very little spawning activity and virtually no documented spawning or recruitment success. We feel enhanced or restored spawning habitat must be in place for pallids prior to any flow test to adequately address if the flow and habitat is sufficient for the pallids.

Least Terns and Piping Plovers

Although the future of the least tern and piping plover is not as precarious as the future of the pallid sturgeon, the League is still concerned about these two species. These birds have been impacted by loss of nesting and feeding habitat along the river. We feel restoration efforts for these birds also benefit other species as well as the river itself. As the document states (V2-page 97), reservoirs, channelization of rivers, and modification of river flows were identified in the 2010 piping plover 5-year review as major continuing threats because they reduce sandbar riverine habitat, increase flooding of remaining breeding habitat during the nesting season, and promote vegetation growth on sandbars that are rarely scoured by high flows.

When faced with losses in critical habitat, the birds also face losses through predation. We agree with the DEIS (V1 Page 116) in this statement on predator management - "more habitat equals less loss to predators." Predation (V1-page 98) has been observed to be more significant when habitat is limited and nest densities are higher.

The AMP also states that there is some evidence that the presence of protective cages meant to protect nesting birds attracts predators. We urge additional research to develop other methods to protect nests that won't attract avian and mammalian predators.

For other recovery efforts, we support more backwater restoration (AMP 1-page 454). More backwater areas would provide habitat that is important to the food source for the least tern.

Water Quality

Water quality is a major concern of the League. Water quality impacts people, fish, and wildlife. We believe water quality needs to be thoroughly examined and corrective actions must be taken to improve degraded water in the Missouri River.

Another water quality concern is vegetation removal on ESH. The DEIS (V2-page 121) states that herbicides could enter the substrate when vegetation is removed during vegetation management operations. Even if approved herbicides are used, we fear potential impacts to birds, mammals, and invertebrates could occur. We are also concerned that the potential impacts from aerial spraying and herbicide drift to fish and wildlife (V2-p197).

The League would like to see much more research on the possible impacts of agricultural pesticides to determine if any of these chemicals are influencing recruitment of pallids or their prey species in the lower river. The levels may not exceed water quality criteria, but may be too high for the pallid sturgeon or their forage species (V2-page 194).

We support the restoration of wetlands, levee setbacks, and river widening in the river recovery process. Wetlands process large amounts of nitrogen and phosphorous and also sequester carbon. This provides many valuable environmental functions. Restoring wetland habitat on land that had been in agricultural use to a natural state results in many positive impacts (V3 Page 320).

Bank Stabilization and Navigation Project

The construction and the ongoing operation and maintenance of the Bank Stabilization and Navigation Project (BSNP) has dramatically changed the lower Missouri River. The BSNP resulted in the loss of over 520,000 acres of aquatic and terrestrial habitat between Sioux City and St Louis. That includes the loss of about 65,000 acres of island and sandbar habitat. This habitat loss has resulted in the decline in many native fish and wildlife species. The DEIS (V2-page 25) says "the primary geomorphic influence is the navigation channel which contains, in comparison to the historic river, fewer sandbars and side channels. Floodplain levees along much of the lower river have reduced overbank flooding, thereby decreasing water flows to old sloughs and chutes."

The BSNP was constructed for commercial navigation which has never met its expected tonnage. Navigation continues to fall far short of what was predicted when the project was authorized over seven decades ago. Yet navigation continues to be the tail that wags the dog on the Missouri River. Water management and day to day operational decisions are made based in large part on navigation, even though there is little or no commercial traffic on much of the 735 mile navigation channel.

The Corps has designated service levels for its inland waterways across the country. The service level ranks those reaches on a priority level from 1-6. We feel that the navigation ranking on the Missouri

River, compared to the ranking of other waterways with endangered species recovery programs is important to know, as the BSNP has such a major impact on the health of the lower river and the prospects for recovery. We ask that this service level ranking for navigation on the Missouri River be included in the final EIS.

We also ask that more research be conducted on the hypothesis that the velocity and turbulence of navigation channel may be fatal to free embryos of pallid sturgeon in the lower river. It is critical to determine if the navigation channel is lethal to the young pallids, and if so, then the upper portions of the navigation channel should be de-authorized. The DEIS reports that "river currents in the lower Missouri River are swift, and pushing loaded barges upstream is more costly in terms of fuel consumption," (V2-page 249). Recovery efforts that reestablish additional stretches of slow and shallow water would provide a multitude of benefits.

The DEIS (V2-page 24) states that degradation and head cutting have led to increased erosion, aquatic habitat degradation, reduced fish access up some of the affected tributaries, and increased public expenditures to maintain infrastructure. The ways in which the BSNP has contributed to this degradation must be identified so that the recovery program might lessen its impacts and help the tributaries recover.

The DEIS (V2-page 256) states "each project will be designed to not impact other authorized purposes including sand and gravel dredging as described in Section 2.5.3.1." The eight authorized purposes from the Flood Control Act include flood control, hydropower, water supply, water quality, recreation, fish and wildlife, navigation and irrigation. We ask that this statement be corrected in the final EIS.

The DEIS (V3-page 134-3.15.2) Environmental Consequences says "Alternative means of achieving species objectives are evaluated for their effects on navigation." The League believes this statement is backwards. We urge this statement to be changed in the final EIS, especially considering the lack of commercial traffic on the river. Also the AMP (AMP 2-page 235) - Table 22 says "when navigation requirements allow." We ask for an explanation on what this means. We also ask how one purpose (navigation) can control other purposes (fish and wildlife and recreation).

We support the section in the AMP (AMP 2-page 249) that says "opportunity to provide low summer flows exists under the current Master Manual, dependent primarily on system storage level and the status and location of commercial navigation on the river. Anticipated traffic or the absence of traffic at the control points will have a bearing on the selection of the control point for providing the service level." We feel this should be standard policy for the Corps and we also urge additional system storage checks in the reservoir system. Currently there are only two in March and July, to determine service levels for navigation. We urge the Corps to change the Master Manual to allow additional storage checks each year. This would provide a more flexible approach to water management and benefits to the other purposes and recovery efforts.

The League believes recovery can and needs to happen on the lower river. The AMP (AMP 2-page 419) indicates that pallids spawned successfully in 2014 around Sioux City, above the Platte River. This is encouraging. We wonder how much more spawning we would see in that area if navigation was de-authorized in the upper end of what is now a rarely used navigation channel, so that recovery and restoration efforts could flourish. We ask for this to be considered in the final EIS.

Mitigation

The League believes that BSNP Mitigation must be included in the recovery actions and we want this clearly stated in the final EIS. Mitigation for the BSNP has numerous congressional authorizations and we urge the Corps to complete the authorized mitigation goals. BSNP mitigation should be integrated

into other future recovery actions. The AMP (AMP-2-page 45) states that habitat development should be implemented on any acquired lands, which would be credited toward the BSNP mitigation requirements.

Recreation

For many League members, recreation on or along the Missouri River makes up a major part of their lives. The recreation industry is critical to the local, state, regional, and national economies. We urge the Corps to utilize the new REC act analysis to gauge Missouri River recreational impacts in the final EIS.

Several of the proposed alternatives could have major impacts on Lakes Sakakawea and Oahe. Under these alternatives, the level of the reservoirs could fall an additional 5-7 feet. The lakes may not refill for years depending on precipitation and runoff. We feel this could potentially cripple the recreation industry, as access to boat ramps could be restricted and forage and game fish spawning would suffer (V3-pages 197 & 202). The AMP (AMP 2-page 210-211-Table 19) refers to steady to declining reservoir levels during the bird nesting season. While this could be beneficial to some species, this action would have detrimental impacts to forage and game fish recruitment on the reservoirs and drastic impacts on the recreation industry. We urge the Corps to always carefully consider the impacts to recreation when implementing recovery actions.

The AMP (AMP 2-page 455) states that "some priorities for water use are mutually contradictory, the need to find a reasonable balance among HC interests has therefore always been central to the operation of the System." The League has concerns that the priorities are highly out of balance now. We feel navigation is heavily favored, even though there is little or no use of the river for commercial traffic outside of a 10 mile segment near Kansas City. At times, the reservoirs appear to be managed only for benefit of a few in the lower basin. Continued drawdowns, coupled with extended drought conditions leave boat ramps unusable. For example, in 2006, full service flows were provided for navigation even with little or no commercial navigation traffic. The reservoirs then hit record low levels in 2007. This demonstrates that a more balance approach is needed.

In the lower river as stated in the AMP (AMP 2-page 489), increased channel complexity around ESH and IRC projects are likely to increase habitat values and sportfish production. These could provide substantial economic impacts by increasing recreational opportunities. We ask that more research be done on lower river recreation and its impact. We also ask for more details in the final EIS on what the increase to local and regional economies will be from the recreation industry as a direct result of recovery habitat projects.

Fish and Wildlife

The proposed alternatives are designed for the pallid sturgeon, least tern, and piping plover. However, many other native species will also benefit from these efforts. The DEIS (V2-page 127) refers to the many species that spend their entire life in the low-velocity areas of the river.

These areas are lacking and we urge the Corps to implement recovery actions that return this type of aquatic habitat to the river to provide long-term, large, beneficial impacts to fish and wildlife.

We encourage the Corps to implement recovery actions that restore needed habitat for the 51 of 67 native fish species that are rare or declining on the river. We believe this can be accomplished through restoring slow and shallow water habitat, levee setbacks, and river widening projects. In addition, also consider the species that have special-status designation at the federal or state level including 18 plants, 31 birds, 11 mammals, 18 reptiles and amphibians, 20 mussels, and 4 insects (V2-page 148).

The League asks what will happen if another species is added to the Endangered Species List. A petition has been submitted to the U.S. Fish and Wildlife Service (FWS) requesting listing for the sturgeon chub and sicklefin chub, two fish species native to the Missouri River. The final EIS should address what actions will be required if additional species are listed and if the species listed in Table K will be integrated into the Corps' future plans.

In the final EIS, we encourage the Corps to further evaluate Ecosystem Services (V3 Page 318). These environmental services contribute to people in ways that need to be considered and tabulated for their economic impact.

Natural landscapes that also benefit fish and wildlife along the Missouri River provide aesthetic enjoyment, educational opportunities, and a quality of life component that is difficult to quantify. In the final EIS, we ask that the Corps find a way to evaluate these values. We agree that the Missouri River and its terrestrial lands are a "dynamic aquatic ecosystem" unlike anything else in America.

Invasive Species

The League strongly encourages the Corps to take steps in any alternative selected for the recovery plan that prevent the spread of invasive species. Invasive species adversely impact native populations of fish and wildlife and their habitat. Asian carp and zebra mussels in the lower river and their disruption of the food chain, impacting the pallid and its prey species, are particularly alarming.

Land Use

Land use along the river has to be factored in to any implemented recovery actions. Over 70% of the floodplain along the lower river is in agriculture. Runoff in the lower river from Sioux City to St. Louis averages about 43 million acre feet (MAF) making up 63 percent of the runoff in the entire basin. Land use is critical for the Corps' recovery actions. We encourage the Corps to prevent development in the floodplain, since landowners cannot be assured there won't be future flooding since so much of the lower basin is unregulated.

We urge adherence to the 3,000 foot floodplain above Kansas City and the 5,000 foot floodplain below Kansas City, as described in the Missouri River Master Manual. We urge the Corps to spread out recovery actions over the entire lower Missouri River.

The DEIS (V3-page 71) references interior drainage. In the final EIS, we ask the Corps to address the impact to interior drainage of full service navigation flows. Full service flows have impacted interior drainage in the past and we feel it needs to be addressed in the document.

Also in regards to interior drainage, the AMP (AMP 1-page 225) states "an engineering study may be conducted to evaluate effects of experimental flow releases on other authorized purposes such as interior drainage and tern/plover nesting habitat." Interior drainage is not one of the eight congressionally authorized purposes. We ask this be corrected in the final EIS.

The DEIS (V3-page 324) says that the transition of farmlands, especially croplands previously tilled, to a more natural state would enrich soil life and restore soil organic matter, increasing localized terrestrial carbon pools. We support efforts that will accomplish this transition.

The DEIS states that land acquisition associated with the alternatives may reduce agricultural production due to the development of wildlife habitat on lands that would otherwise be used for agriculture (V3 Page 385). These areas will increase flood retention and improve water quality. We believe that restoring lands and natural processes to the Missouri is a positive development and feel this needs to be detailed in the final EIS.

Flood Risk

Flood risk reduction has to be an important consideration of the recovery effort. Aspects of the recovery program might include top width widening, wetland restorations, and levee setbacks, all of which can all aid in lowering flood risk. There are 500 nonfederal levees between Sioux City and the mouth near St Louis. The DEIS states most of them are not adequate to withstand major flooding. We encourage the Corps to remove pinch points along the river to decrease the flood stage.

The DEIS (V1-page 320) says one acre of wetland adjacent to a river typically stores about three acre-feet of water or one million gallons. Trees and other wetland vegetation can slow the flow of floodwaters. Wetland features, channel widening, backwaters, chutes, and other river-floodplain connectivity can increase storage capacity for flood waters, attenuating flood risks for people and property downstream. We support actions that return these elements to the river.

The AMP states (AMP 1-page 246), "At level 2, field experimentation would require flow manipulations and/or channel reconfigurations that could be perceived as risks to flood control, power generation, water supply, navigation, and floodplain farming." We urge the Corps to provide more details in the EIS and communicate with stakeholders to alleviate this misperception.

The AMP (AMP 2-page 469) says that major events, such as floods, are occasionally the subject of post-event investigations that can be used to update information on the effects of flows on HCs. We applaud this step but would also ask that major droughts be considered a major event. The historic hydrograph shows many more years of below average runoff in the upper basin than above average. When President Roosevelt signed the 1944 Flood Control Act, he wondered where the water to support the purposes would come from, given the upper basin is semi-arid. Prolonged drought conditions are a concern of the League and we think it will become an even greater concern as more and more users extract water from the reservoir system. We urge the Corps in the final EIS to consider major droughts for post-event investigations.

The AMP (AMP 2-page 484) constructed IRC habitat can decrease stages for most flows. We believe this information needs to be better communicated in the final EIS to show habitat projects will decrease river stages on the lower river to end fears that the restoration efforts cause flooding.

Missouri River Recovery Implementation Committee

The Missouri River Recovery Implementation Committee (MRRIC) plays a unique role in river recovery. The League has been a member of the committee since it started in 2008. The DEIS (V1-page 140) refers to MRRIC. In the final EIS, we ask that this specific reference clearly state that MRRIC did not reach a consensus agreement, and that there was little or no tradeoff discussion before the committee.

The AMP (AMP 2-page 505) again references the committee and says that it "could instead be a simple assessment of pros and cons of each of the alternatives." This discussion has not happened at a MRRIC meeting and we believe it needs to happen.

The AMP (AMP 2-page 512) references human considerations (HCs) and states "decision makers and, time permitting, MRRIC, would be informed to understand the trade-offs involved and given an opportunity to express preferences for one approach over another." We believe the final EIS needs to address what issues might prevent the Corps from having time to engage MRRIC.

Suggested Edits

The League recognizes and appreciates the tremendous amount of work the authors of the MRRMP-

DEIS have done in what was a very compressed timeline. In a document this large and complex we know some typos and errors will occur. We ask for the following to be corrected or completed in the final EIS.

Volume 2 Page 60 references to the Big Sioux River. It should say the river is in both Iowa and SD as the river is the border between the states.

Volume 2 Page 77 - As stated in Chapter 2.0, USACE determined that more than twice as much floodplain connectivity is currently provided on the System. We ask more than twice as much what? This needs a reference location and/or more detail for reader to be able to go back and find the information.

Volume 2- page 214 Figure 3-50. Missouri River Floodplain - the city of Pierre is no in the correct location

Volume 3 Page 75 - Hydropower - In the Missouri River Basin, peak energy loads (demand) increase in the summer months, when temperatures are highest and farm communities may be pumping water for irrigation or operating grain-drying machinery. We suggest an edit here as nobody dries grain in the summer months that occurs in the fall.

Volume 3 Page 166 - mentions "Oahe Lake" - we suggest a change to Lake Oahe.

Volume 3 Page 259 - Water supply access s in the lower river - is this a typo?

Areas that we think need to be completed or that require more information
Adaptive Management Plan 1-Page 105 - [Note: Remaining text under development.] - When will this (A 6.8.9.10.12.14) be available and will it be open to public comment?

AMP 1 Page 447 - Scaling: The scaling of this variable is specific to each reach, and is shown in Error! Reference source not found. What does this mean? What's is to be added?

AMP 1 Page 531 of 538 - Debriefing of unsuccessful contractors and protest procedures - TBD. What will this section include? We ask for more detail on this in the final EIS.

AMP 1 Page 537 of 538- Appendix L. Reserved - Reserved for what? More details needed in final EIS.

AMP 2 Page 67 of 597 - The decision process generally involves using new information from monitoring and research, modeling of habitat and population response, and management conditions (see Error! Reference source not found.). What does this mean?

AMP 2 Page 77 - bereduced - Typo - space needed

AMP 2 Page 80 - Analyses of these data and application of an evidentiary framework (section Error! Reference source not found.) Will then be used to determine whether it is appropriate to implement a Level 2 action - testing spawning cue flows at Gavins Point.

AMP 2 Page 98 - the potential exists for actions aimed at one species to adversely affect the other; - How will these situations be dealt with and is there an establish process to do that?

AMP 2 Page 120 - Technical Team members will likely not be co-located, so they should are given 13 opportunities to meet as needed to execute their responsibilities. Is this a typo? Do you mean should

be given?

AMP 2 175 - The specific processes to conduct additional NEPA analysis, produce a new decision document, and/or alter the Master Manual are not described in the draft AM Plan, but will be incorporated into the final AM Plan. - We ask how this would be done.

AMP 2 Page 222 - see Section Error! Reference source not found.). - What will be included here?

AMP 2 Page 250 - Bird population densities should be greater than <TBD> for lowered nesting season flows to be beneficial; at lower densities additional habitat is not needed. - When will this data be available for review?

AMP 2 6.3 Data and Information Management - 550 - 6.3.4.1.6 -schedule - All of the tasks and dates are before 4/17. What can the public comment on in this section since the dates have already passed at the time the comment period on the MRRMP-DEIS has ended?

AMP 2 6.3.3 - Reporting and Communication - page 543 - We urge the Corps to consider utilizing an existing communication template for recovery program information. We ask you consider using the same method as the Water Management Division to communicate with elected officials, cities, local governments, media and staff from congressional delegations throughout the basin. The process has worked well to keep people engaged and interested in water updates. We feel the same process could be used to provide updates to this group on the recovery program at least once or twice a year or more often if needed.

Summary

The League truly appreciates the effort of the authors on the MRRMP-DEIS. We also thank you for the opportunity to provide comments.

Recovery of the Missouri River will not be easy and will take time. However, the League believes that once a recovery plan is selected and communicated to people in the basin, the recovery effort can be successful.

For decades, the Missouri River has not been allowed to be itself. The man-made changes have kept the river in a straightjacket. The League seeks recovery actions that allow the river to regain its natural identity in selected areas and let it heal itself.

We want to see actions that restore wetlands and backwater areas to reconnect the river to its floodplain. We also favor additional top width widening projects, such as Deer Island, to create slow, shallow, water habitat. We strongly support the inclusion of the Bank Stabilization and Navigation Project Mitigation in the recovery process. We also want to see the removal of man-made pinch points on the lower river. This can be done with more levee setbacks, reducing flood risk and lowering the river's stage, especially during high flow events.

The League favors actions that provide the best opportunities for recovery of the three species and lead to self-sustaining populations of other native fish and wildlife. We support actions that bring back aspects of the natural river and the historic Missouri River hydrograph. We believe these efforts will be good for the health of the river, the listed species, native fish and wildlife, and the people of the basin.


We also request that we are kept fully apprised of all future updates, meetings, hearings, and comment opportunities on the MRRMP as this process moves forward.

Sincerely,

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Correspondence Text

Subject: Comments on the Use of the Social Cost of Greenhouse Gases in the Draft Environmental Impact Statement for the Proposed Missouri River Recovery Management Plan (MRRMP--EIS)
 Submitted by: Environmental Defense Fund, Institute for Policy Integrity at New York University School of Law, Natural Resources Defense Council, and Union of Concerned Scientists

In the Draft Environmental Impact Statement for the Missouri River Recovery Management Plan, the Army Corps of Engineers appropriately applies an estimate of the social cost of carbon ("SCC") to monetize changes in greenhouse gas emissions resulting from the proposed alternatives. Specifically, the Corps uses an estimate from a range developed by the Interagency Working Group on the Social Cost of Greenhouse Gases. That Interagency Working Group drew on the best available scientific and economic literature and, from 2009 through 2016, developed harmonized, transparent estimates of the social cost of greenhouse gases for all federal agencies to use in their analyses. On March 28, 2017, President Trump's Executive Order 13,783 officially disbanded the Interagency Working Group and withdrew its technical support documents that underpinned the range of estimates. The Order also withdrew the Council on Environmental Quality's guidance on considering greenhouse gas changes in environmental impact statements. Nevertheless, Executive Order 13,783 assumes that federal agencies will continue to "monetiz[e] the value of changes in greenhouse gas emissions" and instructs agencies to ensure such estimates are "consistent with the guidance contained in OMB Circular A--4."

Our organizations respectfully submit these comments encouraging the Corps--and all federal agencies--to continue valuing the social cost of greenhouse gases as thoroughly, accurately, and transparently as possible, drawing from the best available scientific and economic data and methodologies. Our organizations may separately submit other comments regarding other aspects of the draft Environmental Impact Statement. These comments make the following key recommendations:

- First, it is appropriate to continue estimating the social cost of greenhouse gases in environmental impact statements, because monetizing such values advances the National Environmental Policy Act's goals of informing decision--makers and the public. More broadly, under legal standards for rational

decision--making, agencies must monetize important greenhouse gas effects when their decisions are grounded in cost--benefit analysis.

- Second, OMB's Circular A--4 requires agencies to coordinate and use the best available data and methodologies to estimate the social cost of greenhouse gases. Though Executive Order 13,783 withdrew the Interagency Working Group's technical documents, leaving agencies without specific guidance for how to incorporate the social cost of greenhouse gases, the estimates developed by the Interagency Working Group continue to reflect the best available data and methodological choices consistent with Circular A--4, as required by the new Executive Order. The estimates of the Interagency Working Group also reflect close collaboration and consistency across agencies. Agencies should avoid relying exclusively on a single model to derive their estimates, and instead should follow the Interagency Working Group's reliance on multiple, peer--reviewed models.
- Third, reliance on a global estimate of the social cost of greenhouse gases is consistent with Circular A--4. By comparison, no existing methodology for estimating a "domestic--only" value is reliable, complete, or consistent with Circular A--4. If an agency is required to provide a domestic--only estimate, the existing, deficient methodologies must be supplemented to reflect international spillovers to the United States, U.S. benefits from foreign reciprocal actions, and the extraterritorial interests of U.S. citizens including financial interests and altruism.
- Fourth, reliance on a 3% or lower discount rate for inter--generational effects--or a declining discount rate--is consistent with Circular A--4. Applying a 7% discount rate to inter--generational effects would be inconsistent with Circular A--4's requirements to distinguish social discount rates from rates based on private returns to capital; to make plausible assumptions; to adequately address uncertainty, especially over long time horizons; and to rely on the best available economic data and literature.
- Fifth, while Circular A--4 requires thorough treatment of uncertainty, including probability distributions, OMB's guidance also requires plausible assumptions about uncertainty. Giving disproportionate weight in decision--making to improbably optimistic assessments of future climate impacts (i.e., the low--percentile estimates from a probability distribution) would be inappropriate due to the uncertainties, catastrophic risks, and risk aversion related to climate change. All existing best estimates of the social cost of greenhouse gases are almost certainly underestimates and should be treated as a lower bound.

These comments make several other recommendations about the appropriateness of a 300--year time horizon for measuring climate effects, the requirement to qualitatively describe omitted damages, and the relevance of the Information Quality Act to estimating the social cost of greenhouse gases.

Finally, these comments offer specific advice to the Corps on its future use of the social cost of greenhouse gases, including to monetize methane and nitrous oxide as well as carbon dioxide, and to pay attention to how the estimates increase over time.

1. It Is Appropriate to Estimate the Social Cost of Greenhouse Gases in EISs

To achieve the National Environmental Policy Act (NEPA)'s goals of informing decision--makers and the public, monetizing the costs and benefits of changes in greenhouse gas emissions is appropriate for any environmental impact statement (EIS) with substantial greenhouse gas effects. More broadly, under legal standards for rational decision--making, agencies must monetize important greenhouse gas effects when their decisions are grounded in cost--benefit analysis.

NEPA May Require Monetizing Climate Effects, Especially If Other Costs and Benefits Are Monetized NEPA requires "hard look" consideration of beneficial and adverse effects of each alternative option for major federal government actions. The U.S. Supreme Court has called the disclosure of impacts the "key requirement of NEPA," and held that agencies must "consider and disclose the actual environmental effects" of a proposed project in a way that "brings those effects to bear on [the agency's] decisions."⁶ Courts have repeatedly concluded that an EIS must disclose relevant climate

effects. Though NEPA does not require a formal cost-benefit analysis, agencies' approaches to assessing costs and benefits must be balanced and reasonable. Courts have warned agencies, for example, that "[e]ven though NEPA does not require a cost-benefit analysis, it was nonetheless arbitrary and capricious to quantify the benefits of [federal action] and then explain that a similar analysis of the costs was impossible when such an analysis was in fact possible."

Furthermore, it is arbitrary to exclude a monetized cost or benefit from a final EIS when that monetized value was included in the draft EIS. Because the Corps included in this draft EIS a reasonable estimate of the social cost of carbon based on the best available science and economics, it must likewise include in its final EIS a reasonable estimate based on the best available science and economics.

While often eschewing formal cost-benefit analysis in environmental impact statements, agencies typically include in their NEPA reviews of resource management decisions both quantitative and monetized analyses of the economic benefits and distributional effects of the decision, including estimated tons of recoverable resources per acre and the market value thereof; rental rates per acre and annual royalty rates; temporary and permanent job growth, including annual wages and indirect job effects from local expenditures; construction of infrastructure supporting the project; and other related benefits. This draft EIS, for example, monetizes regional labor income changes, flood risk management benefits, recreational effects, and the value of hydropower generation, among other effects. As the U.S. District Court of Colorado concluded, "[i]t is arbitrary to offer detailed projections of a project's upside while omitting a feasible projection of the project's costs." Thus, to the extent agencies continue to quantify and monetize many of the economic and distributional effects of resource management decisions, agencies must also treat climate effects with proportional analytical rigor.

The recent withdrawal of the Council on Environmental Quality's guidance on greenhouse gas emissions does not change the fact that using the social cost of greenhouse gases is consistent with--and may be required under--NEPA obligations. As CEQ explained in its withdrawal, the "guidance was not a regulation," and "[t]he withdrawal of the guidance does not change any law, regulation, or other legally binding requirement." In other words, when the guidance recommended the appropriate use of the social cost of greenhouse gases in EISs, it was simply explaining that the social cost of greenhouse gases is consistent with longstanding NEPA regulations and case law, all of which are still in effect today.

Numerous federal agencies support using the social cost of greenhouse gases in EISs. EPA has called on agencies to include a monetized estimate of anticipated greenhouse gas effects in their environmental impact statements, and multiple agencies have applied the social cost of carbon in their environmental impact statements, including the Office of Surface Mining Reclamation and Enforcement, the Bureau of Land Management, the National Highway Traffic Safety Administration, and the Forest Service. Clearly there are no legal, conceptual, methodological, or practical barriers to applying the social cost of greenhouse gases in NEPA reviews, and there is much to recommend applying it.

Economic Principles Support Monetizing Climate Effects to Fulfill NEPA's Goals

NEPA's goals are to inform decision-makers and the public by providing a "hard look" at the full range of environmental consequences of the government's proposed action and any feasible alternatives. To inform decision-makers and the public, NEPA reviews should aim to present information in the manner that most easily facilitates comparison across alternatives and that best avoids any information-processing biases that might distort rational decision-making. The economic literature

supports monetizing climate effects to achieve these goals.

Monetization provides much-needed context for otherwise abstract consequences of climate change. If the NEPA review for an agency action merely quantifies greenhouse gas emissions by metric ton, or only qualitatively discusses the general effects of global climate change, decision-makers and the public will tend to overly discount that individual action's potential contribution. Without context, it is difficult for many decision-makers and the public to assess the magnitude and climate consequences of, for example, an additional million tons of carbon dioxide. Monetization, on the other hand, allows decision-makers and the public to weigh all costs and benefits of an action--and to compare alternatives--using the common metric of money. Monetizing climate costs, therefore, better informs the public and helps "bring those effects to bear on [the agency's] decisions."

The tendency to ignore non-monetized effects is the result of common but irrational mental heuristics like probability neglect and base-rate bias. For example, the phenomenon of probability neglect causes people to reduce small probabilities entirely down to zero, resulting in these probabilities playing no role in the decision-making process. This heuristic applies even to events with long-term certainty or with lower-probability but catastrophic consequences, so long as their effects are unlikely to manifest in the immediate future. Weighing the real risks that, decades or centuries from now, climate change will fundamentally and irreversibly disrupt the global economy, destabilize earth's ecosystems, or compromise the planet's ability to sustain human life is challenging; without a tool to contextualize such risks, it is far easier to ignore them. Monetization tools like the social cost of carbon and social cost of methane are designed to solve this problem: by translating long-term costs into present values, instantiating the harms of climate change, and giving due weight to the potential of lower-probability but catastrophic harms.

Agencies and the public might also suffer from base-rate bias, which causes the undervaluation of information that is generally applicable across a range of scenarios. Agencies fall into this trap when their NEPA reviews provide generic narrative descriptions of climate change yet conclude that climate change is too global and general a problem to address in a project-specific environmental impact statement. This approach inappropriately forecloses the possibility of mitigating the effects of climate change. Metrics like the social cost of carbon and social cost of methane encourage agencies to identify such mitigation opportunities by monetizing the effects on climate change from the emission of as little as a single ton of greenhouse gases. In fact, these monetization tools were developed to assess the cost of actions with "marginal" impacts on cumulative global emissions, and so are well suited to projects or rules with even relatively small net changes in greenhouse gas emissions.

Standards of Rationality Requires Attention to and Consistent Treatment of Important Factors

The Supreme Court defined the standard of rationality for agency actions under the Administrative Procedure Act as follows:

Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view of the product of agency expertise.

Furthermore, the Court found that the standard requires agencies to "examine the relevant data and articulate . . . a 'rational connection between the facts found and the choice made.'"

Two courts of appeals have already applied arbitrary and capricious review to require the use of the social cost of greenhouse gases in agency decision-making. In *Center for Biological Diversity v.*

National Highway Traffic Safety Administration, the U.S. Court of Appeals for the Ninth Circuit ruled that, because the agency had monetized other uncertain costs and benefits of its vehicle fuel efficiency standard, its "decision not to monetize the benefit of carbon emissions reduction was arbitrary and capricious." Specifically, it was arbitrary to "assign[] no value to the most significant benefit of more stringent [vehicle fuel efficiency] standards: reduction in carbon emissions." When an agency bases a rulemaking on cost-benefit analysis, it is arbitrary to "put a thumb on the scale by undervaluing the benefits and overvaluing the costs."

More recently, in *Zero Zone Inc. v. Department of Energy*, the U.S. Court of Appeals for the Seventh Circuit found that "the expected reduction in environmental costs needs to be taken into account" for the Department of Energy "[t]o determine whether an energy conservation measure is appropriate under a cost-benefit analysis." More specifically, in response to petitioners' challenge that the agency's consideration of the global social cost of carbon was arbitrary, the Seventh Circuit responded that the agency "acted reasonably" in monetizing the global climate effects.

In short, agencies must monetize important greenhouse gas effects when their decisions are grounded in cost-benefit analysis.

New Executive Order Encourages Continued Monetization of the Social Cost of Greenhouse Gases

Executive Order 13,783 officially disbanded the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) and withdrew its technical support documents that underpinned their range of estimates. Nevertheless, Executive Order 13,783 assumes that federal agencies will continue to "monetiz[e] the value of changes in greenhouse gas emissions" and instructs agencies to ensure such estimates are "consistent with the guidance contained in OMB Circular A--4." Consequently, while the Army Corps and other federal agencies no longer have technical guidance directing them to exclusively rely on the IWG's estimates to monetize climate effects, by no means does the new Executive Order imply that agencies should not monetize important effects in their regulatory analyses or environmental impact statements. In fact, Circular A--4 instructs agencies to monetize costs and benefits whenever feasible. The Executive Order does not prohibit agencies from relying on the same choice of models as

, the same inputs and assumptions as the IWG, the same statistical methodologies as the IWG, or the same ultimate values as derived by the IWG. To the contrary, because the Executive Order requires consistency with Circular A--4, as agencies follow the Circular's standards for using the best available data and methodologies, they will necessarily choose similar data, methodologies, and estimates as the IWG, since the IWG's work continues to represent the best available estimates. The Executive Order does not preclude agencies from using the same range of estimates as developed by the IWG, so long as the agency explains that the data and methodology that produced those estimates are consistent with Circular A--4 and, more broadly, with standards for rational decision-making.

Similarly, as explained above, the Executive Order's withdrawal of the CEQ guidance on greenhouse gases does not change agencies' obligations to appropriately monetize climate effects in their EISs. The CEQ guidance had merely summarized and applied longstanding NEPA regulations and case law, all of which are still in effect today. Using the best available estimates of the social cost of greenhouse gases is still consistent with, and may be required by, NEPA.

As the rest of these comments explain, existing best estimates of the social cost of greenhouse gases in fact are already consistent with the Circular A--4. Therefore, the IWG estimates or those of a similar or higher value are appropriate for future use in regulatory analyses and environmental impact statements.

2. Circular A--4 Requires Agencies to Coordinate and Use the Best Available Data and Methodologies to Estimate the Social Cost of Greenhouse Gases

Agencies Should Not Rely on a Single Model, but Should Use Multiple, Peer--Reviewed Models

Circular A--4 requires agencies to use "the best reasonably obtainable scientific, technical, and economic information available. To achieve this, you should rely on peer--reviewed literature, where available."

Since 2010, federal agencies have used estimates of the social cost of greenhouse gases based on the three most cited, most peer--reviewed integrated assessment models (IAMs). These three IAMs--called DICE (the Dynamic Integrated Model of Climate and the Economy), FUND (the Climate Framework for Uncertainty, Negotiation, and Distribution), and PAGE (Policy Analysis of the Greenhouse Effect) -- draw on the best available scientific and economic data to link physical impacts to the economic damages of each marginal ton of greenhouse gas emissions. Each model translates emissions into changes in atmospheric greenhouse gas concentrations, atmospheric concentrations into temperature changes, and temperature changes into economic damages. These three models have been combined with inputs derived from peer--reviewed literature on climate sensitivity, socio--economic and emissions trajectories, and discount rates. The results of the three models have been given equal weight in federal agencies' estimates and have been run through statistical techniques like Monte Carlo analysis to account for uncertainty.

In a 2017 report, the National Academies of Sciences (NAS) recommended future improvements to this methodology. Specifically, over the next five years the NAS recommends unbundling the four essential steps in the IAMs into four separate "modules": a socio--economic and emissions scenario module, a climate change module, an economic damage module, and a discount rate module. Unbundling these four steps into separate modules could allow for easier, more transparent updates to each individual component, to better reflect the best available science and capture the full range of uncertainty in the literature. These four modules could be built from scratch or drawn from the existing IAMs. Either way, the integrated modular framework envisioned by NAS for the future will require significant time and resource commitments from federal agencies. It is likely unrealistic that the Corps could undertake this approach on its own or complete it in time for this EIS process without significant and costly delays.

In the meantime, the NAS has supported the continued near--term use of the existing social cost of greenhouse gas estimates based on the DICE, FUND, and PAGE models, as used by federal agencies to date. In short, DICE, FUND, and PAGE continue to represent the state--of--the--art models. The Government Accountability Office found in 2014 that the estimates derived from these models and used by federal agencies are consensus--based, rely on peer--reviewed academic literature, disclose relevant limitations, and are designed to incorporate new information via public comments and updated research. In fact, the social cost of greenhouse gas estimates used in federal regulatory proposals and EISs have been subject to over 80 distinct public comment periods. The economics literature confirms that estimates based on these three IAMs remain the best available estimates. In 2016, the U.S. Court of Appeals for the Seventh Circuit held the estimates used to date by agencies are "reasonable."

While Executive Order 13,783 withdrew the explicit guidance requiring federal agencies to rely on IWG's technical support documents to estimate the social cost of greenhouse gases, nevertheless, the IWG's choice of DICE, FUND, and PAGE, its use of inputs and assumptions, and its statistical analysis still represent the state--of--the--art approach based on the best available, peer--reviewed literature. This approach satisfies Circular A--4's requirements for information quality and transparency.

Therefore, as agencies comply with the Executive Order's instructions to ensure that social cost of greenhouse gases are consistent with Circular A--4, agencies will necessarily have to rely on models like DICE, FUND, and PAGE, to use the same or similar inputs and assumptions as the IWG, and to apply statistical analyses like Monte Carlo.

If agencies choose not to rely directly on the IWG estimates, models should be chosen based on Circular A--4's criteria of quality and transparency. DICE, FUND, and PAGE are still the dominant, most peer-- reviewed models, and most estimates in the literature continue to rely on those models. Each of these models has been developed over decades of research, and has been subject to rigorous peer review, documented in the published literature. Other models exist but lack DICE, FUND, and PAGE's long history of peer review or exhibit other limitations. For example, the World Bank has created ENVISAGE, which models a more detailed breakdown of market sectors, but unfortunately does not account for non--market impacts and so would omit a large portion of significant climate effects. Models like ENVISAGE are not currently appropriate choices under the criteria of Circular A--4.

An approach based on multiple, peer--reviewed models (like DICE, FUND, and PAGE) is more rigorous and more consistent with Circular A--4 than reliance on a single model or estimate. DICE, FUND, and PAGE each include many of the most significant climate effects, use appropriate discount rates and other assumptions, address uncertainty, are based on peer--reviewed data, and are transparent. However, each IAM also has its own limitations and is sensitive to its own assumptions. No model fully captures all the significant climate effects. By giving weight to multiple models--as the IWG did--agencies can balance out some of these limitations and produce more robust estimates.

Finally, while agencies should be careful not to cherry--pick a single estimate from the literature, it is noteworthy that various estimates in the literature are consistent with the numbers derived from a weighted average of DICE, FUND, and PAGE--namely, with a central estimate of about \$40 per ton of carbon dioxide, and a high--percentile estimate of about \$120, for year 2015 emissions (in 2016 dollars, at a 3% discount rate). The latest central estimate from DICE's developers is \$87 (at a 3% discount rate); from FUND's developers, \$12; and from PAGE's developers, \$123, with a high--percentile estimate of \$332.

In fact, much of the literature suggest that a central estimate of \$40 per ton is a very conservative underestimate. A 2013 meta--analysis of the broader literature found a mean estimate of \$59 per ton of carbon dioxide, and a soon--to--be--published update by the same author finds a mean estimate of \$108 (at a 1% discount rate). A 2015 meta--analysis--which sought out estimates besides just those based on DICE, FUND, and PAGE--found a mean estimate of \$83 per ton of carbon dioxide. Various studies relying on expert elicitation from a large body of climate economists and scientists have found mean estimates of \$50 per ton of carbon dioxide, \$96--\$144 per ton of carbon dioxide, and \$80--\$100 per ton of carbon dioxide. There is a growing consensus in the literature that even the best existing estimates of the social cost of greenhouse gases may severely underestimate the true marginal cost of climate damages. Overall, a central estimate of \$40 per ton of carbon dioxide at a 3% discount rate, with a high--percentile estimate of about \$120 for year 2015 emissions, is consistent with the best available literature; if anything, the best available literature supports even higher estimates.

Similarly, a comparison of international estimates of the social cost of greenhouse gases suggests that a central estimate of \$40 per ton of carbon dioxide is a very conservative value. Sweden places the long-- term valuation of carbon dioxide at \$168 per ton; Germany calculates a "climate cost" of \$167 per ton of carbon dioxide in the year 2030; the United Kingdom's "shadow price of carbon" has a central value of \$115 by 2030; Norway's social cost of carbon is valued at \$104 per ton for year 2030 emissions; and

various corporations have adopted internal shadow prices as high as \$80 per ton of carbon dioxide.

Agencies Should Coordinate Efforts and Harmonize Estimates

Without IWG's framework for inter--agency coordination or the instructions in IWG's technical documents for all agencies to use standardized estimates of the social cost of greenhouse gases, agencies have a choice going forward: either each agency could try to select and justify its own estimates, or agencies could continue to coordinate their efforts and harmonize their estimates. The latter is preferred and most consistent with Circular A--4's instructions.

Circular A--4 directs agencies to "keep in mind the larger objective of analytical consistency in estimating benefits and costs across regulations and agencies. . . Failure to maintain such consistency may prevent achievement of the most risk reduction for a given level of resource expenditure." By sharing resources, information, and expertise, agencies can save time and money and ultimately produce better estimates. Harmonized values for the social cost of greenhouse gases will increase predictability and transparency for regulated entities, the U.S. public, and international actors looking to U.S. actions to develop their own reciprocal approaches (see *infra* for more on reciprocal foreign actions). Though the recent Executive Order officially disbanded the IWG, agencies can and should continue to coordinate their efforts.

3. Reliance on a Global Estimate Is Consistent with Circular A--4

Not only is it consistent with Circular A--4 and best economic practices to estimate the global damages of

U.S. greenhouse gas emissions in regulatory analyses and environmental impact statements, but no existing methodology for estimating a "domestic--only" value is reliable, complete, or consistent with Circular A--4. If an agency is required to provide a domestic--only estimate, the existing, deficient methodologies must be supplemented to reflect international spillovers to the United States, U.S. benefits from foreign reciprocal actions, and the extraterritorial interests of U.S. citizens including financial interests and altruism.

Circular A--4 Requires "Different Emphases . . . Depending on the Nature" of the Regulatory Issue

From 2010 through 2016, federal agencies based their regulatory decision and NEPA reviews on global estimates of the social cost of greenhouse gases. Though agencies often also disclosed a "highly speculative" range that tried to capture exclusively U.S. climate costs, emphasis on a global value was recognized as more accurate given the science and economics of climate change, as more consistent with best economic practices, and as crucial to advancing U.S. strategic goals.

Opponents of climate regulation challenged the global number in court and other forums, and often attempted to use Circular A--4 as support. Specifically, opponents have seized on Circular A--4's instructions to "focus" on effects to "citizens and residents of the United States," while any significant effects occurring "beyond the borders of the United States . . . should be reported separately." Importantly, despite this language and such challenges, the U.S. Court of Appeals for the Seventh Circuit had no trouble concluding that a global focus for the social cost of greenhouse gases was reasonable:

AHRI and Zero Zone [the industry petitioners] next contend that DOE [the Department of Energy] arbitrarily considered the global benefits to the environment but only considered the national costs. They emphasize that the [statute] only concerns "national energy and water conservation." In the New Standards Rule, DOE did not let this submission go unanswered. It explained that climate change

"involves a global externality," meaning that carbon released in the United States affects the climate of the entire world. According to DOE, national energy conservation has global effects, and, therefore, those global effects are an appropriate consideration when looking at a national policy. Further, AHRI and Zero Zone point to no global costs that should have been considered alongside these benefits. Therefore, DOE acted reasonably when it compared global benefits to national costs.

Circular A--4's reference to effects "beyond the borders" confirms that it is appropriate for agencies to consider the global effects of U.S. greenhouse gas emissions. While Circular A--4 may suggest that most typical decisions should focus on U.S. effects, the Circular cautions agencies that special cases call for different emphases:

[Y]ou cannot conduct a good regulatory analysis according to a formula. Conducting high--quality analysis requires competent professional judgment. Different regulations may call for different emphases in the analysis, depending on the nature and complexity of the regulatory issues and the sensitivity of the benefit and cost estimates to the key assumptions.

In fact, Circular A--4 elsewhere assumes that agencies' analyses will not always be conducted from purely the perspective of the United States, as one of its instructions only applies "as long as the analysis is conducted from the United States perspective," suggesting sometimes the perspective may instead be global. For example, the Environmental Protection Agency and the Department of Transportation have adopted a global perspective on the analysis of potential monopsony benefits to U.S. consumers resulting from the reduced price of foreign oil imports following energy efficiency increases, and the

Environmental Protection Agency assesses the global potential for leakage of greenhouse gas emissions owing to U.S. regulation.

The nature of the issue of climate change requires such a "different emphasis" from the default domestic--only assumption. To avoid a global "tragedy of the commons" that could irreparably damage all countries, including the United States, every nation should ideally set policy according to the global social cost of greenhouse gases. Climate and clean air are global common resources, meaning they are freely available to all countries, but any one country's use--i.e., pollution--imposes harms on the polluting country as well as the rest of the world. Because greenhouse pollution does not stay within geographic borders but rather mixes in the atmosphere and affects climate worldwide, each ton emitted by the United States not only creates domestic harms, but also imposes large externalities on the rest of the world. Conversely, each ton of greenhouse gases abated in another country benefits the United States along with the rest of the world.

If all countries set their greenhouse emission levels based on only domestic costs and benefits, ignoring the large global externalities, the aggregate result would be substantially sub--optimal climate protections and significantly increased risks of severe harms to all nations, including the United States. Thus, basic economic principles demonstrate that the United States stands to benefit greatly if all countries apply global social cost of greenhouse gas values in their regulatory decisions and project reviews. Indeed, the United States stands to gain hundreds of billions or even trillions of dollars in direct benefits from efficient foreign action on climate change.

Therefore, a rational tactical option in the effort to secure that economically efficient outcome is for the United States to continue using global social cost of greenhouse gas values itself. The United States is engaged in a repeated strategic dynamic with several significant players--including the United Kingdom, Germany, Sweden, and others--that have already adopted a global framework for valuing the social cost of greenhouse gases. For example, Canada and Mexico have explicitly borrowed the U.S. estimates of a global Social Cost of Carbon to set their own fuel efficiency standards. For the

United States to now depart from this collaborative dynamic by reverting to a domestic-only estimate could undermine the country's long-term interests and could jeopardize emissions reductions underway in other countries, which are already benefiting the United States.

For these and other reasons, federal agencies have, since 2009, properly relied on global estimates of the social cost of greenhouse gases to justify their decisions. At the same time, agencies have often disclosed a "highly speculative" estimate of the domestic-only effects of climate change. In particular, the Department of Energy always includes a chapter on a domestic-only value of carbon emissions in the economic analyses supporting its energy efficiency standards; the Environmental Protection Agency has also often disclosed similar estimates. Such an approach is consistent with Circular A-4's suggestion that agencies should usually disclose domestic effects separately from global effects. However, as explored more below, reliance on a domestic-only methodology would be inconsistent with the standards of Circular A-4, and existing estimates of domestic-only effects are severe underestimates. Consequently, it is appropriate under Circular A-4 for agencies to continue to rely on global estimates of the social cost of greenhouses to justify their regulatory decisions or their choice of alternatives under NEPA.

For more details on the justification for a global value of the social cost of greenhouse gases, please see Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 *Columbia J. Envtl. L.* 203 (2017). Another strong defense of the global valuation as consistent with best economic practices appears in a letter published in the latest issue of *The Review of Environmental Economics and Policy*, co-authored by Nobel laureate Kenneth Arrow.

No Current Methodology for Estimating a "Domestic-Only" Value Is Consistent with Circular A-4

OMB, the National Academies of Sciences, and the economic literature all agree that existing methodologies for calculating a "domestic-only" value of the social cost of greenhouse gases are deeply flawed and result in severe and misleading underestimates.

The Interagency Working Group had offered some domestic estimates. Using the results of one economic model (FUND) as well as the U.S. share of global gross domestic product ("GDP"), the group generated an "approximate, provisional, and highly speculative" range of 7-23% of the global social cost of carbon as an estimate of the purely direct climate effects to the United States. Yet, as the interagency group acknowledged--and as discussed more thoroughly in the next subsection of these comments--this range is almost certainly an underestimate because it ignores significant, indirect costs to trade, human health, and security that are likely to "spill over" into the United States as other regions experience climate change damages, among other effects.

Neither the existing IAMs nor a share of global GDP are appropriate bases for calculating a domestic-only estimate. FUND, like other IAMS, includes some simplifying assumptions: of relevance, FUND and the other IAMs are not able to capture the adverse effects that the impacts of climate change in other countries will have on the United States through trade linkages, national security, migration, and other forces. This is why the IWG characterized the domestic-only estimate from FUND as a "highly speculative" underestimate. Similarly, a domestic-only estimate based on some rigid conception of geographic borders or U.S. share of world GDP will fail to capture all the climate-related costs and benefits that matter to U.S. citizens. U.S. citizens have economic and other interests abroad that are not fully reflected in the U.S. share of global GDP. GDP is a "monetary value of final goods and services--that is, those that are bought by the final user--produced in a country in a given period of time." GDP therefore does not reflect significant U.S. ownership interests in foreign businesses, properties, and other assets, as well as consumption abroad including tourism, or even the 8 million

Americans living abroad. At the same time, GDP is also over-inclusive, counting productive operations in the United States that are owned by foreigners. Gross National Income ("GNI"), by contrast, defines its scope not by location but by ownership interests. However, not only has GNI fallen out of favor as a metric used in international economic policy, but using a domestic-only SCC based on GNI would make the SCC metrics incommensurable with other costs in regulatory impact analyses, since most regulatory costs are calculated by U.S. agencies regardless of whether they fall to U.S.-owned entities or to foreign-owned entities operating in the United States. The artificial constraints of both metrics counsel against a rigid split based on either U.S. GDP or U.S. GNI.

In 2015, OMB concluded, along with several other agencies, that "good methodologies for estimating domestic damages do not currently exist." Similarly, the National Academies of Sciences recently concluded that current IAMs cannot accurately estimate the domestic social cost of greenhouse gases, and that estimates based on U.S. share of global GDP would be likewise insufficient. William Nordhaus, the developer of the DICE model, cautioned earlier this year that "regional damage estimates are both incomplete and poorly understood," and "there is little agreement on the distribution of the SCC by region." In short, any domestic-only estimate will be inaccurate, misleading, and out of step with the best available economic literature, in violation of Circular A-4's standards for information quality.

Benefits and Costs that "Accrue to U.S. Citizens" Are Much Broader Than Effects "within U.S. Borders"

To the extent agencies are required to distinguish a portion of the global social cost of greenhouse gases that "accrue[s] to U.S. citizens" alone, agencies will need to analyze a much broader range of climate effects than those occurring "within U.S. borders." Circular A-4 instructs to estimate all important "opportunity costs," meaning "what individuals are willing to forgo to enjoy a particular benefit." U.S. individuals are willing to forgo money to enjoy benefits or avoid costs from climate effects that occur beyond U.S. borders, and all such significant effects must be captured.

International Spillovers: First, agencies may not ignore significant, indirect costs to trade, human health, and security likely to "spill over" to the United States as other regions experience climate change damages. Due to its unique place among countries--both as the largest economy with trade--and investment--dependent links throughout the world, and as a military superpower--the United States is particularly vulnerable to effects that will spill over from other regions of the world. Spillover scenarios could entail a variety of serious costs to the United States as unchecked climate change devastates other countries. Correspondingly, mitigation or adaptation efforts that avoid climate damages to foreign countries will radiate benefits back to the United States as well. While the current IAMs provide reliable but conservative estimates of global damages, they currently cannot calculate reliable region--specific estimates, in part because they do not model such spillovers.

As climate change disrupts the economies of other countries, decreased availability of imported inputs, intermediary goods, and consumption goods may cause supply shocks to the U.S. economy. Shocks to the supply of energy, technological, and agricultural goods could be especially damaging. For example, when Thailand--the world's second-largest producer of hard-drives--experienced flooding in 2011, U.S. consumers faced higher prices for many electronic goods, from computers to cameras. A recent economic study explored how heat stress--induced reductions in productivity worldwide will ripple through the interconnected global supply network. Similarly, the U.S. economy could experience demand shocks as climate-affected countries decrease their demand for U.S. goods. Financial markets may also suffer as foreign countries become less able to loan money to the United States and as the value of U.S. firms declines with shrinking foreign profits. As seen historically, economic

disruptions in one country can cause financial crises that reverberate globally at a breakneck pace.

The human dimension of climate spillovers includes migration and health effects. Water and food scarcity, flooding or extreme weather events, violent conflicts, economic collapses, and a number of other climate damages could precipitate mass migration to the United States from regions worldwide, especially, perhaps, from Latin America. For example, a 10% decline in crop yields could trigger the emigration of 2% of the entire Mexican population to other regions, mostly to the United States. Such an influx could strain the U.S. economy and will likely lead to increased U.S. expenditures on migration prevention. Infectious disease could also spill across the U.S. borders, exacerbated by ecological collapses, the breakdown of public infrastructure in poorer nations, declining resources available for prevention, shifting habitats for disease vectors, and mass migration.

Finally, climate change is predicted to exacerbate existing security threats--and possibly catalyze new security threats--to the United States. Besides threats to U.S. military installations and operations at home and abroad from flooding, storms, extreme heat, and wildfires, Secretary of Defense Mattis has explained that "Climate change is impacting stability in areas of the world where our troops are operating today." The Department of Defense's 2014 Defense Review declared that climate effects "are threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions--conditions that can enable terrorist activity and other forms of violence," and as a result "climate change may increase the frequency, scale, and complexity of future missions, including defense support to civil authorities, while at the same time undermining the capacity of our domestic installations to support training activities." As an example of the climate--security-- migration nexus, prolonged drought in Syria likely exacerbated the social and political tensions that erupted into an ongoing civil war, which has triggered an international migration and humanitarian crisis.

Because of these interconnections, attempts to artificially segregate a U.S.--only portion of climate damages will inevitably result in misleading underestimates. Some experts on the social cost of carbon have concluded that, given that integrated assessment models currently do not capture many of these key inter--regional costs, use of the global SCC may be further justified as a proxy to capturing all spillover effects. Though surely not all climate damages will spill back to affect the United States, many will, and together with other justifications, the likelihood of significant spillovers makes a global valuation the better, more transparent accounting of the full range of costs and benefits that matter to U.S. policymakers and the public.

Reciprocal Foreign Actions: Second, an indirect consequence of the United States using a global social cost of greenhouse gas to justify actions that protect against climate damages is that foreign countries take reciprocal actions that benefit the United States. Circular A--4 requires that the "same standards of information and analysis quality that apply to direct benefits and costs should be applied to ancillary benefits and countervailing risks." Consequently, any attempt to estimate a domestic--only value of the social cost of greenhouse gas must include indirect effects from reciprocal foreign actions.

As detailed more in Howard & Schwartz (2017), because the world's climate is a single interconnected system, the United States benefits greatly when foreign countries consider the global externalities of their greenhouse gas pollution and cut emissions accordingly. Game theory predicts that one viable strategy for the United States to encourage other countries to think globally in setting their climate policies is for the United States to do the same, in a tit--for--tat, lead--by--example, or coalition--building dynamic. In fact, most other countries with climate policies already use a global social cost of carbon or set their carbon taxes or allowances at prices above their domestic--only costs, consistent with the global perspective used to date by U.S. agencies to value the cost of greenhouse gases. Both Republican and Democratic administrations have recognized that the analytical and regulatory choices

of U.S. agencies can affect the actions of foreign countries, which in turn affect U.S. citizens.

According to one study, over the next fifteen years, direct U.S. benefits from global climate policies already in effect could reach over \$2 trillion. Any attempt to estimate a domestic-only value of the social cost of greenhouse gases must include such indirect effects from reciprocal foreign actions.

Extraterritorial Interests: Circular A--4 requires agencies to count all significant costs and benefits, and specifically explains the importance of including "non--use" values like "bequest and existence values": "ignoring these values in your regulatory analysis may significantly understate the benefits and/or costs of regulatory action." Similarly, while Circular A--4 distinguishes altruism from non--use values, the guidance instructs agencies that "if there is evidence of selective altruism, it needs to be considered specifically in both benefits and costs." Many costs and benefits accrue to U.S. citizens from use values, non--use values, and altruism attached to climate effects occurring outside the U.S. borders.

U.S. citizens have economic and other interests abroad that are not fully reflected in the U.S. share of global GDP. As explained above, GDP does not reflect significant U.S. ownership interests in foreign businesses, properties, and other assets, as well as consumption abroad including tourism, or even the 8 million Americans living abroad.

The United States also has a willingness to pay--as well as a legal obligation--to protect the global commons of the oceans and Antarctica from climate damages. For example, the Madrid Protocol on Environmental Protection to the Antarctic Treaty commits the United States and other parties to the "comprehensive protection of the Antarctic environment," including "regular and effective monitoring" of "effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment." The share of climate damages for which the United States is responsible is not limited to our geographic borders.

Similarly, U.S. citizens value natural resources and plant and animal lives abroad, even if they never use those resources or see those plants or animals. For example, the "existence value" of restoring the Prince William Sound after the 1989 Exxon Valdez oil tanker disaster--that is, the benefits derived by Americans who would never visit Alaska but nevertheless felt strongly about preserving the existence of this pristine environment--was estimated in the billions of dollars. Though the methodologies for calculating existence value remain controversial, U.S. citizens certainly have a non--zero willingness to pay to protect rainforests, charismatic megafauna like pandas, and other life and environments existing in foreign countries. U.S. citizens also have an altruistic willingness to pay to protect foreign citizens' health and welfare. This altruism is "selective altruism," consistent with Circular A--4, because the United States is directly responsible for most of the historic emissions contributing to climate change.

NEPA Requires a Global Perspective

Circular A--4 cannot change agencies' statutory obligations. The National Environmental Policy Act contains a provision on "International and National Coordination of Efforts" that broadly requires that "all agencies of the Federal Government shall . . . recognize the worldwide and long--range character of environmental problems." Using a global social cost of greenhouse gases to analyze and set policy fulfills these instructions. Furthermore, the Act requires agencies to, "where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment." By continuing to use the global social cost of greenhouse gases to spur reciprocal foreign actions, federal agencies "lend appropriate support" to the National Environmental

Policy Act's goal of "maximize[ing] international cooperation" to protect "mankind's world environment."

Also of note, Circular A--4 implements Executive Order 12,866, but that Order has been supplemented by additional Orders. Executive Order 13,609, which remains in effect, recognizes that significant regulations can have "significant international impacts," and it calls on federal agencies to work toward "best practices for international regulatory cooperation with respect to regulatory development." Therefore, for federal policies and actions with significant international effects, a global perspective on costs and benefits is appropriate and may be required.

4. Reliance on a 3% or Lower Discount Rate for Intergenerational Effects--or a Declining Discount Rate--Is Consistent with Circular A--4

In 2015, OMB explained that "Circular A--4 is a living document. . . . [T]he use of 7 percent is not considered appropriate for intergenerational discounting. There is wide support for this view in the academic literature, and it is recognized in Circular A--4 itself. " While Circular A--4 tells agencies generally to use a 7% discount rate in addition to lower rates for typical rules, the guidance does not intend for default assumptions to produce analyses inconsistent with best economic practices. Circular A--4 clearly supports using lower rates to the exclusion of a 7% rate for the costs and benefits occurring over the extremely long, 300--year time horizon of climate effects.

A 7% Discount Rate Is Not "Sound and Defensible" or "Appropriate" for Climate Effects

As quoted previously, Circular A--4 clearly requires agency analysts to do more than rigidly apply default assumptions: "You cannot conduct a good regulatory analysis according to a formula. Conducting high-- quality analysis requires competent professional judgment." Analysis must be "based on the best reasonably obtainable scientific, technical, and economic information available," and agencies must "Use sound and defensible values or procedures to monetize benefits and costs, and ensure that key analytical assumptions are defensible." Rather than assume a 7% discount rate should be applied automatically to every analysis, Circular A--4 requires agencies to justify the choice of discount rates for each analysis: "[S]tate in your report what assumptions were used, such as . . . the discount rates applied to future benefits and costs," and explain "clearly how you arrived at your estimates." Based on Circular A--4's criteria, there are numerous reasons why applying a 7% discount rate to climate effects that occur over a 300--year time horizon would be unjustifiable.

First, basing the discount rate on the consumption rate of interest is the correct framework for analysis of climate effects; a discount rate based on the private return to capital is inappropriate. Circular A--4 does suggest that 7% should be a "default position" that reflects regulations that primarily displace capital investments; however, the Circular explains that "When regulation primarily and directly affects private consumption . . . a lower discount rate is appropriate." The 7% discount rate is based on a private sector rate of return on capital, but private market participants typically have short time horizons. By contrast, climate change concerns the public well--being broadly. Rather than evaluating an optimal outcome from the narrow perspective of investors alone, economic theory requires analysts to make the optimal choices based on societal preferences and social discount rates. Moreover, because climate change is expected to largely affect consumption, a 7% rate is inappropriate.

In 2013, OMB called for public comments on the social cost of greenhouse gases; in the 2015 Response to Comment document, OMB (together with the other agencies from the IWG) explained that:

[T]he consumption rate of interest is the correct concept to use . . . as the impacts of climate change are measured in consumption--equivalent units in the three IAMs used to estimate the SCC. This is

consistent with OMB guidance in Circular A--4, which states that when a regulation is expected to primarily affect private consumption--for instance, via higher prices for goods and services--it is appropriate to use the consumption rate of interest to reflect how private individuals trade--off current and future consumption.

The Council of Economic Advisers similarly interprets Circular A--4 as requiring agencies to choose the appropriate discount rate based on the nature of the regulation: "[I]n Circular A--4 by the Office of Management and Budget (OMB) the appropriate discount rate to use in evaluating the net costs or benefits of a regulation depends on whether the regulation primarily and directly affects private consumption or private capital." The National Academies of Sciences also explained that a consumption rate of interest is the appropriate basis for a discount rate for climate effects. In short, 7% is an inappropriate choice of discount rate for the impacts of climate change.

Second, uncertainty over the long time horizon of climate effects should drive analysts to select a lower discount rate. As an example of when a 7% discount rate is appropriate, Circular A--4 identifies an EPA rule with a 30--year timeframe of costs and benefits. By contrast, greenhouse gas emissions generate effects stretching out across 300 years. As Circular A--4 notes, while "Private market rates provide a reliable reference for determining how society values time within a generation, but for extremely long time periods no comparable private rates exist."

Circular A--4 discusses how uncertainty over long time horizons drives the discount rate lower: "the longer the horizon for the analysis," the greater the "uncertainty about the appropriate value of the discount rate," which supports a lower rate. Circular A--4 cites the work of respected economist Weitzman and concludes that the "certainty--equivalent discount factor corresponds to the minimum discount rate having any substantial positive probability." The National Academies of Sciences makes the same point about discount rates and uncertainty.

Third, a 7% percent discount rate would be inappropriate for climate change because it is based on outdated data and diverges from the current economic consensus. Circular A--4 requires that assumptions--including discount rate choices--are "based on the best reasonably obtainable scientific, technical, and economic information available." Yet Circular A--4's own default assumption of a 7% discount rate was published 14 years ago and was based on data from decades ago. Circular A--4's guidance on discount rates is in need of an update, as the Council of Economic Advisers detailed earlier this year after reviewing the best available economic data and theory:

The discount rate guidance for Federal policies and projects was last revised in 2003. Since then a general reduction in interest rates along with a reduction in the forecast of long--run interest rates, warrants serious consideration for a reduction in the discount rates used for benefit--cost analysis.

In addition to recommending a value below 7% as the discount factor based on private capital returns, the Council of Economic Advisers further explains that, because long--term interest rates have fallen, a discount rate based on the consumption rate of interest "should be at most 2 percent," which further confirms that applying a 7% rate to a context like climate change would be wildly out of step with the latest data and theory. Similarly, recent expert elicitations--a technique supported by Circular A--4 for filling in gaps in knowledge--indicate that a growing consensus among experts in climate economics for a discount rate between 2% and 3%; 5% represents the upper range of values recommended by experts, and few to no experts support discount rates greater than 5% being applied to the costs and benefits of climate change. Based on current economic data and theory, the most appropriate discount rate for climate change is 3% or lower.

Fourth, Circular A--4 requires more of analysts than giving all possible assumptions and scenarios

equal attention in a sensitivity analysis; if alternate assumptions would fundamentally change the decision, Circular A--4 requires analysts to select the most appropriate assumptions from the sensitivity analysis.

Circular A--4 indicates that significant intergenerational effects will warrant a special sensitivity analysis:

Special ethical considerations arise when comparing benefits and costs across generations. . . It may not be appropriate for society to demonstrate a similar preference when deciding between the well-being of current and future generations. . . If your rule will have important intergenerational benefits or costs you might consider a further sensitivity analysis using a lower but positive discount rate in addition to calculating net benefits using discount rates of 3 and 7 percent.

Elsewhere in Circular A--4, OMB clarifies that sensitivity analysis should not result in a rigid application of all available assumptions regardless of plausibility. Circular A--4 instructs agencies to depart from default assumptions when special issues "call for different emphases" depending on "the sensitivity of the benefit and cost estimates to the key assumptions." More specifically:

If benefit or cost estimates depend heavily on certain assumptions, you should make those assumptions explicit and carry out sensitivity analyses using plausible alternative assumptions. If the value of net benefits changes from positive to negative (or vice versa) or if the relative ranking of regulatory options changes with alternative plausible assumptions, you should conduct further analysis to determine which of the alternative assumptions is more appropriate.

In other words, if using a 7% discount rate would fundamentally change the agency's decision compared to using a 3% or lower discount rate, the agency must evaluate which assumption is most appropriate. Since OMB, the Council of Economic Advisers, the National Academies of Sciences, and the economic literature all conclude that a 7% rate is inappropriate for climate change, agencies should select a 3% or lower rate. Applying a 7% rate to climate effects cannot be justified "based on the best reasonably obtainable scientific, technical, and economic information available" and is inconsistent with the proper treatment of uncertainty over long time horizons.


Alternatively, Use a Declining Discount Rate

Circular A--4 contemplates the use of declining discount rates in its reference to the work of Weitzman. As the Council of Economic Advisers explained earlier this year, Weitzman and others developed the foundation for a declining discount rate approach, wherein rates start relatively higher for near-term costs and benefits but steadily decline over time according to a predetermined schedule until, in the very long-term, very low rates dominate due to uncertainty. The National Academies of Sciences' report also strongly endorses a declining discount rate approach.

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One possible schedule of declining discount rates was proposed by Weitzman. It is derived from a broad survey of top economists and other climate experts and explicitly incorporates arguments around interest rate uncertainty. Work by Arrow et al, Cropper et al, and Gollier and Weitzman, among others, similarly argue for a declining interest rate schedule and lay out the fundamental logic. Another schedule of declining discount rates has been adopted by the United Kingdom.

However, as the Council of Economic Advisers notes, "there are technical difficulties with the declining discount rate approach that have yet to be fully addressed by economists." OMB has similarly cautioned that there is not yet a consensus around which schedule to adopt for declining discount rates. The Council of Economic Advisers therefore suggests that, in lieu of a declining discount rate, it is still appropriate "to pick a flat but somewhat lower discount--rate schedule for projects involving distant costs and benefits."

If agencies are not yet confident that the economic literature supports a specific schedule for a declining discount rate, applying a 3% or lower rate to long--term climate effects remains the best practice.

5. Circular A--4 requires plausible assumptions about uncertainty, which support higher estimates of the social cost of greenhouse gases.

Circular A--4 requires thorough treatment of uncertainty around both values and outcomes, and for especially large or complex matters it recommends a formal probabilistic analysis. Generally, Circular A--4 encourages agencies to disclose the full probability distribution of potential consequences, including both upper and lower bound estimates in addition to central estimates.

However, this guidance comes with some caveats. First, this approach to central estimates and the probability distribution "is appropriate as long as society is 'risk neutral' with respect to the regulatory

alternatives." But if society is risk averse--as is the case with climate change--different considerations need to be taken into account. Second, in 2011, the Office of Information and Regulatory Affairs interpreted Circular A--4's goal as "not to characterize the full range of possible outcomes . . . but rather the range of plausible outcomes." Agency analysts must exercise judgment. Finally, as with all elements of agencies' economic analyses, Circular A--4 stresses that "Your analysis should be credible, objective, realistic, and scientifically balanced."

Consequently, while it may be appropriate to disclose the full probability distribution of an uncertainty analysis, it is not appropriate under Circular A--4 to give a low--percentile estimate of the social cost of greenhouse gases equal weight in decision--making with the central and upper--percentile estimates. Giving equal attention to a low--percentile estimate is not "credible, objective, realistic, and scientifically balanced," does not reflect "plausible" scenarios, and would undermine consideration of risk aversion. Instead, a proper and plausible treatment of uncertainty in the context of climate change will support higher estimates of the social cost of greenhouse gases.

The estimates of the social cost of greenhouse gases used to date by federal agencies are a range of four estimates: three central or mean--average estimates at a 2.5%, 3%, and 5% discount rate respectively, and a 95th percentile value at the 3% discount rate. The Interagency Working Group's technical support documents did disclose fuller probabilities distributions, but those four estimates were chosen by agencies to be the focus for decision--making. In particular, application of the 95th percentile value was not part of an effort to show the probability distribution around the 3% discount rate; rather, the 95th percentile value serves as a methodological shortcut to approximate the uncertainties around low-- probability but high--damage, catastrophic, or irreversible outcomes that are currently omitted or undercounted in the economic models.

The shape of the distribution of climate risks and damages includes a long tail of lower--probability, high-- damage, irreversible outcomes, due to "tipping points" in planetary systems, inter--sectoral interactions, and other deep uncertainties. Climate damages are not normally distributed around a central estimate, but rather feature a significant right skew toward catastrophic outcomes. In fact, a 2015 survey of economic experts concludes that catastrophic outcomes increasingly seem likely to occur. The integrated assessment models used to calculate the social cost of greenhouse gases are unable to systematically account for these potential catastrophic outcomes, and so a 95th percentile value is typically used instead to account for such uncertainty. There are no similarly systematic biases pointing in the other direction which might warrant giving weight to a low--percentile estimate.

Additionally, the 95th percentile value addresses the strong possibility of widespread risk aversion with respect to climate change. The integrated assessment models do not reflect that individuals likely have a higher willingness to pay to reduce low--probability, high--impact damages than they do to reduce the likelihood of higher--probability but lower impact damages with the same expected cost. Beyond individual members of society, governments also have reasons to exercise some degree of risk aversion to irreversible outcomes like climate change.

In short, the 95th percentile estimate attempts to capture risk aversion and uncertainties around lower-- probability, high--damage, irreversible outcomes that are currently omitted or undercounted by the models. There is no need to balance out this estimate with a low--percentile value, because the reverse assumptions are not reasonable:

- There is no reason to believe the public or the government will be systematically risk seeking with respect to climate change.
- The consequences of overestimating the risk of climate damages (i.e., spending more than we need to on mitigation and adaptation) are not nearly as irreversible as the consequences of underestimating the risk of climate damage (i.e., failing to prevent catastrophic outcomes).

- Though some uncertainties might point in the direction of lower social cost of greenhouse gas values, such as those around the development of breakthrough adaptation technologies, the models already account for such uncertainties around adaptation; on balance, most uncertainties strongly point toward higher, not lower, social cost of greenhouse gas estimates.
- There is no empirical basis for any "long tail" of potential benefits that would counteract the potential for extreme harm associated with climate change.

Furthermore, emphasis on low--percentile values would have no support in the community of experts on climate economics. The existing estimates based on the 5% discount rate already provides a lower-- bound; indeed, if anything the 5% discount rate is already far too conservative as a lower-- bound. A recent survey of 365 experts on the economics of climate change found that 90% of experts believe a 3% discount rate or lower is appropriate for climate change; a 5% discount rate falls on the extremely high end of what experts would recommend. Only 8% of the experts surveyed believe that the central estimate of the social cost of carbon is below \$40, and 69% of experts believed the value should be at or above the central estimate of \$40. Moreover, even the best existing estimates of the social cost of greenhouse gases are likely underestimated because the models currently omit many significant categories of damages--such as economic growth, pests, pathogens, erosion, air pollution, fire, energy supply, health costs, political conflict, and ocean acidification--and because of other methodological choices. There is little to no support among economic experts to give weight to any estimate lower than the 5% discount rate estimate.

The National Academies of Sciences did recommend that the Interagency Working Group document its full treatment of uncertainty in an appendix and disclose low--probability as well as high--probability estimates of the social cost of greenhouse gases. However, that does not mean it would be appropriate for individual agencies to rely on low--percentile estimates to justify decisions. While disclosing low--percentile estimates as a sensitivity analysis may promote transparency, relying on such an estimate for decision--making--in the face of contrary guidance from the best available science and economics on uncertainty and risk--would not be a "credible, objective, realistic, and scientifically balanced" approach to uncertainty.

More generally, agencies should remember that uncertainty is not a reason to abandon the social cost of greenhouse gas methodologies; rather uncertainty supports a higher estimates of the social cost of greenhouse gases, because most uncertainties about climate change entail tipping points, catastrophic risks, and unknown unknown about the damages of climate change.

6. Circular A--4 Requires Analyzing the Full 300--Year Time Horizon of Climate Effects

Circular A--4 instructs that the timeframe for agencies' analyses "should cover a period long enough to encompass all the important benefits and costs likely to result from the rule." A--4 further explains that "[b]enefits and costs do not always take place in the same time period." Importantly, the "ending point" for economic analysis should be set "far enough in the future to encompass all the significant benefits and costs likely to result from the rule."

Opponents of climate regulation have complained in court that it is inconsistent to analyze 300 years' worth of climate effects when an agency's regulatory analysis looks at perhaps only 30 years' worth of compliance costs. In fact, there is no inconsistency with such an approach. For example, when the Department of Energy has set energy efficiency standards, it has analyzed all the consequences resulting from implementation over roughly a 30--year period (a typical expected life of appliances): all the compliance efforts over 30 years, all the consumer savings over 30 years, and all the greenhouse gas emissions over 30 years. However, because greenhouse gases persists in the atmosphere for centuries, the climate benefits from reducing emissions over those 30 years will continue to accrue far

beyond that time frame into the future. The U.S. Court of Appeals for the Seventh Circuit recently upheld the Department of Energy's approach that captured all the effects from 30 years of regulatory implementation, including the 300 years of climate costs and benefits that will accrue from those 30 years of emission changes.

One state--level administrative judge (from Minnesota) reviewing the social cost of carbon expressed concern about the multiplying risk of calculation errors associated with very long time frames. On the other hand, the Minnesota judge acknowledged that "a ton of CO₂ released into the atmosphere will not be fully absorbed into the land or the oceans for a minimum of two hundred years," and noted that "a preponderance of the evidence demonstrates that CO₂ will continue to have a cumulative impact on the climate for as long as it remains in the atmosphere." Ultimately, the Minnesota judge recommended a 200--year time frame. However, more recent analysis by the highly respected National Academies of Sciences concludes that the effects of climate change over a 300--year period are well established in the scientific literature.

In 2017, NAS issued a report stressing the importance of a longer time horizon for calculating the social cost of greenhouse gases. The report states that, "[i]n the context of the socioeconomic, damage, and discounting assumptions, the time horizon needs to be long enough to capture the vast majority of the present value of damages." The report goes on to note that the length of the time horizon is dependent "on the rate at which undiscounted damages grow over time and on the rate at which they are discounted. Longer time horizons allow for representation and evaluation of longer--run geophysical system dynamics, such as sea level change and the carbon cycle." In other words, after selecting the appropriate discount rate based on theory and data (in this case, 3% or below), analysts should determine the time horizon necessary to capture all costs and benefits that will have important net present values at the discount rate. Therefore, a 3% or lower discount rate for climate change implies the need for a 300--year horizon to capture all significant values. NAS reviewed the best available, peer-- reviewed scientific literature and concluded that the effects of greenhouse gas emissions over a 300-- year period are sufficiently well established and reliable as to merit consideration in estimates of the social cost of greenhouse gases.

The best available science and economics, as required by Circular A--4, thus supports a 300--year time horizon for climate effects.

7. Circular A--4 requires qualitative description of all omitted damages

Experts widely acknowledge that even the best existing estimates of the social cost of greenhouse gases are almost certainly underestimates of true global damages--perhaps severe underestimates. Using different discount rates; selecting different models; applying different treatments to uncertainty, climate sensitivity, and the potential for catastrophic damages; and making other reasonable assumptions could yield very different, and much larger estimates. For example, a 2014 report found current social cost of carbon estimates omit or poorly quantify damages to the following sectors:

agriculture, forestry, and fisheries (including pests, pathogens, and weeds, erosion, fires, and ocean acidification); ecosystem services (including biodiversity and habitat loss); health impacts (including Lyme disease and respiratory illness from increased ozone pollution, pollen, and wildfire smoke); inter--regional damages (including migration of human and economic capital); inter--sector damages (including the combined surge effects of stronger storms and rising sea levels); exacerbation of existing non--climate stresses (including the combined effect of the over pumping of groundwater and climate--driven reductions in regional water supplies); socially contingent damages (including increases in violence and other social conflict); decreasing growth rates (including decreases in labor productivity and increases in capital depreciation); weather variability (including increased drought and

inland flooding); and catastrophic impacts (including unknown unknowns on the scale of the rapid melting of Arctic permafrost or ice sheets).

Circular A--4 requires that "When there are important non--monetary values at stake, you should also identify them in your analysis." Specifically, agencies must "Include a summary table that lists all the unquantified benefits and costs, and use your professional judgment to highlight (e.g., with categories or rank ordering) those that you believe are most important." Agencies should therefore fully disclose the limitations of their social cost of greenhouse gas estimates and include detailed charts of any important, unquantified climate effects.

8. The Information Quality Act Further Requires Agencies to Use the Best Available Data

The Information Quality Act (IQA), also known as the Data Quality Act, was enacted in 2001, and further supports all the recommendations of these comments about basing estimates of the social cost of greenhouse gases on the best available science and economics.

The text of the IQA itself is brief; it calls upon the Office of Management and Budget (OMB) to prepare guidance for "ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies," in fulfillment of the provisions of the Paperwork Reduction Act (35 U.S.C chapter 44). It also requires that each agency create its own information quality guidelines to those ends.

Like all other federal agencies, the Army Corps of Engineers, a component of the Department of Defense, is required to abide by the IQA. As described in further detail below, the IQA--as well as the agency--specific guidelines to which the Corps must adhere--requires the Corps to use the best available data, meaning data that is objective, accurate, complete, and reliable.

It is important to note that IQA guidelines are independently applicable as well as incorporated into Circular A--4, which says that agencies must "assure compliance with the Information Quality Guidelines for your agency." Circular A--4 further goes on to say that "[t]he data and analysis that you use to support your rule must meet these agency and OMB [information] quality standards."

The Corps follows the Department of Defense's guidelines, which are substantially similar to those issued by the OMB. According to the agency's guidelines, the Corps must use information that "meets a basic level of quality." The guidelines state that quality is comprised of three substantive conditions, information's "utility," "objectivity," and "integrity."

Utility "[r]efers to the relevance and timeliness of information to its intended users." The guidelines also mandate that agency components, like the Corps, need "to consider the uses of the information not only from the perspective of the component but also from the perspective of the public" in assessing information. Finally, the guidelines tell agency components that they must consider the "usefulness" of the information for its reasonable and expected application.

The guidelines state that objectivity "[i]nvolves two distinct elements, presentation and substance." That means that information has objectivity if it is "presented in an accurate, clear, complete and unbiased manner," as well as presented in the proper context. In a scientific, financial, or statistical context, objectivity means that "the original and supporting data shall be generated, and the analytical results shall be developed, using sound statistical research methods," subject to "formal, independent, external peer review." Moreover, "influential" scientific, financial, or statistical information must have "a high degree of transparency of data and methods...to facilitate the reproducibility of such information by qualified third parties."

Finally, integrity of information "[r]efers to the security of information," which the guidelines define as whether the information is protected "from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification."

For any analysis or risks to public health, safety or the environment, the Department of Defense guidelines also require the Corps and other agency components to adopt or adapt, as appropriate, the quality principles of the Safe Water Drinking Act of 1996. The Safe Water Drinking Act principles state that, "to the degree that an Agency action is based on science," the agency shall use "the best available, peer--reviewed sciences and supporting studies conducted in accordance with sound and objective scientific practices," and "data collected by...best available methods." For analysis of public health effects, information must be "comprehensive, informative, and understandable." Furthermore, the agency must specify, to the extent practicable, "the expected risk or central estimate of risk for the specific populations; each appropriate upper--bound or lower--bound estimate of risk; [and] each significant uncertainty identified in the process of the assessment of public health effects and studies that would assist in resolving the uncertainty."

Continuing to estimate the social cost of greenhouse gases using peer--reviewed models, a global perspective, a 3% or lower discount rate, and a 300--year time horizon will meet the Corps' requirements set forth in the IQA.

9. The Corps Should Monetize Methane as well as Carbon and Adjust for Yearly Increases

The Corps' use of an estimate of the social cost of carbon in its draft EIS is commendable. However, currently the Corps does not appear to be using the social cost of methane or the social cost of nitrous oxide. Additionally, the Corps seems to be using only a single estimate of the social cost of carbon, without considering how that estimate will grow over time or giving weight to higher estimates that better capture uncertainty, catastrophe, and risk aversion.

For example, Alternative 2 identified in the EIS would increase carbon dioxide emissions by over 121 million pounds annually (about 55,000 metric tons), as well as several thousands of pounds more in methane and nitrous oxide emissions; by comparison, Alternative 3 (the option preferred by the Corps) would decrease carbon dioxide emissions by 8 million pounds annually (about 3600 metric tons). The Corps applied an estimate of the Social Cost of Carbon to partially monetize these effects, choosing the central estimate for present--year emissions at a 3% discount rate, or about \$38 per metric ton of carbon dioxide. Applying this metric to the Plan Alternatives' greenhouse gas effects, the Corps calculates that Alternative 2 would lead to climate costs totally over \$2 million annually, while its preferred Alternative 3 would save about \$138,000 in climate benefits annually.

Monetize Methane and Nitrous Oxide Emissions

Based on the above calculations, it seems the Corps has only monetized the carbon dioxide emissions. However, estimates of the social cost of methane and the social cost of nitrous oxide also exist in the literature and have been used by agencies. All the reasons discussed above for applying the social cost of greenhouse gases generally also counsel in favor of monetizing non--carbon emissions. Since the Corps has already quantified the emissions of methane and nitrous oxide, monetization can be accomplished by simple multiplication.

Move Beyond a Single Estimate, to Account for Growing Damages over Time and Uncertainty

The same calculations discussed above further suggest that these climate effects would occur on an annual basis. However, the Corps has chosen only a single estimate of the social cost of greenhouse

gases: based on the calculations, the Corps has chosen an estimate appropriate for roughly present-year emissions. The social cost of greenhouse gases in fact increases every year. Because carbon dioxide accumulates in the atmosphere over time and climate damages escalate as temperature rises, a ton of carbon dioxide emitted next year is marginally more damaging than one emitted today, and so the social cost estimates rise over time. Even if it not feasible for the Corps to calculate the entire future stream of greenhouse gas effects over the years, discounted back to net present value, the Corps should acknowledge that it is only monetizing greenhouse gases for a single year, and that increased emissions would be more costly and reductions would be more beneficial in future years.

Finally, the Corps should acknowledge that there is a range of social cost of greenhouse gas estimates, including a 95th--percentile value that captures uncertainty, risk aversion, and the potential of catastrophic outcomes.

Sincerely,

Susanne Brooks, Director of U.S. Climate Policy and Analysis, Environmental Defense Fund
Tomás Carbonell, Senior Attorney and Director of Regulatory Policy, Environmental Defense Fund
Rachel Cleetus, Ph.D., Lead Economist and Climate Policy Manager, Union of Concerned Scientists
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* No part of this document purports to present New York University School of Law's views, if any.

Correspondence: 245

Correspondence Information

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Correspondence Text

Re: Draft Missouri River Recovery Management Plan and Environmental Statement.

Dear Sirs:

Thank you for the opportunity to comment on the draft Missouri River Recovery Management Plan Environmental Impact Statement (hereafter DEIS) and the Draft Science and Adaptive Management Plan (hereafter DSAMP). These comments and recommendations represent solely my personal views as a scientist who has worked on the Missouri River for over 25 years, and not as a member of the Missouri River Recovery Implantation Committee (MRRIC). Nor do they represent the opinions of my MRRIC sponsor, Missouri River Relief. Additionally, I am not recommending a preferred alternative, but my comments are restricted to the science aspects of both documents.

GENERAL. I have participated in and reviewed many documents on Missouri River (MOR) management over the past two decades as a scientist working on the Missouri River, a member of an NRC panel on the Missouri River, the Independent Science Advisory Panel (ISAP) for the Missouri River Recovery Program (MRRP) and as a member of MRRIC. At many times I've been critical of the 2000 and 2003 Missouri River Biological Opinions (BiOps), the MRRP and its past actions to reduce jeopardy to the listed species. In my opinion the DEIS and DSAMP represent a monumental step forward towards performance based management planning for the Missouri River and the U.S. Army Corps of Engineers (Corps) responsibility to comply with the Endangered Species Act while . Specifically the DEIS and SAMP thoroughly address each of the seven actions the ISAP and MRRIC recommended to the Corps and U.S. Fish and Wildlife Service (FWS) in August 2012. Most importantly, the SAMP provides a much improved road map to designing, implementing and evaluating consequences of future management actions and identifies mechanisms of accountability for implementing a science based program to reduce jeopardy to the three listed species while addressing relevant human considerations (HCs). Such a robust adaptive management process has heretofore been lacking in MRRP documents and actions. Whichever alternative the Corps selects, the challenge will be to effectively implement it under an anticipated restrictive future fiscal environment.

The MRRMP's success at achieving objectives for the three listed species depends on effective implementation of the SAMP to reduce uncertainties through the Integrated Science Program (ISP) . Consequently, most of my concerns relate to the allocation of resources to implement management actions and the perceived ability of the ISP to conduct effective research, monitoring and evaluation so that adaptive management can be operationally implemented to reduce jeopardy. Fundamentally, the authenticity of proposed management actions in the DEIS can transparently substantiated by the resources allocated to accomplish them.

ISSUES WITH DEIS and SAMP

Text in italics is direct quotes from DEIS, DSAMP or appendices with page/line referenced as follows:

Px, Ly

1. No Action Alternative (Alt1): Text (2.8.2) and Cost Estimates, Appendix F (also see the issue:# 2. Early life History Habitat Construction)

Background: USFWS ([https://www.fws.gov/r9esnepa/NEPA Handbook/40 Asked Questions.pdf](https://www.fws.gov/r9esnepa/NEPA%20Handbook/40%20Asked%20Questions.pdf))
USFWS defines no action alternative as: A. Section 1502.14(d) requires the alternatives analysis in the EIS to "include the alternative of no action. 11 There are two distinct interpretations of "no action" that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity.

The second interpretation of "no action 11 is illustrated in instances involving federal decisions on proposals for projects. "No action" in such cases would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

STATEMENT OF CONCERN. It appears that Alternative 1 (Current System Operation and Current MRRP Implementation) is a major change from the current level of management intensity.

BASIS FOR CONCERN. If 'actions common to all alternatives' includes new actions not previously part of Alt 1 (i.e., Actions Common to All Plan Alternatives 2.81., pg. 2-48)), how can it be identified as. Pg2-55 to 2.82 as No Action (Current System Operation and Current MRRP)? Highlighted excerpts from the DEIS that follow illustrate that the DEIS no-action alternative includes actions that are a significant change from current management direction or level of management intensity.

2.8.1 Actions Common to All Plan Alternatives

The following management actions would be implemented as part of all plan alternatives carried forward for detailed evaluation in this draft MRRMP-EIS including the No Action alternative Sections that follow (2.8.2.1-.2.8.2.3.) generally describe the no-actions alternatives being followed since the 2003 Amended BiOp. One would assume that should Alt 1 be implemented annual program costs would approximate historical costs (adding a bit for inflation). This is not the case as demonstrated below:

DEIS Alternative 1 (no-action) has an estimated MRRP average annual cost of \$121,513,501 (Appendix F, Table MRRP EIS Alternatives - Cost Estimates) over double that of the MRRP average annual cost from FY2004 -2016 of \$56,149,126 (Table Missouri River Recovery Program1 (MRRP) Allocations). The average annual- cost for the no action alternative is higher than any maximum annual expenditure for the MRRP program (\$85,000,000 in FY2007} over the 13 year period of record. How can a no-action alternative that is required to represent "no change" from current management direction or level of management intensity" cost over 2x that of the existing level of the no-action management intensity?

Note: Comparisons of historical and DEIS cost estimates throughout these comments are generally reported comparatively (e .g. order of magnitude or percentage) rather than estimates examined in isolation as recommended by D. Ponganis, Jan 2017 MRRIC meeting, Kansas City, MO.

SIGNIFICANCE OF CONCERN. A major purpose of the no-action alternative is as a comparison or reference against which to evaluate all other alternatives. Given that the no-action alternative appears to misrepresent what actions were taken in the past and grossly overestimates their costs we are left

with an inability to accurately evaluate proposed alternatives including the preferred alternative.

ACTIONS RECOMMENDED. Include annual expenditures for the duration of MRRP by analogous categories shown in EIS Alternatives - Cost Estimates as an addendum to Appendix F (i.e. Table Missouri River Recovery Program (MRRP) Allocations; Harburg 2017) and used in the text when comparing costs of various alternatives to the non-action alternative. This will enable the reader to compare actual expenses for the MRRP to those given for all alternatives in the DEIS.

Consider revising the DEIS to include a valid no-action alt which continues the MRRP 'exactly' as it is now and reflects the USFWS definition of a 'no-action' alternative, i.e. management actions undertaken following the 2000 and 2003 BiOp RPAs and revise the budget to reflect this. All subsequent alternatives then should be compared with this current MRRP implementation 'no action' alternative - - not a misleading no-action alternative that includes millions of additional\$ and channel widening activities not a regular part of past BiOp compliance management actions.

Alternatively, please explain the EIS policy implications of substituting a 'new action' alternative as the 'no action alternative'?

2. Early life History Habitat Construction

STATEMENT OF CONCERN

2.1. Channel widening is the largest expense under Early Life History Habitat construction and the largest single expense of all management actions for all alternatives. Nevertheless, its potential benefit to pallid sturgeon early life history recruitment is circumstantial at best and not supported by the effects analysis.

2.2. The proposed cost of channel widening to create additional SWH (largely by channel widening) under the no-action alternative appears unrealistically high relative to historical costs for creating SWH under the MRRP.

2.3. The proposed cost of channel widening to create IRCs under alternatives 3-6 appears unrealistically high relative costs proposed for IRCs already identified.

BASIS FOR CONCERN

2.1. What is channel widening and how will it benefit age-0 pallid sturgeon recruitment?

Channel widening or top-width widening is described as follows (2.5.3.1): Channel widening projects involve the use of mechanical equipment to lower the adjacent floodplain and bank of the Missouri River to create habitat and widen the top-width of the river channel. Excavation is typically performed by hydraulic dredge. Some of the excavated material would be distributed in the main channel adjacent to the excavation zone. The remaining material would be discharged into the thalweg of the Missouri River where it would become entrained into the bedload of the river.

For clarification, under Table 2-14 channel widening is described as a type of shallow water habitat creation under the no action Alternative 1 and in section 2.8.4.4 channel widening was identified as the primary means to develop IRC habitat (p 2-67). Thus importantly, the same action identified a primary means to create SWH under the 2003 BiOp (alternatives land 2) is also proposed to be applied to create IRC habitat under alternatives 3-6, including the preferred alternative (#3). The raises the obvious question of how SWH and IRCs differ other than identifying interception, and rearing as the

function of IRCs - as if these functions were not implied for SWH if age-0 pallids were to settle and survive there!

Additionally, channel widening is described (2.5.3.1) as a type of channel reconfiguration distinct from structure modifications (e.g., bank notches, dike notches, revetment notches and lowering), placement of new structures (e.g., chevrons, rootless dikes, and reverse sills), and off-channel habitat (e.g., creating of chutes and backwaters).

The fact is channel widening has never been a primary mechanical action employed to create SWH between 2004 and 2013. Evidence for this comes from the Corps map of mitigation sites (file:///C:/Users/galatd/Downloads/SWH ESH l1x17 2013opt.pdf) which identifies 64 SWH-ESH sites along the Lower Missouri River and the management actions used to create them. Only one of the 48 SWH sites (Deer Island - under construction as of 2013) lists channel widening as the primary mode of construction. Chutes, backwaters, dike notching, bank notching and revetment lowering were the management actions used to create the remaining 47 sites. Additionally, Table 47 P 379 of the DEIS Vol 2 indicates that channel widening was employed as a main channel modification in only 3 of 2,173 SWH construction actions. With so little past emphasis on employing channel widening to create SWH it is no surprise that there is scant scientific evidence for it benefitting pallid sturgeon recruitment. Why then has it channel widening become the proposed management action of choice for all DEIS for early life history habitat construction alternatives?

Lastly, in the DSAMP channel widening is indicated to be the primary management action proposed to create IRCs: (P88, LI0-13): For the purposes of evaluating potential impacts to the human environment, modeling assumed that about 3,380 acres of channel widening would be implemented to create IRCs under Alternatives 3-6 (Table A.3.9). Collectively these excerpts from the DEIS and supporting documents indicate that channel widening is the primary management action proposed to be implemented to create IRCs (or SWH under alternatives 1 and 2) to benefit pallid sturgeon early life history - considered the most critical

What is the evidence supporting this management action and the high estimated cost to create it? What other management actions were considered to benefit survival of age-0 pallid sturgeon?

There is only a single statement in Vol 2 of the DEIS identifying benefits of channel widening for pallid sturgeon recruitment: P 89. L7-9 (also on P88 L9-10 of DSAMP appendices). Under Alternatives 3-6, construction of habitat to support early life history requirements of pallid sturgeon would occur following the /RC (interception and rearing complexes) concept. Best available science indicates that future acreage required to construct IRCs would most likely be achieved through channel widening.

One expects this 'best available' science' would be described in the pallid sturgeon effects analysis volumes. However, in Jacobson et al 2015 (P26) there is only a single reference to channel widening as an action to benefit pallid sturgeon and it is unsupportive or equivocal as to the benefits of SWH - including channel widening: The report from the assessment (Schapaugh and others, 2010) cited the HAMP as an excellent design to achieve active adaptive management; however, the report also documented that assumptions underlying the BACJ designs were not being met under real-world conditions, and, therefore, the ability to detect effects of SWH was limited. In particular, the authors reported that the actions of dike notching and channel widening did not result in detectable changes in the fish community.

Moreover there is not a single reference to observed or proposed benefits of channel widening in the Pallid Sturgeon Effects Analysis Integrative Report (Jacobson et al 2016) or as part of any working hypothesis linking management of the Missouri River to pallid sturgeon population dynamics

(Jacobson et al 2016b).

There are two references to channel widening in the DSAMP (P43, L 23; Table 47, P376) - but both just describe implementing the management action, not its anticipated benefits. Numerous references to channel widening are in the DAMP appendices, but again, all but the aforementioned statement that best available science supports channel widening, are details of acreages, locations and implementation processes.

2.2. Why is channel widening proposed to cost so much even under the no-action alternative?

Under the no-action alternative (p. 2-55): Existing habitat on the System combined with SWH projects have created a total of 11,832 acres, leaving 3,999 acres to be created (Table 2-13).

Total 2004-2016 cost for creating SWH was \$218,112,900 assuming all site acquisition was for SWH (a generous assumption) adds an additional \$130,407,000 for a total of \$348,519,900 or 47.7% % of MRRP total expenses. This provides a liberal estimate of total expenditures to acquire and create the 11,832 acres of SWH under the no-action alternative or \$29,456 /acre of SWH. In contrast the no action alternative for the remaining 3,999 acres of SWH allocated as channel widening (3,519 acres) and backwaters (480 acres) under the DEIS Table 2-14 is \$1,836,033,033 for channel widening and an additional \$65,529,009 for backwater construction. These total \$1,901,562,042 (57.7% of total estimated cost) or \$475,509 /acre of SWH under the no-action alternative #1. How is it possible that projected cost per acre of SWH under the no-action alternative is now 16X higher than the observed cost per acre for the bulk of SWH creation?

2.3. What does it cost to build an IRC?

Under the preferred Alternative (Alternative 3 - Pallid Habitat Construction & ESH Mechanical) average annual costs for IRC construction in the Kansas City Reach is \$40,181,427 (39% of total program costs). According to the DEIS, two IRCs will be constructed per year over six years in this reach to yield a total of 12 for the Level 2 phase. Thus, on average the proposed total cost to acquire and build a typical IRC is about \$20, 090,173.

At least three IRCs have already been identified and EAs published: Langdon Bend, Searcys Bend and Baltimore Bend). Table IRC Project Costs summarizes total project costs and can be used to approximate what average annual total costs for 2 IRCs per year might be - assuming these represent typical future IRCs? The average total cost is per site is \$2,553,854 or 2 per year for \$5,107,707 per year. Why is the proposed annual cost for channel widening IRC construction for Alternative 3 (also alternatives 4-6) 10 times higher than observed cost for per site per year?

[IRC Project Costs table]

1. June 2016. PROJECT IMPLEMENTATION REPORT WITH INTERGRATED TIERED ENVIRONMENTAL ASSESSMENT, FINDING OF NO SIGNIFICANT IMPACT AND SECTION 404(b)(I) EVALUATION, Langdon Bend Interception and Rearing Complex Habitat Project. USACE Omaha District

2. May 2016. Missouri River Recovery Program - Environmental Assessment & Section 404(b)(I) Evaluation Searcys Bend Interception-rearing-complex Habitat Project. USACE, Kansas City District

3. July 2016. MISSOURI RIVER RECOVERY PROGRAM - July 209Baltimore Bend Interception Rearing Complex Project. Definite Project Report and Integrated Environmental Analysis & Section

404(b)(1) Evaluation. USACE, Kansas City District

SIGNIFICANCE OF CONCERN. The DEIS falsely presents channel widening and the comparatively high costs associated with it as a primary management action to create SWH under alternatives 1 and 2. The historical evidence indicates that other management actions were used to create the majority of SWH sites and at a much lower cost than is presented in the DEIS and specifically the Cost Estimates Table in appendix F.

There appears to be weak support for the benefits of channel widening to recruitment of age-0 pallid sturgeon, particularly given its proposed high cost.

IRCs are proposed in the DEIS and supporting documents to be superior to SWH for pallid sturgeon age-recruitment, yet channel widening is the management action proposed to create both SWH and IRC projects under alternatives 1 and 2 (SWH) and 3-6 (IRCs) .

A major purpose of the no-action alternative is as a comparison or reference against which to evaluate all other alternatives. It appears the proposed no-action and BiOp alternatives misrepresents what management actions were taken in the past to create SWH by largely equating SWH creation to channel widening and grossly overestimating construction costs. Inflating the costs for the no-action and BiOp alternatives relative to historical expenditures prevents the public and resource management agencies from accurately evaluating proposed alternatives including the preferred alternative against the no-action-(alternative 1) and BiOp alternatives (alternative 2).

RECOMMENDED ACTIONS TO RESOLVE. Clarify why channel widening appears as the proposed primary management action to create SWH under Alternatives 1 and 2 and also IRCs under alternatives 2-6 when was it seldom be employed by the MRRP to create existing SWHs and when the AM Plan (e.g., Section 4.2.6.3.5) states that while IRCs and SWH share some attributes, they are different relative to food production and foraging habitat.

Provide explicit evidence for the anticipated benefit to cost of channel widening to achieve IRCs and review the 'best available science' that shows IRCs are superior to SWH (not hypothesized benefits), or other channel reconfigurations when SWH has not been shown to benefit recruitment of age-0 pallid sturgeon (e.g., Schapaugh et al 2010; Schloesser et al. 2012). What alternative hypotheses (under an active AM approach) were considered to create pallid sturgeon early life history habitat and the science to support them?

Revise proposed management actions and associated costs for SWH construction for the no-action and BiOp alternatives to reflect historical actions employed and actual costs used to create SWH, or justify why the proposed no-action and BiOp alternatives SWH proposed costs to continue the existing program have escalated so much.

Revise proposed costs for IRC construction via channel widening for alternatives 3-6 to be in line with observed costs to create the 3 identified IRCs or justify why proposed costs for any additional IRCs have escalated so much.

3. Pallid Sturgeon Population Augmentation.

STATEMENT OF CONCERN. Stocking proposals for pallid sturgeon throughout the DEIS and supporting documents address only stocking 'optimal size classes and in optimal numbers'. These criteria have little relevance to fitness and survival of stocked fish to reproduction.

BASIS FOR CONCERN. Despite stocking thousands of pallid sturgeon to the Lower Missouri River, few are reproducing and condition of stocked pallids is declining. Both hatchery conditions (Kittle and Small 2014, Deslauriers et al 2016, Meyer et al. 2016) and environmental factors (Steffensen and Mestl 2016, Randall et al 2016) are believed responsible. Recommendations to improve the Middle Basin Propagation Program (Basin-wide Pallid Sturgeon Propagation Committee 2016) are a step in the right direction, but the overall philosophy of sturgeon population augmentation in the DEIS is misplaced on numbers of stocked fish.

SIGNIFICANCE OF CONCERN. Only three larval pallid sturgeon have been collected in the Lower Missouri River over the past decade (Middle Basin Pallid Sturgeon Work Group annual meeting, January 2017, Blue Springs, MO) despite an intensive sampling program under HAMP and PSPAP. Adult stocked pallids are routinely collected under these programs (see HAMP and PSPAP annual reports), yet few appear to be spawning (Deloney et al. 2015). Reducing jeopardy under the BiOp RPAs is highly dependent on survival and reproduction of hatchery stocked pallids. All proposed efforts of the MRRMP (and specifically Pallid Sub-Objective 2) will be in vain if healthy, reproductively mature pallid sturgeon do not spawn in sufficient numbers in the upper and lower Missouri River.

RECOMMENDED ACTIONS TO RESOLVE. The overall philosophy of Pallid Sturgeon population augmentation needs to shift to a focus on quality of stocked fish over quantity. 'Quality' of stocked fish should also be identified as a potential limiting factor and addressed in the DSAMP. Quality criteria should include physiological and ecological factors such as overall health of fish when stocked, the ability of newly stocked pallids to adapt to natural river conditions (e.g., feeding, positioning in current and habitat selection) and grow and perform as well as wild fish. Actions to improve the quality of propagated and stocked pallid sturgeon so they reach sexual maturity and spawn in the wild should be identified in the Effects Analysis and SAMP. This can be achieved Under Big Question #6 Population Augmentation, components 1 and 2.

4. Research, Monitoring and Evaluation (Integrated Science Program)

The SAMP states (p. 51, L8-14): In lieu of a more definitive but comprehensive set of actions that might have otherwise been prescribed, the AM approach provides (a) time and latitude to implement, monitor and assess actions in a structured fashion to promote learning, {b} opportunities for research and studies that may yield answers to critical questions more quickly than would occur through implementation alone, and (c) the flexibility to reject, modify, or introduce new actions and/or adjust targets based on knowledge gained through the process. Adequate research, monitoring and evaluation are the foundation of a successful AM program and underpin the MRRMP. It is largely the inclusion of a robust AM Plan and the detailed descriptions of RM&E implementation for birds and fish in the SAMP (specifically the Appendices) that gives me confidence the MRRMP will be successful where past efforts have failed to reduce jeopardy for reasons documented by the National Research Council (NRC 2010) and ISAP (2011). However, for the rhetoric presented in the SAMP to be realized the proportion of the total proposed MRRMP budget devoted to research, monitoring and evaluation (RM&E) via the Integrated Science Program's (ISP) must be adequate.

STATEMENT OF CONCERN. The ISP's proportion of the total Program budget for the preferred alternative (and all alternatives) is greatly reduced from what it was historically- despite the ISP being repeatedly claimed as critical to implementing AM of the MRRMP.

BASIS FOR CONCERN. Between 2004 and 2016 the Integrated Science Program (ISP) accounted for an average of 22.9% (range: 4.1-44.9%) of the average total MRRP budget (\$M 56.1). Whereas, under the proposed no-action alternative the average annual ISP budget as a percentage of the total estimated costs drops to 7.6% and to 9.5% under alternative 3 (Table ISP). I recognize that there is a science surge in the early years, as shown by Figure FI in SAMP, Appendix F (P401). However, even

with the science surge peak expenditures for research and monitoring are \$10M in 2018, only slightly more than the proposed 15 year average.

[Table ISP: Integrated Science Program as a proportion of average annual MRRP (2004-2016) budget and DEIS alternatives 1 and 3 estimated costs.]

SIGNIFICANCE OF CONCERN. Success of the MRRMP depends on implementation of the SAMP and its guidance to monitor, evaluate and adjust given the high degree of uncertainty of proposed actions, particularly those for pallid sturgeon. This is only possible if the promises for science leading the way made throughout the DEIS are backed up by adequate resources to implement the Integrated Science Program aspects of AM.

RECOMMENDED ACTIONS TO RESOLVE. Whatever the final cost estimates are for the EIS, the ISP should average about 20% of annual expenses if the SAMP is to be successfully executed and this commitment be made explicit in the document text as well as the Missouri River Recovery Management Plan EIS Alternatives - Cost Estimates Tables

5. Cost Estimates for Alternatives

STATEMENT OF CONCERN. Cost estimates for all alternatives are unrealistically high given past budgets and anticipated future funding climate. Yet, I was unable to find a systematic analysis of how proposed management actions would be ranked and limited funds allocated should future resources not meet expectations.

See Appendix F, MRRMP EIS Alternatives- Cost Estimates Tables

BASIS FOR CONCERN. Total estimated cost for 6 alternatives ranges from a low of 94.7 M\$ /yr (#4) to high of 473 M\$ /yr for alternative 2 (BiOp). The preferred alt, # 3 is 103. 1 M\$ /yr. I previously discussed issues with the no action alternative - so we don't really know what no-action annual costs would be.

This compared with total expenses for the 2004-2016 period mentioned earlier (Harburg 2017) ranging from of 13.2 M\$/yr (2004) to 84.5 M\$ /yr (2011) with a 13 year average of 56.1 M\$/yr. The preferred alternative annual expenses are nearly double the average for these 13 years.

All I could find in the DEIS text relevant to Budget review is the following:

AM Plan - Section 2.5.13.3 Annual cost budgeting (P159, L25). The SPM coordinates with the PMs to ensure budgets for each MRRP subprogram and project are reasonable, and to assess risks/impacts and develop contingencies for alternative budget amounts.

SIGNIFICANCE OF CONCERN: Are the years of effort and millions of\$\$ that have gone into preparing the MRRMP for naught given the low likelihood that any alternative will be fully funded?

Without a structured decision process in place beforehand to prioritize management actions and resource allocation under uncertain future budgets the risk of misallocation of funds is great and a well-designed MRRMP is likely to unravel.

ACTIONS RECOMMENDED TO RESOLVE. Adaptive management and its tool of decision analysis are processes that enable one to prioritize management actions, examine alternative funding scenarios and develop contingencies should resources be limiting. A process should be outlined in the final EIS to identify the most critical management actions that yield the greatest probability of reducing

jeopardy and can be implemented under reduced funding scenarios (e.g. 70 M\$/yr, vs 50 vs 20).

I hope these comments and recommendations will be useful as you revise the DEIS and Draft SAMP. Thank you again for the Corps continued efforts for a robust science-based Missouri River Recovery Program that reflects your commitment to human considerations within this globally significant natural resource.

Sincerely,

David L. Galat
3951 County Road 259
Fulton, Missouri 65251-3042

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Correspondence: 246

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

Dear Major General Spellmon:

As a farmer in the Missouri River bottoms, and I am concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan. Implementation of any of the six DE IS alternatives the Corp suggests would increase flooding.

In April I have seen the river rise approximately 12 feet in one week. All of the alternatives except Alternative 1 would raise the current flood constraints to release more water in another experiment for the pallid sturgeon. No science has been developed to prove increased flow equate to greater pallid sturgeon population.

Low summer flow would kill the navigation industry on the river. Navigation as a as a reliable transportation source as another option for shipping harvested crops headed to the global market.

I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management the Corps should build one interception rearing complex (IRC) and study its effects before committing to build more. I believe species recovery can and should be done in a responsible way that doesn't cause economic damage to stakeholders.

Please keep my thoughts in mind as you move toward a Record of Decision on the Missouri River Recovery Management Plan.

Yours truly,

Linda Offutt Waters

Correspondence: 247

Correspondence Information

Status: Reviewed	Park Correspondence Log:
Date Sent:	Date Received: 02/16/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Transcript
Notes:	

Correspondence Text

MR. JASON ERFLING: Hi, my name is Jason Erfling, E-r-f-l-i-n-g. And I represent myself, I guess. I'm a fifth generation farmer on the Missouri River. We owe our entire livelihood to our agriculture grounds behind levees that protect it from the rise of the Missouri River.

And as somebody whose livelihood is reliant on the flow rate of the Missouri River, there's just no feasible way to support any alternative that has any type of rise at all. So from that aspect, you know, we support Alternative 3 of the proposed alternatives.

And with being downstream as far as we are at River Mile 92, there's too much water that comes past us and there's too much water that flows into the river where we're at to gamble on whether a pulse is or is not going to affect us. You know, if it's one-foot or three-foot, if it comes over the top, we're done for.


Thank you for your time tonight, and I appreciate you letting us make these comments.

"

Correspondence Received on the Draft Science and Adaptive Management Plan

Correspondence: 3

Author Information

Keep Private: No
Name: Doug Burgum
Organization: State of North Dakota  Official Rep.
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Status: New Park Correspondence Log:
Date Sent: 04/18/2017 Date Received: 04/18/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

Dear Brigadier General Spellmon:

The State of North Dakota agencies with Missouri River responsibilities have reviewed the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and submit the attached comments. The state looks forward to continuing to work with the U.S. Army Corps of Engineers (USACE) on further development of the MRRMP-EIS and implementation of adaptive management. This partnership is critical in ensuring that sound decisions are made for the good of all that rely on the Missouri River in North Dakota. To be a true partnership, the final EIS should provide for direct consultation with North Dakota, and other affected states, for consideration of flow modifications or deviations outside the bounds of the current Master Manual. It is also requested that the USACE incorporate their responses to comments submitted for the MRRMP-EIS in the final EIS. Thank you for the opportunity to review and provide input into the MRRMP-EIS.

Sincerely,
Doug Burgum
Governor

The following comments are specific to the Draft Adaptive Management Plan (AMP).

Multiple Sections

Comment: Alternative 3 is identified as the Preferred Alternative. Alternative 3 has the potential to violate the water quality standards during mechanical ESH construction, during Level 2 in-river testing, and during implementation of Level 3 and 4 actions of the AMP (based on the decisions reached after Level 2 testing). Obvious potential violations to the water quality standards include the release of trace elements into the Missouri River during mechanical ESH construction and loss of cold water habitat in Lake Sakakawea during level 2 testing, or following testing in the implementation of Level 3 and 4 actions.

Multiple Sections

Comment: While the NDDOH supports the overall premise of the AMP, it lacks any assurances that

the laws of North Dakota will be supported or that the state will be part of the decision making-process. Of particular concern is that the in-river hypothesis testing (Level 2) and partial and complete implementation of actions (Level 3 and 4) could violate water quality standards for Lake Sakakawea. The lack of a clearly defined collaborative process requiring state agreement prior to implementing a level 2, 3 or 4 action raises concern/suspicion that state laws will not be respected. This suspicion is furthered by statements like those found on page 2-73, Section 2.8.7, of the EIS (volume 1) that only includes concerns for downstream. "Under Alternative 6, USACE would attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May. These spawning cue releases would not be started or would be terminated whenever downstream flow limits are exceeded."

And on page 2-66, Section 2.8.4.1, of the EIS (volume 1) where the following statement is made:

"Under Alternative 3, the USACE would follow the AM Plan that was developed based on the results of the Effects Analysis. The AM Plan is a companion document to the MRRMP-EIS. The AM Plan identifies the process and criteria to implement the initial management actions, assess hypotheses, and introduce new management actions should they become necessary."

Our confidence in the decision-making process is further eroded on page 4-7 of the EIS (volume 4) in Figure 4-4 describing Level 1 and 2 actions to consider for adaptive management of pallid sturgeon in the upper river. Figure 4-4 shows that Fort Peck flow experiments and drawdowns on Lake Sakakawea are expected to be considered for in-river testing between the years 2022 and 2027. That's well within the 15-year timeframe that the Preferred Alternative would be implemented. The devil is not residing in the concept of the AMP, but in the details related to the lack of identified limits of hydraulic modification that could occur and the lack of a clear process to consult the state being affected by the decision-making process in implementing the AMP.

The language in the EIS implies that under the AMP the unidentified decision-makers will have a smorgasbord of science-based options to implement regardless of the water quality consequences in the upper basin. In order to be acceptable, North Dakota will need to see a science supported menu with or without a limited amount of a la carte substitutions to ensure maintenance of existing beneficial uses and protection of aquatic life.

North Dakota cannot support Alternative 3 without inclusion of specific boundaries in the AMP that would protect existing beneficial uses and support state water quality standards. Also necessary is a clearly defined process that would require state consultation prior to Level 2 testing, or implementation (Level 3 and 4) of the AMP.

Section & Page Number: 1.1.3, p. 8; 3.0, p. 162-187; 4.1.1, p. 279

Comment: The AMP characterizes its focus as that of avoiding jeopardy. It states that the purpose of the MRRP is to enable the USACE to operate the Missouri River System in accordance with the Master Manual to meet its authorized purposes without jeopardizing the listed species, and that the MRRMP-EIS is meant to serve as the basis for ESA consultation and to result in a suite of management actions that will avoid a jeopardy determination (p. 8; Glossary definition, p. xxx).

The AMP's sub-objectives, means objectives, targets, and metrics, however, appear to be recovery-oriented insofar as they support stable or improving trends with the species. The following illustrates this with respect to each of the three listed species.

Piping Plover. Specific sub-objectives for the piping plover pertain to maintenance of geographic distribution, long-term population persistence, stable or increasing population trends, and maintenance and increase in breeding success (p. 163).

- Sub-objective 1 (Distribution) is to maintain a geographic distribution of plovers in the river and reservoirs in which they currently occur in both the Northern and Southern Regions (p. 187-188).

- Sub-objective 2 (Population) is to maintain a population of Missouri River piping plovers with a modeled 95% probability that at least 50 individuals will persist for at least 50 years in both the Northern and Southern Regions, with the means objective, metric, and targets tied to sufficient ESH acres in 3 out of 4 years to be met or exceeded over a running 12-year interval (p. 187-188).
- Sub-objective 3 (Population Dynamics) is to maintain a stable or increasing long-term trend in population size in both regions with a growth rate target of ≥ 1.0 as a 3-year running geometric mean (p. 187-188).
- Sub-objective 4 (Reproduction) is to maintain fledgling production by breeding pairs sufficient to meet the population growth rate objectives within both regions on the Missouri River, with a fledge ratio target of ≥ 1.14 chicks fledged per breeding pair as a 3-year running arithmetic mean (p. 187-188).

Interior Least Tern. The AMP states that it is anticipated that management for nesting habitat to sustain the piping plover population in the Missouri River will also provide sufficient nesting habitat supporting recovery of the Interior least tern there. It is expressly anticipated that this process will serve as the "conservation plan" that will meet the Missouri River requirements for delisting the least tern (p. 167, 186; also PAL letter dated Nov. 13, 2015, p. 3).

Pallid Sturgeon. The fundamental objective for the pallid sturgeon is to keep USACE's actions from jeopardizing the continued existence of the species. But sub-objectives are to increase recruitment to age 1 and to maintain or increase numbers of pallid as an interim measure until sufficient and sustained natural recruitment occurs. According to the AMP, "[t]he USFWS notes that this objective is consistent with species recovery goals but specific to Missouri River management actions." (p. 279)

The AMP appears to provide a pathway toward stability and recovery of the species and to allow for adaptive adjustments that, while consistent with avoidance of jeopardy, may go beyond that minimum. A concern at this point is that the AMP is somewhat open-ended in terms of not identifying clearly what is "enough." It is not clear if the "recovery-oriented" targets are going to be equated to "non-jeopardy" thresholds. In the spirit of being open and transparent, and for the purposes of understanding how the USFWS will address this issue, the State of North Dakota requests an opportunity to review and comment on the draft Biological Opinion prior to its finalization.

Section & Page Number: 2.2.5, p. 68 (Figure 13); 5.5.5, p. 453

Comment: The AMP contains no definitive "sideboards" constraining the range of actions that may ultimately be prescribed by the federal agencies. Rather, the draft AM Plan identifies changes that may be implemented through adaptive adjustments under the selected alternative in the ROD, and then identifies the procedural pathways that are to be followed for implementing decisions that evolve beyond that. So framed, the only real sideboards on implementation of adaptive management actions are those that exist by virtue of the budget, applicable legal requirements, and what is mandated or precluded by the science.

Conceptually, the management actions proposed for implementation under the Preferred Alternative are a subset of those embodied in the range of alternatives studied in the MRRMPEIS, which in turn are a subset of the "full suite" of management actions identified in the EA (p. 15). According to the draft AMP, "[t]he preferred alternative may not be sufficient to meet the objectives of the MRRP, and it might be necessary to consider other alternatives, including actions involving flow modifications. These may include those actions evaluated in the MRRMP-EIS or other, as yet undefined actions that would be dictated by the science and understanding developed through the AM Program." (p. 453) Thus, the agencies have telegraphed that management measures could potentially include actions in any of the above-described assessment categories as well as actions not yet even evaluated (p. 15). The procedural pathway to implementation, however, would be different depending on the category in which a particular action lies, as illustrated in Figure 13 on page 68 of the AMP.

The description in the draft AMP on modification of the Master Manual is rather brief and incomplete. The draft AMP (p. 124) acknowledges that, "[e]xpansion of this section to outline the appropriate and necessary requirements for introduction of new management measures is recommended so those engaged in the MRRP have a reference for the processes." The specific appendix on Procedures to Adjust Water Management Technical Criteria (Appendix A.5 on p. 101-103) is similarly abbreviated, though noting that updates and adjustments to the Manuals are encouraged as a matter of USACE policy. See Appendix A.5 on p. 103 stating that, "[r]emaining text [is] under development."

Since the Preferred Alternative does not contain any flow modifications with the exception of a single potential spring spawning cue that was not modeled, the Final EIS and ROD should clearly state that adaptive management will not include any flow modifications outside the bounds of the current Master Manual without completion of actual consultation with affected states and the preparation of an additional EIS. This is critical for several reasons. First, the information provided in the EIS, AMP, and supporting technical documents is incomplete; see especially our comments on the Flood Risk Management Environmental Consequences Analysis Technical Report and the Habitat Analysis for the Missouri River Effects Analysis - Hydrogeomorphic Report. Second, the models on which the EIS is based were not made available for review; and had the models been made available on a timely basis, even with the time extension provided it would have been difficult if not impossible for the state experts to review, understand, and comment on all the possible alternatives in the EIS within the time allowed. Third, the AMP contemplates additional possible actions that may be taken in the future that were not analyzed in the EIS, e.g. the Lake Sakakawea drawdown. It would be inappropriate to proceed with flow modification actions through the abbreviated Master Manual modification procedures described by the USACE in view of this lack of full disclosure of technical information and lack of adequate analysis of such potential AM actions in this EIS.

Section & Page Number: 2.3.8.1, p. 103-104

Comment: The State of North Dakota requests that the following language be used in Section 2.3.8.1, which describes state roles outside of the MRRIC process.

Each state has responsibilities through various federal and state statutory and constitutional authorities, for management of water quantity, water quality, and fish and wildlife resources within their boundaries that could be affected in this process (in either a positive or negative way). As previously stated this governance structure does not change or impede any of the rights and responsibilities of a state codified by law.

Historically, it has been the role of the state fish and wildlife agencies to assist in putting projects on the ground. The USACE and USFWS will continue to plan site-specific projects with State input and will continue to coordinate with the appropriate state agency on any and all legal requirements for comment, collaboration, certification, permitting, etc. One statutorily protected consultation role of note is the Fish and Wildlife Coordination Act (FWCA). Under the FWCA, USACE is required to coordinate with the state fish and wildlife agencies and the USFWS for site specific projects. USACE will continue to execute the FWCA in accordance with the National MOU between the USFWS and the USACE. As described in the National MOU the USFWS will coordinate with state fish and wildlife agencies and provide consolidated comments to the USACE via a planning aid letter as required by the FWCA.

With regard to the regulation of the Missouri River Mainstem Reservoir System, the USACE will continue to provide a draft and final Annual Operating Plan (AOP) that describes the planned operation of the reservoir system within the conditions of the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) for the coming year under a variety of runoff

conditions. States will have the opportunity to provide comments on the draft and final AOP at the public meetings or by providing written comments during the comment periods. If at any time during AM Plan implementation the Basin States or USACE determine the actions proposed to occur are outside of the conditions of the Master Manual, the USACE will first consult with all the Basin States, their designated representatives and/or other interstate organizations consisting of Missouri River Basin State representatives before making any substantive modifications. Additionally, states retain the right to comment or request consultation outside of MRRIC, FWCA, and AOP processes on any issue related to the Management Plan or ongoing AM process via official letter at any time.

The main reason for requesting this language, in particular the statement below, is because the AMP as described has no substantive sideboards governing its scope of implementation. Therefore, the state demands procedural protection.

If at any time during AMP implementation the Basin States or USACE determine the actions proposed to occur are outside of the conditions of the Master Manual, the USACE will first consult with all the Basin States, their designated representatives and/or other interstate organizations consisting of Missouri River Basin State representatives before making any substantive modifications.

The lack of sideboards in the AMP may result in flow management changes to or deviations from the Master Manual. For these high-consequence decisions there needs to be an avenue for direct consultation with experts from state agencies - experts who understand their agency's authorities and responsibilities, know what questions to ask, and can recognize concerns. This is necessary to ensure that the federal government: (1) complies with state regulations, and (2) does not do something that significantly adversely affects the states and their right to manage natural resources within their borders. This consultation with the states must be separate from the MRRIC, FWCA, and AOP processes for the following reasons:

- States are sovereign entities with authorities and responsibilities for managing the resources within their boundaries.
- MRRIC places limitations on who can actively participate at the table, which excludes state agencies with special expertise. The MRRIC state representative participates on behalf of the state's governor. This does not substitute for consultation with the various state agencies.
- The MRRIC decision-making process is consensus-based. Because states are responsible for managing the resources within their boundaries, it is not always appropriate for state input to be subject to a consensus decision-making process.
- The FWCA requires consultation with the state fish and wildlife agencies. This excludes other state agencies with responsibilities that may be affected by high-consequence decisions.
- The AOP process is inadequate for state input on Master Manual changes or other high-consequence decisions. An AOP meeting is meant to inform the public on the potential range of operations expected for a given year within the constraints of the Master Manual.
- A cooperative relationship between federal and state governments will help avoid conflict.

Section & Page Number: 3.2.4.3.1, p. 217

"The USFWS has determined that created habitat other than sandbars must be hydrologically connected, i.e. it regularly comes into contact with the mainstem river or reservoirs, in order to contribute to bird objectives for the MRRP."

Comment: The draft AMP is oriented strongly toward in-channel sandbar habitat and other habitat that is hydrologically connected to the mainstem river and reservoirs. The following bullet points demonstrate this strong propensity.

- The plover sub-objectives are framed with reference to rivers and reservoirs and ESH. For example, sub-objective 1 is to maintain a geographic distribution of plovers "in the river and reservoirs" in which they currently occur (p. 187). Sub-objective 2's population persistence target has as its "means objective" to "[p]rovide sufficient ESH (in-channel riverine habitat) on the Missouri River to meet the persistence target" (id.).
- The critical uncertainties related to bird management actions and the associated management hypotheses in the AMP also relate solely to river and reservoir shoreline areas and to hydrologically connected non-ESH habitat on river segments (Table 1, p. 25-26; 174-175).
- The quantitative components in the conceptual ecological models for plovers relate to discharge, river stage, reservoir levels, sediment transport, ESH, reservoir shoreline productivity, and the like (p. 169; Appendix B, p. 147-150).
- The habitat metrics to be used when testing the hypotheses and to support management decisions relate to the amount of standardized ESH, available ESH, available shoreline, and inundation during the nesting season (p. 28, 30, 181-183).
- The framing of "management action decisions" in Section 3.6.3.1 is consistent with this orientation (p. 263-264). As stated in the Executive Summary, "[m]anaging for piping plovers and interior least terns largely involves ensuring sufficient availability of ESH to support nesting and foraging for plovers, which the USFWS has determined also meets habitat needs for terns, while accounting for any benefits to bird populations from use of reservoir shorelines." (p. 23, 185) "The greatest near-term source of uncertainty is in estimating future flows, which drives ESH availability. Managers will be required to make decisions about how much ESH to create annually and how best to create it with consideration of the risk of falling short of ESH targets. AM will likely revolve around the above issues...." (p. 24, 51-52).

There is no hypothesis, sub-objective, means objective, or associated metric or target for true off-channel habitat in the current draft AMP. According to Table 20 of the draft AMP (p. 193), off-channel habitat was not evaluated as a management action under any alternatives in the MRRMP-EIS and is thus not available for full implementation after the ROD.

It is a bit unclear from the document whether off-channel sandpit or alkali lake habitat would "qualify" for further AMP research at this time. Section 3.2.4.3 addresses Actions for Research and Pilot-Scale Implementation (Not Evaluated in the MRRMP-EIS) that require additional evidence for effectiveness through research and/or field testing to determine whether broader implementation should be considered (p. 216). Non-sandbar habitat creation and modification is addressed in this context under Section 3.2.4.3.1 (p. 217). However, that section states that the "non-sandbar created habitat" at issue must be hydrologically connected (regularly coming into contact with the mainstem river or reservoirs) in order to be deemed to contribute to bird objectives for the MRRP. The type of non-sandbar created habitat identified for potential research and pilot-scale implementation by MRRP expressly includes habitat on reservoir shorelines, on islands in reservoirs, and on areas connected to the river but not in the channel such as backwaters (p. 217). Hydrologically disconnected habitat areas (e.g., sandpits or alkali lakes separated from the river) are expressly excluded from this category (p. 217) and would not qualify under the "constraint" definition on the scope of potential research topics and pilot-scale implementation projects (218). It thus appears that hydrologically disconnected off-channel habitat is not contemplated as part of the potential non-intervention research studies at Level 1, much less included as a potential action for pilot project and/or field experimentation at Level 2 (p. 219).

Confining management actions for the birds to those that are hydrologically connected to the mainstem river or reservoirs fails to consider a reasonable range of alternatives. The USGS Northern Prairie Wildlife Research Center is currently studying the metapopulation dynamics of the Northern Great Plains piping plover. While this study is still in progress, it has shown a stronger connection between populations of piping plovers on the Missouri River and alkali lakes region than once

believed. Including these birds in the overall evaluation of population health could change the implementation of the MRRMP, including the target acreage of ESH needed in any given year. This would give a better overall picture of population health and further promote the USACE's goal of avoiding jeopardy for piping plover on the Missouri River.

Section 3176 of the Water Resources and Development Act (WRDA) of 2007 authorizes the Secretary of the Army to use recovery funds in the upper basin of the Missouri River, including the states of Montana, Nebraska, North Dakota, and South Dakota. It is our understanding that guidance has not been developed for this section of the WRDA of 2007, which may prove vital in expanding the geographic scope of the MRRMP-EIS. Guidance should be developed for Section 3176 of the WRDA of 2007 that allows the USACE to implement actions which, based on science, will avoid jeopardy and contribute to recovery of the listed species - regardless of whether or not the action is on the mainstem of the Missouri River.

Section & Page Number: 5.0, p. 418 - 488

Comment: The AMP states that a fundamental objective for the MRRP is to minimize impacts to Human Considerations (HC's) while fulfilling the requirements of the ESA (p. 420). However, Chapter 5 is vague on monitoring for HC's. The document states that the HC Team should provide recommendations on this as the AM Plan gets implemented (p. 439-446, 455-465). It states that "[t]he exact nature of the analysis to be used and the HC performance metrics that would be most appropriate cannot be determined at this time. However, a task for the HC Team at the initiation of the AM Plan could be to investigate the types of performance metric that may be available for each HC, and which might be used under varying decision-making circumstances." (p. 476-477) The AM Plan elsewhere observes that:

"The combined cost of the [HC monitoring] studies... represents a significant investment and it is not clear that the Program has a responsibility to fund them or that resources for these studies should be diverted from other uses (e.g. project implementation for species benefits). For these reasons, the monitoring studies are presented here with a relative priority from a HC value of information perspective for decision makers to consider, but without comparison to other Program investments." (p. 446)

Appendix H of the AMP (Monitoring and Assessment Protocols for Human Considerations) has yet to be completed. Chapter 5 and Appendix H of the AMP require further specificity. It's understood that there is difficulty in identifying monitoring protocols and contingency plans for HC's because the final action has not yet been determined. The Preferred Alternative could still change based on the results of the Independent External Peer Review and the USFWS' Biological Opinion. Specificity on everyone's part is further complicated by the lack of sideboards in the AMP. When there are no boundaries, the acceptance of the AMP by the states, tribes, and stakeholders is difficult, causing an endless list of HC-related monitoring demands. Again, due to the lack of sideboards, the final EIS and ROD should clearly state that adaptive management would not include any flow modifications outside the bounds of the current Master Manual without the preparation of an additional EIS, which would include actual consultation with affected states. Regarding greater specificity for HC monitoring, this would benefit greatly from consultation with experts from state agencies.

Section & Page Number: 5.8, p. 477

"The analysis of MRRMP-EIS alternatives provides a rich source of information for understanding the specific circumstances that give rise to the most acute impacts to HCs. An analysis examined the impact on HCs in each year of the period of record, focusing on the net change in NED for each

resource area, and sought to explain why the most negative impact years occurred. RED and OSE impacts are typically correlated to NED impacts for any given resource area. The analysis found that for most HCs there were various circumstances created by the alternatives that give rise to a small number of unusually high impact difference years. In discussions with MRBWMD, several proposed amendments have been conceptually outlined that it is thought might better inform decisions that could help avoid or reduce the impact of each of the actions associated with each of the MRRMP-EIS alternatives if they were to be implemented. These proposed changes do not concern activities included in the preferred alternative (with the exception of the potential spawning cue test flow), but do address actions that could be implemented in the course of the plan under the circumstances outlined in Section 5.7.4 following procedures laid out in Section 2.4.5 and described more generally in Chapter 2.

Each potential modification proposed here is seeking to address special circumstances created by the alternatives based on information that would be available at the time (i.e. without requiring knowledge of how the future will unfold, as is possible in modelling exercises). Some are amendments that could simply be written into an alternative's definition (e.g. never allow releases to go below x) or require other modifications to practices (e.g. more targeted tributary monitoring)."

Comment: The above quotation provides the context for the entirety of Section 5.8, which pertains to defining alternatives or actions in such a way as to avoid adverse effects to HC's if future adaptive management led to flow management changes on the Missouri River. This is an important step in the adaptive management process that would require, and greatly benefit from, consultation with experts from state agencies (see comments on Section 2.3.8.1 of AMP).

Section & Page Number: 5.8.3.2, p. 479 - 481 (Figure 92)

"Some HCs, including irrigation and recreation in the upper three reservoirs, have NED benefits that are closely and positively correlated to system storage. Annual average system storage over the period of record for the DEIS Alternatives is shown in Figure 92. For much of the period of record, the storage is aligned across the alternatives. In these years, there is a relatively small difference between the alternatives' performance for irrigation and reservoir recreation. However, there are several periods of time in this period where the storages of the alternatives separate - most noticeably this occurs in the late 1950s and early 1960s, in the early 1990s and in the mid-to-late 2000s."

Comment: This section describes how one flow release (i.e. ESH-creating release or spawning cue release) can result in significant adverse impacts to the reservoirs for multiple years subsequent to the release. The example provided in this section to determine impacts to HC's is based on changes in the annual average of system storage (Figure 92). Relying on averages when evaluating impacts washes out the effect of the action when it actually occurs. Average change will only show one part of the picture, which is generally how the impacts of the alternatives are reported in the EIS and accompanying technical reports. The other part of that picture is the direct effect of a particular action as it's occurring, such as the change in elevation of Lake Sakakawea due to an ESH-creating pulse (see comments on Section 3.1.1 of EIS Volume 2).

Also, it is important to note that by nature of how the Missouri River dams are operated, the reservoirs are always preferentially affected, especially during drought conditions. Establishing thresholds to avoid cascading adverse effects for an extended period of time is vital in protecting the resources that the state is required to manage. It is an example of why consultation with the state is necessary in establishing those thresholds.

Section & Page Number: 5.8.3.2, p. 482

"The first could involve changing the storage threshold below which releases may occur. For Alternative 4, this threshold is 42 MAF and for Alternative 2 and 6 the threshold is 40 MAF. Alternative 5, which does not appear to be vulnerable to this kind of effect, is defined using navigation storage levels rather than system storage, but it has an approximate equivalent storage threshold of 54 MAF. Increasing the storage thresholds associated with Alternatives 2, 4 or 6 may therefore decrease the likelihood of a 1960s-like sequence of events."

Comment: The preclude for Alternative 5, as defined in the EIS, is not a navigation storage level. Rather, it is defined as a navigation service level, which is based off of a range of system storage values.

Section & Page Number: 5.8.3.2, p. 482

"A flow release from an alternative by definition discharges a larger quantity of water from a dam than would otherwise have been the case under the No Action alternative in a relatively short period of time. Once discharged, system storage is lower than it would have been without it. To recharge the system storage to its normal desired operating condition, more water must be accumulated in the upper three reservoirs than would have been the case under No Action. Therefore, during this period, there is less water released to the river than would have been the case before."

Comment: It should be noted that the action described above - reducing releases for the purposes of refilling the reservoirs after discharging large quantities of water for the species - could constitute a change in the Master Manual. There are no rules in the Master Manual that stipulate refilling. The Master Manual allows the USACE to capture runoff in the reservoirs and then release water from the dams in accordance with rules that are based on system storage. If runoff in a given year is great enough to raise a reservoir pool into its flood control zone, then releases are adjusted in order to lower the pool down to the base of the flood control zone by the beginning of March. Adjusting releases to "refill" may be beyond the bounds of what's allowed in the current Master Manual and may be subject to the state's appropriation laws. Generally speaking, any modification of the Master Manual that results in operational changes may be subject to the state's appropriation laws.

Section & Page Number: 5.8.3.5, p. 485

"It might be possible for improved weather forecasting efforts along tributaries like the Heart River to provide more advance warning about such events. This could combine an analysis of snowpack conditions as well as local precipitation events. Additionally, in the modelling, flow releases are not stopped when flooding occurs in Bismarck because there are no operational flood checks there. In actual operation, it is unlikely that a flow release for endangered species would continue during a flood event."

A further issue affecting spring flood risk concerns the presence of ice in the river. Ice increases flood risk in the channel by reducing its effective capacity. Modelling cannot predict which years have ice. In reality, the USACE would not release additional water into the channel for species flows if ice were present."

Comment: This section pertains to actions that could be taken to help avoid or mitigate the negative impacts of a spring flow release for the species. Again, these kinds of thresholds are important to establish in consultation with the state and they should have been discussed in the main report of the EIS. It is also important that the thresholds be explicitly stated, for example, a flow release for endangered species would be terminated if the river stage got to a certain level, unless those flood

impacts were mitigated.

Section & Page Number: 5.8.3.9, p. 488

"The case of a sudden, acute HC issue that might preclude the use of a flow release in season (were an alternative to be implemented that contained one) would be raised directly at the Management Team level at the discretion of the USACE."

Comment: This sentence is confusing. Does it mean that the Missouri River Basin Water Management Division (MRBWMD) has discrete authority to preclude a flow release due to conditions reaching an established threshold? Does it mean that MRBWMD has the discretion to stop a flow release if any member of the public raises a concern during real-time implementation of that flow release?

Section & Page Number: Whole AMP and associated appendices/attachments


Comment: There are a number of incomplete sections in the AMP, especially in the associated appendices and attachments. These gaps in the AMP frustrate the opportunity for meaningful review and informed public comment. Some of these incomplete sections are as follows:

- Appendix A.6 - Procedures for Adjustments to Significant Components of the AM Plan. "This attachment has not yet been prepared. It will address the process for adjustments to the MRRP AM Plan, including interactions with MRRIC."
- Appendix A.13 - MRRP Program Management Plan. "To be developed/provided by the USACE."
- Attachment A.14 - ISP Program Management Plan. "Important components of an ISP Program Management Plan have been developed, at least in part, throughout the AMP. The AMP will now be used as a guide to revise the ISP PMP to ensure the ISP is structured to best serve the many adaptive management, agency, and stakeholder needs. Due to time constraints, other priorities, and need to develop AMP components first, this task has yet to be completed but will be completed in coming months..."
- Appendix H - Monitoring and Assessment Protocols for Human Considerations. "This appendix will present common monitoring protocols employed by the program for HCs. Additional content is TBD.... Populating this appendix with the appropriate information will be an ongoing objective for activities following AMP V5 and continuing to the Final Draft AMP."
- Appendix A.5 - Procedures to Adjust Water Management Technical Criteria. This two-page appendix contains citations to USACE regulations and manuals; states that updates and adjustments to the Manuals are encouraged as a matter of USACE policy; contains a flow diagram and one paragraph description of the process for notice of proposed changes to the Master Manual 30 days in advance of a public meeting; and states that the "[r]emaining text [is] under development."
- There are also numerous references throughout the body of the draft AM Plan to "Section o." It is unclear whether these are just incomplete cross-references or whether they refer to currently undeveloped sections.

Correspondence Received on the Flood Risk Management Human Considerations Technical Report

Correspondence: 1

Author Information

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Status: New Park Correspondence Log:
Date Sent: 04/18/2017 Date Received: 04/18/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
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Correspondence Text

Dear Brigadier General Spellmon:

The State of North Dakota agencies with Missouri River responsibilities have reviewed the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and submit the attached comments. The state looks forward to continuing to work with the U.S. Army Corps of Engineers (USACE) on further development of the MRRMP-EIS and implementation of adaptive management. This partnership is critical in ensuring that sound decisions are made for the good of all that rely on the Missouri River in North Dakota. To be a true partnership, the final EIS should provide for direct consultation with North Dakota, and other affected states, for consideration of flow modifications or deviations outside the bounds of the current Master Manual. It is also requested that the USACE incorporate their responses to comments submitted for the MRRMP-EIS in the final EIS. Thank you for the opportunity to review and provide input into the MRRMP-EIS.

Sincerely,
Doug Burgum
Governor

The following comments are specific to the Flood Risk Management Environmental Consequences Analysis Technical Report.

General Comment:

As a technical report this document is very disappointing, it provides very little insight into the technical basis for the flood risk analysis and provides no method of verifying the analysis, it is rather a rehash of the information provided in the EIS. The USACE constantly gives lip service to being "open and transparent" but in this report provides only the results of models as they choose to present them

rather than a document that would allow reviewers to understand and either agree with or challenge the results the USACE chooses to make available.

Section & Page Number: 2.1, p. 6

Comment: One of the assumptions of the flood risk analysis is that aggradation and degradation are occurring. However, the analysis does not attempt to evaluate effects to flood risk due to aggradation and degradation. Aggradation of the Lake Oahe delta has contributed to an increase in base flood elevation in Bismarck. The 2005 flood insurance study showed an increase of about 0.7 to 0.8 feet in base flood elevation of the Missouri River at some locations through the Bismarck-Mandan area, compared to the previous study in 1985. The USACE's study on aggradation in Lake Oahe (2015) shows that approximately 100,000 acre-feet of sediment has been deposited in ND between 1958 and 2007. Skalak et al. (2013) calculated change in channel capacity using sediment range data from the 1950's to 2007. The study determined that channel capacity had decreased by about 50% between river miles 1303 (Little Heart Bottoms) and 1272 (Fort Rice Boat Ramp). A post-2011 flood report by the USACE (undated) determined that the water surface elevation, for a flow of 20,000 cfs, at the Missouri River near Schmidt USGS gage increased 2.3 feet since 1985.

A USACE study (2014) shows that nearly 570,000 acre-feet of sediment has been trapped in the Lake Sakakawea delta since dam completion. The study predicts as much as six feet over the next 50 years of additional aggradation, which would increase the flood risk for the City of Williston.

Skalak, K.J., Benthem, A.J., Schenk, E.R., Hupp, C.R., Galloway, J.M., Nustad, R.A., and Wiche, G.J., 2013, Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River: Anthropocene 2 (2013): 51- 64.
<http://dx.doi.org/10.1016/j.ancene.2013.10.002>

USACE. Undated. Missouri River 2011 Flood - Channel Response and Observations

USACE. 2014. Garrison Dam-Lake Sakakawea Headwaters Aggradation Evaluation of the Missouri River and Tributaries

USACE. 2015. Lake Oahe Aggradation Study, 1958 - 2012

Section & Page Number: 2.1 and 2.2, p. 6

Comment: These sections endeavor to describe the assumptions and the Risk and Uncertainty of the modeling. It does not state that flow under the ice which results in higher stages is not modeled, nor that the formation and effects of ice jams cannot be modeled. These sections should clearly state that higher stages in the winter and during ice formation and breakup are likely.

These sections discuss aggradation and degradation and appears to assume that it will be similar under all alternatives. Some alternatives will result in more aggradation than others which would increase flood stages for those alternatives. While we understand the difficulty in modeling the aggradation for each alternative, it should be documented as an uncertainty. The model also uses 2012 cross sections, it should be noted as another risk that because the model is based on a scoured channel the year after the 2011 flood, aggradation will likely result in higher flood stages than reported, especially in reservoir delta areas.

Section & Page Number: 2.8, p. 10

"The impacts evaluated were organized into two groups depending on their locations: "upper river" which includes all locations located from Fort Peck Dam to Gavins Point Dam and "lower river" which includes everything below Gavins Point Dam to the mouth of the Missouri River." These are good definitions of the upper and lower river. However, in the Glossary of the Draft EIS the Upper Missouri River is defined as: "Mainstem of the Missouri River between Fort Peck Dam and the headwaters of Lake Sakakawea and the Yellowstone River for an unspecified distance upstream of the confluence with the Missouri River." And defines the Lower Missouri River as: "The reach of the river downstream of Gavins Point Dam (RM810) as it pertains to management for pallid sturgeon."

Comment: The authors should use common definitions of the river throughout the EIS and the supporting documents, and the North and South Dakota portions of the river should not be defined away as they are in the EIS. Therefore, we recommend using throughout the EIS and supporting documents, the definitions of upper and lower river as presented on page 10 of the Flood Risk Management Environmental Consequences Analysis Technical Report.

Section & Page Number: 3.1, p. 12 - 13

Tables 3 and 4 show the NED impacts due to changes in flood risk in the upper and lower basin, respectively. The last paragraph on page 12 states, "The amount of damageable property that could be affected by flooding is greater in the lower river than that in the upper river, resulting in overall impacts being higher."

Comment: This statement oversimplifies and misinterprets the results in Tables 3 and 4. The total cost of NED impacts is greater in the lower basin, but the percent change in NED impacts is greater in the upper basin for Alternatives 2, 4, 5, and 6.

Section & Page Number: 3.5, p. 21

"The most noticeable impact would occur in the Garrison Dam to Oahe Dam reach which would experience an average annual increase in flood impact of \$721,860 relative to No Action."

"The increase in impacts is driven in large part by the 1950 simulated event which resulted in a \$41,037,774 increase in impacts over No Action in the upper river. Approximately 98 percent of this increase is attributable to the Garrison Dam to Oahe Dam reach alone."

Comment: The entire open river reach between Garrison and Oahe, where it seems likely most of these flood damages would occur, is located in North Dakota. An increase in flood damages of over \$41 million dollars in one year is not acceptable and therefore Alternative 4 is not acceptable to the State of North Dakota. The extreme damages caused by the spring pulse in 1950 also show the risk of increasing flows during the spring runoff in certain years. This risk of high releases from Lake Sakakawea must be considered in adaptive management decisions, especially for a spring spawning cue. While the spring spawning cue is modeled as coming from Lake Oahe, in the adaptive management process this might be changed to increasing releases from Sakakawea, this is an example of why the states must be consulted prior to any changes to the releases described in the Master Manual being implemented. The local knowledge and expertise in hydrology and hydraulics is critical to rational decision making.

Section & Page Number: 3.6, p. 28

"A modeled year (1975) that followed a full release action year experienced the largest beneficial impacts relative to No Action, with a \$1,461,037 reduction in impacts in the upper river."

Comment: First, according to Figure 15, the "modeled year" should be 1984, not 1975. Second, this sentence seems to imply that because there was a large reduction in flood impacts, it was permissible to cause flooding the previous year (or another year). There is no bank account to cash in on flooding credit. The dam system must always be operated to lessen flood risk as much as possible.

Section & Page Number: 3.7, p. 32

"Differences in annual upper river impacts relative to No Action ranged from a reduction of \$908,277 million in the 1987 simulation..."

Comment: The word "million" should be deleted.

Section & Page Number: 4.1, p. 37 - 41

Comment: Table 14 lists the Average Annual Structural Damages Relative to Alternative 1 by County. Alternative 4 has over \$700,000 increase in flood impacts on the Garrison to Oahe reach. The largest population center on this reach is the Bismarck-Mandan area in Burleigh and Morton Counties. The Bismarck-Mandan area is located on the open river reach just upstream of Lake Oahe and is impacted by the Oahe delta and would logically be the area where most of these impacts occur. However, Table 14 reports \$0 for both Burleigh and Morton Counties for Alternative 4 as well as Alternatives 3, 5, and 6. Table 14 does report large values for Campbell, Hughes, and Walworth Counties in South Dakota. These counties are located along the Oahe Reservoir and since the reservoir has already flooded them it seems unlikely that they would experience more flood damage than the Bismarck-Mandan area. If this is an error as it seems, it should be corrected, if it is not an error the reasoning for the location of the damages should be explained in an open and transparent manner.

Also, beginning on page 39 Table 14 begins to repeat itself.

Section & Page Number: 4.3, p. 45

"The counties that would have the largest increase in structural damages...are the following: Hughes and Walworth counties in South Dakota."

Comment: As described above this makes no sense.

Section & Page Number: 4.5, p. 47

"The counties that would have the largest increase in structural damages...are the following: Campbell county in South Dakota."

Comment: As described above this makes no sense.

Section & Page Number: 5.5, p. 56

"For Alternative 4, the greatest changes in PAR relative to No Action would range from a 312 person decrease to a 168 person increase. In the upper river, the range differential relative to No Action would be a 103 person decrease to a 2,118 person increase."

Comment: The "lower river" should be added to the first sentence as the way it is currently written makes it sound like the greatest increase in people at risk is a 168 person increase and the 2,118 people on the upper river don't matter. The increase of 2,118 people at risk also seems to be

dismissed rather lightly, it appears most of these people being placed at risk are North Dakota citizens as the largest number in table 28 is in the Garrison to Oahe reach, of which all the non-reservoir portion is in North Dakota. Over 2,000 people is significant to North Dakota, to illustrate this the USACE should realize that of the 360 cities in North Dakota, only 23 of them have a population greater than 2,000. In other words, this alternative would have the effect of putting the 24th largest city in the state at risk.

Correspondence: 2

Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 04/23/2017	Date Received: 04/23/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

My family farms MO River bottom land. My main concern is flooding. During 2016 we were flooded after planting and replanting was delayed. The idea of an artificially caused spring rise is unsettling. Let nature take it's natural course.


My second concern is navigation. We need to keep the barges operating to aid in getting our harvested crops to market. The MO River is a natural "highway". Please keep it operating efficiently.

Thank you for the opportunity to comment on current issues.

Judy Lay

Correspondence: 3

Author Information

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N/A, UN N/A
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Correspondence Information

Status: New Park Correspondence Log:
Date Sent: 04/04/2017 Date Received: 04/04/2017
Number of Signatures: 5 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

BRIEF INPUT TO U.S. ARMY CORP ENGINEERS
REQUEST ON MISSOURI RIVER RECOVERY IMPLEMENTATION COMMITTEE (MRRIC)
HUMAN CONSIDERATION BY SOME MEMBER TRIBES OF THE MISSOURI RIVER BASIN

Our input will focus on one fundamental human consideration resulting from the Pick-Sloan Act of 1944 that has caused immense and irreparable loss and damage to tribal population (humans) on Indian Reservations flooded by the construction of the main stem dams on the Missouri River.

This may sound like we are coming from the left field but the issues are intrinsically attached to the core fabric of our well being as human beings. Our lands were flooded, lives disrupted, towns and communities wiped out and yet none of such issues comes to the limelight of MRRIC discussions and when our representatives bring it up, they are not heard and heeded to and more of than not brushed aside.

Make no mistake about it, We as Indians do appreciate nature and wild life and as such the endangered pallid sturgeon, piping plover and least terns do not and will not fall through the cracks, we will be a part of any group that provides and takes any step to reinvigorate these endangered species.

U.S. Army Corp of Engineers/U.S. Government must make accurate assessments of the impacts of the six main stem dams on human lives both good and bad. Proper assessment will reveal only bad things that have happened to Indian Tribes of the Missouri River Basin and a lot of good things have happened for others particularly U.S. government by generating many billions of dollars just from hydro-electricity generation, over the last 50 to 60 years.

MRRIC Human consideration must evaluate this unfortunate human catastrophe inflicted upon the Indian Tribes negatively impacted by the Missouri River dams. Perhaps MRRIC should make recommendation to the U.S. government/congress for compensating the Indian Tribes under human consideration by putting billion dollars in a trust account, interest from which will assist in rebuilding

tribal economies adversely impacted by flooding of lands and human habitation. Rebuilding of tribal economies will be a win win for U.S. congress/government, states in which the Reservations are located and of course the down trodden and most underprivileged humans (Indian population) living on some of the most impoverished regions of the country. As a matter of fact the most impoverished counties in U.S. are located on Indian Reservations in South and North Dakota.

If you are going to address human consideration, how can you ignore the issues that has been enumerated above by us. We did not raise the Winter's Doctrine, which the Corp of Engineers is taking steps to violate, another human consideration issue, we will leave that for another day. Thank you for giving us this opportunity to present one important aspect of human consideration, which is of utmost importance to the pertinent Indian Tribes.

Cyril Scott, President
Rosebud Sioux Tribe

Bryan Brewer, President
Oglala Sioux Tribe

Michael Jandreau, Chairman
Lower Brule Sioux Tribe

Dave Archambault II, Chairman
Standing Rock Sioux Tribe

Cc: The Honorable Tim Johnson
The Honorable John Thune
The Honorable Heidi Heitkamp
The Honorable Kristi Noem
The Honorable Kevin Kramer

RESOLUTION NO. 162- -17

WHEREAS, the Standing Rock Sioux Tribe is an unincorporated Tribe of Indians, having accepted the Indian Reorganization Act of June 18, 1934, with the exception of Section 16; and the recognized governing body of the Tribe is known as the Standing Rock Sioux Tribal Council; and

WHEREAS, the Standing Rock Sioux Tribal Council, pursuant to the amended Constitution of the Standing Rock Sioux Tribe, Article IV, Section 1[aJ, 1[b], 1[c], 1[h], and 1U], is authorized to negotiate with Federal State and local governments and others on behalf of the Tribe, to promote and protect the health, education and general welfare of Tribal members and to administer such services that may contribute to the social and economic advancement of the Tribe and its members; and is further empowered to manage, protect and preserve the property of the Tribe and natural resources of the Standing Rock Sioux Reservation; and

WHEREAS, the Army Corps of Engineers built and operates the six main stem dams on the Missouri River, impounding 7 4 million are-feet of water and producing a National Economic Benefit of \$1.8 billion annually [2004 dollars]; and

WHEREAS, the construction of the Oahe Dam and Reservoir resulted in the forced acquisition of 56,000 acres of fertile, wooded bottomlands on the Standing Rock Reservation, and the forced

relocation of four reservation communities in 1960 against our wishes, for the site of the Oahe Reservoir; and

WHEREAS, the lands inundated by Oahe Reservoir were our Reservation's most productive agricultural land, with successful Indian-owned ranching enterprises, vast community gardens, abundant wildlife, and natural foods and medicinal plants; and

WHEREAS, the socioeconomic impacts of the destruction of our resources and dislocation of our communities continues to experienced today; and

WHEREAS, the Standing Rock Sioux Tribe possesses extensive reserved water rights to the Missouri River, its tributaries and groundwater, under the principles enunciated by the U.S. Supreme Court in *Winters v. United States*, 207 U.S. 564 [1908], which establish that the Tribe's water rights are prior, senior and superior to non-Indian water uses in the Missouri Basin; and

WHEREAS, the operation of the Oahe Dam by the Army Corps of Engineers pursuant to the Missouri River Master Water Control Manual continues to degrade the land and water of the Standing Rock Reservation, by storing flood waters in Oahe Reservoir and implementing releases for navigation, hydropower and other economic uses downstream, causing water level fluctuations, erosion and habitat destruction; and

WHEREAS, the U.S. Fish and Wildlife Service published the Biological Opinion for the Missouri River Master Water Control Manual Review and Update [1999], which determined that the Corps of Engineers' Missouri River operations jeopardize the continued existence of three listed species, the least tern, piping and pallid sturgeon thereby violating the Endangered Species Act; and

WHEREAS, the Revised Biological Opinion [2003] reversed the findings of jeopardy, and permitted the Corps of Engineers to continue its environmentally-destructive management of Missouri River water flows; and

WHEREAS, the Missouri River Recovery Implementation Committee [MRRJC], was established by the Corp of Engineers to recommend habitat mitigation measures for the recovery of listed species whose habitat was destroyed by the Corps of Engineers under the Pick-Sloan program; and

WHEREAS, on December 16, 2016, the Corps of Engineers released the Missouri River Recovery Program and Draft Environmental Impact Statement [Draft EIS], outlining alternatives for habitat restoration for minimal compliance with the Endangered Species Act; and

WHEREAS, by maintaining water releases under the Master Manual that give preference to downstream navigation, and by proposing to dedicate additional flows for wildlife mitigation in the Draft EIS, the Corps of Engineers continues to commit water to uses that conflict with Indian reserved water rights to the Missouri River; and

WHEREAS, the Master Manual and Draft EIS are management tools that give priority to non-Tribal water uses, thereby suppressing Indian reserved water rights to the Missouri River; and

WHEREAS, the Draft EIS identified Alternative 3 as the preferred alternative for wildlife habitat restoration, and states on page 3-513, "Water supply access in the upper river, including Tribal intakes, would experience more impacts under Alternative 3 than locations in the lower river. [During periods of low water] costs would increase to access water in the upper river." Thus, the Draft EIS acknowledges that the preferred alternative will increase the hardship experienced by Tribes with

securing adequate water supplies for safe drinking water; and

WHEREAS, the impacts on the elevation of Oahe Reservoir described in the Draft EIS will intensify the proliferation of noxious weeds and cause further deterioration of wildlife habitat on the Standing Rock Reservation; and

WHEREAS, the Draft EIS fails to identify damages caused by Oahe Dam to the land, water and wildlife of the Standing Rock Reservation, fails to accurately disclose the cumulative impact of future habitat activities with destructive projects approved by the Corps such as Dakota Access Pipeline, fails to properly identify impacts on Native American cultural resources; and fails to identify changes to the Missouri River Master Manual that are necessary to protect the water resources of the Standing Rock Indian Reservation; and WHEREAS, the Draft EIS was prepared with no government-to-government consultation with the Standing Rock Sioux Tribal Council as required by Executive Order 13175; and

WHEREAS, the Draft EIS was prepared with no consultation with the Standing Rock Sioux Tribal Historical Preservation Officer as required under section 106 of the National Historic Preservation Act; and

WHEREAS, it is incumbent upon the Corps of Engineers to revise the Missouri River Master Water Control Manual, by limiting needless and environmentally-destructive navigation flows from Gavins Point Dam, and managing stored water in the Missouri River system for the benefit of the Standing Rock Sioux Tribe and other Indian Nations in the upper Missouri Basin, as well as the recovery of threatened and endangered species;

NOW THEREFORE BE IT RESOLVED, that the Draft Missouri River Recovery Program and Environmental Impact Statement violates the Treaty water rights of the Standing Rock Sioux Tribe, the National Environmental Policy Act and its implementing regulations, section 106 of the National Historic Preservation Act and its implementing regulations, Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments, Executive Order 12898 on Environmental Justice, and the Endangered Species Act; and

BE IT FURTHER RESOLVED, that the Standing Rock Sioux Tribal Council directs the Tribal Chairman, in consultation with the Department of Water Resources, Game and Fish, EPA/DER and THPO, to submit comments on the Draft EIS consistent with this Resolution, and to take such action as is appropriate and necessary to protect the reserved water rights of the Standing Rock Sioux Tribe from the ongoing mismanagement of Missouri River flows by the Army Corps of Engineers; and

BE IT FURTHER RESOLVED, that the Standing Rock Sioux Tribal Council hereby calls upon the Army Corps of Engineers to revise the Master Water Control Manual and fulfil its Treaty obligations and trust responsibility to the Standing Rock Sioux Tribe to preserve and protect our valuable water~ and

BE IT FURTHER RESOLVED, that the Chairman and Secretary of the Tribal Council are hereby authorized and instructed to sign this resolution for and on behalf of the Standing Rock Sioux Tribe.

CERTIFICATION

We, the undersigned, Chairman and Secretary of the Standing Rock Sioux Tribe, hereby certify that the Tribal Council is composed of 17 members, of whom 13 constituting a quorum, were present at a meeting duly and regularly called, noticed, convened and held on the 04th day of APRIL, 2017, and

that the foregoing resolution was duly adopted by the affirmative vote of 12 members, with 0 opposing, and with 1 not voting. THE CHAIRMAN'S VOTE IS NOT REQUIRED EXCEPT IN CASE OF A TIE.

DATED THIS 04th DAY OF APRIL, 2017.

ATTEST:

Adele M. White, Secretary
Standing Rock Sioux Tribe

Dave Archambault II, Chairman
Standing Rock Sioux Tribe

[OFFICIAL TRIBAL SEAL]

ORDINANCE OF THE OGLALA SIOUX TRIBAL COUNCIL OF THE OGLALA SIOUX TRIBE
(An Unincorporated Tribe)

ORDINANCE OF THE OGLALA SIOUX TRIBAL COUNCIL ESTABLISHING PROCEDURES FOR
GOVERNMENT-TO-GOVERNMENT CONSULTATION BETWEEN THE OGLALA SIOUX TRIBE AND
THE UNITED STATES GOVERNMENT, AND OTHER GOVERNMENTS.

WHEREAS, the government-to-government relationship between the Oglala Sioux Tribe was established in the United States Constitution, Article 6 (Supremacy Clause); the Treaty of July 2, 1825, United States-Oglala Band of Sioux Nation, 7 Stat. 252; Rev. Stat. § 2116, 25 U.S.C. § 177 (codifying section 12 of the Trade and Intercourse Act of June 30, 1834, ch. 161, 4 Stat. 730); the Treaty of September 17, 1851, United States-Teton Division of Sioux Nation, et al., 11 Stat. 749; the Treaty of April 29, 1868, United States-Sioux Nation, 15 Stat. 635; Rev Stat. § 2079, 25 U.S.C. 5 71 (codifying the Act of March 3, 1871, ch. 120, § 1, 16 Stat. 566), the Indian Reorganization Act of June 18, 1934, ch. 476, 48 Stat. 984, 25 U.S.C. § 461 et seq., the Indian Self-Determination and Education Assistance Act of January 4, 1975, P.L. 93-630, 88 Stat. 2203, 25 U.S.C. § 450, et seq., and other Congressional enactments, and

WHEREAS, the 1851 Treaty recognized title in the Oglala Band to 60 million acres of territory currently in the States of North Dakota, South Dakota, Nebraska , Montana and Wyoming for the Oglala Sioux Tribe and other Sioux tribes, and

WHEREAS, a permanent homeland was established within the 1851 Treaty territory for the "absolute and undisturbed use and occupation" of the Oglala Sioux Band and other Sioux bands, which homeland has been referred to as the " Great Sioux Reservation" and comprises substantially all of present day South Dakota west of the east bank of the Missouri River, and

WHEREAS, the Indian Claims Commission also found that the Oglala Band other Sioux bands held aboriginal (non-treaty) title to 14 million acres east of the Missouri River in the States of North Dakota and South Dakota, and

WHEREAS, uncontested encroachments on the 1851 Treaty territory by the United States and its

citizens resulted in the Powder River War of 1866-1868 between the United States and the Oglala band and other bands of Sioux Indians. as a result of which, peace was concluded between the United States and the Oglala Band and other Sioux bands by treaty on April 29, 1868, 15 Stat. 635 ("1868 Fort Laramie Treaty," which treaty was duly ratified by the United States on February 16, 1869 and proclaimed by the President on February 24 , 1869, and

WHEREAS, the 1868 Treaty provided for a mutual demobilization of the United States and Oglala Band and other Sioux bands without terms of surrender on either side, and as a result thereof, the Oglala Band and other Sioux bands were never militarily conquered by the United States, and the Oglala Band has abided by the 1868 Treaty and resided on its reservation in accordance of the terms of the treaty since 1868, except for incidences in Montana in 1876 where the Oglala Band and other Sioux bands were legally exercising its 1868 Treaty, Article 11, hunting rights and yet had to defend themselves from attack by the United States Cavalry in violation of Articles 1 and 11 of the 1868 Treaty, and

WHEREAS, subsequent to ratification of the 1868 Treaty, no aboriginal or treaty territory of the Oglala Band was ever acquired by the United States in accordance with 25 U.S.C. § 177 or Article 12 of the 1868 Treaty, and all acquisitions of Oglala Band's territory was either confiscated by the United States or acquired with the requisite consent of the Band, and

WHEREAS, the "Og1ala Band" reorganized in 1936 as the "Oglala Sioux Tribe of the Pi ne Ridge Indian Reservation" under Section 16 of the 1934 Indian Reorganization Act of June 18 , 1934 , ch . 576, 48 Stat. 987, 25 U.S.C. § 476, by adopting a constitution and bylaws approved by the Secretary of the Interior, and presently enjoys all of the rights and privileges guaranteed under its existing treaties with the United States in accordance with 25 U. S.C . § 478b

WHEREAS, as a result of its unique government-to-government relationship with the United States, and because the Oglala Band (now Oglala Sioux Tribe) is one of the few militarily unconquered Sioux tribes in the United States and all of its territory now in the possession of the United States was acquired without its consent, the Oglala Sioux Tribe still possesses very strong aboriginal rights within all the territory that comprised its aboriginal homeland, and as a result thereof, the Tribe has both a domestic and international rights to government-to-government consultations with the United States on the formulation of federal policies, or on all federal actions or undertakings that adversely affect its aboriginal and treaty territories, and

WHEREAS, the Executive Branch of the United States Government has recognized the right of government-to-government consultations with Indian Tribes in:

a. President Clinton's Memorandum of April 29, 1994, which, among other things, directed agencies to:

- (i) "ensure that the department or agency operates within a government-to-government relationship with Federally-recognized Tribal government,"
- (ii) "consult, to the greatest extent practicable ad to the extent permitted by law with Tribal governments prior to taking actions that affect Federally recognized tribes, to be open and candid so that all interested parties may evaluate for themselves the potential impact of relevant proposals," and
- (iii) "assess the impacts of Federal government plans, projects, programs, and activities on tribal trust resources to assure that Tribal government rights and concerns are considered during the development of such plans, projects, and activities."

b. President Clinton's Executive Order No. 13084 of May 19, 1998, which directed federal agencies to

respect tribal self-government and sovereignty, tribal rights, and tribal responsibilities whenever they develop policies "significantly affecting Indian tribal governments,"

c. President Clinton's Executive Order No. 13175 of November 6, 2000, which directed all federal agencies to establish consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and

d. President Barak Obama Memorandum of November 5, 2009, to the heads of the Executive Department and federal agencies to submit plans of actions that the agencies will take to implement the policies and directives of President Clinton's Executive Order 13175,

and

WHEREAS, Congress has also mandated government-to-government consultation with Indian tribes, which have been implemented in statutes, orders, regulations, rules, policies, manuals, protocols and guidance, most of which are described in a document issued by the White House- Indian Affairs Executive Working Group (WH-IAEWG), dated January, 2009, and entitled, "List of Federal Tribal Consultation Statutes, Orders, Regulations, Rules, Policies, Manuals, protocols and guidance," and

WHEREAS, the Oglala Sioux Tribe has never enacted legislation (ordinances) establishing procedures for government-to-government consultation between the Tribe and the United States, and believes that such procedures are necessary to establish a clear process for documenting the nature and results of consultations between the Tribe and the United States and its agencies, now

THEREFORE BE IT ORDAINED, that the following sections relating to government-to-government consultations are hereby adopted for the Oglala Sioux Tribe.

Section 1. Title. This ordinance shall be known and referred to as the Oglala Sioux Tribe Consultation and Coordination Ordinance of 2001.

Section 2. Definitions. The following words and phrases used in this Election Code shall have the following meanings;

"Consultation" and/or "government-to-government" consultation shall mean the formal process of cooperation, negotiation, and mutual decision making between the Oglala Sioux Tribe and the United States Government, and other governments, It is the process through which sovereign governments develop a common understanding of technical and legal issues and use this understanding to formulate mutually agreeable decisions.

Section 3. Scope. This ordinance is intended to extend to:

- a. All of the aboriginal homeland of the Oglala Sioux Tribe, including, the 60 million acre territory Sioux territory, described in Article 5 of the 185 Ft. Laramie Treaty; the territory and the expanded hunting rights territory described in Article 2, 11 and 16 of the 1868 Ft. Laramie Treaty;
- b. All of the aboriginal title (non-treaty) Sioux territory comprising 14 million acres located east of the Missouri River in the present states of North Dakota and South Dakota; and
- c. All undertakings and actions that adversely affect the Oglala Sioux Tribe's aboriginal, treaty or statutorily recognized rights and interests within its aboriginal and treaty recognized territories.

Section 4. Purpose. The primary purpose and intent of this ordinance is to:

- a. Establish a clear process for documenting the nature and results of government-to-government consultations between the Oglala Sioux Tribe and Federal Government and its agencies;

- b. Provide a consistent, orderly process to government-to-government consultation to make and ensure that government-to-government consultations are meaningful and effective, and
- c. Be applicable, to the fullest extent possible, for documenting the nature and results of government-to-government consultations between the Oglala Sioux Tribe and other Indian Tribes, inter-tribal organizations and state governments and agencies.

Section 5. Authority. This ordinance is adopted pursuant to the Oglala Sioux Tribe's inherent sovereignty and Article IV, Section 1 (a) of the Amended Constitution of the Oglala Sioux Tribe, which empowers the Tribal Council "(a) To negotiate with the Federal, State, and local governments, on behalf of the tribe, and to advise and consult with representatives of the Interior Department on all activities of the Department that may affect the Pine Ridge Indian Reservation."

Section 6. Principles and guidelines. All government-to-government consultations between the Oglala Sioux Tribe and the Federal Government, and State or other tribal governments, shall be conducted with the Oglala Sioux Tribe under the following principles and guidelines:

- a. The Oglala Sioux Tribe is a sovereign government with attendant powers;
- b. All treaties between the Oglala Sioux Tribe and the United States must be honored and enforced to the fullest extent possible;
- c. The Oglala Sioux Tribe has never been militarily conquered by the United States, and has existed in a peaceful relationship with the United States since 1863, pursuant to Article 1 of the 1868 Ft. Laramie Treaty; and
- d. The Oglala Sioux Tribe and its territories are not possessions of the United States.

Section 7. Procedures. All consultation between the Oglala Sioux Tribe and the Federal Government, and State or other tribal governments must:

WHEN CONSULTATION IS REQUIRED BY THE FEDERAL GOVERNMENT OR OTHER GOVERNMENTS

- a. Occur through a formal meeting with the Oglala Sioux Tribal Council. Neither the Executive Committee nor any Executive Committee member or staff member of the Tribe shall be authorized to engage in government-to-government consultations with an government of governmental agency;
- b. Accomplish the goals and objectives described in Section 8.
- c. Be initiated by serving a formal written request for government-to-government consultation with the Secretary of the Oglala Sioux Tribe. The request for consultation should describe the impending, proposed project or activity that may or may not affect the Oglala Sioux Tribe's interests in its aboriginal or treaty territory and/or rights or interest therein. This include the Tribes aboriginal and treaty territory both within and outside the exterior boundaries of the Pine Ride Indian Reservation;
- d. It shall be the duty of the Tribal Secretary to immediately notify all members of the Executive Committee and Tribal Council of each request for consultation;
- e. Upon receipt of a request for consultation, the Tribal President, or council members under established procedures, shall call a special council meeting for the purpose of responding to the request for consultation. The tribal council shall:
 - (i) Request by resolution a policy-level meeting, initiating government-to-government consultations;
 - (ii) Authorize the Tribe's technical staff (and when appropriate the Tribe's attorneys) to meet with the responding government's technical staff to discern and define the issues that are subject to the request for consultation including how the proposed governmental undertaking or activity affects the tribe's aboriginal, treaty, statutory or other interests;
 - (iii) Schedule a special council meeting in which the Tribe's technical staff (and when appropriate the Tribe's attorneys) can fully brief the Tribal council on the issues that are subject to consultation, with recommendations and opinions;

- (iv) Schedule a follow-up special council meeting in which the Tribe through the Tribal council shall engage in formal government-to-government consultation based on the recommendations and opinions of its staff (and attorneys); and
- (v) Pass a resolution fully articulating the Tribe's formal decision, which decision shall be consistent with the provisions of this ordinance.

WHEN CONSULTATION IS REQUIRED BY THE OGLALA SIOUX TRIBE

- a. Be initiated by passing a tribal council resolution requesting government-to-government consultation, which resolution shall be executed and sent by the Tribal President to appropriate officials of the Federal Government or tribal or state government with which consultation is desired;
- b. Follow the procedure described in Subsections 7.e. (i) through (v) above; and
- c. Accomplish the same objectives described in Section 8.

Section 8. Objectives. All government-to-government consultations should ensure the following results:

- a. Tribal officers and officials proceed in a dignified, orderly manner, keeping in mind that the Oglala Sioux Tribe is engaging in the consultations as a sovereign government that maintains government-to-government relations with the United States Government and other governments. Tribal officials engaging in consultation should dress in appropriate attire during the consultation proceedings, and conduct themselves in a professional, dignified, and diplomatic manner;
- b. Tribal officers and officials fully understand the issues to be discussed prior to engaging in and consultation proceeding; this includes an understanding of tribal history, federal treaties and federal statutes, regulations and rules, that will be discussed at each consultation;
- c. Ensure that the Tribe's interest are fully protected, including interests in all tracts of land located within the Tribe's aboriginal and treaty territories, and interests therein, as well as tribal cultural resources, human remains, and any other tribal patrimony;
- d. Ensure compliance with federal treaties, statutes, regulations and rules and tribal policies (e.g., policy that the Black Hill Are Not For Sale and tribal land claims must include restoration of federally held lands to the Tribe);

Section 9. Documentation. Following any governmental-to-government consultation between the Oglala Sioux Tribe and the Federal government, or other governments, the Tribal Council shall:

- a. Achieve a bi-lateral decision between the Tribe and the United States, or other government;
- b. Adopt a resolution documenting the nature and results of the consultation and bilateral decision;
- c. Direct the Tribal Secretary to file a copy of the resolution and all backup documentation with the Tribal Records Department.

Section 10. Representation. Neither the Federal Government nor any agency thereof, nor any other government, shall legitimately represent to any other government or governmental entity, nor to any third party, that they have consulted with the Oglala Sioux Tribe unless they fully comply with the terms and conditions of this ordinance.

Section 11. Effective Date. This ordinance shall become effective immediately.

Section 12. Repeal of inconsistent ordinances. All previously enacted ordinances are hereby repealed to the extent that they are inconsistent with this ordinance.

C-E-R-T-I-F-I-C-A-T-I-O-N

I, as undersigned Secretary of the Oglala Sioux Tribal Council of the Oglala Sioux Tribe, hereby certify that this Ordinance was adopted by a vote of: 13 For; 1 Against; 0 Abstain; and 0 Not Voting, during a

SPECIAL SESSION held on the 7th day of JUNE, 2011.

A-T-T-E-S-T:

John W. Yellow Bird-Steele
President
Oglala Sioux Tribe

Rhonda J. Two Eagle
Secretary
Oglala Sioux Tribe

[1.1 Great Sioux Reservation map]

[1.2 Great Sioux Reservation map]


[Table of plant species important to buffalo habitat in Oglala Sioux Tribe buffalo pastures and surrounding grasslands]

">

Correspondence Received on the Hydropower Human Considerations Technical Report

Correspondence: 1

Author Information

Keep Private: No
Name: Doug Burgum
Organization: State of North Dakota  Official Rep.
Organization Type: S - State Government
Address: 600 E. Boulevard Ave.
Bismarck, ND 58505-0001
USA
E-mail:

Correspondence Information

Status: New Park Correspondence Log:
Date Sent: 04/18/2017 Date Received: 04/18/2017
Number of Signatures: 1 Form Letter: No
Contains Request(s): No Type: Letter
Notes:

Correspondence Text

Dear Brigadier General Spellmon:

The State of North Dakota agencies with Missouri River responsibilities have reviewed the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS) and submit the attached comments. The state looks forward to continuing to work with the U.S. Army Corps of Engineers (USACE) on further development of the MRRMP-EIS and implementation of adaptive management. This partnership is critical in ensuring that sound decisions are made for the good of all that rely on the Missouri River in North Dakota. To be a true partnership, the final EIS should provide for direct consultation with North Dakota, and other affected states, for consideration of flow modifications or deviations outside the bounds of the current Master Manual. It is also requested that the USACE incorporate their responses to comments submitted for the MRRMP-EIS in the final EIS.

Thank you for the opportunity to review and provide input into the MRRMP-EIS.

Sincerely,

Doug Burgum
Governor

The following comments are specific to the Hydropower Environmental Consequences Analysis Technical Report.

Section & Page Number: 3.1.3, p. 11, Table 1

Comment: This table generally shows the highest energy values for the month of February with the July and August values being significantly lower. In Section 3.13.1.4 on page 3-331 of the Draft EIS,

including Figure 3-54 show the lowest demand and generation in February, with the peak in August. An explanation should be provided as to why the highest energy value occurs in the lowest demand month.

Section & Page Number: 4.0, p. 16

"Total average annual impacts range from -\$256,000 (0.05%) under Alternative 3 to \$5,426,000 (1.03%) under Alternative 2."

Comment: The \$5,426,000 for Alternative 2 should have a negative sign.

Section & Page Number: 4.2 - 4.6, p. 19 - 32, Tables 5 - 10

Comment: Placing the dams in alphabetical order rather than from upstream to downstream as is typically done in USACE documents is confusing.

Section & Page Number: 4.4, p. 25 - 27

Comment: It is impossible to determine from the information provided if the power generation reported was properly calculated. Garrison releases for Alternative 4 are 42,500 cfs while the power plant capacity is 41,000 cfs, Gavins Point and Fort Randall releases are 60,000 cfs while the power plant capacities are 36,000 cfs for Gavins Point and 44,500 cfs from Fort Randall. From the text earlier in the document it appears that the maximum power plant capacity was considered. However, Alternative 4 calls for 60,000 cfs from Gavins Point for 35 days, this would result in the power plants to operate at full capacity 24 hours per day for this time period. From the information provided we cannot determine if it was assumed that there would be a market for this power at all times or if an adjustment was made. If it was assumed that all the power could be sold this may underestimate the impacts. While it would not completely address our concern about the assumptions made, the report should include a chart or table showing volume of water that is discharged without generating power for each alternative.

Section & Page Number: 4.6, p. 31

Comment: Although this section is describing Alternative 6, in the last paragraph it states Alternative 5.

Section & Page Number: 5.0, p. 34 - 37

Comment: Looking at one or two years as is done in this section is a major flaw. The release cycle modeled for each alternative will impact individual years when compared to Alternative 1, had the release cycle started differently it could impact the individual year substantially.

Correspondence Received on the Cultural Resources Human Considerations Technical Report

Correspondence: 1

Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 03/07/2017	Date Received: 03/07/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

The Army Corp of Engineers does not own our land and water, the Army Corp of Engineers has caused illegal approval for Dakota Access Pipe Line to move forward in destroying our land and water our people as well as other people down the river, as well as destroying our rights as a Tribe and our rights as People, in this so called MRRMP and EIS you are attempting to take away our land and water, AGAIN, you do not have approval from us !!!

Correspondence Received on the Hydrology and Hydraulics Human Considerations Technical Report

Correspondence: 1

Author Information

Keep Private:	No	
Name:	Doug Burgum	
Organization:	State of North Dakota	<input checked="" type="radio"/> Official Rep.
Organization Type:	S - State Government	
Address:	600 E. Boulevard Ave. Bismarck, ND 58505-0001 USA	
E-mail:		

Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 04/18/2017	Date Received: 04/18/2017
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

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Thank you for the opportunity to review and provide input into the MRRMP-EIS.

Sincerely,

Doug Burgum
Governor

The following comments are specific to the Missouri River Recovery Management Plan Time Series Data Development for Hydrologic Modeling Report.


Section & Page Number: 5.2.3, p. 22 - 27

Comment: It is not clear how evaporation was accounted for in the HEC-ResSIM model. Figures 5-5, 5-6, and 5-7 in the Time Series Data Development Report show the final daily, monthly, and annual evaporation plots for Lake Oahe supposedly used in the Res-SIM model. These figures are not consistent with the evaporation plots for Lake Oahe in the Missouri River Mainstem HEC-ResSIM Modeling - Mainstem Missouri River Reservoir Simulation Report (Section 3.5, p. 3-33 - 3-39). This discrepancy would appear to have a substantial effect on how evaporation was accounted for during the 1930s drought.

Hydrology and Hydraulics Technical Report – HEC-ResSim Alternatives Correspondences

Correspondence: 1

Author Information

Keep Private: No
Name: Doug Burgum
Organization: State of North Dakota  Official Rep.
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E-mail:

Correspondence Information

Status: New Park Correspondence Log:
Date Sent: 04/18/2017 Date Received: 04/18/2017
Number of Signatures: 1 Form Letter: No
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Correspondence Text

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Sincerely,
Doug Burgum
Governor

The following comments are specific to the Missouri River Mainstem HEC-ResSIM Modeling - Mainstem Missouri River Reservoir Simulation Alternatives Technical Report.

Section & Page Number: 3.2.1, p. 3-16

"Fort Peck and Garrison still release water based on the forecasted System storage as the model

attempts to balance Fort Peck's, Garrison's, and Oahe's amount of occupied Carryover Multiple Use Zones. The balancing release specified at Fort Peck and Garrison on May 15 is attempted to remain steady through August 31 to help the endangered bird species during their nesting season. Pool elevation boundaries were established for both Fort Peck and Garrison during the steady release period that allow the releases to come off a steady release during drought and extreme flood periods. Drought conservation elevations were established for Fort Peck, Garrison, and Oahe that allow fluctuations in summer releases if either the releasing reservoir's or the downstream reservoir's pool elevation falls below their respective drought conservation elevation. Each reservoir's drought conservation elevation was calculated by adding twenty five percent of the total height of their respective Carryover and Multiple Use Zone to the elevation of their respective permanent pool elevation. For example, Fort Peck's drought conservation elevation was $2160.0 + (2234.0 - 2160.0) * 0.25$, which equaled 2178.5 feet (NGVD 29). Garrison's drought conservation elevation was 1790.6 feet (NGVD 29) and Oahe's was 1556.9 feet (NGVD 29). The upper steady release operational boundary for each reservoir was the top of their Annual Flood Control & Multiple Use Zones, which are 2246.0 feet (NGVD 29) at Fort Peck, 1850.0 feet (NGVD 29) at Garrison, and 1620.0 feet (NGVD 29) at Oahe. Using Fort Peck as an example, Fort Peck would have a steady release during the summer if its pool elevation was between 2178.5 feet (NGVD 29) and 2246.0 feet (NGVD 29) and Garrison's pool elevation was greater than 1790.6 feet (NGVD 29)."

Comment: Using Garrison Dam as an example, according to the above paragraph, steady releases (for the purposes of not flooding nested birds) would be implemented from May 15 to August 31 as long as the elevation of Lake Sakakawea was between 1790.6 ft and 1850 ft. The navigation system storage preclude is defined in the Master Manual as 31 MAF. This equates to an elevation of 1795 ft on Lake Sakakawea. As stated above, elevation 1850 ft is the top of the annual flood control zone. It is understood that criteria had to be chosen to simulate reservoir operations, however, operating the system in this fashion puts less emphasis on mitigating floods and drought conditions, and more emphasis on endangered bird species.

Attachment 3: Comment Report - Substantive Issues Report (U.S. Army Corps of Engineers Missouri River Recovery Management Plan and Environmental Impact Statement)

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AL300 Alternatives: Alternative 3 (Preferred Alternative) (Substantive)	K-1129
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AL450 Alternatives: Alternative 4 (non-substantive) (Non-Substantive)	K-1204
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AMP1200 Adaptive Management Decision Process, Critical Engagement and Workflow (Substantive)	K-1327
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EC600 Environmental Consequences: Water Quality (Substantive)	K-1597
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HTR100 Hydropower Technical Report: General Comments (Substantive).....	K-1642
MT1000 Miscellaneous Topics: General Comments (Non-Substantive)	K-1642
ON1000 Other NEPA Issues: General Comments (Substantive)	K-1677
OPP100 General Opposition of the Missouri River Recovery Management Plan and EIS (Non-Substantive)	K-1693
OT1000 Other AE/EC Resource Topics (Substantive)	K-1701
PN10000 Purpose and Need: Compliance with Other Laws, Policies, and Regulations (Substantive)	K-1701
PN3000 Purpose And Need: Scope Of The Analysis (Substantive)	K-1738
PN8000 Purpose And Need: Objectives In Taking Action (Substantive)	K-1766
RF1000 References: General Comments (Substantive).....	K-1772
RTT100 Recreation Technical Report: General Comments (Substantive)	K-1773
SUP100 General Support of the Missouri River Recovery Management Plan and EIS (Non- Substantive)	K-1773

TC1000 Resources of Concern - Tribal (Substantive)	K-1776
TC3500 Guiding regulations, policies, laws - Tribal (Substantive).....	K-1785
TC4500 Tribal Consultation and Coordination (Substantive).....	K-1790
WSTR100 Water Supply Technical Report: General Comments (Substantive)	K-1798

AE0100 Affected Environment: River Infrastructure and Hydrologic Processes (Substantive)

Correspondence Id: 51 **Comment Id:** 628670 **Coder Name:** jgutierrez

Comment Text: The river has changed, and the notching of the dikes is a big - - a big thing because it's eating away the ground. And observing the one that was put right next to our property, it will - - before too long, it will be into our ag. property, our ground.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645390 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.1.4, p. 3-23 Comment: The "Ice Dynamics" section lacks detail on the effect of ice on river flows and stages in North Dakota. Ice jam-induced flooding is a concern on the Missouri River. Although ice-induced flooding can occur anywhere along the Missouri River in North Dakota, there is heightened concern in the Bismarck-Mandan area. At the beginning of winter when ice cover is forming, river stage usually rises between 5 and 7 feet in a short period of time (measured at the Missouri River at Bismarck USGS gage). During the ice-out period, there is a high risk of ice jams and river stages can fluctuate drastically with little to no warning. Typically, the USACE will temporarily reduce releases from Garrison Dam to prevent ice-induced flooding during freeze-in and ice-out periods as conditions permit.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645389 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.1.4, p. 3-20 - 3-22 Comment: The geomorphology of the Garrison Reach is discussed within these pages in the "Degradation and Bank Erosion" and "Reservoir Sediment Deposition and Aggradation" sections. While the description is not inaccurate, it is written as if the degradation and aggradation occurring in the Garrison Reach are two separate and independent processes. Skalak et al. (2013) stated that Garrison Dam exerts considerable morphological control on the channel until the backwater effects of the Oahe Reservoir begin to influence the channel. The following figure from Skalak et al. (2013) clearly demonstrates that concept. [Channel Capacity Graph] The study proposed a conceptual model for channel morphology, called an "Inter-Dam Sequence", comprised of the following morphological zones: Dam Proximal, Dam Attenuating, River-Dominated Transitional, Reservoir-Dominated Transitional, and Reservoir (see following figure). [Figure 11. Conceptual model of channel morphology that results from dam interaction along a river reach. Removal of islands occurs just below the dam in the Dam Proximal zone (bed degradation and bank erosion are also likely). The eroded sediment may be locally deposited in new islands and sand bars

downstream. These sand bars and islands are stable in the Dam attenuating zones but erosion and deposition are likely less episodic due to the controlled releases from the dam. In the Transitional reaches all sediment that has not been locally deposited will accumulate here. This results in large distributary islands and deposition of large wood. Finally, in the downstream reservoir, the historic channel is completely submerged.] The study determined the following general characteristics for each morphological zone in the Garrison Reach: 1. Dam Proximal Zone: River Mile 1390 to 1359 (Garrison Dam to Washburn); Characterized by erosion; 57% of sandbars were lost from 1950 to 1999 2. Dam Attenuating Zone: River Mile 1359 to 1328 (Washburn to Sundown Acres) Erosion, but not as severe as Dam Proximal; 16% increase in sandbar area from 1950 to 1999; All major 1950-islands were still present in 1999 3. River-Dominated Transitional Zone: River Mile 1328 to 1303 (Sundown Acres to Little Heart Bottoms - through Bismarck-Mandan); Increase in islands and sandbars, minimal change in cross-sectional area; 150% increase in sandbars from 1950 to 1999; Sandbar islands become more attached to the riverbank 4. Reservoir-Dominated Transitional Zone: River Mile 1303 to 1272 (Little Heart Bottoms to Fort Rice Boat Ramp); Aggrading islands, delta formation occurs and depends on elevation of Lake Oahe; 50% decrease in cross-sectional area 5. Reservoir: River Mile 1272 to 1072 (Little Heart Bottoms to Oahe Dam); Very little deposition, relatively stable Skalak et al. (2013) predicted that the boundaries of each zone would migrate. The Dam Proximal Reach would migrate downstream as sediment supply continues to be limited and erode the Dam Attenuating Reach. The River-Dominated Interaction Reach would migrate upstream from sediment eroded upstream. The Reservoir-Dominated Interaction Reach would extend both upstream and downstream due to sediment transported from upstream and reduced velocity from reservoir backwater effects. The geomorphology pattern established by the interaction of Garrison Dam and Oahe Reservoir will impact the effectiveness of management actions performed for the least tern and piping plover over time (same for other inter-dam reaches). Skalak, K.J., Benthem, A.J., Schenk, E.R., Hupp, C.R., Galloway, J.M., Nustad, R.A., and Wiche, G.J., 2013, Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River: Anthropocene 2 (2013): 51-64. <http://dx.doi.org/10.1016/j.ancene.2013.10.002>

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644832 **Coder Name:** jgutierrez

Comment Text: IRC's as a hypothesis and experiment appear to have promise and are supported. They should be patiently introduced with adequate monitoring for impacts to the channel and for their success.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640276 **Coder Name:** jgutierrez

Comment Text: The geomorphology of the Garrison Reach on the Missouri River is predominantly controlled by the interaction of Garrison Dam on the upstream end, and Lake Oahe on the downstream end (Skalak et al. 2013). Garrison Dam acts as a sediment trap and releases are essentially free of sediment. These releases have a high sediment carrying capacity and primarily erode the riverbanks and riverbed on the upstream end of the Garrison Reach. Further downstream, the sediment load of the flows increases. In addition, as flows move downstream, control of the geomorphology of the river channel transitions from Garrison Dam to Lake Oahe. The reservoir and its backwater effects decrease the sediment carrying capacity of the flows and causes aggradation. Therefore, the ability of the Garrison Reach, and the river in general to continuously create sandbar habitat with flows over the long term is questionable.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

AE100 Affected Environment: Pallid Sturgeon (Substantive)

Correspondence Id: 128 **Comment Id:** 637082 **Coder Name:** jgutierrez

Comment Text: You don't have to go to the Gulf of Mexico to understand the Dead Zone. Hypoxic zone within Missouri River reservoirs is a major source of the decline and disappearance of the pallid sturgeon. Scientists from Montana have tested the deepest portions of the huge reservoirs and identified what has been killing this prehistoric fish. The measurement of dissolved oxygen reveals that so little oxygen can be found in the reservoirs, no measuring instruments can fathom the lack of oxygen in the lowest pools of these reservoirs. Now, fisheries scientists with Montana State University, the U.S. Geological Survey and the U.S. Fish and Wildlife Service have shown why, detailing for the first time the biological mechanism that has caused the long decline of pallid sturgeon in the Missouri River and led to its being placed on the endangered species list 25 years ago. In a paper published this week in the journal Fisheries, the scientists show that oxygen-depleted dead zones between dams in the upper Missouri River are directly linked with the failure of endangered pallid sturgeon hatched embryos to survive to adulthood. "We certainly think this is a significant finding in the story of why pallid sturgeon are failing to recruit in the upper Missouri River," said Christopher Guy, the assistant unit leader with the USGS Montana Cooperative Fishery Research Unit and the MSU professor who was the lead author on the paper. "We're basically talking about a living dinosaur that takes 20 years to reach sexual maturity and can live as long as the average American. After millions of years of success, the pallid sturgeon population stumbled and now we know why. From a conservation perspective, this is a major breakthrough."

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645837 **Coder Name:** jgutierrez

Comment Text: According to the scientists working on the river, few hybrids between the pallid and shovelnose sturgeon have been found in the upper river, but are common in the lower river. One genetic group has been identified that is characteristic of the Upper Missouri River in Montana and North Dakota, another group is prominent in the Middle Mississippi and Atchafalaya Rivers, and a third genetically intermediate group is prominent in the Lower Missouri River, downstream from Gavins Point Dam (Schrey and Heist, 2007). The Upper Missouri River group was most distinct, and less genetic differentiation was observed between the Lower Missouri River and the Middle Mississippi and Atchafalaya Rivers groups

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645591 **Coder Name:** jgutierrez

Comment Text: Volume 2 Page 60 references to the Big Sioux River. It should say the river is in both Iowa and SD as the river is the border between the states.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645326 **Coder Name:** jgutierrez

Comment Text: 1) The Use of the Shovelnose as Surrogate Species Lacks Support For much of the EIS, where data are unavailable or scarce on the pallid sturgeon, life history characteristics of the shovelnose are used. A number of reasons exist that could undermine the credibility of this approach, including differences in drift rates and distance, diet, and habitat use. For these reasons, the Corps should consider shifting the alternatives to rest solely on what is known about pallid sturgeon, rather than use the surrogate species approach. Specifically: -The transition from the drifting to the benthic life stage occurs in only 6 days after hatch for shovelnose sturgeon and at 11-17 days after hatch for pallid sturgeon. 11 -Drift simulations have found that average larval shovelnose sturgeon may drift from 94 to 250 km and the average larval pallid sturgeon may drift from 245 to 530 km. 12 -While both fish consume larval caddisflies, the diet and thus feeding position in the river differ greatly. Pallid sturgeon consume fish in the water column, including chubs, shad, and other minnows. Shovelnose sturgeon were benthic feeders, mostly eating insects that live on the

river bed or in the drift. 13 -Pallid sturgeon used sandy substrate, midchannel bars islands, and areas with riparian vegetation more often than shovelnose sturgeon. 14

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645235 **Coder Name:** jgutierrez

Comment Text: Pg. xiv - The Pallid Sturgeon paragraph: The majority of this paragraph seems to be directed to the delisting of the pallid sturgeon! The species is far from being delisted. It speaks of the species status as having improved (No!) and that the population is currently stable as a result of artificial propagation and stocking efforts. (Population is stable?) Further, the paragraph seems to believe that the pallid sturgeon will face local extirpation in just several reaches of the river. I believe that possibility of extirpation can be throughout much of the river. Would the Corps please recheck this paragraph. Based on how it reads, it would seem that we dont really have much of a problem with the pallid sturgeon!

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643516 **Coder Name:** jgutierrez

Comment Text: Recent data presented by the State of Nebraska concerning the status of forage fish and body condition of pallid sturgeon is also worthy of additional consideration. While we understand the timing of that presentation was not ideal for this process, it may represent valuable insight for future efforts.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643313 **Coder Name:** jgutierrez

Comment Text: The State has concerns with what the USACE has included in their compilation of the "best available science" to inform their implementation of an adaptive management strategy. Much of the current science on Pallid Sturgeon in the Upper Missouri River Basin has not been consistently applied within the MRRMP-EIS and the State's institutional knowledge has not been

utilized in the development of meaningful alternatives. To further this concern, the justification for excluding RPMA 1 in the MRRMP-EIS is poorly conveyed and a lack of coordination with the State has perpetuated the issue.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642884 **Coder Name:** jgutierrez

Comment Text: The Nebraska Game and Parks Commission believes that habitat is the most critical component impacting Pallid Sturgeon on the Missouri River. We firmly believe that the loss of 100,200 acres of aquatic and 67,800 acres of terrestrial habitat acres in the channel below Sioux City has had the greatest impact on Pallid Sturgeon and other native fish species on the channelized Missouri River. This does not count the 354,000 acres of habitat lost in the adjacent meander belt of the river.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

AE1100 Affected Environment: Commercial Sand and Gravel Dredging (Substantive)

Correspondence Id: 239 **Comment Id:** 645409 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.11.1.2, p. 3-248 "According to commercial dredgers and industry research, the primary area served by existing dredging operations is generally 2,050 miles from the sand plants." Comment: As 2,050 miles is nearly the entire length of the Missouri River this appears to be an error.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

AE1200 Affected Environment: Flood Risk Management and Interior Drainage (Substantive)

Correspondence Id: 36 **Comment Id:** 628350 **Coder Name:** jgutierrez

Comment Text: Water surface elevations within the landward side of the federal levees are affected by the ability to drain interior runoff into the Missouri River. And I'll add this as existing in nonfederal units. High water can result in poor drainage, higher groundwater, blocked access and associated damage and inconvenience. Hundreds of individual gravity drainage structures, culverts with flapgates and pumping plants exist along levees near the Missouri River. The Kansas City and Omaha US Army Corps of

Engineer districts have surveyed data on approximately 1,400 individual interior drainage structures. And the alternative evaluated include management action with potential to affect river flows.

Organization: Missouri Levee and Drainage District Association.

Commenter: Lanny Franks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645534 **Coder Name:** jgutierrez

Comment Text: Section 3.12.1 - Affected Environment Here, the DEIS states: High water can result in poor drainage, higher groundwater, blocked access, and associate damage an inconvenience. The DEIS fails to mention the greatest impact-delayed or prevented agricultural activity. Does the agency culture cause the most damaging management actions to be downplayed or disregarded?

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645293 **Coder Name:** jgutierrez

Comment Text: Comment: The agencies should use the term "flood control" instead of "flood risk management." Even current management actions do not protect citizens of the basin from life threatening floods. Witness the major floods since the System was filled: 1967, 1975, 1978, 1984, 1986, 1987, The Great Flood of 1993 (flooding that occurred below the System), 1995, 1996, 1997 (centered above the System), and The Great Flood of 2011.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645236 **Coder Name:** jgutierrez

Comment Text: Pg. xviii - The page discusses the 500 non-federal levee units throughout the Lower Missouri River and their inadequacy to withstand major or even small floods. I would like the Corps to mention the recommendations in the Pick-Sloan Act for expected width of the channel and the width that should be established between the two levees. Neither of these guidelines were ever followed, and the result is too narrow of a channel and levees too close to the river.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 175 **Comment Id:** 641397 **Coder Name:** jgutierrez

Comment Text: At high river stage, which is two feet below flood stage, the levee district where I farm begins to have challenges with drainage.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 135 **Comment Id:** 637265 **Coder Name:** jgutierrez

Comment Text: At 14 feet river stage, which is four feet below flood stage, L575 levee district where I farm begins to have challenges with drainage. The reoccurring flooding, blocked drainage, over bank flooding etc. since 2004 has had a tremendous negative impact on our entire community. As self-employed small business owner/operators our retirement plan is our land. We rely on the income from our crops to take us through retirement and provide future generations the same lifestyle and business opportunities we have received from our land. However with the reoccurring flooding our land productivity and actual value has decreased.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 127 **Comment Id:** 636922 **Coder Name:** jgutierrez

Comment Text: Secondly since that question has not been answered what is the economic impact of your alternatives? I for one can answer part of that question. Back in 2011 when you opened the dams and let water flow all summer we as a levee district went out bought a pump, a tractor to run it raised our levees to avoid a flood and we lucky to save most of our crops. But as a result we ended up spending about \$100,000 dollars to protect ourselves. That has amounted to about \$50/ acre of land protected. If you do dangerous releases then we have used 1/2 of our average annual income to protect our land. By the way that income includes no return on investment it assumes the land has been paid for. Fortunately in 2011 farm prices were up so we could "afford it" (crop prices allowed the Income to be closer to \$300/Acre then. However since that time our fortunes have dimmed and we may be lucky to

maintain our \$100 / acre average. Those farmers that own money for the \$5000 /acre land are not likely to survive. We have also noticed that you pull back on DIke maintenance has thrown the river dangerously close to our levees and caused sever erosion.

Organization: Reveaux Levee Distric President

Commenter: CLarence A Trachsel **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 68 **Comment Id:** 633532 **Coder Name:** jgutierrez

Comment Text: Robert Criss just reported a paper that the floodwater levels are increasing and rising along areas that have been profoundly channelized, flood levels have become progressively higher, from 1.2 to 1.9 meters.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AE1300 Affected Environment: Hydropower (Substantive)

Correspondence Id: 242 **Comment Id:** 645595 **Coder Name:** jgutierrez

Comment Text: Volume 3 Page 75 - Hydropower - In the Missouri River Basin, peak energy loads (demand) increase in the summer months, when temperatures are highest and farm communities may be pumping water for irrigation or operating grain-drying machinery. We suggest an edit here as nobody dries grain in the summer months that occurs in the fall.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

AE1400 Affected Environment: Irrigation (Substantive)

Correspondence Id: 186 **Comment Id:** 641534 **Coder Name:** jgutierrez

Comment Text: On Page 15, last paragraph, and Page 16, Table 6. NRCS Comment: The amount of irrigation water shown on Table 6 appears to be the net amount applied to the field. The gross amount pumped from the river is not shown or discussed. The difference between the gross and net amounts of water would include loss in conveyance, wind drift, evaporation, deep percolation, and runoff. In addition, water is not applied evenly across the field. The total amount of water pumped from the river would be greater than the amount applied to the field. It is not clear that the USACE analysis accounts for this difference.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642507 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.1, p. 3-359, Table 3-133 Comment: The number of irrigation intakes for North Dakota is listed as 265. There are 328 points of diversion for 251 surface water permits on the mainstem of the Missouri River in North Dakota, each of which has one or more pumps. If pump movement is the objective of the study, the EIS estimate may be low.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642506 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.1, p. 3-357, Table 3.132 & p. 3-359, Table 3.133 Comment: The estimate within the EIS of permitted irrigated acres is inaccurate. The EIS estimate for the Missouri River mainstem is 89,105.8 for ten North Dakota counties. Permitted acreage in the Office of the State Engineer's database (same year) is 61,959 acres, a 30% difference. [Table DEIS/ND Office of State Engineer Water Permit Database]

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642504 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.1, p. 3-357 "Irrigators in 42 counties in Montana, North Dakota, South Dakota, and Nebraska hold permits to use water from the Missouri River for the purpose of agricultural production. This generally includes the area extending from Fort Peck Reservoir to Rulo, Nebraska. No irrigation permits were identified for counties from the states of Iowa, Kansas, or Missouri. The state of Iowa does not require surface water users to file for a permit for withdrawals under 25,000 gallons per day (gdp). No intakes for irrigation are currently permitted in states located on the Missouri River reach from Rulo, Nebraska, to the mouth of the Missouri River. The irrigation intakes permitted on the Missouri River are a mix of semi-permanent (portable) and permanent structures." Comment: The statement is confusing. Does it imply that there are no irrigation intakes, that intakes are not permitted, or that permitting is not required? The last sentence seems to contradict the previous statements. We suggest moving the

last sentence: "The irrigation intakes permitted on the Missouri River are a mix of semi-permanent (portable) and permanent structures," to right after "This generally includes the area extending from Fort Peck Reservoir to Rulo, Nebraska." Also, specify if you are assuming one intake per permit (i.e. clarify the relationship between permits and intakes).

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

AE1500 Affected Environment: Navigation (Substantive)

Correspondence Id: 239 **Comment Id:** 642679 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.15.1.3, p. 3-389 "Each year a water-in-storage check for navigation season length is taken on March 15, to determine if a navigation season will occur, and on July 1, to determine the length of the season." Comment: The system volume check on March 15 determines navigation service level, which could be full service, minimum service, no service (or a service level in between). The July 1 system volume check determines season length and service level for the remainder of the navigation season.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645550 **Coder Name:** jgutierrez

Comment Text: The Corps has designated service levels for its inland waterways across the country. The service level ranks those reaches on a priority level from 1-6. We feel that the navigation ranking on the Missouri River, compared to the ranking of other waterways with endangered species recovery programs is important to know, as the BSNP has such a major impact on the health of the lower river and the prospects for recovery. We ask that this service level ranking for navigation on the Missouri River be included in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644743 **Coder Name:** jgutierrez

Comment Text: Flow changes have a direct impact on Missouri River navigation opportunities. Prior to the severe disruptions in flows in the late 1990s and early 2000s, towing companies operating exclusively on the Missouri River could obtain five-year contracts from shippers. After the flow changes, all line haul companies working exclusively on the Missouri River were out of business. The 2015-2016 navigation season was also a productive year for barge traffic on the Missouri River. In 2015, the Missouri River saw an increase in barge traffic volume due to reliable flows and a well-maintained navigation channel. The Port of Kansas City experienced an increase in barge traffic volume in 2016 to roughly 45,000 tons, more than three times the amount of tonnage shipped to and from the port during 2015. In addition to this amount, an additional 60,000 tons moved from private terminals through the Kansas City area for a total of over 100,000 tons of freight. The Port of Kansas City expects an increase in 2017 of at least 20 percent. During the record 2015 harvest, the system relieved the roads of 190,000 trucks, with most of these trucks reducing traffic on the heavily congested Interstate 70. Several WCI members have returned to navigation on the Missouri River. At the Inland Rivers Ports and Terminals meeting in February of 2017, a representative from Archer Daniels Midland (ADM) announced that ADM loaded barges on the Missouri River [in 2016] for the first time in 15 years, transporting 50,000 tons. During the same convention, Missouri Farmers Association Cooperative (MFA) officials indicated the company loaded barges at Booneville in 2014 for the first time in 14 years. Most operators and stakeholders expect this increase to continue if the Corps continues its recently policy of not changing flows, unlike the actions of the early 2000s, when scientifically unjustified actions to recover endangered and threatened species caused major flow changes, detrimental to barge transportation. WCI continues to maintain that if the Corps provides reliable flows and a well-maintained channel, commercial navigation on the Missouri River will have an opportunity to return.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644741 **Coder Name:** jgutierrez

Comment Text: Navigation on the Missouri River itself relies on consistent and reliable flows, and the recent return of traffic are testament to the necessity of reliable flows. According to the Missouri Department of Transportation, barge traffic on the Missouri River has been increasing over the last five years, in large part due to reliable flows. In September 2014, the first barge shipments in eleven years traveled north to Sioux City, Iowa carrying hundreds of thousands of pounds of equipment to an expanding fertilizer plant in Nebraska. The existence of reliable flows allowed robust barge traffic to continue through December of that year, with vessels moving as far north as Mile Marker 660.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644669 **Coder Name:** jgutierrez

Comment Text: Certainly, the navigation industry has had some hard times but, with rail capacity becoming less and an over-the-road driver shortage showing no abatement, one can see the evidence that inland waterways are becoming critical in the movement of freight. The first full year of operating Port KC (the Kansas City port facility) was tremendously successful. KC Port had a throughput of 45K tons, but this also generated an additional 60K tons of freight moved from private terminals in the KC area. Therefore, over a 100K tons of freight moved, up from zero in 2014. This has a positive impact on the local economy. Not only did shippers enjoy competitive rates but the elimination of approximately 1 million truck miles impacted road transportation as this freight originally was routed through Tulsa, Oklahoma instead of Kansas City. KC Port expects to replicate its success in 2017 with a modest increase of at least 20%, the port is presently constructing an additional 12K tons of storage capacity that is committed to bulk fertilizer and salt storage. This will give them the ability to increase their throughput to 100K tons for 2018 for fertilizer only. They are also looking to expand and diversify other commodities to include scrap, steel and other bulk commodities such as mill scale, sand, gravel and composted tree bark. There is also a strong interest in transporting empty containers to the lower Mississippi to load resin chemicals. KC Ports business plan for the near-term looks positive as other KC terminals are looking to load empty barges the port generates with grain, aggregate and cement. Agri-Services of Brunswick Missouri moved in excess of 250K tons in 2016 as well as freight moving from private terminals in Nebraska City and Lexington Missouri. These regional advances in navigation should be acknowledged, discussed and studied in the DEIS.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644663 **Coder Name:** jgutierrez

Comment Text: The trade analysis was based on 2014 data with little or no research in changing trade flows from the gulf ports, emergence of regional agricultural export markets to Asia, increased movement of petrochemicals and petroleum products by water and the effects of an expanded Panama Canal on shipping volumes. These updated factors should be evaluated. Within the past few weeks a major carrier announced a direct New Orleans to Asia service, a first of any major steamship line to offering a direct service from the Gulf to Asia. This will enable central U.S. shippers alternative access to U.S./Asia routes and will definitely influence freight rates in favor of agricultural products from the Midwest.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

AE1600 Affected Environment: Recreation (Substantive)

Correspondence Id: 239 **Comment Id:** 642696 **Coder Name:** jgutierrez

Comment Text: "Most recreation sites within the riverine reaches are "low density use" sites, with relatively low visitation and few facilities." This is a mischaracterization of the situation in North Dakota. Even with "limited" access, recreational use during the open water period can be quite high with crowded available facilities, and watercraft densities that can at times be dangerously high. Public demand for additional Missouri River access points and facilities continues to grow.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

AE1700 Affected Environment: Thermal Power (Substantive)

Correspondence Id: 167 **Comment Id:** 643851 **Coder Name:** jgutierrez

Comment Text: Montana-Dakota would like to clarify how thermal unit operation has evolved over the past ten years in consideration of the following statement in section 3.17.1 Affected Environment Although coal-fired plants may be cycled over a 24-hour period to meet fluctuations in demand, it is most economical if they are operated at constant production levels. While it is typically true that baseline operation of coal-fired units has been most economical at baseload operation, these units have increased in flexibility to operate at different loads as the electric market would call upon them to operate. The increase in flexibility at coal-fired units has been necessary due to new additions of natural gas-fired generation resources and intermittent renewable electric generation resources. The USACE should acknowledge that a significant amount of thermal power generation is essential in providing electric transmission reliability services and this type of dispatchable generation is not replaced by renewables.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643856 **Coder Name:** jgutierrez

Comment Text: Update for Heskett Station in Table 3-211. Gross Capacity of Missouri River Power Plants Montana-Dakota notes that although the 2014 Nameplate Capacity for Heskett is correct, additional generation was added to the facility in 2014. The nameplate capacity for Heskett is now approximately 203 MW based on reporting to EIA.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

AE200 Affected Environment: Piping Plover (Substantive)

Correspondence Id: 49 **Comment Id:** 628666 **Coder Name:** JGUTIERREZ

Comment Text: The only place I see these birds now are inside my levee in ponds and pools that are created because the river is at the foot of our levees. They're there inside on farm ground that's been there for 100 years, but they're not outside where everybody thinks they ought to be because that habitat is destroyed.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AE2100 Affected Environment: Environmental Justice (Substantive)

Correspondence Id: 239 **Comment Id:** 642766 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.22.1, p. 3-566 "Twelve census block groups that intersect the Missouri River floodplain in North Dakota comprise potential environmental justice populations. These block groups are all located in the Bismarck, North Dakota, metropolitan area and exhibit high concentrations of minority populations." Comment: It is difficult to understand how the Three Affiliated Tribes and the Standing Rock Sioux Tribe are not considered an environmental justice population. An explanation of why they are not considered should be included in the document.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

AE2200 Affected Environment: Ecosystem Services (Substantive)

Correspondence Id: 131 **Comment Id:** 640143 **Coder Name:** jgutierrez

Comment Text: The Corps fails to give adequate consideration of ecosystem services and that failure impacts their evaluation of alternatives. One example occurs in the Land Use and Ownership Environmental Consequences Analysis, Technical report pages 5-8. The Corps evaluates the impact of agriculture acres for federal acquisition. The Corps notes the loss of agriculture output if some acres are taken out of crop production and points to the loss of taxes to the county, or land in the local levee association. But no consideration is given to the likely reduction in flood risk to those same neighboring acres when, due to those acquired acres, levees

are set back, wetlands created, a channel widened and or floodplain connection is formed. Also the Corps fails to give adequate clean water services to those acquired acres, or any impacts on groundwater recharge.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AE2300 Affected Environment: Mississippi River (Substantive)

Correspondence Id: 46 **Comment Id:** 628533 **Coder Name:** jgutierrez

Comment Text: In Missouri, over 3 million people rely on the Missouri River, or its alluvium, as its water source. Reductions in navigation flow support have cascading impacts, not only to uses on the Missouri River, but also on the Mississippi River, which is 40 percent of the flow to the middle Mississippi during normal conditions and peaked at more than 70 percent during the 2012 drought.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645608 **Coder Name:** jgutierrez

Comment Text: Water Compelled Rates There is no mention of water-compelled rates in either Sections 3.15 Navigation-Affected Environments et al., nor is there any analysis of water-compelled rates in Section 3.24 Mississippi River Impacts. Instead, the Corps devotes roughly one-half of one page to this critical concept in the Navigation Environmental Consequences Analysis Technical Report to the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644739 **Coder Name:** jgutierrez

Comment Text: According to the Missouri Department of Natural Resources, the Missouri River supplies over 40% of the flows to the middle Mississippi River during normal conditions and provided more than 70% during the 2012-2013 drought. During severe drought years, such as the late 1980s, more than 80 percent of the water flowing by the St. Louis Arch originates from the Missouri River. These flows are critical to keep the Mississippi River operable. Section 3.24.2.1 of DEIS itself states that the Missouri River contributes almost half the flow in the middle Mississippi River.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642781 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.24, p. 3-585 - 3-630 Comment: Regarding the Mississippi River evaluation, it is understood that effects to the Mississippi River must be documented in the EIS for NEPA purposes. It should be noted in the EIS, however, that the USACE is not authorized to operate the mainstem Missouri River dams for the Mississippi River.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640951 **Coder Name:** jgutierrez

Comment Text: The Corps needs to better study the linkage between the Missouri and Mississippi Rivers.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

AE300 Affected Environment: Least Tern (Substantive)

Correspondence Id: 49 **Comment Id:** 628666 **Coder Name:** JGUTIERREZ

Comment Text: The only place I see these birds now are inside my levee in ponds and pools that are created because the river is at the foot of our levees. They're there inside on farm ground that's been there for 100 years, but they're not outside where everybody thinks they ought to be because that habitat is destroyed.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643920 **Coder Name:** jgutierrez

Comment Text: Section 3.4.1.2, Page 3-91, second paragraph. Why is ESH which has to be constantly rebuilt, or in any year can be overtopped, not considered an intermittent habitat but reservoir shorelines are?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

AE3000 Affected Environment: General (Non-Substantive)

Correspondence Id: 36 **Comment Id:** 628346 **Coder Name:** jgutierrez

Comment Text: Land ownership within the Missouri River floodplain includes federal, state and local government lands, tribal lands and private lands. Various land uses are practiced within the Missouri River floodplain, including developed lands, agriculture lands, open water and other types of use. Developed land refers to communities, towns and cities, including commercial, industrial and residential uses, as well as the lands developed to support transportation, highways, roads, bridges, railroads and other infrastructure. Agriculture is the dominant land use in the floodplain between Gavins Point and the mouth, accounting for between 63% to 72% of the floodplain land.

Organization: Missouri Levee and Drainage District Association.

Commenter: Lanny Franks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645471 **Coder Name:** jgutierrez

Comment Text: The adverse impacts were demonstrated dramatically at Standing Rock in 2003 when the community drinking water intake malfunctioned during a period of low water. Notwithstanding the drought, the Corps continued the significant water releases for downstream navigation, and the elevation of Oahe Reservoir declined precipitously, causing the deposition of silt at the intake structure in Fort Yates. On November 23, 2003, three Reservation communities lost their drinking water supplies for 10 days. The Corps of Engineers water releases contributed to adverse environmental conditions, which led to a public health crisis on the Standing Rock Reservation. (Missouri River Master Manual: Hearing Before the Committee on Indian Affairs, US Senate, 108th Cong. (2003)). Similar impacts have been experienced on other Reservations in the upper basin, as well.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645234 **Coder Name:** jgutierrez

Comment Text: Pg.ii - In the description of the pallid sturgeon, any reference of it being an ancient fish has been removed. The Corps used to include that in its description but I remember hearing a MRRIC member once saying How do you know its ancient? and questioning this statement over and over. I looked it up on Wikipedia today and found the entry to be excellent. Here are notes from the first portion of the entry: Sturgeon evolution dates back to the Triassic period, some 245 to 208 million years ago. They are referred to as primitive fishes because their morphological characteristics have remained relatively unchanged since the earliest fossil record. Most sturgeon species are considered to be at risk of extinction, making them more critically endangered than any other species. Based on this (and Ichthyology textbooks), I would like the Corps to rewrite this portion and honestly describe the pallid sturgeon as an ancient fish.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645132 **Coder Name:** jgutierrez

Comment Text: The Missouri River is naturally a turbid, sediment-laden river and native fish and wildlife species evolved and thrived in these conditions. Construction of the Missouri River mainstem dams drastically altered the sediment transport process. This has resulted in relatively clear, sediment-starved water that increases river bed degradation, which further promotes the disconnect with the floodplain, reduces shallow-water and backwater habitats, and negatively impacts invertebrate production.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644729 **Coder Name:** jgutierrez

Comment Text: The nations inland waterways remain a vast national treasure of 12,000 miles of navigable rivers stretching across 38 states, intracoastal waterways, channels, ports, canals, and locks and dams that facilitate the safest, most fuel-efficient and environmentally friendly transportation mode for essential commodities. Our inland waterways sustain more than 541,000 jobs worth \$29 billion, and facilitate competition for farmers, manufacturers and other shippers in demanding world markets. The American construction industry benefits from properly maintained waterways, and Americas energy renaissance relies upon efficient waterways transportation. Other non-transportation beneficiaries of our waterways include hydropower, water supply, ecosystem maintenance, recreation, national defense and more.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644618 **Coder Name:** jgutierrez

Comment Text: 6. Missourians overwhelmingly support forest, fish and wildlife conservation with over 95 percent indicating their interest. Over two million residents and visitors participate in fishing, hunting, or wildlife-associated recreation in Missouri. There is an over \$12 billion economic impact in Missouri from wildlife-related recreation and the forest products industry. Fish and wildlife recreation and the forest products industry support over 99,000 jobs. Most Missourians agree (76 percent) that the Department should make an effort to restore animals that once lived or are currently very rare in the state. Together, these figures illustrate that Missourians place value on sport species as well as native, non-game species.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644616 **Coder Name:** jgutierrez

Comment Text: 5. The Missouri River is a significant resource for the citizens of Missouri. Recreation on the Missouri River enriches our economy and quality of life. Recreational use of the Missouri River in Missouri and along shared borders results in upwards of \$38 million in economic impact (2004 dollars), supports 490 jobs, and generates \$2.9 million in state and local taxes. River users participate in 69 river uses along the 552 miles in Missouri. There were 1.2 million visits to the Missouri River in Missouri and along shared borders during a 13-month study. The Department has interest in maintaining all forms of recreational use on the Missouri River. Any actions taken by USACE should seek to maintain or enhance the upwards of \$38 million in economic impacts in Missouri from recreation along the Missouri River.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644412 **Coder Name:** jgutierrez

Comment Text: When an environmentalist made the statement at a MRRIC meeting "we don't want to flood the farmers", then he understands what a major flood can do to the Habitat and its environment for survival in the floodplain. It is VERY VISIBLE from the 2011 flood that it has sit back the environment over 100's of years for the habitat, also for trees, bushes (all kinds of plant life) as

well as protection areas and food plots have not been reestablished even at this time period since the flood. Agriculture areas were loss for ever and some areas will take years to get it returned to agriculture productivity, which was a food provider and cover for habitat.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644382 **Coder Name:** jgutierrez

Comment Text: we do need to both control the rivers levels one with more flow to bring back a natural river and to also cut down on flooding by diverting excess water to texas or other drought stricken areas. During spring excuses when the river could flood. Our rivers are the life blood of the nation, they provide us water a valuable natural resources. Its vital to farms wildlife and humans. Wisely using its natural resources is something we should do. so frankly all aspects of the river are the same thing.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 196 **Comment Id:** 644140 **Coder Name:** jgutierrez

Comment Text: For historical relevance the Mississippi Valley flood of 1927 devastated our nation with more than 16 million acres inundated and levee failures throughout the lower Mississippi Valley. The 1927 flood alone caused 1/3rd of the United States GDP that year to be lost and never recovered. The flood left 500 people dead, 700,000 people without a home, 3,000 miles of railway destroyed, 2,000 miles of roadways destroyed, and 41,000 buildings inundated. In response, the United States Congress passed the Flood Control Act of 1928, authorizing the MR&T's comprehensive flood control project, to protect the people and property of the Mississippi Valley and the economic viability of our entire nation. The US Congress's passage of the act was to ensure the devastation and negative economic impact from 1927 flood does not repeat itself. In 2011 the MR&T comprehensive flood control system passed the flood of record without incident, which was greater in volume than the 1927 flood. On January 1, 2016 the MR&T comprehensive flood control system passed the flood of record, on the Middle Mississippi River at Cape Girardeau on LRDD's System 21-Headwater Diversion Levee System without incident. The MR&T project is a proven success and has returned 54 to 1 on the Federal investment, on damages prevented, by providing reliable flood control and navigation on the Mississippi River from Cape Girardeau, Missouri to the Gulf of Mexico.

Organization: The Little River Drainage District

Commenter: Dustin Boatwright **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 196 **Comment Id:** 644137 **Coder Name:** jgutierrez

Comment Text: The Little River Drainage District's system of levees located in Cape Girardeau and Bollinger County Missouri became a part of the Mississippi River and Tributaries project (MR&T) following the 1928 Flood Control Act. The levees today are identified as System 21-Little River Headwater Diversion Levee System and System 5 -Castor River Levee System on the U.S. Army Corps of Engineers-National Levee Database. The two levee systems were improved at the cost of the Federal Government, with assurances of the local people, to handle the Project Design Flood (PDF), which is the largest flood reasonably expected to occur. The Mississippi River Commission (MRC) was charged with the prosecution of the MR&T project in 1928. The President of the MRC also serves as the Commander of the Mississippi Valley Division of the U.S. Army Corps of Engineers which executes the MR&T project.

Organization: The Little River Drainage District

Commenter: Dustin Boatwright **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 196 **Comment Id:** 644132 **Coder Name:** jgutierrez

Comment Text: The Little River Drainage District's approved reclamation plan encompasses 550,000 acres, drains 2 million acres runoff, and provides flood control and drainage benefits to residential and commercial development, agriculture, federal & state conservation land, airway, telecommunication, utility, roadway, railway, and sanitary infrastructure. LRDD's authorized system is made up of nearly 1000 miles of drainage channels, 300 miles of levees, five (5) detention basins (~20,000 acres), one (1) pump station, and three (3) gated structures. Today, LRDD's system provides reliable drainage and flood control protection that ensures the highly productive people and property of the St. Francis Basin Watershed (Missouri and Arkansas), contribute significantly to the United States Gross Domestic Product each year.

Organization: The Little River Drainage District

Commenter: Dustin Boatwright **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642932 **Coder Name:** jgutierrez

Comment Text: Emergent sandbar habitat is a component of habitat restoration and is critical for maintaining bird populations in certain reaches of the river but also plays a critical role in floodplain connectivity, shallow water habitat and system productivity throughout the entire river. We support maintaining the amount of ESH necessary to support targeted population levels for least terns

and piping plovers. We strongly support creating ESH by spring habitat-forming flows rather than mechanical means whenever possible. These flows would not only create ESH but also provide important benefits to Pallid Sturgeon and the entire Missouri River ecosystem that mechanical creation cannot. While higher level sandbars provide nesting and rearing habitat for birds for several years, these same bars provide early life stage habitat for Pallid Sturgeon and other native fish species by creating aquatic habitat with various depths and velocities. As sand bars vegetate and are subsequently either flooded thereby providing floodplain connectivity or as they are eroded back into the river, they provide critical nutrients to fuel primary productivity which is sorely lacking in the current river. With managed low summer flows, these same sand bars create shallow, slow water areas critical for the early life stages of many native fish species and develop into highly productive areas for aquatic insects, biofilm and even aquatic vegetation, all of which provide critical resources for the Missouri River aquatic food chain thereby contributing to the overall health and productivity of the ecosystem.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641540 **Coder Name:** jgutierrez

Comment Text: Our family operates Hermann Sand & Gravel, Inc. (dredging company on the lower MO) and Missouri River Towing LLC (commercial towing business operating from St. Louis to Sioux City). Our dredging permits were capped by the Corps in 2008 which made it impossible to grow our business. We decided to start moving commercial hopper barges in 2009 and have been able to grow that business. Many terminals on the MO River have started shipping again. Our customers have invested millions of dollars in rebuilding their docks and equipment. The last time the Master Manual was adjusted it had a negative impact to our industry. Many companies went out of business. Terminals were closed. For the first time since then we are experiencing growth. New businesses are operating on the river, terminals are re-investing. In light of this new growth and investment, we need stability.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641438 **Coder Name:** jgutierrez

Comment Text: Humans have greatly changed the Missouri River. The river was once a wide, shallow, slow moving river. Now in the lower third it is channelized. It is impounded by six large reservoirs in the upper basin. It has lost flood plain connectivity due to the Bank Stabilization and Navigation Project (BSNP) and a series of levees. The overall health of the river has declined.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 164 **Comment Id:** 641356 **Coder Name:** jgutierrez

Comment Text: Mitigation actions included flow management, habitat restoration actions, and artificial propagation. Many of the flow management actions related to the pallid sturgeon are intended to cue spawning; however, to date, a spring pulse spawning cue has not been effective. The continued practice of artificial propagation (included in all Alternatives) is adequate in providing a continuous population set to study the effectiveness of habitat restoration and pallid sturgeon recruitment.

Organization: MidAmerican Energy Company

Commenter: Jenny McIvor **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 159 **Comment Id:** 640979 **Coder Name:** jgutierrez

Comment Text: Ameren Missouri owns and operates the Callaway and Labadie Energy Centers (located at approximately River Miles 115 and 58 respectively) which utilize the Missouri River as their cooling water supplies and as the receiving stream for cooling water and other effluents in accordance with our National Pollution Discharge Elimination Permits. The availability of water at our intakes is essential to our operations and the reliability of these two facilities with their combined capacity of approximately 3,600 Megawatts. These two Missouri River facilities comprise approximately 35% of our net capacity and produced approximately 62% (over 24.2 million Megawatt hours) of all the energy generated by our facilities in 2016. Our foremost concern with the EIS is with downstream flow support, as it is critical to these vital generating assets.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 134 **Comment Id:** 640568 **Coder Name:** jgutierrez

Comment Text: This hydroelectric power is also tremendously valuable as part of the energy that fuels the economy of the Upper Great Plains. As is shown in the table of Environmental Consequences of the Action Alternatives Compared to No Action on page xxvii of the Executive Summary of the DEIS, hydroelectric generation on the mainstem Missouri River provides almost \$526,000,000 in National Economic Development benefits per year under the No Action alternative.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 241 **Comment Id:** 640489 **Coder Name:** jgutierrez

Comment Text: Over the past 150 years, a host of man-made alterations have greatly changed the Missouri River. The river was transformed from a wide, shallow, slow moving river, to one dominated by channelization on the lower third and impounded by six large reservoirs in the upper basin. The river also suffers from loss of flood plain connectivity due to the Bank Stabilization and Navigation Project (BSNP) and a series of levees. These changes have contributed to a drastic decline in the overall health of the river.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 241 **Comment Id:** 640487 **Coder Name:** jgutierrez

Comment Text: The river is home to a tremendous variety of fish and wildlife. It provides world class recreational opportunities and is an important quality of life component for residents of the basin and the tens of thousands of visitors who enjoy many outdoor activities. The Missouri is also a critically important engine for the local, regional, and national economies. Activities on and along the river support many businesses and manufacturers.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 131 **Comment Id:** 640140 **Coder Name:** jgutierrez

Comment Text: As just described, the Missouri river is missing much of its former fish and wildlife habitat due to the channelization of the river, the loss of floodplain connections to habitats such as bottom land forests, wetlands, backwaters, chutes, shifting sandbars, shallow water habitat, etc. These provided habitat and food sources. The reservoir system has altered sediment transfer, water temperature and natural flow regimens.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 122 **Comment Id:** 638295 **Coder Name:** jgutierrez

Comment Text: Large public water suppliers like WaterOne rely on permanent, fixed intake structures to divert water from the Missouri River and its major tributaries, such as the Kansas River. These intakes rely on the channel created and maintained by Corps Bank Stabilization and Navigation Project (BNSP) to operate. Most public water suppliers have limited or no access to alternative sources of water. It is extremely expensive or impossible to adjust these intakes to substantial changes in river levels. These intakes were designed and constructed with the advice, consent and approval of the Corps. It is imperative for the Corps to ensure that these intakes remain capable of continuous operation.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 135 **Comment Id:** 637266 **Coder Name:** jgutierrez

Comment Text: In the Iowa County where I live, Fremont County, the Corp has purchased 6244 acres. The Federal Government pays no Real Estate taxes. The loss of R.E. tax as well as the loss of State Income Tax from crops produced on the land owned by the Corp has been very detrimental to this rural community. Our schools are really suffering. The PILT program is a Joke.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 68 **Comment Id:** 633533 **Coder Name:** jgutierrez

Comment Text: For too many years, our taxes moneys have been spent repeatedly padding the pockets of the levee districts, barge industry and a few farmers, who actually took the very land by accreditation that was considered to be unsuitable for agriculture from the river's edge to grow corn and beans, the same crops that the tax payers repeatedly replaces, along with the failed levees and sand removal each time a so-called natural disaster occurs.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 66 **Comment Id:** 633524 **Coder Name:** jgutierrez

Comment Text: Almost a quarter of our state's counties border the Missouri River. A new study shows agriculture is vitally important in those 25 counties. Agriculture, forestry and related industries had an economic impact of \$34.6 billion in 2016. Agriculture's contribution includes \$21.2 billion in inputs, over 135,000 jobs, and \$2.8 billion in federal, state and local taxes.

Organization: Missouri Farm Bureau

Commenter: Adam Jones **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 60 **Comment Id:** 631138 **Coder Name:** jgutierrez

Comment Text: We have an area on our land where the Corps cut a dike, causing tremendous erosion. We lost sandbar habitat that now they are so desperately trying to gain. We are losing land, soil. It's going down the Missouri River. And we have intense bank erosion.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 36 **Comment Id:** 628349 **Coder Name:** jgutierrez

Comment Text: And then another paragraph, a main objective for the mainstem reservoir system is to regulate the reservoirs to reduce the risk the Missouri River flows from contributing to flood damage and the reaches downstream from dams. Regulation of individual reservoirs is coordinated to reduce flood risk from a particular reservoir. And on the next page, levees also play a role in flood risk management along the Missouri River. Federal agriculture levee construction in accordance with the 1941 and 1944 Flood Control Acts began in 1947. Most existing federal levees are in the reach located between Omaha and Kansas City. The levees help to manage flood risks to these localities during the most severe flood events of record. Between Sioux City and the mouth of the Missouri River, local interests have built many miles of levees consisting of about 500 nonfederal units through this reach of the river. Most of these levees are inadequate to withstand major floods, but generally protect against floods smaller than a 5% annual chance of exceedance event for 20 years.

Organization: Missouri Levee and Drainage District Association.

Commenter: Lanny Franks **Page:** **Paragraph:**

Kept Private: No

AE400 Affected Environment: Fish and Wildlife Habitat (Substantive)

Correspondence Id: 147 **Comment Id:** 640685 **Coder Name:** jgutierrez

Comment Text: While we are in support of the Army Corps of Engineers efforts to avoid a finding of jeopardy of the listed endangered species, we believe this management plan and impact statement is narrowly focused on listed species. On page v, lines 34-36: It states, "The purpose is to develop a suite of actions that meets Endangered Species Act responsibilities for already listed species." We believe this document should take a more holistic approach as to prevent additional species listings and not focus solely on endangered species.

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645223 **Coder Name:** jgutierrez

Comment Text: Invasion of the Asian Carp - The invasion of the Asian Carp has changed the balance of the river species community. They eat-up all the prey fish until they unbalance it so much that they eventually starve themselves, but in the process, many other fish species are impacted through stress, competition, foraging areas and river spaces stolen, and being devoured. The DEIS does not address this problem and it should be considered.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

AE500 Affected Environment: Other Special Status Species (Substantive)

Correspondence Id: 147 **Comment Id:** 640691 **Coder Name:** jgutierrez

Comment Text: Additionally, considering other species beyond Scaphirhynchus sturgeon may be important. There have been documented declines of numerous other species, including a potential listing of Sturgeon and Sicklefin Chubs. The National Research Council (2002) reported that 51 of 67 native main-stem fish species are rare, uncommon, or decreasing in all or part of their range. Because of additional species declining, other species such as Sturgeon Chub, Sicklefin Chub, Shoal Chub, Paddlefish, etc. that have the potential to decline further should be considered in order to avoid additional listings. For example, if we are creating habitat for young of year sturgeon does this same habitat meet the needs for chub species, or do they have different habitat requirements? Can we make the most out of these habitat rehabilitation projects and create habitats that will benefit numerous species and types of wildlife while also providing benefits to local landowners?

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645224 **Coder Name:** jgutierrez

Comment Text: Basin states threatened and endangered species -The species which are listed on states threatened and endangered lists should at least be addressed in this DEIS. Lands which adjoin the Missouri River and which have an avoidance of jeopardy concerns for the states, have overlapping needs and shouldnt be shut out of this process.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644621 **Coder Name:** jgutierrez

Comment Text: 7. In addition to the Federally Endangered pallid sturgeon, a number of native fish species are known to be in decline or are below historic abundances in the river in Missouri including: sturgeon chub; sticklefin chub; flathead chub; western silvery minnow; lake sturgeon. Nebraska reports a high proportion of native fish species in the Missouri River are in decline. In fact, the U.S. Fish and Wildlife Service petitioned in August 2016 to consider listing sturgeon chub and sticklefin chub as endangered species. Habitat mitigation efforts were intended to benefit a wide variety of species, and were not linked to Endangered Species Act compliance.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644406 **Coder Name:** jgutierrez

Comment Text: In general, the State is supportive of the Corps' efforts with regard to avoiding jeopardy of the three listed species. However, there have been documented declines of numerous other species, including a potential listing of Sturgeon and Sicklefin Chubs. The Bank Stabilization and Navigation Project (BSNP) Fish and Wildlife Mitigation Project to develop additional acres of fish and wildlife habitat along the lower 735 miles of the Missouri River would provide benefits not only for the listed species, but other important native fish and wildlife species, some of which are included in the state of Iowa's Wildlife Action Plan species of greatest conservation need. It is stated in the draft Environmental Impact Statement (EIS) document that the mitigation program is still relevant and remains unchanged; however, current mitigation efforts have been reduced and focused solely on the listed species.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

AE600 Affected Environment: Water Quality (Substantive)

Correspondence Id: 204 **Comment Id:** 644455 **Coder Name:** jgutierrez

Comment Text: Staff takes issue with the statements in 3.7.1.3 concerning other pollutants. This paragraph addresses substances such pesticides and atrazine stating "at Rulo, the pesticides ... atrazine ... were present but not at levels that exceeded water quality criteria". KCMO routinely treats for atrazine removal to meet the potable water contaminate level of a maximum of 3 ppb. KCMO periodically treats for Taste and Odor compounds caused by algal and bacterial releases of Geosmin and MIB. When these Taste and Odor events occur, and staff is unable to respond effectively by adding Powdered Activated Carbon, our customers complain and this leads to an erosion of customer confidence in KCMO's drinking water.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645405 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.7, pp. 3-181 - 3-191 Comment: The document assessed the physiochemical water quality parameters of temperature, dissolved oxygen, nutrients, sediment and turbidity, and other pollutants including metals/metalloids, but not pH. pH is a common and important metric used to track the health of the ecological community and human uses of the river. We recommend it be added to the list of physiochemical parameters monitored.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644920 **Coder Name:** jgutierrez

Comment Text: Searching the DEIS, we find that there are few references and little analysis for TMDL documents for the Missouri River. There is a reference to North Dakota Dept of Public Health's ongoing TMDL program. That documentation shows Lake Sakakawea and Lake Oahe with a number of TMDLs, and Missouri River TMDLs have their own table.. For the most part, states link TMDL creation with identification and publication of health risks related to fish consumption. Missouri has had TMDLs for

chlordan, PCBs and mercury since about 2002, and fish consumption advisories warn against eating sturgeon roe. A tabular listing of TMDLs, by state would provide the public with an awareness of environmental conditions on the Missouri River that may be contributing or competing sources of jeopardy for the endangered species.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

AE700 Affected Environment: Water Supply (Substantive)

Correspondence Id: 190 **Comment Id:** 641584 **Coder Name:** jgutierrez

Comment Text: At the same time, the Fort Calhoun nuclear power plant has ceased operation and will begin a decommissioning process. The nuclear plant sat right at the edge of the river north of Omaha. Without the nuclear plant, water levels no longer need to remain consistent in that stretch of the river.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644445 **Coder Name:** jgutierrez

Comment Text: Water Services represents an essential City function and provides an average of 100 MGD of potable water to Kansas City and suburban customers for drinking water, sanitation, firefighting, recreation, and industrial uses. During peak summer demand, the water treatment plant is capable of producing over 200 MGD. The primary source of raw water is the Missouri River; supplemented by 14 alluvial wells for intermittent use as temperature control. The Missouri River Intake has been located at its current location since 1925.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642721 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18.1.1, p. 3-502 Comment: The title of Table 3-230 says the table contains information regarding flows and elevations associated with water supply intakes, however, the table only includes elevations. In addition, for intakes above Gavins Point Dam, Table 3-230 shows that the operating range is 2160 to 1194 and the shutdown range is 2160 to

1192. The operating and shutdown ranges both start at elevation 2160. The shutdown elevation should be less than the operating elevation. It is also pointless as the elevation of the intake only matters in relationship to the water surface elevation at the intake. Grouping them this way makes no sense. Also, providing them in the 1988 vertical datum is fine for the river, but the reservoir elevations are referenced to the 1929 vertical datum.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642719 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18, p. 3-501 "There are an estimated three commercial/industrial water supply intakes operating along the Missouri River, two in North Dakota and one in Iowa (USACE 2015c; USACE 2006a; USACE 2012; Personal communication with water supply intake managers and operators, November 2015 through March 2016). The North Dakota intakes are the Great Plains Synfuels and Blue Flint Ethanol Refinery." Comment: This paragraph does not include the Tesoro Refinery in Mandan as well as the numerous other industrial intakes in Lake Sakakawea for oilfield use.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642715 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18.1.1, p. 3-500, Table 3-229 Comment: The table shows an incorrect number of intakes in Lake Sakakawea and the Garrison Dam to Lake Oahe Reach (Garrison Reach). The table lists one intake each for Lake Sakakawea and the Garrison Reach for commercial/industrial use. The Office of the State Engineer water permit database lists 27 commercial/industrial intakes in Lake Sakakawea and seven in the Garrison Reach. It appears as though the EIS does not classify oilfield use as industrial/commercial. This table also misrepresents the number of municipal water intakes in Lake Sakakawea and the Garrison Reach at nine and one, respectively. The Office of the State Engineer water permit database shows 15 municipal/rural water intakes in Lake Sakakawea and seven in the Garrison Reach.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642139 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**

Kept Private: No

AE900 Affected Environment: Cultural Resources (Substantive)

Correspondence Id: 232 **Comment Id:** 645439 **Coder Name:** jgutierrez

Comment Text: Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes or Native Hawaiian organizations and should consider that when complying with this part. 36 CFR Â§800.2(c)(2)(ii)(D). None of this has occurred. The surveys used for the computer models are outdated, and were not conducted in compliance with the consultation requirements for traditional cultural properties. 36 CFR Â§800.2(c)(2)(ii). The Great Plains Water Alliance Tribes are not signatories to the Missouri River Programmatic Agreement, and thus full compliance with section 106 and the implementing regulations at 36 CFR Part 800 is mandatory. The Corps has not done so with respect to the Draft EIS. The Corps admitted this on page 8 of the Technical Report - It is understood that there are many unknown cultural resource sites existing on the landscape, as well as important cultural resources that do not meet the definition of a cultural resources site used in this study. The inventory of known cultural resource sites used in this analysis is intended to serve as a representative sample. That does not constitute compliance with the identification requirements of 36 CFR 36 CFR Â§800.2-800.5. Consequently, the Draft EIS violates the National Historic Preservation Act and its implementing regulations. The Advisory Council permits agencies such as the Corps to develop agency specific procedures for NHPA section 106, "if they are consistent with the Council's regulations." 36 CFR Â§800.14(a). The Corps has promulgated section 106 procedures which are codified at 33 CFR Part 325 App. C. The Corps' section 106 procedures are widely considered to violate 36 CFR Part 800.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

AL100 Alternatives: Alternative 1, No Action (Substantive)

Correspondence Id: 28 **Comment Id:** 627555 **Coder Name:** JGUTIERREZ

Comment Text: Alternative 1 is a concern that it continues to allow for a bi-modal spring rise and the construction of shallow water habitat.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645450 **Coder Name:** jgutierrez

Comment Text: The CPRs members who live and operate businesses along the lower Missouri River experience flooding each spring caused by inflows from various tributaries. In April 2017, the Missouri River has risen approximately twelve feet in a weeks time in the central Missouri reach. For this very reason, the CPR is wary of attempts to boost pallid sturgeon population by increasing flows from Gavins Point Dam. Further, no science has been developed to prove its value. The DEIS states: The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning (Doyle, et, al. 2011). Therefore, we remain opposed to the bimodal spring rise provision within Alternatives 1, 2 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645379 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.9.2.1, p. 2-78 "Alternative 1 does not meet the species objective of providing a 95 percent chance of persistence for piping plover over the 50-year modeled period." Comment: The piping plover actions in the Preferred Alternative are the same as in Alternative 1. It is disingenuous to assert that Alternative 1 does not meet the needs of the birds when the only justification provided in the EIS for that assertion is that Alternative 1 includes an annual average of 107 acres of mechanical ESH construction. Page 2-49 states that the 107 acres is based on past average annual ESH construction in the Gavins Point Dam and upper Lewis and Clark Lake segments from 2004 through 2010. It further states that Alternative 1 represents continued implementation of that acreage of ESH, but in the Garrison and Gavins Point reaches. In the Garrison Reach, from 2004 to 2010, mechanical construction did not occur because the sole focus was vegetation maintenance on existing ESH. The 107 acres of ESH construction under Alternative 1 does not include the acres gained due to vegetation maintenance and misrepresents and underestimates the actions that are currently being implemented.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645248 **Coder Name:** jgutierrez

Comment Text: In the DRAFT EIS, the current 2006 Master Manual is reflected as Alternative 1, or the No Action Alternative. While the 2006 Master Manual includes a bi-modal spring pulse, it left the flood control constraints undisturbed. The State of Missouri has consistently opposed the bimodal spring rises in the current Master Manual given that it increases flood risk (see "Spring Rise Letter Pauley to McMahon 1-27-12" and "Governor Letter to Gen. McMahon RE Spring Rise 3-9-10" enclosed). Given the high frequency of flood events in Missouri, we have always expressed opposition to any proposed spring rise releases from Gavins Point Dam.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644922 **Coder Name:** jgutierrez

Comment Text: Alternative 1 is called the "no action" alternative; but it is not. On the one hand, it is meant to describe the history of ongoing operational management actions the Corps is currently, or has in the past, engaged in for the purpose of avoiding jeopardy. On further examination, we are told, within the DEIS, that Alt 1 is not those actions; but rather, that it describes the actions the Corps would do, or would like to have done, if only it had been given the resources to comply with the existing 2003 amended biological opinion, and the Reasonable and Prudent Actions (RPAs) from the 2000 biological opinion. It describes a 'what if' world, previously unattained; and stipulates that this world- - used for comparison to the other alternatives- - does not avoid jeopardy.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644907 **Coder Name:** jgutierrez

Comment Text: 1. No Action Alternative (Alt1): Text (2.8.2) and Cost Estimates, Appendix F (also see the issue:# 2. Early life History Habitat Construction) Background: USFWS ([https://www.fws.gov/r9esnepa/NEPA Handbook/40 Asked Questions.pdf](https://www.fws.gov/r9esnepa/NEPA%20Handbook/40%20Asked%20Questions.pdf)) USFWS defines no action alternative as: A. Section 1502.14(d) requires the alternatives analysis in the EIS to "include the alternative of no action. 11 There are two distinct interpretations of "no action" that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity. The second interpretation of "no action 11 is illustrated

in instances involving federal decisions on proposals for projects. "No action" in such cases would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward. STATEMENT OF CONCERN. It appears that Alternative 1 (Current System Operation and Current MRRP Implementation) is a major change from the current level of management intensity. BASIS FOR CONCERN. If 'actions common to all alternatives' includes new actions not previously part of Alt 1 (i.e., Actions Common to All Plan Alternatives 2.81., pg. 2-48)), how can it be identified as. Pg2-55 to 2.82 as No Action (Current System Operation and Current MRRP)? Highlighted excerpts from the DEIS that follow illustrate that the DEIS no-action alternative includes actions that are a significant change from current management direction or level of management intensity.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644501 **Coder Name:** jgutierrez

Comment Text: As previously stated, the MOARC preference is the No Action alternative, with no changes or modifications with the exception of eliminating the bi-modal spring pulse.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644496 **Coder Name:** jgutierrez

Comment Text: Upon review of the identified alternatives for the Missouri River Management Plan and Draft Environmental Impact Statement (DEIS) MOARC hereby expresses our preference is the No Action alternative, with no changes or modifications except for elimination of the bi-modal spring pulse. There are several ports within the MOARC region, including Port KC and the St. Joseph Port, both on the Missouri River. MOARC understands that uncertainties associated with the Master Manual review process resulted in the loss of much of the Missouri River navigation network, including some shippers, terminals and ports. Nonetheless, by law, navigation remains a primary purpose for which the Missouri River is to be operated. That was confirmed by the 8th Circuit Court during the extended Master Manual review process. In recognition of that fact, efforts to revitalize Missouri River navigation began several years ago and, having achieved some success, were increased in recent years. Despite uncertainty being introduced through the current effort to again revise the Missouri River operations, and to do so without due consideration to the operating parameters previously established in the Master Manual, navigation is increasing.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 204 **Comment Id:** 644448 **Coder Name:** jgutierrez

Comment Text: Alternative 1 (current operation) has created situations where drought coupled with channel degradation required modification to intake pumping in order to install low water stage auxiliary pumps to accommodate low water conditions. These units are not designed for continuous operation over long periods of time and do not provide adequate feed rates to the treatment plant where extended low water conditions persist. This alternative per the ISAP is also not effective for the endangered species and thus its continuation seems unlikely.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 643781 **Coder Name:** jgutierrez

Comment Text: NPPD has concerns with the DEIS contention that Alternative 1 is a baseline or reference case. We do not believe it serves such a purpose from a scientific perspective or as a tool for comparing impacts of alternatives for thermal power. This is because the Independent Science Advisory Panel (ISAP) has found that the spring pulse management action (as implemented to date) does not benefit to pallid sturgeon, the Shallow Water Habitat (SWH) development was determined to not benefit the Pallid Sturgeon, and it is not a viable alternative that would be implemented.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 205 **Comment Id:** 642122 **Coder Name:** jgutierrez

Comment Text: The Corps has an obligation to meet targets proposed in each AOP as close as possible without violating the eight Authorized Purposes. Alternatives #1 and #3 come the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 161 **Comment Id:** 641123 **Coder Name:** jgutierrez

Comment Text: With our policy and concerns in mind, and because the Corps hydrologic and economic modeling is incomplete, Farm Bureau does not support any of the six alternatives proposed by the Corps, except Alternative 1 - No Action (Current System Operation and Current MRRP Implementation).

Organization: Iowa Farm Bureau Federation

Commenter: Rick Robinson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640728 **Coder Name:** jgutierrez

Comment Text: Aside from Alternative #1 (No Action) each of the alternatives relax flood control constraints within the current Missouri River Mainstem Reservoir System Water Control Master Manual (Master Manual). In the month of April, we have witnessed the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to Missouri farmers, thus it will come as no surprise that MFB, and many other Missouri organizations, vehemently oppose any change in river flow that increases the likelihood of flooding during any time of year. This is non-negotiable.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633683 **Coder Name:** jgutierrez

Comment Text: Our members who live, farm and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are extremely wary of any attempt to increase flows from the Gavins Point Dam because to date, no science has been developed to prove this boosts the pallid sturgeon population. This is the basis for our opposition to bimodal spring rise provisions in Alternatives 1, 2 and 6.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633517 **Coder Name:** jgutierrez

Comment Text: First, AWO supports the recovery of the endangered pallid sturgeon and the threaten leased tern and piper plover, and we strongly believe that these species can be recovered without changes to the Master Manual or any other major flow modifications to the mainstem reservoir system, which our members strongly oppose.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 627997 **Coder Name:** jgutierrez

Comment Text: First of all, AWO supports the recovery of the endangered pallid sturgeon and the threatened least tern and piping plover, and believe that these species can be recovered without changes to the Master Manual or any other major flow modifications to the mainstem reservoir system.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

AL150 Alternatives: Alternative 1, No Action (non-substantive) (Non-Substantive)

Correspondence Id: 11 **Comment Id:** 626225 **Coder Name:** jgutierrez

Comment Text: Leave the alt the same. Select #1.

Organization: St. Joseph Regional Port Authority

Commenter: Row Blakley **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644463 **Coder Name:** jgutierrez

Comment Text: Alternative 1 (No Action) Current bi-modal spring rise

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 175 **Comment Id:** 641396 **Coder Name:** jgutierrez

Comment Text: I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 235 **Comment Id:** 640501 **Coder Name:** jgutierrez

Comment Text: The Carroll County Commission does hereby go on record as being in favor of the present method of operation of the Missouri River.

Organization: Carroll County Commission

Commenter: Nelson Heil **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 142 **Comment Id:** 633882 **Coder Name:** jgutierrez

Comment Text: Alternative 1 Spawning cue release for the pallid sturgeon

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 66 **Comment Id:** 633527 **Coder Name:** jgutierrez

Comment Text: Alternative 1 is a concern that it continues to allow for a bimodal spring rise and the construction of shallow water habitat.

Organization: Missouri Farm Bureau

Commenter: Adam Jones **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 15 **Comment Id:** 626275 **Coder Name:** jgutierrez

Comment Text: Option #1 or Option #3 would be least offensive to those who live and farm close to the Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 12 **Comment Id:** 626226 **Coder Name:** jgutierrez

Comment Text: After review of the alternatives presented, I can not support any option. I find the Fish and Wildlife Service is asking the USACE to abandon priorities of flood control, navigation, and water supply availability to do the management experimentation of the FWS. USACE responsibility to not unnecessarily damage threatened species do not present the responsibility to save all endangered species at the peril to other responsibilities.

Organization: Missouri Farm Bureau

Commenter: Brent Hampy **Page:** **Paragraph:**

Kept Private: No

AL200 Alternatives: Alternative 2 (Substantive)

Correspondence Id: 23 **Comment Id:** 626658 **Coder Name:** jgutierrez

Comment Text: The Corps incorrectly sets the cost of Alternative 2 as too high. The Corps has included too much mechanically created habitat in Alternative 2 which unnecessarily raises its cost.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645613 **Coder Name:** jgutierrez

Comment Text: Section 3.18.2.5 - Alternative 2 - USFWS 2003 Biological Opinion Projected Action This is the worst possible alternative for water supply because of its inclusion of a summer low flow provision. Because Alternative 2 relies on the USFWS 2003 Biological Opinion (BiOp), which lacks scientific basis and is deeply flawed. Since then, most of the hypotheses relied upon in the BiOp have been disproven.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645452 **Coder Name:** jgutierrez

Comment Text: In addition, the CPR remains steadfast in its opposition to low summer flow provisions contained in Alternative 2. If this alternative were to be implemented, the Corps would effectively abandon a primary congressionally authorized purpose of the Missouri River by causing severe harm to the navigation industry - one that's been on the increase in recent years and serves as a vital mode of transportation as our nation grapples with continued deterioration of our roads and bridges.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645450 **Coder Name:** jgutierrez

Comment Text: The CPR's members who live and operate businesses along the lower Missouri River experience flooding each spring caused by inflows from various tributaries. In April 2017, the Missouri River has risen approximately twelve feet in a week's time in the central Missouri reach. For this very reason, the CPR is wary of attempts to boost pallid sturgeon population by increasing flows from Gavins Point Dam. Further, no science has been developed to prove its value. The DEIS states: The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning (Doyle, et al. 2011). Therefore, we remain opposed to the bimodal spring rise provision within Alternatives 1, 2 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645418 **Coder Name:** jgutierrez

Comment Text: Similarly, the low summer flow found in Alternative 2 has not been shown to be effective. The only explanation of its effects on the pallid sturgeon is that "the USFWS 2003 Amended BiOp (USFWS 2003) also called for the modification to System operations to allow for flows that are sufficiently low to provide for SWH as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon."¹¹² The MRRMP-EIS does not explain the benefits of low summer flow in terms of how much SWH would be created and thus does nothing to prove that it is a beneficial management action for the pallid sturgeon. In addition, low summer flow "would only be implemented in the two years following implementation of a complete bimodal spring pallid sturgeon flow release."¹¹³ This would make the implementation of low summer flow infrequent because "modeling based on an 82-year POR, indicate that in practice the bimodal spring pallid sturgeon flow releases would likely only meet the conditions for implementation once in every eight years," meaning that the complete implementation of these flows would occur even less frequently than this.¹¹⁴

The lack of explanation about the benefits of low summer flow, along with its infrequent implementation, show that the Corps provides no evidence of the effectiveness of this management action. It is possible that because there is a lack of evidence showing a positive effect of the low summer flow on the pallid sturgeon, the low summer flow could be ineffective. NEPA requires use of the best available scientific information, which in turn necessitates the consideration of other viable alternatives.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645266 **Coder Name:** jgutierrez

Comment Text: Alternative 2 of the Draft EIS includes a low summer flow period specified to run from late June to September within two years following implementation of a complete bimodal spring flow release. The Corps specified this operation in Section VII.1.b of the 2003 Amended Biological Opinion (2003 Amended BiOp) as a Reasonable and Prudent Alternative (RPA) for the pallid sturgeon. The goal of this operation is "to allow for flows that are sufficiently low to provide for [shallow water habitat] as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon" (MRRP MP EIS Vol. 1: p. 2-64-65). This operation is unnatural as it would not mimic the timing of lower flows as compared to the pre-settlement hydrograph and it would cause economic and environmental harm. This was proven during the summer of 2003 when the Corps failed to operate the Missouri River Reservoir System in accordance with the purposes mandated by Congress and implemented a summer low flow period of the approximate timing, magnitude, and duration of the aforementioned operation. This low flow period was implemented because the Fish and Wildlife Service (FWS) and the Corps failed to collaborate on river management in advance of the nesting of endangered bird species below Gavins Point dam. After the birds had nested, the FWS notified the Corps the agency would not allow birds or eggs to be moved once nested, thereby prohibiting the Corps from increasing releases as indicated in the Annual Operating Plan. If the Corps would have been notified of this new prohibition in advance of the bird nesting season, the Corps could have provided steady releases from the reservoirs to provide adequate flow support throughout the summer, while still allowing the birds to nest at higher elevations on the sandbars. Due to this failure of coordination and the low summer flow implemented, downstream users suffered significant losses, waterborne transportation became hazardous, drinking water systems were impacted, and water quality standards were exceeded. On December 13, 2003, the FWS released their 2003 Amended Biological Opinion (BiOp). This BiOp mandated a summer low flow period as part of their RPA for the pallid sturgeon. The RPA also included provisions to modify these prescriptive low flows after 1,200 acres of additional shallow water habitat were developed. In hopes to avoid the summer low flow operation, in early 2004 the Corps reinitiated consultation with the FWS and sought to modify the prescribed flows by constructing the additional shallow water habitat. The Corps worked with the FWS and the affected states to initiate expedited construction of the required habitat in advance of July 1, 2004 - the start date of the mandated low flow operation. On June 7, 2004, the Corps sent a letter to the FWS (enclosed) stating that by July 1, 2004, the Corps expected to construct between 1,420 and 1,810 acres of new

shallow water habitat. On June 24, 2004, the FWS responded (enclosed) and verified that the Corps' habitat construction and restoration efforts yield an estimated 1,395 to 1,785 acres of new shallow water habitat available to pallid sturgeon by July 1, 2004. The FWS concurred that the Corps fulfilled the goal of this RPA element and permitted the Corps to provide flow support releases to meet project purposes. Therefore, the obligations and outcomes desired under this specific RPA operation have been fully achieved, do not need to be reconsidered within this EIS, and should be removed.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645252 **Coder Name:** jgutierrez

Comment Text: The Summer Low Flow Operation in Alternative 2 Must Be Removed Alternative 2 of the DRAFT EIS has a low summer flow period proposed to run from late June to September. This operation is based on criteria specified in the 2003 Biological Opinion (BiOp). The stated goal of the low flow period is "to allow for flows that are sufficiently low to provide for shallow water habitat as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon" (MRRP MP EIS Vol. 1: p. 2-64-65). Missouri has repeatedly expressed opposition to the low summer flow alternative given that it would have significant economic impacts while not even seeking to mimic the timing of low flow periods in the pre-settlement natural hydrograph. Fortunately, the 2003 BiOp included a provision for eliminating the prescriptive low summer flow alternative if the Corps developed 1,200 acres of additional shallow water habitat. Consequently, in 2004 the Corps worked with the FWS and the affected states to expedite construction of the requisite habitat in advance of July 1, 2004, the start date of the mandated low flow operation. At the completion of this work, the Corps and FWS verified that between 1,395 to 1,785 acres of new shallow water habitat was successfully created and made available to pallid sturgeon by July 1, 2004 (see "Corps Letter to Thorson 06.07.2004" and "FWS Letter to BG Grisoli 2004 0624" enclosed). The FWS concurred that the Corps fulfilled the goal of this Reasonable and Prudent Alternative element and has not required the low summer flow operation. Therefore, the Corps has fully achieved the obligations and outcomes desired and the State of Missouri requests the low summer flow alternative be removed from further consideration in the DRAFT EIS (see "Low Summer Flow Should be Abandoned" enclosure for further comment).

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645215 **Coder Name:** jgutierrez

Comment Text: In viewing the USACEs own statement about Alternative #2, it was stated that the Corps would only accept Alternative #2 as its Preferred Alternative if all of the impediments were removed (cost, HC impacts, etc.). This means that in addition to the large number of acres and the huge cost, there seems to have been an over-reach of the Human Considerations influence in the decision-making process based on how HC seemed to drive the selections made in this DEIS. This would mean an over-reach in the calculations of NED and RED, and a likely weighting of the selection preference towards Alternative #3. The no-impact-to-HC biased the direction of the evaluation of possible management actions and weighted the process away from sound biological actions in #2. Thus, Alternative #2 failed cost-wise and HC-wise, according to the Corps weighted selection process. The reporting of Human Considerations data by the special interests themselves was a bit like the fox in the henhouse, and how well the Corps vetted the information - or had the staff and time to do so - is questionable.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645214 **Coder Name:** jgutierrez

Comment Text: The AM in #2 is passive, rather than the active Adaptive Management Plan found in Alternatives 3-6. We ask that the new Adaptive Management Plan be also included in Alternative 2, although the passive plan is not totally unacceptable. There could be a merger of some features and a compromise accomplished which could work, however, the total disregarding of an adjustment or even a discussion of such in Alternative #2 is disappointing.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645213 **Coder Name:** jgutierrez

Comment Text: Alternative #2 should have been adjusted to make it more competitive with the other alternatives. 3546 acres of bird habitat is to be created each year in #2, an \$8 billion cost - far greater than the Preferred Alternatives 391 acres. It is not unrealistic to ask that the Corps modify this aspect and adjust it to a lower level. Also the number of acres of mechanically created sandbar habitat is so large, that this, too, should be adjusted downward for a more realistic alternative. By using higher values, the Corps makes it an unreasonable situation.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645211 **Coder Name:** jgutierrez

Comment Text: Mechanical ESH creation is eight to ten times higher in Alternative 2 when compared to Alternative #3, even though #3 is an all-mechanical alternative! This exorbitant value is hard to understand and one wonders how this can be? Was it simply over-estimation of sandbar construction costs in #2 or a purposeful bias in these estimates? It is possible to manipulate project costs. To make #2 - or any project proposal, for that matter - markedly higher or lower, consistently picking either the highest estimate in the range or the lowest estimate in the range for each project component, will yield such a final number as is desired.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645210 **Coder Name:** jgutierrez

Comment Text: Alternative #2 is too expensive - why? Indeed, in the Corps documents, it runs five times more expensive than each of the other alternatives - a rather strange feature. And also strangely, each of the other five alternatives are about the same in cost, estimated \$3 billion. The one and only alternative that most likely will best prevent jeopardy, has a huge price tag! The one alternative that is biologically focused, and the only one which can return land to the riverine corridor for habitat re-establishment, channel variation, as well as providing flood risk reduction, has been made untenable to Congress, the Presidents Budget, and the public taxpayer by its high cost. The exaggerated cost of Alternative #2 is a disservice to the endangered and threatened species of the Missouri River (and all native species of the river environs) as well as to the public. The public places the care of the fish, birds and other species of the Missouri River into the hands of the Corps, expecting to have honest and biologically-wise management of the river. It is the publics expectation as is reinforced by The Public Trust. The public consists of more than the barge industry, agriculture, states with agendas and intake facilities.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645209 **Coder Name:** jgutierrez

Comment Text: Additionally, the Corps appears to believe that 1) changing the river flows to a more natural flow regime, 2) that reconnecting the river with its floodplain by the enhancement of backwaters, SWH in meaningful numbers, or 3) that the acquiring of land for these habitats and levee setbacks in a substantive amount, are infringements on other authorized uses, and is therefore an unacceptable alternative. All three features actually make Alternative #2 the best for the species. A low summer flow is in Alternative

#2 as well as a spring rise. The Corps has not implemented either of these from the 2003 Amended BiOp for various reasons, part of the Corps incomplete compliance. (One spring rise occurred years ago but it was small and had no effect.) We support both of these as they reflect a more naturalized flow regime, using naturalized from the Corps own text. For an alternative to support the habitat conditions for the pallid sturgeon, ignoring of higher rises in the spring and lower flows in the late summer is incomprehensible. All rivers and streams in this region of the country exhibit this characteristic and river organisms have evolved in this environment throughout time. No one is recommending huge releases like the 2011 flood. But the higher flows and the low summer flow must be of reasonable magnitude, duration and reoccurrence to truly have a benefit for the fish. To expect for a beneficial management action to not have any impacts at all on HC, makes this whole undertaking a fallacy. Having natural variation in flows, higher and lower over the course of the year, is a naturalization of flow and is critical to make the aquatic environment which gives the necessary variations in conditions in which all the many species of fish, water insects, macroinvertebrates, and cellular organisms depend for robust populations. The large, higher flows have multiple uses: setting the stage for spawning, scouring vegetation, scouring sediment, re-depositing sediment, providing drift for larvae fish, filling backwaters, bringing-in terrestrial nutrients, and simply reconnecting that long-separated riverine area back with the river. The benefits are numerous and solid.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645207 **Coder Name:** jgutierrez

Comment Text: Alternative #2 was never a player. The Corps never intended to have the USFWSs 2003 Amended Biological Opinion become the Preferred Alternative. It was included because NEPA review would expect it to be there, and as a gesture to the environmentalists. The Corps never fully completed compliance with it in the first place, why would they want to have to deal with it some more! Perhaps the most glaring failure to comply was the minimalist approach to land acquisition for habitat construction. It only acquired a low number of acres per year with the idea that 40 years from now it could purchase the rest if held to the fire. This fails the good faith concept, and simply means that land acquisition in the amounts recommended, would never occur. Other problems were the changing of unit values so that it was difficult to impossible to compare the amount of new Shallow Water Habitat (SWH) acres with previous years, and slow responses to requests for year-end summaries.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645200 **Coder Name:** jgutierrez

Comment Text: However, Alternative 2 has been made untenable by the excessive cost for land and acres, far greater than any other alternative, almost guaranteeing it won't be acceptable to Congress or the public. We therefore ask that the Corps re-work the alternatives analysis, develop a greater range of alternatives, revise Alternative 2's costs and add the new Adaptive Management Plan to it, develop a more specific Purpose and Need Statement, and reduce the over-reaching of the Human Considerations impacts.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645156 **Coder Name:** jgutierrez

Comment Text: Low summer flow provisions in Alternative 2 (USFWS 2003 Amended BiOp Projected Actions) will cause irreparable harm to the navigation industry by creating a split-navigation season on the Missouri River, severely impacting navigation. The low summer flows in Alternative 2 will also have severe negative impacts on navigation on the Mississippi River from Saint Louis to Cairo, Illinois during the height of export season. While the negative impacts to navigation are severe, the DEIS acknowledges uncertainty on whether the low summer flows under Alternative 2 would benefit the endangered pallid sturgeon. The DEIS states: It is highly uncertain whether or not low summer flows would directly contribute to increased survival of age-0 pallid sturgeon (Jacobson et al., 2016b). Based on theoretical evidence described in Jacobson et al. (2016b), this management action is expected to result in some level of benefit to the pallid sturgeon; however, the level of benefit, if any, to the pallid sturgeon cannot be confirmed or quantified. With a price tag of a staggering \$15.75 billion, or almost five times more expensive than the preferred alternative, Alternative 2 is an unacceptable gamble for the recovery of pallid sturgeon and for the continuity of navigation on the Missouri and Mississippi rivers.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645146 **Coder Name:** jgutierrez

Comment Text: Low summer flows for bird nesting and SWH Availability (Alternative 2) The low summer flow described for pallid sturgeon would also serve as a lowered nesting season flow for the benefit of least terns and piping plovers. Flows need to be sufficiently low to provide for SWH as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644949 **Coder Name:** jgutierrez

Comment Text: 4. The exclusion of an updated adaptive management plan from Alternative 2 is unreasonable. There is also a substantial difference between Alternative 2 and Alternatives 3 through 6 in the ways that AM is implemented. This difference creates a large discrepancy between Alternative 2 and Alternatives 3 through 6 and leaves room for alternatives that implement the more proactive management plan. The AM plan for Alternative 2 "is similar to the AM approach that the Corps has been implementing since 2009 and described for Alternative 1."⁷⁸ However, it appears that the current AM approach is outdated and a new AM plan has been created for the other alternatives. In fact, the Bi Op calls for a robust AM plan,⁷⁹ so it should be incorporated in all the alternatives. Therefore, even though the current AM approach in Alternative 2 "would be modified to address specific alterations to proposed management actions as described in the November 5, 2015, Planning Aid Letter from USFWS," it would only be used in connection with "management actions implemented by the Corps as part of Alternative 2."⁸⁰ In Alternatives 3 through 6, the Corps "would follow the AM Plan that was developed based on the results of the Effects Analysis," which is must more proactive⁸¹ This new AM plan is based on more recent studies than the AM plan for Alternative 2. In addition, this new AM plan "identifies the process and criteria to implement the initial management actions, assess hypotheses, and introduce new management actions should they become necessary."⁸² The EIS does not explain why Alternative 2 retains the outdated AM approach rather than adopting the newer and more robust AM approach based on the Effects Analysis. The new AM plan would provide more benefits to the species than the old plan because it would use new management actions if they are proven beneficial, whereas the plan in Alternative 2 only studies the management actions present in that alternative. The new AM plan for Alternatives 3 through 6 "was designed to address uncertainty related to management for the species and meet updated species objectives that were developed based on results of the effects analysis."⁸³ Its purpose is to "improve decision-making in light of uncertain future trends in habitat availability and improved understanding of various management actions."⁸⁴ These forward-looking purposes make this AM plan superior to the current plan used in Alternative 2. Further, the Corps provides no reason for its failure to include the more recent and more effective AM plan in Alternative 2. The clear difference between the use of the older AM for Alternative 2 and the use of the newer AM in Alternatives 3 through 6 leaves room to develop viable alternatives that resemble Alternative 2 but which include the more proactive and newer AM plan of Alternatives 3 through 6. In sum, there is an unreasonable gap concerning AM between Alternative 2 and Alternatives 3 through 6, leaving room for middle ground viable alternatives where the proactive AM plan is utilized in accordance with management actions on the scale of Alternative 2.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 166 **Comment Id:** 644927 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is scaled roughly on a 50 year time frame. That appears to be based on the 2003 BiOps estimate that it could take 20-50 years to acquire the target number of acres for mitigation in USFWS refuge projects. (2003 BiOp page 133, 220ff) But it also seems to impact the time and number of acres of mechanical habitat included. The difference between the Alternative 2 plan for 3,546 acres of ESH per year and the Alternative 3 plan for 391 acres per year only when needed is huge. (MRRMP EIS-3-100-101) The Corps admits that Alternative 2 provides a greater chance of survivability of piping plover and least tern survivability compared to Alternative 3. But it characterizes Alternative 3 as meeting bird targets while Alternative 2 exceeds the targets. (MRRMP EIS 2-77) This vast range of habitat acres and incomplete analysis fails to provide the public with a reasonable and understandable choice of alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644926 **Coder Name:** jgutierrez

Comment Text: Among the alternatives as written, Alternative 2 provides the best option for recovery of species. However, Alternative 2 is limited unreasonably in several ways. The Corps views Alternative two as implementation of the 2003 Biological Opinion. (MRRMP-EIS- ix) There are clear, substantiated actions recommend in the 2003 BiOp that the Corp accepts. But beyond that the Corps development of an alternative based on the 2003 Bi OP is distorted. The Corps clearly states that new research and approaches developed since 2003 provide additional advantages in achieving recovery. For example, in its statement regarding Need for the Plan the agency states the need for more robust adaptive management (MRRMP-EIS-v). Yet it developed Alternative 2 excluding that interpretation of AM. Only Alternative 2 and the no action alternative exclude it. Thus the Corps created an alternative that up front does not meet its stated Need for the Plan. This approach is not part of a good faith effort to create reasonable alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644887 **Coder Name:** jgutierrez

Comment Text: Also, Alternative 2 is rendered weaker by the mandate of "passive" rather than "active" Adaptive Management. We can find no support for this decision in the description of Adaptive Management called for in the 2003 amended Biological Opinion. Active Adaptive Management should be pursued for all of the considered alternatives rather than depriving one unfairly.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 176 **Comment Id:** 644764 **Coder Name:** jgutierrez

Comment Text: "With a staggering price tag of \$15.75 billion, or almost five times more expensive than Alternative 3, Alternative 2 is an unacceptable gamble for the recovery of pallid sturgeon and for the continuity of navigation on the Missouri and Mississippi rivers.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 183 **Comment Id:** 643947 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is preferred by the NPS. It provides for the most habitat conservation and most closely mimics the Missouri's natural flow regimes (both high and low flows). Further, Alternative 2 results in the fewest visual and recreational impacts.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 643908 **Coder Name:** jgutierrez

Comment Text: Section 3.2.2.4, Page 3-45, Conclusions - Points out the impacts of the each alternative to channel geomorphology. This section also determines that localized aggradation in the lower river from low summer flows could require dredging would occur under Alternative 2. As such this is an additional cost that needs to be included for Alternative 2 and is another reason Alternative 2 should not be implemented. This section also identifies that, temporary, and long-term impacts to the geomorphology would occur from spawning cue releases in Alternative 3. As this could affect availability of materials for piping plover habitat, it is another reason not to implement the spawning cue releases.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 643882 **Coder Name:** jgutierrez

Comment Text: Section 2.8.3, Pages 2-60-66 - Describes the components of Alternative 2 much of which are no longer supported by the latest science and/or have been tried without success (ISAP Reports and EA Reports). It is time to move forward with an adaptive management (AM) approach and away from old ideas which are not supported by science.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643069 **Coder Name:** jgutierrez

Comment Text: Alternative 2 as currently written requires approximately a 300 percent increase in the MRRMP & EIS budget. We believe these costs would be substantially lowered by using the more realistic ESH acreage goal described in Alternative 4, which credits ESH created by spring flows and only utilizing ESH mechanical construction to address any shortfalls,

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643000 **Coder Name:** jgutierrez

Comment Text: We fully support the Spring Pallid Sturgeon Flow Release and Low Summer Flow described in Alternative 2. The bimodal spring release would support pallid sturgeon spawning aggregations, synchronicity, and ultimately their success, as well as creating ESH. Low Summer Flows would provide benefits to drifting larval sturgeon by decreasing drift speeds and distances and potentially increase their likelihood of being intercepted into hospitable habitats thereby decreasing mortality rates. Low Summer Flows would also provide many ecological benefits including creation of shallow water habitats, providing nursery habitats for age-0 fishes, including age-0 sturgeon species, and result in increased survival and recruitment of many native species of fish and invertebrates. If pallid sturgeon successfully spawn and hatch, these lower summer flows would decrease water velocities which would increase habitat availability and decrease bioenergetic demands.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642993 **Coder Name:** jgutierrez

Comment Text: We do not support constructing an average of 3,536 acres of ESH annually across the Garrison, Fort Randall, Gavins Point and Lewis and Clark Lake reaches as projected in Alternative 2. This amount of annual construction is neither warranted nor feasible and would cause major impacts on the remaining actions under Alternative 2 due to the high cost of these construction activities and anticipated USACE MRRP budget limitations. As previously stated, the Nebraska Game and Parks Commission supports creating ESH whenever possible by releases provided by the Spring Pallid Sturgeon Flow Release as described in Alternative 2 or by specific Spring ESH Creating Releases as described under Alternative 4 and only use Mechanical ESH Construction as needed. This same spring release would also provide Floodplain Connectivity as described in Alternative 2 which would benefit system productivity and other native riverine species.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642853 **Coder Name:** jgutierrez

Comment Text: As the agency responsible for managing the public trust fish and wildlife resources of Nebraska, the Nebraska Game and Parks Commission supports Alternative 2 - the U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions as best meeting the needs of the Pallid Sturgeon and the other native fish and wildlife species of the Missouri River. We believe that Alternative 2 would be greatly enhanced by the addition of the new Science and Adaptive Management Plan (AM Plan) that has been developed based on the effects analysis. Our agency values the effort that the U.S. Army Corps of Engineers has committed to avoiding jeopardy for Pallid Sturgeon, but feel that it is imperative that any plan should manage, mitigate and restore critical components of the physical environment along with the associated biological community to be successful. Pallid Sturgeon as a top predator cannot survive without a substantial prey base and critical habitat necessary to support both predator and prey.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 195 **Comment Id:** 642102 **Coder Name:** jgutierrez

Comment Text: The MLDDA is opposed to the low summer flows and spring pulses in the default plan in the 2003 Amended Biological Opinion and the vestiges of this plan in Alternative 2-U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions in the MRRMP DEIS. Another plan with low summer flows could serve to once again eliminate barge transportation on the Missouri River. A channel of appropriate depth must be maintained for reliable barge transportation, and such a channel can be permanently damaged by siltation and reduced scouring action due to a prolonged loss of adequate flow. As a result, alternative

shipping costs would increase and the net price to farmers would decrease. Farmers would also pay higher prices for agricultural inputs as a result of the loss of water compelled rates (reduced competition) for long haul truck and rail transportation. The loss of barge transportation would serve to escalate transportation costs to a far greater extent than that represented by the increased demand placed on other modes of transportation by the tonnage that would have been carried by barge.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641557 **Coder Name:** jgutierrez

Comment Text: Low flow provisions in Alternative 2 should be removed from consideration because of the disastrous impact it would have on my business.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641444 **Coder Name:** jgutierrez

Comment Text: The inevitable and ongoing channel degradation below dams means there will be ever-less production of natural sandbars into the near future. The acreage of mechanical sandbar construction does vary considerably, though, and among the alternatives we favor Alt. 2, which has the highest targets for that acreage.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 178 **Comment Id:** 641436 **Coder Name:** jgutierrez

Comment Text: The Missouri Parks Association has been on record in strong support of Corps restoration projects at Jameson Island, Cora Island, and elsewhere along the Missouri River, especially in the vicinity of our state parks, and we would be happy to voice our support for more such projects and encourage others to do so as well. We particularly appreciate the Corps' commitment to scientific research, monitoring, and state-of-the-art adaptive management in the proposed plan, and trust that it would be applied to Alt #2 as well as to the other alternatives.

Organization: Missouri Parks Association

Commenter: Steve L Nagle **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 178 **Comment Id:** 641426 **Coder Name:** jgutierrez

Comment Text: We regard Alternative #2 as having the greatest potential for restoration of ecosystem and hydrologic function as well as recovery of endangered species populations, with the caveat that you use the most scientifically advanced and proactive plan for adaptive management, such as is contemplated for the other alternatives; there is no justification for anything less. Alt #2 provides for considerably more emergent sandbar and shallow water habitat as well as more land acquisition, including more channel widening, backwater construction, and floodplain connectivity, all critically needed for river restoration. It is more expensive in dollar cost, but we believe that if the EIS included a state-of-the-art analysis of ecosystem services, as it certainly should by law and by Corps policy, alt #2 would prove to be the least expensive as well as the most effective in the long run.

Organization: Missouri Parks Association

Commenter: Steve L Nagle **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 173 **Comment Id:** 641388 **Coder Name:** jgutierrez

Comment Text: Conversely, summer low flow provisions in Alternative 2 would cause extreme harm to the Missouri River's navigation industry; one that's been on the rise due to increased water supply and reliability. The Missouri River can contribute over 70 percent to the flow of the middle Mississippi River during times of drought. The harmful effects of low summer flow to our nation's economy must be taken into consideration and the Corps should remove this proposed flow option. Navigation is critical to moving harvested crops to market and inputs up river. With increased supplies of corn we must have every transportation option available. Waterways continue to be the most efficient and environmentally friendly mode of moving grain to market. Missouri River management should support those goals.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 164 **Comment Id:** 641357 **Coder Name:** jgutierrez

Comment Text: The USFWS provided two sub-objectives to meet the fundamental objective of not jeopardizing the continued existence of the pallid sturgeon from USACE actions that stress the recruitment of young sturgeons. " Pallid Sub-Objective 1:

Increase pallid sturgeon recruitment to age 1. " Pallid Sub-Objective 2: Maintain or increase numbers of pallid sturgeon recruitment to age 2 and older until sufficient and sustained natural recruitment occurs. Both of these objectives are dependent on habitat construction, but a river flow management plan to fulfill the objective of natural recruitment has not been proven effective for implementation in Alternative 2. Instead, Alternative 2 proposes the continuation of a spring spawning cue pulse and low summer flows. The spawning cue has proven to be ineffective and the low summer flows are speculative actions that will have a negative impact on thermal power plants in the lower reach of the river.

Organization: MidAmerican Energy Company

Commenter: Jenny McIvor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 163 **Comment Id:** 641272 **Coder Name:** jgutierrez

Comment Text: We prefer Alternative Number Two as the most holistic, ecologically driven alternative with the greatest potential for habitat restoration. We encourage the continuation of mitigation for habitat losses caused by prior bank stabilization and navigation activities, including lands purchased and restored for the Big Muddy National Fish and Wildlife Refuge with its 186,000-acre acquisition target, a target that must be met. Alternative Number Two provides for more extensive construction of emergent sandbar habitat to benefit the meta-populations of the piping plover and least tern, rather than focusing on just a small area of the Missouri River. On an annual basis some areas will fail and others will be successful in production of young, so actions need to be taken in multiple regions to support the meta-populations.

Organization: Audubon Missouri

Commenter: Anita C Randolph **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641200 **Coder Name:** jgutierrez

Comment Text: In many respects this plan doesn't change much from the way the Missouri River (MR) is managed currently. The acreage of mechanical sandbar construction does vary considerably, though, and among the alternatives I favor Alt. 2, which has the highest targets for that acreage. My reasoning is that any number set in a plan is a target which may or may not be attained in any year, with unpredictable factors like weather and funding in play. So the target may as well be set fairly high, which is what Alt. 2 does.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641143 **Coder Name:** jgutierrez

Comment Text: Regarding the Missouri River Reservoir System draft plan and eis, I favor 1) Strengthening the second alternative, which is far the best - as explained in this Billings Gazette piece that the Associated Press picked up and distributed, http://billingsgazette.com/news/opinion/guest/guest-opinion-managing-the-missouri/article_102d3b0e-cb78-5113-89a5-5e0000e53f73.html/

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641000 **Coder Name:** jgutierrez

Comment Text: We oppose actions to create low summer flows such as those proposed in Alternative 2. Such low flow conditions have the greatest potential to impact our ability to generate power and occur during a seasonal period of peak demand. Our experience with historic droughts is directly relevant and reinforces our concerns regarding the challenges we would need to overcome to maintain operations with inadequate low flow conditions, potentially during periods of peak consumer demand for electricity.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640139 **Coder Name:** jgutierrez

Comment Text: Although the Corps references acquired acres for mitigation could play a role in any of the alternatives, it is only in Alternative 2 that the real value of that process is grudgingly given any sanctioned role in recovery.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640129 **Coder Name:** jgutierrez

Comment Text: A strength of Alternative 2 is anticipation of mitigation/restoration acres and inclusion of floodplain connectivity. (MRRMP EIS 2-65) The loss of a functioning floodplain and natural habitat along almost the entire Missouri River has led to many adverse impacts. That loss has increased flood risk and has harmed native fish and wildlife, including the three endangered species

which are the subject of the DEIS. River systems are complex and dynamic. Our understanding of species needs, especially fish species, can be limited by the unknown interaction and dependencies among the many parts of a riverine system. But we do understand that restoring areas of the river to its natural state will have broad benefits. Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640128 **Coder Name:** jgutierrez

Comment Text: The Corps interprets the SWH component of Alternative 2 as an uncertain benefit, yet the same can be said of IRCs and spawning habitat creation all of which are experimental. Any reasonable alternative with adaptive management would include all these options.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640127 **Coder Name:** jgutierrez

Comment Text: An argument can be made that the type of AM outlined in the 2003 BiOp (pages 24-28), which includes scientifically based assessments of essential conditions that contribute to survival of the endangered species, experimental actions and monitored results, is more robust than the Corps characterizes it in this DEIS. Regardless of how accurate it is, the Corps's™ evaluation of Alternative 2 carries weight in its evaluation of a preferred alternative. Alternative 2 is scaled roughly on a 50 year time frame. That appears to be based on the 2003 Bi Ops estimate that it could take 20-50 years to acquire the target number of acres for mitigation in USFWS refuge projects. (2003 BiOp page 133, 220ff) But it also seems to impact the time and number of acres of mechanical habitat included. The difference between the Alternative 2 plan for 3,546 acres of ESH per year and the Alternative 3 plan for 391 acres per year only when needed is huge. (MRRMP EIS-3-100-101) The Corps admits that Alternative 2 provides a greater chance of survivability of piping plover and least tern survivability compared to Alternative 3. But it characterizes Alternative 3 as meeting bird targets while Alternative 2 exceeds the targets. (MRRMP EIS 2-77) This vast range of habitat acres and incomplete analysis fails to provide the public with a reasonable and understandable choice of alternatives. Furthermore according to the DEIS the creation of this large number of acres per year would require creation of ESH in what is described as the exclusionary areas. Exclusionary areas are defined as areas which should be off limits to ESH due to the significant negative impacts to other resources and or extreme cost in construction. (2011 PEIS 4-5) The Corps seems to assume that this is just what the writers of the 2003 Bi Op

intended and it carries forward with an assessment of large human consideration and economic impacts from this rather absurd scenario. This would never happen and the public is not well served by the Corp including this calculus in what is supposed to be a reasonable alternative. This further distorts the Corps evaluation when considering recreation impacts.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640122 **Coder Name:** jgutierrez

Comment Text: Among the alternatives as written, Alternative 2 provides the best option for recovery of species. However, Alternative 2 is limited unreasonably in several ways. The Corps views Alternative two as implementation of the 2003 Biological Opinion. (MRRMP-EIS- ix) There are clear, substantiated actions recommend in the 2003 BiOp that the Corp accepts. But beyond that the Corps development of an alternative based on the 2003 Bi OP is distorted. The Corps clearly states that new research and approaches developed since 2003 provide additional advantages in achieving recovery. For example, in its statement regarding "Need for the Plan" the agency states the need for more robust adaptive management (MRRMP-EIS-v). Yet it developed Alternative 2 excluding that interpretation of AM. Only Alternative 2 and the no action alternative exclude it. Thus the Corps created an alternative that up front does not meet its stated Need for the Plan. This approach is not part of a good faith effort to create reasonable alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 640074 **Coder Name:** jgutierrez

Comment Text: But there are significant differences between Alternative 2 and the other alternatives. First, Alternative 2 requires far more mechanical ESH construction to benefit the interior least tern and piping plover. The goal from the 2003 amended BiOp is to create 11,886 acres of ESH. Alternative 2 achieves this by creating 3,546 acres of ESH per year at a significant cost. Alternatives 3 through 6 require only a fraction of this acreage, ranging from approximately one-tenth to one-fifteenth of that in Alternative 2. Unsurprisingly, Alternative 2 is significantly more costly than the other alternatives.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 149 **Comment Id:** 637684 **Coder Name:** JGUTIERREZ

Comment Text: We understand that there are multiple user groups on the Missouri River with many different interests. However, we as a chapter want the best alternative that benefits native fish populations and communities, including the listed species of concern. We feel that Alternative 2 and the new Adaptive Management Plan based on the Effects Analysis would assist in avoiding jeopardy because it focuses on "Listening to the River".

Organization: NE Chapter of the American Fisheries Society

Commenter: Michael Archer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 149 **Comment Id:** 637683 **Coder Name:** JGUTIERREZ

Comment Text: We recommend Alternative 2 as mechanical construction alone would not be sufficient to restore the ecological integrity of the Missouri River or avoid jeopardy to pallid sturgeon. Systematically implementing Alternative 2 and the new Science and Adaptive Management Plan that has been developed based on the Effects Analysis facilitates a more comprehensive understanding of the system and provides the opportunity for research and monitoring to better guide the USCOE in engineering the system to benefit fish and wildlife, particularly the pallid sturgeon and listed bird species.

Organization: NE Chapter of the American Fisheries Society

Commenter: Michael Archer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637626 **Coder Name:** jgutierrez

Comment Text: Our members who live and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are wary of any attempt to boost pallid sturgeon population by increasing flows from Gavins Point Dam because no science has been developed to prove this linkage. This is the basis for our opposition to bimodal spring rise provisions in Alternatives 1, 2 and 6.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 141 **Comment Id:** 637298 **Coder Name:** jgutierrez

Comment Text: However, Alternative #2 has been unfairly written in a manner which limits it's broader acceptability, and I ask that the US Army Corps of Engineers (Corps) revise it by: 1.) moderating the number of land acres and price/acre, and 2.) incorporating the new Adaptive Management Plan into the Alternative, as has been done with the other alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 135 **Comment Id:** 637268 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 101 **Comment Id:** 636860 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 77 **Comment Id:** 636783 **Coder Name:** jgutierrez

Comment Text: The Corps incorrectly sets the cost of Alternative 2 as too high. The Corps has included too much mechanically created habitat in Alternative 2 which unnecessarily raises its cost.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633921 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633865 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river and promotion by MODOT to lessen the strain on our crumbling, underfunded highway system. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633848 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option

for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633834 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for crops and industrial products headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633811 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 118 **Comment Id:** 633750 **Coder Name:** jgutierrez

Comment Text: Additionally, KCP&L wants to reinforce its concerns regarding Alternative 2 and other alternatives. Alternative 2 currently proposes low summer flows under certain conditions. In the Draft Science and Adaptive Management Plan it outlines a low summer flow of 21,000 cubic feet per second (CFS) from Gavin's Point. Efficiency of power plant operations at KCP&L is threatened

at that level of flow due to the shallow depth of water at the cooling water intakes. The plants would not be able to run at peak efficiency and would have to derate. This flow could also impact power production due to river temperature restrictions in plant operating permits. Low summer flow would mean the temperature of the lower Missouri River would more easily reach 90 degrees, limiting KCP&L's ability to produce power during high electrical usage times. Both of these scenarios impacts KCP&L's ability to interact in the Southwest Power Pool market and could mean higher costs of energy for our customers as well as increased maintenance costs.

Organization: KCP&L

Commenter: Paul M Ling **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633683 **Coder Name:** jgutierrez

Comment Text: Our members who live, farm and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are extremely wary of any attempt to increase flows from the Gavins Point Dam because to date, no science has been developed to prove this boosts the pallid sturgeon population. This is the basis for our opposition to bimodal spring rise provisions in Alternatives 1, 2 and 6.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 78 **Comment Id:** 633627 **Coder Name:** jgutierrez

Comment Text: Among the choices in the Draft Environmental Impact Statement, Alternative 2 is the best alternative. Alternative 2 allows habitat acres to be acquired and moves toward a more natural river that will sustain wildlife and provide a more secure future for endangered species. The Corps should reduce the number of mechanically created habitat acres in Alternative 2 to lower the cost. I am asking you to choose alternative 2 and work in the coming years to save these three species and restore more natural fish and wildlife habitat along the Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 72 **Comment Id:** 631232 **Coder Name:** jgutierrez

Comment Text: I primarily want to second the comments of the first two speakers from the Wash U Environmental Law Group who really requested and stressed a need for reconsideration of Alternative 2. I very much hope that there could be a modified Alternative 2 that can keep the very laudable goals of Alternative 2 in habitat construction and acquisition and flood plain connectivity.

Organization: Great Rivers Habitat Alliance

Commenter: David Stokes **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 45 **Comment Id:** 628645 **Coder Name:** JGUTIERREZ

Comment Text: Wildlife is our issue, so we want the alternative that best promotes wildlife, and it appears that none of the alternatives are really great in that regard. Two is probably the best, but we would prefer a more ecosystem-wide approach to it.

Organization: Nebraska Wildlife Federation

Commenter: Jarel Vinduska **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 48 **Comment Id:** 628592 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented in the EIS, we believe, that is the Sierra Club, the only environmentally sound option is Alternative 2, which will allow appropriate habitat types to be developed and move river management towards a more natural river that sustains wildlife and provides a more secure future for endangered species. Also, Alternative 2 is the only alternative that links future management actions to the existing authority to carry out the bank stabilization and navigation mitigation program that restores over 165,000 acres of river habitat as the result of the modification to the Missouri River by the Pick-Sloan program. Unlike some of the other alternatives presented in the EIS, Alternative 2 would not solely base habitat development on mechanically created restoration. Unfortunately, as currently written, Alternative 2 has proposed too many mechanically created sandbar acres thus inflating what we believe to be the true cost of Alternative 2. Despite this overinflated cost, we support Alternative 2 with a reduction in the mechanically created habitat, more in line with the other alternatives proposed by the Corps in the EIS.

Organization: Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 37 **Comment Id:** 628462 **Coder Name:** jgutierrez

Comment Text: Finally, alternative 2 contemplates a low summer flow. There was absolutely no effort made to evaluate the impacts and cost associated with those low summer flows on water supply intakes. Although this is not the preferred alternative, it is important to document those impacts for the record.

Organization: WaterOne

Commenter: Mike Armstrong **Page:** **Paragraph:**

Kept Private: No

AL250 Alternatives: Alternative 2 (non-substantive) (Non-Substantive)

Correspondence Id: 14 **Comment Id:** 626260 **Coder Name:** jgutierrez

Comment Text: I believe Alternative 2 because it best protects endangered species and their habitats.

Organization: Sierra Club - Nebraska Chapter

Commenter: Clyde L Anderson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645509 **Coder Name:** jgutierrez

Comment Text: We believe Alternative 2 provides the best opportunities for recovery of the three priority species. This alternative recognizes the critical importance of floodplain connectivity and the need for acquiring land for habitat restoration for mitigation of the BSNP. We think Alternative 2 comes closest to bringing back more aspects of a natural river and the historic hydrograph. We believe these efforts will benefit the overall health of the river, the listed species, and other native fish and wildlife.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645503 **Coder Name:** jgutierrez

Comment Text: We support the floodplain connectivity listed in Alternative 2 (V1-page 16) and in table 2-11. We urge that floodplain connectivity be incorporated and explored in all future management actions. Floodplain connectivity would benefit native species, improve water quality, provide habitat for other fish and wildlife, reduce flood risk, and increase recreational opportunities.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645502 **Coder Name:** jgutierrez

Comment Text: We also support recovery efforts that achieve the high end of habitat goals for pallid sturgeon of at least 30 acres per river mile between Ponca and the mouth. This is needed to replace the hundreds of thousands of acres of habitat that has been destroyed through the construction and ongoing operation and maintenance of the BSNP.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645500 **Coder Name:** jgutierrez

Comment Text: The League supports the exploration of lowered flows during the nesting season, as mentioned in Alternative 2, to gauge the benefit to bird species, as well as the possible benefits to pallid sturgeon and native other fish species. We also support restoring or mimicking a more normalized river hydrograph below Gavins Point Dam and urge that this be closely monitored to gauge the biological response from native species.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645199 **Coder Name:** jgutierrez

Comment Text: We believe that Alternative #2 is the best choice among the six alternatives for the Preferred Alternative. As the 2003 USFWSs Amended Biological Opinion, it is focused entirely on Missouri River habitats, species recovery, and beneficial flows.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645125 **Coder Name:** jgutierrez

Comment Text: Draconian flow changes in alternatives 2, 4, 5, and 6 are not acceptable options. There is no credible science that supports flow changes for the recovery of the threatened and endangered species. And, the flow changes would negatively impact the

economy of the entire Missouri River Basin. In alignment with the bi-partisan, basin-wide Congressional letter sent to the Corps on December 17, 2015, AWO strongly opposes any flow changes.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644085 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 4.1, page 51, 2nd paragraphs - Points out the large and possibly significant adverse impacts that low summer flow events would have (Alternative 2 relative to Alternative 1). Alternative 2 is not an acceptable alternative for managing the river going forward.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643988 **Coder Name:** jgutierrez

Comment Text: Section 3.17.2.5, Page 3-481, last paragraph - States that Alternative 2 has the potential to significantly affect capacity values; energy values; and reliability during low flow events. Alternative 2 is not an acceptable alternative for managing the river going forward.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643927 **Coder Name:** jgutierrez

Comment Text: Section 3.13.2.5, Page 3-341, last paragraph - Alternative 2 has the largest NED impact on Hydro, Hydro is a clean renewable energy resource as compared to a gas turbine, as such Alternative 2 is not an acceptable alternative for managing of habitats on the river going forward.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643914 **Coder Name:** jgutierrez

Comment Text: Section 3.3.2.5, Page 3-73, paragraph 3 - Points out the high uncertainty of whether or not low summer flows would directly contribute to increased survival of age-0 pallid sturgeon. This reason, along with the impacts on authorized purposes and stakeholder impacts make Alternative 2 unacceptable and should not be considered.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641578 **Coder Name:** jgutierrez

Comment Text: Although Alternative 2 appears to be the best of all of the options, even that option falls short.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 178 **Comment Id:** 641435 **Coder Name:** jgutierrez

Comment Text: In the near term, we know that Missouri has greater potential damages from flooding and risks to drinking water from low flows than other states along the river, so we would be willing to accept somewhat more limited flow modification, as in Alt #3. But these risks have been exacerbated by the Corps's Bank Stabilization and Navigation Project and its failure to enforce the minimum floodway widths (3,000 feet above and 5000 feet below Kansas City) mandated by the Flood Control Act of 1944. This makes it all the more imperative for the Corps to acquire available lands in the floodway from Sioux City to the mouth as required by WRDA 1986 and 1999, at least up to the mandated 166,000 acres. This mandate is still less than a third of the 522,000 acres of fish and wildlife habitat lost to the BSNF, 300,000 acres of which were lost in Missouri alone; and the Corps is still far from reaching the mandated goal. Alt #2 would provide for a good faith continuation of the effort; the other alternatives would not. The lands, once acquired, would be available for levee removal or setback and other restoration for the benefit of fish and wildlife, including the three endangered species, as well as for substantial flood risk reduction for humans.

Organization: Missouri Parks Association

Commenter: Steve L Nagle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 178 **Comment Id:** 641401 **Coder Name:** jgutierrez

Comment Text: The Missouri Parks Association is pleased to comment on your Missouri River Recovery Management Plan and Environmental Impact Statement, and to support the continued restoration of hydrologic and ecosystem function and endangered species recovery that we believe can best be advanced by the plan's Alternative #2.

Organization: Missouri Parks Association

Commenter: Steve L Nagle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640759 **Coder Name:** jgutierrez

Comment Text: MFB strongly opposes Alternatives 2, 4, 5 and 6. Each of the alternatives has detrimental impacts for Missourians. Specific concerns are listed in CPR's written comments.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640543 **Coder Name:** jgutierrez

Comment Text: CMEPC strongly support Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-Emergent Sandbar Habitat (ESH) work for piping plovers;

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 157 **Comment Id:** 637692 **Coder Name:** jgutierrez

Comment Text: In many respects this plan doesn't change much from the way the Missouri River (MR) is managed currently. The acreage of mechanical sandbar construction does vary considerably, though, and among the alternatives I favor Alt. 2, which has the highest targets for that acreage. My reasoning is that any number set in a plan is a target which may or may not be attained in any year, with unpredictable factors like weather and funding in play. So the target may as well be set fairly high, which is what Alt. 2 does.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 141 **Comment Id:** 637296 **Coder Name:** jgutierrez

Comment Text: Among the six alternatives as written, Alternative #2 (the US Fish and Wildlife Service's 2003 Amended Biological Opinion for the Missouri River) provides the best option for recovery of the threatened and endangered species, restoration of habitat in and near the river, and beneficial spring and fall flows and a lower late summer flow. It also indirectly benefits many other species as well. I support Alternative # 2 as the Preferred Alternative. This is especially important to the portion of the river between Iowa and Nebraska!

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 97 **Comment Id:** 636849 **Coder Name:** jgutierrez

Comment Text: As concerned conservationists who value our precious Missouri River ecosystem, we support a strengthened Alt. 2 in order to better comply with the ESA in regard to the pallid sturgeon, the No. Great Plains piping plover and the interior least tern.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 81 **Comment Id:** 636789 **Coder Name:** jgutierrez

Comment Text: To say that Alternative 2 - following the U.S. Fish and Wildlife Service's 2003 Biological Opinion projected actions - is the best alternative presented, and it is clearly is, is not to say that Alternative 2 is adequate.

Organization: Sierra Club, Audubon, Nature Conservancy

Commenter: Anne Millbrooke **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 77 **Comment Id:** 636782 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is best, but needs critical changes implemented. It provides the best opportunities for recovery of the three species and adaptive management practices over time. This option also includes recognition of the importance of connections to

floodplains and includes the option of acquiring increased acres for habitat and mitigation. Alternative 2 is the best option to move toward a more natural river which is advantageous for the three targeted species as well as other fish and wildlife species.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 73 **Comment Id:** 635367 **Coder Name:** jgutierrez

Comment Text: Alternative 2 should be the selected alternative as it aims at creating greater improvements on the ecosystem upon which these species depend. It is clear from the decline of the 57 to 61 native species of fishes that the food web has been seriously impaired and the previous high rate production capacity of the river system has been cut off.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 142 **Comment Id:** 633883 **Coder Name:** jgutierrez

Comment Text: Alternative 2 Run Unless Storage Check on March 1st Determines NO Service or Flood Control Constraints are Exceeded 2 Spring Rises March 15th, 31,000cfs* 7 Day Rise - - - - 7 Day Peak - - - - 7 Day Fall May 1st-May 15th 12,000cfs-20,000cfs* Determined by March 1st Runoff Forecast 7-10 Day Rise - - - 14-35 Day Peak - - - 7 Day Fall Flood Control Constraints Adjusted by Flow Increase Includes Low Summer Flow Looks like 2003 BiOp Projected Actions Biological Opinion Alternative
*March and May Events Could be Higher Depending on Runoff Forecast

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 55 **Comment Id:** 632093 **Coder Name:** JGUTIERREZ

Comment Text: In our preliminary review of the DEIS we favor many aspects offered in Alternative 2. This alternative re-establishes the floodplain connectivity and provides habitat for species and native fish and wildlife. Reconnecting the river to the floodplain in certain areas will also reduce flood risk, improve water quality, and increase recreational opportunities for families along the river.

Organization: Izaak Walton League of America (South Dakota, Nebraska, Iowa)

Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 72 **Comment Id:** 631234 **Coder Name:** jgutierrez

Comment Text: A natural river is a beneficial river for all of us, and we very much hope that Alternative 2 can be reconsidered by the Corps.

Organization: Great Rivers Habitat Alliance

Commenter: David Stokes **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 50 **Comment Id:** 628627 **Coder Name:** jgutierrez

Comment Text: I would encourage Alternative 2. It is the amended biological opinion produced by the U.S. Fish and Wildlife Service, and I would like to see biologists in the Fish and Wildlife Service providing a description for what should be done, rather than - - please forgive me - - the Corps of Engineers.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 88 **Comment Id:** 627566 **Coder Name:** JGUTIERREZ

Comment Text: Please implement Alternative 2 of the Missouri River Recovery Plan. It is imperative that habitat be provided for the pallid sturgeon, interior least tern, and Northern Great Plains piping plover. The Wildlife of this river and of our country are one of its greatest assets. Creating and preserving habitat for these species will of course provide habitat for countless other species.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 28 **Comment Id:** 627554 **Coder Name:** JGUTIERREZ

Comment Text: We will not support proposals that weaken flood control, initiate pulses or reduce flows in the summer. We do not support construction as chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil

being deposited into the river. Given past experience, we're skeptical of adaptive management and what we consider to be very expensive experiments. For the reasons stated, several of the alternatives under consideration are nonstarters. Given the prescribed flow modifications, we do not support alternatives 2, 4, 5 and 6.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 74 **Comment Id:** 627544 **Coder Name:** JGUTIERREZ

Comment Text: Alternatives 2, 4, 5 and 6 are unacceptable due to the prescribed flow modifications.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 41 **Comment Id:** 627005 **Coder Name:** jgutierrez

Comment Text: I am writing to say that I favor Alternative 2 as the best option of the DEIS plan to manage the Missouri River. Alternative 2 provides the best opportunities for recovery of the three endangered species. It also provides adaptive management over time.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 31 **Comment Id:** 626829 **Coder Name:** jgutierrez

Comment Text: Alternative 2 appears to provide the best opportunities for recovery of the three federally listed species. It includes recognition of the importance of connections to the flood plains, the option of acquiring increased acreage for habitat and mitigation, and provides for adaptive management over time.

Organization: Sierra Club - Kansas Chapter

Commenter: Elaine Giessel **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 27 **Comment Id:** 626695 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented to us for review and comment, the Coalition supports a mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to alternatives 2, 4, 5 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 24 **Comment Id:** 626674 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is our best choice for our endangered species, the corp. Says it's too expensive, but only because they have included too much mechanically altered habitat. The extra land purchased would pay dividends for years to come through flood control, recreation, wildlife habitat,

Organization: Sierra Club/ Kansas City Area Transportation Authority

Commenter: Thomas E Crawford **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 23 **Comment Id:** 626655 **Coder Name:** jgutierrez

Comment Text: I favor Alternative 2 (even though flawed) and here's why: 1. Alternative 2 is best, but needs changes. It provides the best opportunities for recovery of the three species. It provides adaptive management over time. Alternative 2 includes recognition of the importance of connections to floodplains and includes the option of acquiring increased acres for habitat and mitigation. Alternative 2 is the best option to move toward a more natural river which is good for the three targeted species as well as other fish and wildlife species.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AL300 Alternatives: Alternative 3 (Preferred Alternative) (Substantive)

Correspondence Id: 27 **Comment Id:** 626704 **Coder Name:** jgutierrez

Comment Text: We applaud the Corps for their commitment to study the linkage between tributary flows and pallid sturgeon recovery. However, we question how the Corps can keep such an option "on the shelf" for nine to ten years in the future as part of this

alternative, knowing that river conditions can change during this time, making human consideration effects difficult to monitor. We're concerned that this one-time flow test could be part of a permanent flow regime.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 645878 **Coder Name:** jgutierrez

Comment Text: This section also identifies that, temporary, and long-term impacts to the geomorphology would occur from spawning cue releases in Alternative 3. As this could affect availability of materials for piping plover habitat, it is another reason not to implement the spawning cue releases.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 645762 **Coder Name:** jgutierrez

Comment Text: It is also difficult to believe that the Alternatives 3 through 6 would reach the goal of 11,886 acres of ESH on the Missouri River.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 645761 **Coder Name:** jgutierrez

Comment Text: But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645513 **Coder Name:** jgutierrez

Comment Text: Alternative 3 does include pallid sturgeon spawning habitat construction, with up to 3 sites selected. However, the DEIS does not say how large the site would be, where they would be located, or when their construction would be completed. The DEIS is also unclear about what scientific criteria will be used in the selection of sites and other aspects of this process. More details on these concerns should be addressed in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645380 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.9.2.3, pg 2-81 "Under Alternative 3, USACE would create ESH through mechanical means at an average rate of 391 acres per year in the Garrison, Fort Randall and Gavins Point river reaches." Comment: Further explanation of how the ESH acres would be distributed between the reaches should be included.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645243 **Coder Name:** jgutierrez

Comment Text: Our qualified support of the Preferred Alternative does not extend to the proposed one-time flow test, which would have the same reservoir release criteria as Alternative 6. Therefore, our comments regarding Alternative 6 also apply to the Preferred Alternative. Additionally, we are unable to provide comments on the impacts of the one-time flow event because the Corps did not model or assess the impacts associated with it in the Draft EIS. In fact, page xi of the Executive Summary states that the Corps did not do so "because of uncertainty of the hydrologic conditions present." The State of Missouri asserts that the Corps cannot implement an action on which the agency has not adequately assessed impacts.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645242 **Coder Name:** jgutierrez

Comment Text: The Corps' Preferred Alternative (Alternative 3) appears to result in the least number of impacts to flood control and downstream flow support for commercial navigation and water supply. Therefore, Missouri supports mechanical habitat construction

as identified in the Preferred Alternative, but only if mechanical construction is implemented in a targeted and contextually sensitive manner. The Corps should implement the Preferred Alternative in a manner that would provide both beneficial habitat and improve overall channel flow conveyance. But habitat construction activities must also comply with all applicable state and federal water quality laws and regulations. In addition, the Corps has determined the channel structures from Kansas City downstream to the mouth are degraded and in need of repair. These insufficient structures cause challenges in maintaining the navigation channel. Therefore, it is important that habitat construction activities within this reach are implemented only after these deficient structures are brought up to their original design dimensions.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645206 **Coder Name:** jgutierrez

Comment Text: It is thought by some that if Alternative #3 doesn't do enough for habitat and the pallid sturgeon, it will show-up in the Adaptive Management (AM) process eventually over time. This is probably true, but this is also a poor reason to accept Alternative #3. Here are some reasons: 1) the appearance in the data might take multiple years to become apparent; 2) a new management action as it is now set-up will take years to be implemented, perhaps up to 15 years (by my calculation) to make its way through Level 1, 2, 3 and finally Level 4, implementation; this includes planning an action, testing in the lab and in study reaches, monitoring and data collection, assessments, final reports, and policy decision-making. I question whether the pallid sturgeon has that long! Most of the reproducing wild pallid sturgeon are an aging population and another decade or two will see the last of those individuals. 2) Even if the Adaptive Management Plan shows that the chosen management action is not working, the forward process is fraught with if this and if that conditions which have to be met. Both the AM and EIS seem to be so concerned that one interest group or another will be even minimally impacted, that the processes as written will take years to clear the hurdles; and 3) which brings me to the fact that there are specific interest groups, who are suspicious of the AM, and would likely oppose any findings by the AM which would require changing the status quo. Indeed, as I have stated, I believe it will be difficult for the research and studies of Level 1, 2, and 3 to be implemented because they will always be met with resistance if their results indicate river management (and probably the Master Manual) needs to be changed to help the species. As years go by and staff and program priorities change, there is less and less likelihood that new/reserve hypotheses are pulled down off the shelf and put into Levels 1-4, and that AM will ever be fully applied.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645153 **Coder Name:** jgutierrez

Comment Text: In summary of South Dakota's comments on the MRRMP and EIS, the State supports Alternative 3 (Mechanical-only construction) with modifications to increase the emphasis on development of pallid sturgeon science, include sediment management as a component of the management plan, and actively address flow constraints from Fort Randall Dam to Lewis and Clark Lake. We have provided specific impacts to South Dakota for each of the various management actions in the MRRMP alternatives.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645130 **Coder Name:** jgutierrez

Comment Text: Plans for development of spawning habitat and interception rearing complexes (IRC) for larval pallid sturgeon as outlined in Alternative 3 should be implemented. Expanding the budget for Level 1 and 2 research on the effectiveness of physical habitat creation and modification within the current river channel needs to be a priority. However, if research indicates these habitats are contributing to reproduction and recruitment of pallid sturgeon, we recommend the goal of 20 acres of shallow water habitat or IRC per river mile be increased to 30 acres per river mile, the upper end of the range specified in the 2003 Amended Biological Opinion. An additional justification for an increase in effort on Level 1 and Level 2 studies in the years immediately following plan implementation is the requirement that if Level 1 studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important, a one-time, bimodal spawning cue test release from Gavins Point Dam, as outlined for Alternative 6, be conducted. South Dakota recommends the research effort be increased such that in 9-10 years, there is sufficient information to determine if flow modifications to annual operations of the system are needed to support pallid sturgeon recovery.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645128 **Coder Name:** jgutierrez

Comment Text: After a thorough review of the six management alternatives presented for consideration, the State of South Dakota supports preferred Alternative 3 (mechanical habitat construction only), with some modifications requested. Alternative 3 differs from Alternatives 4 and 5 in that there is not a spring or fall flow release aimed at creating emergent sand bar habitat (ESH) for piping plover and interior least tern. Spring flow releases to act as pallid sturgeon spawning cues or to aid in pallid sturgeon recruitment are also not included in Alternative 3, as they are for Alternatives 2 and 6. South Dakota supports Alternative 3 with modifications

requested because we agree that there is enough uncertainty in the science related to flow patterns, volumes, and frequency needed to serve as a pallid sturgeon spawning cue or to aid in sturgeon recruitment, that these actions, and their impacts on South Dakota residents and municipalities, cannot be justified at this time. South Dakota supports efforts to recover endangered species, however, potential impacts of management actions that negatively affect basin stakeholders must be carefully considered with the potential benefit to the listed species. At this time, negative impacts of flow modifications are known and potential benefits to pallid sturgeon population status are unknown.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644937 **Coder Name:** jgutierrez

Comment Text: 1. Due to the vague purpose and need statement, the selection of a preferred alternative is not determined by species goals but by virtually boundless human considerations. Under NEPA, an EIS must "be written in plain language and may use appropriate graphics so that decision makers and the public can readily understand [it]." 17 An EIS must "concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail."18

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 166 **Comment Id:** 644928 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS. But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644901 **Coder Name:** jgutierrez

Comment Text: TNC is concerned with the lack of specific actions related to acquiring and developing lands associated with the Bank Stabilization and Navigation Project (BSNP) Mitigation Project authorities in the draft MRRMP-EIS and current Preferred

Alternative. Although the Preferred Alternative does note the inclusion of " riparian habitat development on any acquired land", the MRRMP-EIS seems to lack any detail on the amount of acquired land would occur or the types of habitat development. TNC has been and remains supportive of the acquisition and development of lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986 and modified by Section 334(a) of WRDA 1999 and agrees with the USACE characterization in Volume 1 of these authorities being obligations of the Fish and Wildlife Coordination Act. TNC observed at the public comment meeting held in Omaha on the draft MRRMP-EIS two out of the three self-identified agricultural based landowners who provided public oral comments described how they wanted and were willing to participate in restoration activities along the river.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644899 **Coder Name:** jgutierrez

Comment Text: TNC is concerned by the lack of environmental flows contained in the current Preferred Alternative in the draft MRRMP-EIS. The inclusion of an "Experimental Flow Release - if required" in 2025 as identified in the Preferred Alternative is a small step in the right direction, but hardly reflects Fish and Wildlife as an authorized purpose in the operation of the Missouri River mainstem system. TNC has a long history of working on environmental flows and over a decade of it with USACE through the Sustainable Rivers Project. To supplement these comments, we are attaching a 2014 letter and report by the Chief of Engineers Environmental Advisory Board and the 2015 response by the Chief of Engineers. TNC understands the challenges and constraints USACE faces on the Missouri River in terms of implementing environmental flows, but TNC does not believe they are insurmountable and would propose two approaches for inclusion in a MRRMP-EIS preferred alternative: 1. To enhance the research surrounding "Big Question 1: Spawning Cues" TNC recommends inclusion of Level 2 Experimental Flow Decreases from Gavins Point Dam in addition to (not replacing) the proposed release. These decreases would be timed to coincide with high flow events at appropriate water temperatures (spawning) occurring on the tributaries near Gavins Point Dam to attempt to enhance localized temperature and turbidity- known factors impacting pallid spawning behaviors. These managed decreases would appear to be already within the Master Manual, should be complementary to the other authorized purposes given timing with increased tributary inflows, and could benefit the research already identified in the Preferred Alternative. 2. Given long known negative environmental impacts and a recent publication in Bioscience (Kennedy et al. 2016) further documenting them, TNC recommends USACE alter (not eliminate) hydropeaking practices on the Missouri River mainstem system. TNC believes this directly applies to the primary biotic response of food availability in both the upper and lower river pallid sturgeon exogenously-feeding larvae conceptual ecological models. And the ecological response of area of suitable foraging habitat in the piping plover conceptual ecological models. TNC offers no specific flow prescription at this time, only that USACE begin evaluating and implementing low stable flows during known periods of peak aquatic-insect laying. TNC believes this can and should be done in ways that minimally affect hydroelectricity

generation while still obtaining the goal of improving aquatic-insect egg laying and rearing. TNC also believes evaluation of the impacts on these same insects by "harassment flows" to discourage bird nesting a low sandbar elevations should be considered. TNC believes these minor water management adjustments could bring important ecological and informational benefits, be acceptable to a broad range of stakeholders, and thus, make important additions to the MRRMP- EIS preferred alternative. TNC also wants to emphasize it recommends these adjustments because it trusts USACE to implement these water operations safely.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644860 **Coder Name:** jgutierrez

Comment Text: The selected alternative management actions described in sect 5.3 are entirely insufficient to avoiding jeopardy for the pallid sturgeon, and mostly insufficient for the terns and plovers. It is difficult to conceive how a reasonable mind could read the details found in the effects analysis and integrated report for the pallid sturgeon, conduct the analysis described in this DEIS, and yet,, and yet, STILL, arrive at Alternative 3 as suggested preferred, much less, the selected alternative. If the Corps is to construct an entire programmatic EIS for the purpose of 'avoiding jeopardy' then the end product MUST avoid jeopardy, and- - by preferring Alt 3, and for other reasons- - this DEIS does NOT avoid jeopardy. It creates jeopardy, even after considering and describing many- - though, not all- - of the things it should do to avoid jeopardy.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644851 **Coder Name:** jgutierrez

Comment Text: It is extremely unlikely that Big Questions 1 through 4 (SAMP-draft 6- Sect 4.2.4, table 43; and elsewhere) which refer to, and study, "naturalized flows" can be efficiently or definitively answered by passively monitoring existing, or historical record, Corps operated flows. Of the five hypotheses deemed, by the Corps, to meet or exceed criteria stipulated by the Effects Analysis documents for "avoiding jeopardy", only Alternative 2 aims at approximating "naturalized flows". Alternatives 4 through 6 aim at remediating interventions for the attenuation of naturally occurring flow regimes; but these interventions for attenuations caused by the dams, reservoirs and BSNP channelization are not, in and of themselves, natural. Moreover, even as some of the corollary hypotheses already benefit from Level 1 reflection on past operations data, these hypotheses become bootless and cannot be tested by falsification if they cannot ascend the stepwise decision process through levels 2, 3 and 4- - which is the implicit effect, if Alternative 3 is retained as preferred to become the selected alternative. Level 2 lab studies would have no effect on pallid sturgeons

living in the river and insufficient statistical power to overcome what is, essentially, a policy decision preference for an intervention (Alt 3) that may not work.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644838 **Coder Name:** jgutierrez

Comment Text: By promoting Alternative 3 as "preferred", the DEIS appears to abandon pallid sturgeon, least tern and piping plover populations above Fort Peck and on the Yellowstone River, above Intake MT. This abandonment occurs despite previous Corps environmental analysis and draft review documents that justified their work under the MRRP and spent monies appropriated for BSNP Mitigation*. If Alt 3a_mech (6.1.3) is retained as the selected alternative in the FoNSI; RoD, then most of the Big Questions for the Upper Missouri River (Table 4, SAMP draft 6 pg 35) become operationally untestable, and even if retaining scientific validity at levels 1 & 2, are bereft of operational management actions at levels 3 & 4.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644795 **Coder Name:** jgutierrez

Comment Text: 14. Of the alternatives presented, preferred Alternative 3 has the fewest negative impacts and is supported. We are, however, skeptical on the caveat of a flow test in this alternative as it appears unnecessary, especially without increased and enhanced sediment loads.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644746 **Coder Name:** jgutierrez

Comment Text: While WCI has concerns with each Alternative, among all considerations, Alternative 3 strikes the best balance between species recovery and human considerations. This Alternative meets the species targets for the birds at a much lower federal cost than some of the other Alternatives, with less impact to industry stakeholders. Flow changes would have multiple negative impacts on the economy and environment.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644453 **Coder Name:** jgutierrez

Comment Text: Alternative 3 appears to offer the least problems for the operation of the Water Intake and subsequent customer supply. Staff does have reservations about the flow regime for out year 8-9 which is currently undefined.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644443 **Coder Name:** jgutierrez

Comment Text: Based on our review, we believe Alternate 3 has the least effect on our operations and authorized purpose. It should be noted; while supporting Alternative 3, staff continues to hold reservations regarding the flow regime identified in year 9.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644409 **Coder Name:** jgutierrez

Comment Text: In spite of concurrence that Alternative 3 represents the best presented option, the State is concerned that in the process of constructing many of the Shallow Water Habitat practices, sediment is routinely removed from parts of the river and adjacent banks only to be placed back in the main channel of the river where it is flushed downstream. This practice is counterproductive to the goals of both the Iowa Nutrient Reduction Strategy and the Mississippi River/Gulf of Mexico Hypoxia Task Force, which call for significant reductions in the transport of nitrogen and phosphorus to the Gulf from our state. We believe that state and federal agencies should be held to the same standards as our agricultural and urban constituents with respect to reducing nutrient transport by way of our rivers and streams, and that the practice of placing nutrient-laden sediment into the river channel will only add to the challenge of improving water quality in Iowa and downstream. To that end, we request that any mechanical habitat construction be undertaken in a manner that avoids, to the greatest extent possible, deposition of sediment back into the Missouri River.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644397 **Coder Name:** jgutierrez

Comment Text: The Missouri River is an important resource for both the citizens of Iowa, and for the wildlife that depends on it. While supportive of all eight authorized purposes, the State has a prioritized interest in flood risk reduction and efforts that are aligned with the State's Nutrient Reduction Strategy. Habitat mitigation efforts were intended to benefit a wide variety of species by providing natural areas, but they also play a role in flood risk reduction and nutrient reduction strategies (water quality). Over the past decade, there have been several Missouri River flood events on the lower river which have repeatedly caused extensive flood damage to private lands and infrastructure in Iowa. The existence of mitigation acres within the floodplain reduces flood damage costs and reduces nutrient transport. It appears that most of the focus of the Preferred Alternative is the construction of interception and rearing complexes and spawning habitat primarily in the state of Missouri. While these relatively new habitat types may be of particular importance to the Pallid Sturgeon, we believe other traditional shallow water habitat construction projects (bank notches, dike notches, revetment notches, placement of new structures, side channels, chutes, and channel widening/top-width widening) should continue to be considered throughout the lower river because of their demonstrated effectiveness in providing multiple species benefits, along with flood control and water quality improvements.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643950 **Coder Name:** jgutierrez

Comment Text: The NPS believes that the preferred alternative (Alternative 3) is too limited in scope it does not provide sufficient consideration for ecological function and other river resources. They recommend management actions that achieve closer to natural flow regimes, such as those in Alternative 2.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643935 **Coder Name:** jgutierrez

Comment Text: The USFWS is concerned the preferred alternative does not address the identification and removal of impediments to implement more natural flows in the Missouri River. The Final EIS should consider the use of land acquisition, flowage easements, coordination with landowners, and necessary site preparations, within the 15-year project implementation period to achieve the purpose and objectives of the Draft MRRMP/EIS.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643928 **Coder Name:** jgutierrez

Comment Text: The USFWS will not complete a final assessment of the ability of the Draft MRRMP/EIS to achieve its purpose and objectives until consultation pursuant to section 7 of the ESA (Section 7) are complete. However, at this time the USFWS is concerned that the suite of actions in the preferred alternative alone may not meet the purpose and objectives of the Draft MRRMP/EIS. The near-complete reliance upon mechanical construction in the Missouri River system overlooks the value of ecological functions to support the program purposes. Restoring natural flows should be a cornerstone of management approaches to river ecosystems (Poff et al. 1997), yet the current Draft MRRMP/EIS preferred alternative only includes them as a potential for testing the applicability of flows. The 2003 amended biological opinion reinforced the importance of a more natural flow regime linked with physical habitat improvements: Continued survival of pallid sturgeon depends on restoration of riverine form and functions, as well as some semblance of the pre-development or natural hydrograph. Missouri River habitat restoration is, therefore, multi-faceted, and involves a combination of reservoir operational changes (e.g., hydrograph and temperature), structural modifications (e.g., chute restoration), and non-structural actions (e.g., floodplain acquisition or easements). The maximum benefits of physical habitat projects to listed species can only be realized when coupled with complementary hydrology.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643883 **Coder Name:** jgutierrez

Comment Text: Section 2.8.4.2, Page 2-67 - Of the alternatives listed, we support Alternative 3. However to include a one-time spawning que release for pallid sturgeon is speculation (at best) based on the latest science and was not high on the list of recommendations of the Expert pallid sturgeon workshop. Including this as an alternative component at this time should not occur, it should not be included until the science and AMP indicate it is a need. This management action should be dropped in the final EIS as a component of Alternative 3 and become a hypothesis in the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643523 **Coder Name:** jgutierrez

Comment Text: The State of Kansas fully supports the Preferred Alternative. However, we feel very strongly the aforementioned suggested changes be included in the alternative. The final version needs to focus equally on implementation of on the ground habitat and expanded efforts in the habitat types identified above. We believe these actions will significantly improve the alternative's likelihood of success.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643519 **Coder Name:** jgutierrez

Comment Text: Similarly, Alternative 3 identifies only 12 pallid sturgeon early life stage habitat areas. This is insufficient to expect success. If we confine those only to the lower channelized reach that represents one site each 61 miles. To be successful, habitat for early life stages of pallid sturgeon must be at both reasonable distances (and suitable locations) throughout the system. It is important to keep in mind that a larval fish has limited mobility and ability to find and access preferred habitat in this high velocity modified system. It is also important to note that discussion of these areas also seem to plan for these areas to be concentrated very low in the system. Drift, whether it is of larval fish, benthic invertebrates or detritus in the system is a non-uniform event. Drift of these organisms cannot be expected to behave as a model of water flowing downstream. Even in a highly modified channel "roughness" of the channel will create variation in drift rates from varying velocities, eddys, areas behind dikes, etc. Suitable rearing habitat must be created at various locations throughout the system.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643518 **Coder Name:** jgutierrez

Comment Text: Alternative 3 provides for only 3 spawning habitat sites, this is insufficient. Given the variability of the river and spawning conditions, placing this limited number of sites in ideal locations is nearly impossible. More sites are needed throughout the system.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643515 **Coder Name:** jgutierrez

Comment Text: The modifications we recommend be incorporated to Alternative 3 include: (1) removal of the management action of a one-time spring pulse test for pallid sturgeon (estimated in year 9) and placement into the Adaptive Management Plan (AMP) as a hypothesis that would be tested if supported by the science at that time;

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643512 **Coder Name:** jgutierrez

Comment Text: Some aspects of Alternative 3, while important components of an overall Recovery effort, are of concern to us either due to limited scope or inactivity. To be successful in recovering this ecosystem the overall effort must not only address the currently listed species, but also the other species they depend upon.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643285 **Coder Name:** jgutierrez

Comment Text: Ultimately, the sequential approach in the Preferred Alternative (Alternative 3) further delays meaningful conservation of Pallid Sturgeon in the Upper Missouri River Basin through unnecessary reliance on Level 1 and Level 2 studies; research that has already been conducted and ecosystem-understanding that already exists.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 230 **Comment Id:** 642772 **Coder Name:** jgutierrez

Comment Text: The city of Nebraska City, its citizens and businesses support the USA CE implementation of MRRMP Alternative 3 and is opposed to any plans which involve creating an additional flow release from Gavins Point Dam, increasing the risk of flooding that would affect our community. We believe this alternative best fits the USACE Planning Account objective to evaluate species objectives including consideration for the effects of each action or alternative on a wide range of human considerations including economic, social and cultural values associated with the natural resources of the Missouri River.

Organization: City of Nebraska City

Commenter: Grayson Path **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642691 **Coder Name:** jgutierrez

Comment Text: TNC is concerned by the lack of environmental flows contained in the current Preferred Alternative in the draft MRRMP-EIS. The inclusion of an Experimental Flow Release - if required in 2025 as identified in the Preferred Alternative is a small step in the right direction, but hardly reflects Fish and Wildlife as an authorized purpose in the operation of the Missouri River mainstem system. TNC has a long history of working on environmental flows and over a decade of it with USACE through the Sustainable Rivers Project. To supplement these comments, we are attaching a 2014 letter and report by the Chief of Engineers Environmental Advisory Board and the 2015 response by the Chief of Engineers. TNC understands the challenges and constraints USACE faces on the Missouri River in terms of implementing environmental flows, but TNC does not believe they are insurmountable and would propose two approaches for inclusion in a MRRMP-EIS preferred alternative: 1. To enhance the research surrounding Big Question 1: Spawning Cues TNC recommends inclusion of Level 2 Experimental Flow Decreases from Gavins Point Dam in addition to (not replacing) the proposed release. These decreases would be timed to coincide with high flow events at appropriate water temperatures (spawning) occurring on the tributaries near Gavins Point Dam to attempt to enhance localized temperature and turbidity - known factors impacting pallid spawning behaviors. These managed decreases would appear to be already within the Master Manual, should be complementary to the other authorized purposes given timing with increased tributary inflows, and could benefit the research already identified in the Preferred Alternative. 2. Given long known negative environmental impacts and a recent publication in Bioscience (Kennedy et al. 2016) further documenting them, TNC recommends USACE alter (not eliminate) hydropeaking practices on the Missouri River mainstem system. TNC believes this directly applies to the primary biotic response of food availability in both the upper and lower river pallid sturgeon exogenously-feeding larvae conceptual ecological models. And the ecological response of area of suitable foraging habitat in the piping plover conceptual ecological models. TNC offers no specific flow prescription at this time, only that USACE begin evaluating and implementing low stable flows during known periods of peak aquatic-insect laying. TNC believes this can and should be done in ways that minimally affect hydroelectricity

generation while still obtaining the goal of improving aquatic-insect egg laying and rearing. TNC also believes evaluation of the impacts on these same insects by harassment flows to discourage bird nesting at low sandbar elevations should be considered. TNC believes these minor water management adjustments could bring important ecological and informational benefits, be acceptable to a broad range of stakeholders, and thus, make important additions to the MRRMP- EIS preferred alternative. TNC also wants to emphasize it recommends these adjustments because it trusts USACE to implement these water operations safely.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641812 **Coder Name:** jgutierrez

Comment Text: Mid-West supports a slightly revised Corps Preferred Alternative. The one revision to the Preferred Alternative Mid-West proposes is the addition of more off-channel, non-ESH work for plovers. As the work highlighted in the recent MRRIC Annual Forum (Michael Anteau, U.S.G.S., Conservation of Piping Plovers on the Missouri River: Thinking Beyond the Banks) suggests, there are productive habitat opportunities beyond the banks of the Missouri River that could prove very useful to piping plover recovery. With the addition described above, Mid-West supports the Preferred Alternative for the following reasons. First, it provides the best balance of actions likely to result in recovery of the ESA-listed species versus the environmental and economic consequences of those actions. Second, it has the smallest environmental consequences of all the other alternatives in virtually every category, including the No Action alternative. Finally, the Preferred Alternative's embrace of Adaptive Management is entirely appropriate given the magnitude of the scientific uncertainty surrounding all three of the ESA-listed species. For these reasons, Mid-West believes the Preferred Alternative is the superior alternative for ESA-listed species recovery on the Missouri River.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641725 **Coder Name:** jgutierrez

Comment Text: 7. A selected alternative should not have a split season or otherwise threaten commercial navigation.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641710 **Coder Name:** jgutierrez

Comment Text: 5. A selected alternative should not threaten commercial navigation.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641641 **Coder Name:** jgutierrez

Comment Text: 8. A selected alternative should not have a split season or otherwise threaten commercial navigation.

Organization: MMRIC

Commenter: Don Meisner **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 189 **Comment Id:** 641574 **Coder Name:** jgutierrez

Comment Text: It seems that these alternatives are not completely proven and are many unknown factors as to their success as to the pallid sturgeon, piping plover, lease tern and are somewhat of an experimental nature with the possibility that end results could be less than anticipated Possibly alternative number 3 that implements mechanical habitat reproduction and constructio would be less damaging but we remain opposed to any releases associated with alternative 3.

Organization: Halls Levee District

Commenter: Lanny Frakes **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 178 **Comment Id:** 641437 **Coder Name:** jgutierrez

Comment Text: In the event the Corps selects its preferred Alt #3, we ask that it be augmented with a substantially greater commitment to land acquisition, floodplain connectivity, and habitat restoration, with all the attendant benefits for people as well as for wildlife.

Organization: Missouri Parks Association

Commenter: Steve L Nagle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641389 **Coder Name:** jgutierrez

Comment Text: We believe Alternative 3 comes the closest to striking a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. We do appreciate the Corps's cancellation of the current bimodal spring rise as outlined in this alternative, but remain fully concerned that a spring rise could be considered further down the line in this alternative. Until the Corps or the Services can produce peer reviewed science that supports a spring rise as an effective tool to pallid sturgeon recovery, the rise shouldn't even be part of the conversation of river management.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641013 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented in the EIS, we concur with the Corps assessment for the preferred Alternative 3 - Mechanical Construction Only. We believe it best balances effective measures to address the jeopardy of the three species while collectively minimizing the costs and impacts to human considerations. As noted below, we remain skeptical of the value of, and concerned with the potential risk posed by, the one-time spawning cue test included in Alternative 3. By contrast, none of the other alternatives are acceptable to Ameren as they threaten to diminish Missouri River flows at vital facilities and at critical times. Alternative 3 promises both economic and operational benefits compared to other options. Impacts on Thermal Power plants were assessed based on the Corps evaluation of twenty one facilities. Based on the Corps modelling, the National Economic Development impacts for the affected power generating facilities are reduced (annually) under Alternative 3 by an estimated \$1.4 million over the No Action alternative. Others by contrast, such as Alternative 2 are estimated to cost over \$28 million more (annually).

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 149 **Comment Id:** 637677 **Coder Name:** jgutierrez

Comment Text: The US Army Corps has recommended Alternative 3 labeled as Mechanical Construction Only. This alternative does not do enough to conserve and protect the natural resources of the Missouri River such as the prey base for pallid sturgeon. We agree that large scale experimentation as proposed by level-2 experiments would be beneficial, but the scope of such experiments seem extremely limited to just flow pulses. A one-time flow pulse does not constitute a natural flow regime. Establishing a more natural flow regime in combination with habitat construction through an adaptive management plan is a more prudent approach which tries to work with mother nature.

Organization: NE Chapter of the American Fisheries Society

Commenter: Michael Archer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 103 **Comment Id:** 636883 **Coder Name:** jgutierrez

Comment Text: Concern The Conservation District stakeholder group cannot support limiting the MRRMP and DEIS's preferred alternative recommendation to the Alternative 3 - Mechanical Construction Only option for recovering the Missouri River's threatened and endangered species as stated in Vol. 1, Executive Summary, page xxviii. Basis for the Concern As a result of our working with these natural resources for many years, we believe the Mechanical Construction Only alternative will not facilitate the reestablishment of most of the inner acting components that are needed to fully recover the Pallid Sturgeon, Piping Plover and Least Tern species and avoid jeopardizing or endangering other species that rely on the river for their needed habitat. Significance of the Concern By limiting our recovery actions to Mechanical Construction Only, we are not going to be able to rehabilitate the river's eco-system back to its pre-construction condition. We need to include the management practices that are included in Alternatives 4, 5, and 6 that will help mimic the pre-construction natural flows and habitat as best we can. Not only is Alternative 3 inadequate in repairing the natural eco-system, we believe it is not financially sustainable, either. As good stewards of our natural resources, we have to learn how to work in harmony with these natural resources as God created them and not as how man thinks they need to be manipulated.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633522 **Coder Name:** jgutierrez

Comment Text: However, AWO supports eliminating the one-time flow test or bimodal spring rise from the preferred alternative because virtually no science has been developed to prove its value. In fact, the Corps admits in the DEIS that no current scientific evidence indicates the greater magnitude bimodal spring releases would serve as a cue for aggregation and spawning of the pallid sturgeon in the lower Missouri River. AWO is also concerned that this one-time flow test could be part of a permanent flow regime in the future.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 632134 **Coder Name:** JGUTIERREZ

Comment Text: It is also difficult to believe that the Alternatives 3 through 6 would reach the goal of 11,886 acres of ESH on the Missouri River.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631573 **Coder Name:** jgutierrez

Comment Text: The Coalition supports eliminating the current bi-modal spring rise from the preferred alternative because, as Tom just mentioned, the lack of science that's been developed to prove its value. We applaud the Corps for their commitment to study the linkage between tributary flows and pallid sturgeon recovery. That's a point that we've been making for quite some time. We appreciate that that is in Alternative 3. However, we question how the Corps can keep such an option on the shelf for nine to ten years in the future as part of this alternative knowing that river conditions can change during this time, making human consideration effects difficult to monitor.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 55 **Comment Id:** 631092 **Coder Name:** JGUTIERREZ

Comment Text: Thus far, though, we have concerns on the Corps' preferred Alternative No. 3. This one utilizes mechanical construction to create shallow water habitat, interception rearing complexes and emergent sandbar habitat. Our concerns primarily focus on future funding for recovery efforts that are outlined in Alternative 3. We ask what happens if funding for mechanical construction is not available or zeroed out by Congress. This has happened with other Missouri River efforts and programs in the past. Is there a Plan B contained in Alternative 3? If so, we haven't seen it in the DEIS.

Organization: Izaak Walton League of America (South Dakota, Nebraska, Iowa)

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 50 **Comment Id:** 628615 **Coder Name:** jgutierrez

Comment Text: First, I want to talk about Alternative No. 3. It is an all mechanical alternative, which means bulldozers and that type of thing will push sand around, and it is essentially the least sustainable and the worst alternative. It has received a great deal of support by all the people who do not want flows in the river, who don't want to see anything change, and you have heard that tonight. So instead of using flows on the river to produce sandbars, it'll be artificially done. The pallid sturgeon, the third of the three species, will have little benefit to be gained from this alternative, although they are creating what they call the IRCs, the interception - - oh, what is the - - rearing complexes. And this is done on two wing dikes a year and over a span of about ten years, which is really, on the lower river, far too few and far too long of a time period.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628479 **Coder Name:** jgutierrez

Comment Text: It is viewed that the preferred alternative is wholly inadequate, that is Alternative No. 3 offered by the Corps. The most significant deficiency, in my opinion, is that there's an absence of acquiring additional floodplain acres and construction of shallow water habitat, as was pledged in the BSNP 2003 amended biological opinion.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 628017 **Coder Name:** jgutierrez

Comment Text: Furthermore, we commend the Corps for their commitment to study the correlation between tributary flows and pallid sturgeon habitat. However, AWO members believe that any flow test is scientifically unjustified. AWO supports eliminating the one-time flow test, or bi-modal spring pulse, from the preferred alternative virtually because there is no science that has been developed to prove its value.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 41 **Comment Id:** 627007 **Coder Name:** jgutierrez

Comment Text: Alternative 3 is the worst of the choices because it relies only on manual, artificially created habitat which would require indefinite work and maintenance.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 30 **Comment Id:** 626827 **Coder Name:** jgutierrez

Comment Text: At this juncture, our review of - in our review, our executive board feels alternative 3 will have the least effects on the authorized purposes and our members, despite our concerns with a possible spawning cue flow regime in the out-years seven through nine.

Organization: Missouri and Associated Rivers Coalition

Commenter: Tom Poer **Page:** **Paragraph:**

Kept Private: No

AL350 Alternatives: Alternative 3 (Preferred Alternative) (non-substantive) (Non-Substantive)

Correspondence Id: 15 **Comment Id:** 626275 **Coder Name:** jgutierrez

Comment Text: Option #1 or Option #3 would be least offensive to those who live and farm close to the Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645518 **Coder Name:** jgutierrez

Comment Text: The League does not support Alternative 3.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645456 **Coder Name:** jgutierrez

Comment Text: Regarding the Corps preferred Alternative 3, the CPR believes it strikes a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. The CPR appreciates the Corps cancellation of the current bimodal spring rise under this alternative and we applaud the Corps for their commitment to study the linkage between tributary flows and pallid sturgeon recovery.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 247 **Comment Id:** 645352 **Coder Name:** jgutierrez

Comment Text: And as somebody whose livelihood is reliant on the flow rate of the Missouri River, there's just no feasible way to support any alternative that has any type of rise at all. So from that aspect, you know, we support Alternative 3 of the proposed alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645237 **Coder Name:** jgutierrez

Comment Text: Pg. xxvii - Under Implementation of Preferred Alternative under Adaptive Management, 2nd paragraph: agencies means plural; Does this mean that the USFWS has already agreed with the choice for the preferred alternative?

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645204 **Coder Name:** jgutierrez

Comment Text: Alternative #3 has been chosen by the Corps as the Preferred Alternative. It is actually the worst of the alternatives. The DEIS justifies it by 3 reasons: 1) wide range of benefits relative to Alternative #1, 2) reduced program expenditures, and 3) increased performance for most HCs. But despite those justifications, it states that Alternative #3 is less likely to meet species goals than Alternative #2!

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645190 **Coder Name:** jgutierrez

Comment Text: In closing, AWO supports mechanical emergent sandbar habitat construction common to all alternatives including Alternative 3, the preferred alternative. We believe the preferred alternative strikes the best balance, but are concerned that the one-time flow test would negatively impact commercial navigation.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645155 **Coder Name:** jgutierrez

Comment Text: Recovery of the endangered and threatened species can be accomplished without changes to the Master Manual or major flow modifications. Of the six alternatives, AWO supports mechanical emergent sandbar habitat construction contained in each of the alternatives, including Alternative 3, the preferred alternative. Alternative 3 strikes the best balance between species recovery and stakeholder interests. This alternative meets the species targets for the birds at a much lower federal cost than Alternative 2 and at a comparable cost to Alternatives 5 and 6, with significantly less impacts to industry stakeholders.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645124 **Coder Name:** jgutierrez

Comment Text: AWO does not support any flow changes including the potential one-time test flow in Alternative 3.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645123 **Coder Name:** jgutierrez

Comment Text: AWO cautiously supports mechanical emergent sandbar habitat construction in the preferred alternative, Alternative 3.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644938 **Coder Name:** jgutierrez

Comment Text: It is not until later in the MRRMP-EIS, shrouded within the lengthy alternatives analysis itself, that the selection of Alternative 3 is justified because it "has a wide range of benefits relative to Alternative 1, including certain benefits to endangered species, reduced program expenditures, and increased performance for most HCs." The MRRMP-EIS even states that Alternative 3 can be selected although it is less likely to meet species goals than Alternative 2: Although there are uncertainties associated with its effectiveness in meeting the species objectives (in common with Alternative 4, 5, and 6), Alternative 3 clearly demonstrates it would be the least impactful means of potentially meeting species objectives across the full range of interests. [Emphasis added] This statement begs several questions. Why would alternatives be proposed which contain appreciable "uncertainties associated with [their] effectiveness in meeting" species goals? Why does the chart provided in the Executive Summary distinguish effectiveness only by using the word "Exceeds" for Alternative 2's piping plover and interior least tern objectives? Why is the preferred alternative the one that potentially meets species objectives when the entire purpose of the MRRMP-EIS is to avoid jeopardy?

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 222 **Comment Id:** 644827 **Coder Name:** jgutierrez

Comment Text: Alternative 3 has the fewest negative consequences and is supported.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644805 **Coder Name:** jgutierrez

Comment Text: Navigation confidence suffers with every flow release alternative. Alternative 3 provides the least risks to the majority of the authorized purposes, especially navigation.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644777 **Coder Name:** jgutierrez

Comment Text: In closing, WCI supports mechanical emergent sandbar habitat construction common to all alternatives including Alternative 3, which consists of components that strike the best balance.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644710 **Coder Name:** jgutierrez

Comment Text: Again Alternative 3 appears to offer the least problems for water quality as it enables the most reliable source of water supply at the appropriate times to assure water quality.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644687 **Coder Name:** jgutierrez

Comment Text: Of the proposed action alternatives in the DEIS, MOARC sees Alternative 3 as having the least impact to stakeholders, including water supply, power generation and permitting, with the most likely potential to recover the protected species. As previously noted, there are concerns with an out-year pulse and we encourage further study with completion of additional analysis prior to its implementation to determine both its real value to the species as well as its associated costs imposed on others.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644672 **Coder Name:** jgutierrez

Comment Text: As stated earlier, our preference is for no change to the current operation, but if we had to choose one of the alternatives that would be #3. Any of the other alternatives would have serious adverse impacts to navigation, perhaps so much as to eliminate it altogether but, without navigation having been given due consideration in the study of alternatives, the full impact remains unclear. The shippers in the MOARC region can and will greatly benefit from using the Missouri River as an alternative

transportation mode. The environmental discussion in the DEIS makes it abundantly clear that the environmental and safety aspect of waterway transportation should be embraced whenever possible.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644485 **Coder Name:** jgutierrez

Comment Text: Alternative 3, even with the provision for a potential one-time spawning cue test release after year nine (9), stands to have the least adverse effect on levee district operations. This could be supported with the anticipation that the one-time test release will not significantly impact levee integrity or district operations, or otherwise impose increased risk to Missouri River levees in the reach downstream from Gavins Point.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644466 **Coder Name:** jgutierrez

Comment Text: Based on this analysis Alternative 3 has the least impacts.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644444 **Coder Name:** jgutierrez

Comment Text: With regard to the Action Alternatives in the DEIS, our review leads us to determine that Alternate 3 will have the least effects on the authorized purposes and our members, despite concern with a possible out year spawning cue flow regime.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644396 **Coder Name:** jgutierrez

Comment Text: The selection of Preferred Alternative (Alternative 3) also generated a number concerns and comments related to the need to address all of the authorized uses, the importance of addressing a broad range of native fish and wildlife species, and concerns over water quality aspects of habitat construction.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644395 **Coder Name:** jgutierrez

Comment Text: As summarized in the Hydropower Environmental Consequences Analysis Technical Report, Alternative 3 provides the best economic impact result for hydropower generators. Iowa's consumer-owned electric utilities include rural electric cooperatives (REC's) and municipal utilities. These Iowa based utilities, along with approximately 300 other consumer-owned utilities in the Missouri River Basin, also have a critical dependence on the Missouri River. The Western Area Power Administration (WAPA) supplies them with electric power generated by six hydroelectric facilities located on the river. Changes in Missouri River operations can affect Iowa consumer-owned utilities that purchase power from WAPA. When WAPA cannot generate enough hydroelectric power to fulfill its contractually obligated agreements due to low water, WAPA must go to the open market and purchase electricity, often at higher costs, which are passed on directly to the consumer-owned utilities that receive electricity from WAPA.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644391 **Coder Name:** jgutierrez

Comment Text: Alternative 3 has a positive impact on waterway navigation in every area that was studied as part of the analysis (NED transportation savings, RR&R costs, RED employment and income, and OSE air quality) as indicated in the Navigation Environmental Consequences Analysis Technical Report. Alternative 3 also has more positive impacts on flood risk management for Iowa than the other alternatives, as indicated by NED (and to a lesser degree, RED Jobs and Income, and OSE People At Risk) impacts for the Gavins Point Dam to Rulo reach cited in the Flood Risk Management Environmental Consequences Analysis Technical Report. This is ideal for Iowa Department of Transportation (DOT) infrastructure and Iowa landowners as it is expected to be an overall improvement from the current management practices (Alternative 1).

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644390 **Coder Name:** jgutierrez

Comment Text: Overall, and with some points of concern, the State supports the selection of the Preferred Alternative (Alternative 3â€”Mechanical Construction Only). Alternative 3 best balances the interests of all Iowans, considering the eight priorities (represented by the authorized purposes) that must be addressed in implementation of the MRRMP.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644099 **Coder Name:** jgutierrez

Comment Text: Proposed management actions in the DEIS are primarily focused on the lower Missouri River. In the most inclusive alternatives (Alternatives 3-6) the proposed actions in Montana are limited to: â€œ Propagation and augmentation, â€œ Pallid Sturgeon Population Assessment Project, â€œ Level 1 and 2 studies, and â€œ Monitoring and evaluation related to recruitment associated with Intake Dam modifications

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643929 **Coder Name:** jgutierrez

Comment Text: Section 3.13.2.6, Page 3-344, last paragraph - Alternative 3 has the smallest impact of all the alternatives on hydropower and results in a small increase in power generation, and a small decrease in dependable capacity. These are important benefits to a renewable resource as such we support Alternative 3.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643903 **Coder Name:** jgutierrez

Comment Text: Section 2.10.1, Page 2-90 - We support the pallid sturgeon propagation effort as well as studies to assess a proper stocking rate, size, and locations. We also support additional evaluation to determine the carrying capacity of the river, which needs to be determined based on forage based studies.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643870 **Coder Name:** jgutierrez

Comment Text: The following comments are Montana-Dakota's evaluation of the proposed alternatives and may change depending upon the USACE's further evaluation of issues and implementation of recommendations Montana-Dakota provided above. If no changes to the overall results occur after consideration of our recommendations, we believe that the Alternative 3 (identified as the preferred alternative in this MRRMP-EIS) would be the least disruptive Alternative to Heskett's current operation and is preferred. Alternative 3 is described as: 2.9.2.3 Alternative 3 - Mechanical Construction Only Summary of Characteristics and Features.

Hydrologically, the effects of this alternative would be very close to those for Alternative 1 but without the specification for spawning cue releases in March and May. Hydrological differences would be reduced flows relative to Alternative 1 in approximately 30 to 50 percent of years in late March and late April/early May, and corresponding increased flows relative to Alternative 1 during one or two weeks in October or November. The differences in magnitude of these flows would be small compared to those associated with the other alternatives. Alternative 3 would have less channel reconfiguration for pallid sturgeon early life stage habitat relative to Alternative 1, and this would have implications on flow routing and assumed stage- discharge relationships at certain locations. Therefore, Alternative 3 has been identified as the preferred alternative in this MRRMP-EIS.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643785 **Coder Name:** jgutierrez

Comment Text: In summary NPPD supports implementing Alternative 3 with the modifications noted above and contained in the attached set of detailed comments. We believe this provides necessary benefits to the species while maintaining authorized purposes and avoiding significant impacts to power generation in the basin.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643513 **Coder Name:** jgutierrez

Comment Text: NPPD supports, with some modifications, the U.S. Army Corps of Engineers (USACOE) selection of Alternative 3 as the preferred alternative. NPPD would agree that of the 6 alternatives presented; Alternative 3 sets out the best plan to provide benefits for Pallid Sturgeon and Piping Plovers while providing for operations of the system and maintaining the authorized purposes as designated by Congress.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643510 **Coder Name:** jgutierrez

Comment Text: Specifically it appears that Alternative 3 operates inside the current Master Manual. We see this as very positive. In addition, Alternative 3 provides more available storage for low flow periods allowing municipalities to better manage service. Alternative 3 provides several hundred more acres of Emergent Sandbar Habitat through mechanical construction. This should provide sufficient habitat to alleviate the need for releases from the Kansas Reservoirs to protect the limited habitat create by other alternatives. The State of Kansas has long opposed the use of Kansas River reservoirs for flow support on the Missouri River when the other tributary reservoirs in the system are left untouched. This practice represents an unbalanced threat to Kansas water supplies during the uncertainty of drought and impacts our local economies. Finally, Alternative 3 also has the least National Economic Development (NED) impact and appears to be a good balance between overall efficiency and impact to certain NED resources.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643509 **Coder Name:** jgutierrez

Comment Text: The Corps of Engineers selected Alternative 3 as the preferred alternative. It is labeled as the Mechanical Construction Only alternative in the document. As defined by the DEIS, Alternative 3 contains the following general components: Mechanical Emergent Sandbar Habitat Construction for Plovers and Terns Vegetation and Predator Management and Human Restriction Measures to benefit Plovers and Terns Flow Management to Reduce Take of Birds Tern and Plover Monitoring and Research Pallid Sturgeon Propagation Pallid Sturgeon Population Assessment Monitoring and Evaluation of Pallid Sturgeon Recruitment Pallid Sturgeon Early Life Stage Habitat Construction Habitat Development and Management on MRRP Lands Reservoir Unbalancing Would Not Be Implemented Adaptive Management Studies Spawning Habitat Construction (Up to 3 sites)

Mechanical ESH Habitat Construction (390 acres per year) Pallid Surgeon Early Life Stage Construction (12 locations) Each of these components are a necessary part of an overall Recovery effort if it is to be successful. Alternative 3 has many features that we like and some aspects that are cause for concern, mainly due to the scope of the effort identified.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643505 **Coder Name:** jgutierrez

Comment Text: Of the 6 alternatives offered, we see Alternative 3 being the best alternative to fit the needs of the Citizens of Kansas.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643482 **Coder Name:** jgutierrez

Comment Text: Alternative 3 has the least National Economic Development (NED) impact and is a good balance between overall efficiency and impacts to certain NED resources especially when compared to Alternative 1 for the Missouri RAC Region.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643481 **Coder Name:** jgutierrez

Comment Text: Alternative 3, which is preferred, has less channel reconfiguration for pallid sturgeon early life stage habitat relative to Alternative 1.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643479 **Coder Name:** jgutierrez

Comment Text: Hydrologically, the effects of Alternative 3 would be very close to those for Alternative 1 but without the specification for spawning cue releases in March and May. The differences in magnitude of the flows associated with Alternative 3 would be small compared to those associated with the other alternatives which makes this Alternative preferable.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643478 **Coder Name:** jgutierrez

Comment Text: Alternative 3 has a wider range of benefits relative to Alternative 1 including certain benefits to endangered species, reduced program expenditures, and better performance for most of the Human Considerations (HCs).

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643473 **Coder Name:** jgutierrez

Comment Text: Although there are significant uncertainties associated with its effectiveness in meeting the species objectives, Alternative 3 demonstrates it would be the least impactful means of meeting species objectives across the full range of interests in the Missouri River Basin. The USA CE should implement Level 1 and Level 2 studies as outlined in Alternative 3.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643470 **Coder Name:** jgutierrez

Comment Text: The Missouri RAC appreciates the opportunity to provide comments and supports the Preferred Alternative No. 3.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642836 **Coder Name:** jgutierrez

Comment Text: Of the alternatives presented in this Draft MRRMP-EIS, our Utility feels that Alternative No. 3 has the least impact to the Eight (8) Authorized Purposes which includes impacts to water supply and water quality.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642122 **Coder Name:** jgutierrez

Comment Text: The Corps has an obligation to meet targets proposed in each AOP as close as possible without violating the eight Authorized Purposes. Alternatives #1 and #3 come the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641804 **Coder Name:** jgutierrez

Comment Text: - Mid-West supports Alternative 3 “ Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-Emergent Sandbar Habitat (ESH) work for piping plovers;

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 214 **Comment Id:** 641737 **Coder Name:** jgutierrez

Comment Text: Alternative 3, especially, is not acceptable.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641724 **Coder Name:** jgutierrez

Comment Text: 6. A selected alternative should not threaten or increase costs of water supply to domestic and industrial users or increase the cost of treating water.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641723 **Coder Name:** jgutierrez

Comment Text: 5. A selected alternative should not increase flood risk.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641722 **Coder Name:** jgutierrez

Comment Text: 4. A selected alternative should not increase Missouri River bed degradation or lateral bank erosion.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641709 **Coder Name:** jgutierrez

Comment Text: 4. A selected alternative should not threaten or increase costs of water supply to domestic and industrial users.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641708 **Coder Name:** jgutierrez

Comment Text: 3. A selected alternative should minimize degradation of the river and minimize bank erosion and not increase flood risk.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641639 **Coder Name:** jgutierrez

Comment Text: 7. A selected alternative should not threaten or increase costs of water supply to domestic and industrial users or cause increased fresh water treatment costs.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641607 **Coder Name:** jgutierrez

Comment Text: For all of these reasons, the Iowa Chapter opposes Alternative 3 because it does not address the overdevelopment of the river. In fact, it relies on further development of critical habitat.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641577 **Coder Name:** jgutierrez

Comment Text: Further, the preferred option, Alternative 3, is not acceptable and will be addressed by the comments below.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641556 **Coder Name:** jgutierrez

Comment Text: We support no action or Alternative 3.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 185 **Comment Id:** 641493 **Coder Name:** jgutierrez

Comment Text: In closing, we fully support the comments provided by the State of North Dakota regarding the preferred alternative. We strongly encourage the USACE to adjust the draft, as applicable. to address North Dakota's concerns.

Organization: Friends of Lake Sakakawea

Commenter: Terry Fleck **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 185 **Comment Id:** 641479 **Coder Name:** jgutierrez

Comment Text: After considering the benefits and impacts associated with Alternative #3 (Preferred Alternative) we believe it meets the intent of the directive and objectives of the MRRIC process. Therefore, we concur with the preferred alternative, in intent and context, as it accounts for our organizations concerns and interests in Lake Sakakawea. In addition, we feel it should be acceptable to other North Dakota stakeholders.

Organization: Friends of Lake Sakakawea

Commenter: Terry Fleck **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641439 **Coder Name:** jgutierrez

Comment Text: In many respects this plan doesn't change much from the way the Missouri River is managed currently. We do not support adoption of any the proposed alternatives - and we strongly oppose Alternative 3.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641062 **Coder Name:** jgutierrez

Comment Text: While remaining concerned with the potential risk posed by the one time spawning cue test, among the options presented we believe Alternative 3 best meets this mandate. We implore you to achieve a genuine balance, one which fully protects the infrastructure and operation of Amerens Missouri River Energy Centers and our substantial customer base in the communities we serve along its corridor throughout middle and eastern Missouri.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640696 **Coder Name:** jgutierrez

Comment Text: Additionally, in Section 2.9.2.3, page 2-81, lines 7-11: it states, preferred alternative 3 would reduce the need to purchase as much land as alternative 1. How does this relate to the Mitigation Project?

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640591 **Coder Name:** jgutierrez

Comment Text: With the addition described above, CMEPC supports the Preferred Alternative for the following reasons. First, it provides the best balance of actions likely to result in recovery of the ESA-listed species versus the environmental and economic consequences of those actions. Second, it has the smallest environmental consequences of all the other alternatives in virtually every category, including the No Action alternative. Finally, the Preferred Alternatives embrace of Adaptive Management is entirely appropriate given the magnitude of the scientific uncertainty surrounding all three of the ESA-listed species. For these reasons, CMEPC believes the Preferred Alternative is the superior alternative for ESA-listed species recovery on the Missouri River.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640250 **Coder Name:** jgutierrez

Comment Text: Although system operations as driven by the current Master Manual are often detrimental to the MRS fishery, the Preferred Alternative 3 - Mechanical Construction Only, would provide the least additional negative water management impacts.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 158 **Comment Id:** 640078 **Coder Name:** jgutierrez

Comment Text: From our experience, AM affords flexibility to recovery program management actions that weave improving science into the decision making process. We applaud the U.S. Army Corps of Engineers (Corps) and U.S. Fish and Wildlife Service

(USFWS) for incorporating AM into Alternatives #3 (agency preferred alternative), #4, #5 and #6 of the draft EIS. We highly encourage the selection of an alternative that utilizes AM as an implementation component.

Organization: State of Wyoming

Commenter: Beth Callaway **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 640075 **Coder Name:** jgutierrez

Comment Text: Under Alternative 3, the Corps would create ESH habitat only through mechanical means. But this is only a tenth of the acreage of Alternative 2. Alternatives 4 through 6 heavily depend on what are described as annual flow releases to create ESH. But because the river must meet very specific conditions before a flow release occurs, the releases will be much less frequent.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 640073 **Coder Name:** jgutierrez

Comment Text: Alternatives 3 through 6 are very similar to each other, but very different from Alternative 2 which is based on the 2003 amended BiOp. Alternatives 3 through 6 differ slightly in the amount of mechanical emergent sandbar habitat, or ESH construction. They also differ slightly in the need for and timing of a flow release from upstream reservoirs.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638305 **Coder Name:** jgutierrez

Comment Text: Alternative 3 applies the latest science findings while retaining compliance with the Master Manual.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 153 **Comment Id:** 637688 **Coder Name:** jgutierrez

Comment Text: Upon review of the six alternatives evaluated in the draft MRRMP-EIS, the Lewis and Clark Natural Resources District (LCNRD) supports the Corps preferred alternative - Alternative 3, All Mechanical. This alternative does not require changes to the reservoir operation as described in the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) and has the least impacts on Missouri River water users while meeting the objective of avoiding jeopardy to the listed species: interior least tern, piping plover and pallid sturgeon.

Organization: Lewis & Clark Natural Resources District

Commenter: Annette Sudbeck **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637634 **Coder Name:** jgutierrez

Comment Text: We believe Alternative 3 (Preferred Alternative) strikes a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. We appreciate the Corps's™ cancellation of the current bimodal spring rise as outlined in this alternative. We also commend the Corps for its commitment to study the connection between tributary inflows and pallid sturgeon recovery.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 141 **Comment Id:** 637299 **Coder Name:** jgutierrez

Comment Text: Alternative #3 has been the Corps's™ choice for the Preferred Alternative, and it is the worst of the six alternatives. It is an artificial, mechanically-created and unsustainable approach to creating sandbar habitat and uses a one-time spawning-cue test flow release once every 10 years! No other flow releases or variations. Realistically, it will be too costly and will never be funded.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 127 **Comment Id:** 636939 **Coder Name:** jgutierrez

Comment Text: All the above stated, I think the best alternatives are Alternate 3 (No Spring Rise) or alternative 5 (Fall Rise). A fall rise is unlikely to have a large economic impact on us because not much wheat is planted in the river bottoms and No Spring rise gets back to the rationale for funding the dams for flood control.

Organization: Reveaux Levee Distric President

Commenter: CLarence A Trachsel **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 95 **Comment Id:** 636842 **Coder Name:** jgutierrez

Comment Text: In short, we would opt for Alternative #3 as proposing the least harm to all involved, including navigation, agriculture and the pallid sturgeon, but sincerely and respectfully would request that more care, expertise, good science and common sense be involved in make these decisions.

Organization: AGRIServices of Brunswick

Commenter: Lucy A Fletcher **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 79 **Comment Id:** 636786 **Coder Name:** jgutierrez

Comment Text: We think alternative 3 would the least harmful to us, but we do not support any spawning cue or ESH creating releases from Gavins Point Dam.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 77 **Comment Id:** 636784 **Coder Name:** jgutierrez

Comment Text: Alternative 3, the Corps choice, is the worst of the choices. It relies only on manual, artificially created habitat which would require indefinite work and maintenance. Alternative 3 would lock the Corps into a substandard, costly plan.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 160 **Comment Id:** 633966 **Coder Name:** jgutierrez

Comment Text: After reviewing the six alternatives evaluated in the draft MRRMP-EIS, Nebraska would provide support to the Corps's preferred alternative - Alternative 3, All Mechanical. This alternative does not require changes to the reservoir operation as

described in the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) and has the least impacts on Missouri River water users while meeting the objective of avoiding jeopardy to the listed species: interior least tern, piping plover, and pallid sturgeon. Other flow related management actions evaluated in other alternatives could cause the river stage in the Omaha area to increase more than seven feet, which may increase flood risks there and elsewhere along the river in Nebraska. After experiencing the 2011 flooding, the seven basin states consensus was that flood control must be the highest priority in operation of the Missouri River Mainstem system.

Organization: NE Department of Natural Resources

Commenter: Jeff Fassett **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 118 **Comment Id:** 633749 **Coder Name:** jgutierrez

Comment Text: Kansas City Power & Light Company (KCP&L) would like to express its support for the U.S. Army Corps of Engineers (USACE) preferred Alternative 3 identified in the Environmental Impact Statement (EIS). Alternative 3 is the least impactful on the operations of our power plants located along the lower Missouri River, as it is only proposing mechanical creation of shallow water habitats.

Organization: KCP&L

Commenter: Paul M Ling **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 100 **Comment Id:** 633693 **Coder Name:** jgutierrez

Comment Text: - Barnesville Municipal Utility supports Alternative 3 - Mechanical Construction Only (the Preferred Alternative) with additional off-channel, non-emergent sandbar habitat work for piping plovers;

Organization: City of Barnesville Municipal Utility

Commenter: Guy A Swenson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633686 **Coder Name:** jgutierrez

Comment Text: We believe Alternative 3 (Preferred Alternative) strikes a better balance than the other DEIS alternatives in protecting human interests and promoting species recovery. We appreciate the Corps's™ cancellation of the current bimodal spring

rise as outlined in this alternative. We also commend the Corps for its commitment to study the connection between tributary inflows and pallid sturgeon recovery.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633521 **Coder Name:** jgutierrez

Comment Text: We believe the Corps' preferred Alternative 3 strikes the best balance between species recovery and human considerations. This alternative meets the species targets for birds while causing the least amount of impacts to stakeholders. Furthermore, we commend the Corps for their commitment to study the correlation between tributary flows and pallid sturgeon habitat.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633518 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented to us for review and comment, AWO supports mechanical sandbar habitat construction contained in each of the alternatives included in preferred Alternative 3.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 39 **Comment Id:** 628486 **Coder Name:** JGUTIERREZ

Comment Text: At this juncture in our review, the department sees alternative 3 as the alternate that will have the least effects on our operations and the authorized purposes, despite our concern with the possible spawning cue flow regime in out-years nine-plus.

Organization: Kansas City Water Services Department

Commenter: Charles Stevens **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 40 **Comment Id:** 628471 **Coder Name:** jgutierrez

Comment Text: WaterOne does continue to support alternative 3, which shows the least impact to water supply.

Organization: WaterOne

Commenter: Michelle Wirth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 37 **Comment Id:** 628459 **Coder Name:** jgutierrez

Comment Text: We support the preferred alternative number 3. It's not perfect, but it is the best of the six identified. One of the best things about alternative 3 is that it would abandon the 2000 and 2003 biological opinions which are - lack scientific basis and are both deeply flawed.

Organization: WaterOne

Commenter: Mike Armstrong **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 34 **Comment Id:** 628343 **Coder Name:** jgutierrez

Comment Text: Of the alternatives presented, we support the preferred alternative.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 628010 **Coder Name:** jgutierrez

Comment Text: We believe that the Corps' preferred alternative strikes - - alternative 3 strikes the best balance between species recovery and human considerations. This alternative meets the species targets for birds while causing the least amount of impacts to stakeholders.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 32 **Comment Id:** 627967 **Coder Name:** jgutierrez

Comment Text: Of the alternatives presented in this EIS, alternative 3 is the least impact to the eight authorized purposes.

Organization: Missouri River Public Water Supplies Association

Commenter: Mike Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 91 **Comment Id:** 627568 **Coder Name:** jgutierrez

Comment Text: Pallid sturgeon reproduction is poorly understood. Alternative 3 or 6 seem to provide the best chance for further Pallid sturgeon study with the least adverse effect on all parties using the Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 28 **Comment Id:** 627556 **Coder Name:** jgutierrez

Comment Text: While alternative 3 does not call for shallow water habitat, it does require Interception Rearing Complexes, which of those who know the Missouri River simply consider more hocus-pocus. Furthermore, alternative 3 does not rule out flow modifications.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 23 **Comment Id:** 626663 **Coder Name:** jgutierrez

Comment Text: 2. The Corps' preferred alternative, Alternative 3, is the worst of the choices. It relies only on manual, artificially created habitat which would require indefinite work and maintenance. Alternative 3 would lock the Corps into a substandard, costly plan

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AL400 Alternatives: Alternative 4 (Substantive)

Correspondence Id: 33 **Comment Id:** 628008 **Coder Name:** jgutierrez

Comment Text: Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 645762 **Coder Name:** jgutierrez

Comment Text: It is also difficult to believe that the Alternatives 3 through 6 would reach the goal of 11,886 acres of ESH on the Missouri River.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 645761 **Coder Name:** jgutierrez

Comment Text: But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645519 **Coder Name:** jgutierrez

Comment Text: Alternative 4 - The League is concerned with this alternative's focus on how far to draw down water stored in the reservoirs. Lack of water in the system impacts seven of the eight authorized purposes. We also have concern over the potential long refill time for reservoirs after the planned large release. The DEIS states that refill time for the reservoirs could take "months to years." Additionally, the second planned release outlined in the alternative may begin before the reservoirs can refill, drawing them down to even lower elevations. We believe most of the impacts from this alternative would be negative. For example, the DEIS says the levels on Lake Oahe and Lake Sakakawea could drop by as much as 5 feet. This would impact many of the authorized purposes. We feel the benefits this alternative provides do not outweigh its many negative impacts.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644951 **Coder Name:** jgutierrez

Comment Text: The spring and fall flow releases found in Alternatives 4 and 5 do not represent a meaningful difference because their effects are virtually indistinguishable. Nor do the flow releases distinguish Alternatives 4 and 5 from Alternative 3 because they will take place too infrequently to matter. Although the flow releases are intended to "create ESH for the least tern and the piping plover," the MRRMP-EIS at no point discusses the amount of ESH that would result, stating simply that the flow releases will "be adjusted to respond to hydrologic conditions at the time."⁸⁵ Practically speaking, the years that the flow releases will not occur are far more frequent than the years in which they will occur partially or to completion. In terms of the modeling for Alternative 4, the MRRMP-EIS indicates that during the 82-year period of record (POR), "the spring habitat-creating flow release as defined here would have been implemented 10 times and would have been partially implemented 7 times."⁸⁶ This means that the flow release is only fully implemented 12.2% of the 82-year POR. The modeling for Alternative 5 indicates that during the 82-year POR, "the fall habitat-creating flow release as defined here would have been implemented 7 times and would have been partially implemented 2 times."⁸⁷ This means that the flow release is only fully implemented 8.54% of the 82-year POR. The infrequency of the habitat creating flow release raises doubt that the ESH goals of the 2003 Bi Op will be met through utilization of flow releases. The infrequency of the flow releases and the unlikelihood that the ESH goals of the 2003 Bi Op will be met show that Alternatives 4 and 5 are neither meaningfully different from, nor more effective than, Alternative 3.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 166 **Comment Id:** 644928 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS. But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643884 **Coder Name:** jgutierrez

Comment Text: Section 2.8.5, Page 2-69 -The water released from reservoirs to create ESH has the potential to impact multiple stakeholder groups throughout the basin, especially thermal power. The value for the water released from reservoirs for creating ESH should be determined and included, similar to the costs the USACOE is looking at for surplus water, then the total cost of the alternative and impacts to stakeholders can be assessed.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643873 **Coder Name:** jgutierrez

Comment Text: Alternative 4 would be the most disruptive to Heskett's operations and we firmly oppose this alternative. This alternative also appears to favor downstream interests while penalizing upstream sources. Underlined portions of the report summary describing this inequity are as follows: Alternative 4 would result in benefits to power generation and energy values in the lower river and adverse impacts to power generation and energy values in the upper river when compared to No Action, with negligible changes on average across all locations. The benefits in the lower river would occur from slightly lower summer river temperatures from the construction of fewer acres of early life stage habitat for the pallid sturgeon. Adverse impacts to power generation and energy values in the upper river would be temporary and range from small to large, stemming from relatively lower river flows in the fall while reservoirs rebalance following a spring release. There would be negligible impacts to variable costs and capacity values compared to No Action. RED impacts to household and business spending and associated regional economic conditions as a result of changes to consumer electricity rates would be the same as those described under No Action because reductions in power generation under Alternative 4 in the upper river would not occur during peak periods. The OSE impacts would be the same as described under No Action. Alternative 4 would result in uncertain effects on air quality because many of the affected plants are coal-fired plants and the fuel types for the replacement source include fossil fuels. Alternative 4 is not anticipated to have potential significant impacts on thermal power because adverse impacts to power generation to power plants in the upper river would occur during offpeak seasons and there would be beneficial impacts to power plants in the lower river. Montana-Dakota agrees that Alternative 4 is not the preferred alternative and appreciates that the USACE has made this distinction and has not chosen to implement this alternative.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643867 **Coder Name:** jgutierrez

Comment Text: Section 2.7.3, Page 2-40 - The DEIS should indicate whether these flow and duration parameters have been verified in the river?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641563 **Coder Name:** jgutierrez

Comment Text: Also, I am opposed to flow manipulations in Alternatives 4, 5 and 6 that would cause precious water in the system to be wasted running environmental flow experiments for the pallid sturgeon when independent science panels have been unable to prove any benefit.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633916 **Coder Name:** jgutierrez

Comment Text: I farm in the Tri-County Levee District which spans Gasconade, Montgomery and Warren Counties in Missouri. At a river stage of 14 feet on the Hermann gauge - which is seven feet below flood stage - our levee district begins to have challenges with interior drainage. Alternatives 2, 4, 5, and 6 which raise flows, some for considerable amounts of time, are absolutely deal-breakers for my farming operation.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633684 **Coder Name:** jgutierrez

Comment Text: Further, we wholeheartedly oppose flow modifications of up to 60,000 cfs for 35 days in Alternatives 4 and 5. The Corps is effectively abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases. Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633520 **Coder Name:** jgutierrez

Comment Text: Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631571 **Coder Name:** jgutierrez

Comment Text: We too believe Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall to our farmers, increasing downstream flood control constraints and doubling releases from Gavins Point.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

AL4000 Alternatives: New Alternatives Or Elements (Substantive)

Correspondence Id: 21 **Comment Id:** 626567 **Coder Name:** jgutierrez

Comment Text: What are you doing to develop overall natural river, riparian habitat to help the pallid sturgeon? The IRC and spawning areas seem to require ongoing maintenance. What are you doing for ongoing natural habitat for adult pallid sturgeon? Why are you not emphasizing acquiring more acres to restore the river?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628485 **Coder Name:** jgutierrez

Comment Text: Potential compromise would be to include Alternative No. 2 with the Alternative No. 3, if that's the preferred alternative. In saying that, if the science dictates a more aggressive approach, then this land habitat/acquisition could be accelerated and an adaptive management plan would be initiated.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628512 **Coder Name:** jgutierrez

Comment Text: But, finally, there are numerous other issues that could be addressed easier with Alternative No. 2. A hybrid is suggested. But, most importantly, it would contribute most effectively to the health and heartbeat of the entire Missouri River ecosystem.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 68 **Comment Id:** 633534 **Coder Name:** jgutierrez

Comment Text: Some levees should be set back and some should have controlled release structures placed using LiDAR elevation and GIS imaging.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633862 **Coder Name:** jgutierrez

Comment Text: We believe the Corps of Engineers and US Fish and Wildlife Service can and should seek an alternative which allows the Corps to provide flood control and protect the species. The two objectives do not have to be mutually exclusive. A better balance needs to be reached and the Corps needs to fulfill their flood control mission.

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 81 **Comment Id:** 636790 **Coder Name:** jgutierrez

Comment Text: A lot of science has been done since 2003, and that science should inform policy and practice. The final document should include an improved best alternative, with more fairness in estimating the costs of the various alternatives. In other words, the best is still to come. I hope.

Organization: Sierra Club, Audubon, Nature Conservancy

Commenter: Anne Millbrooke **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 103 **Comment Id:** 636886 **Coder Name:** jgutierrez

Comment Text: Recommended Actions to Resolve We believe that Alternatives 3, 4, 5, and 6 all need to be considered viable options to use in this recovery effort. As stated by Mark Harberg in his MRRMP-EIS Public Meeting presentations, current science validates the river's eco-system needs a much broader and dynamic management plan than a mechanical construction only option. By including Alternatives 4, 5, and 6, when the conditions are right and needed, we will be able to work more harmoniously with the elements of this eco-system to recreate the needed habitat and food for all the species in the basin.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 128 **Comment Id:** 637086 **Coder Name:** jgutierrez

Comment Text: Removing the Intake dam near /Glendive seems like an issue that would relate to only a few hundred people in that area. The authorized purposes study would reveal that the people who would be affected who irrigate almost 58,000 acres would have to change, but not profoundly. There are only a few people near Glendive who really make a livelihood from irrigating crops. There could be sufficient federal funding that the citizens of the area might feel they had won the lottery.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 157 **Comment Id:** 637704 **Coder Name:** jgutierrez

Comment Text: The inevitable and ongoing channel degradation below dams means there will be ever-less production of natural sandbars into the near future. That is, unless the navigation channel below Sioux City is modified to have a more natural cross-section. This should also have significant benefit for pallid sturgeon. If that is a solution for a separate EIS, I urge you to get on it.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 157 **Comment Id:** 637714 **Coder Name:** jgutierrez

Comment Text: Lowering pools, on average- -the March 1 target- -is practically a taboo idea in the MR basin, even in the wake of the truly frightening flood of 2011. I believe that lower pools will give you more flexibility in storage and releases that will permit real rsrv unbalancing in more years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that have too often flooded tern and plover nests on sandbars below the dams. Lower pools also produce lower river flood damage reductions, and I hope you will consider an alternative that incorporates a lower storage target and navigation service levels, better unbalancing, and overall better management of pools for terns and plovers and other wildlife benefits. The Corps manages hundreds of miles of reservoir shoreline via water levels, and it's a shame to be overlooking opportunities for creative habitat enhancements over that long shoreline.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 640077 **Coder Name:** jgutierrez

Comment Text: For these reasons, we believe that the current proposed alternatives do not reach a wide enough range of feasible options to adequately protect the threatened and endangered animals. We believe that the Corps should include additional alternatives that fall between the endpoints of Alternative 2 and Alternatives 3 through 6.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 640085 **Coder Name:** jgutierrez

Comment Text: I will speak to our concerns regarding the range of alternatives that are discussed in the EIS. We believe the range is insufficient because a reasonable alternative could fall between Alternative 2 and Alternatives 3 through 6.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640117 **Coder Name:** jgutierrez

Comment Text: The range among alternatives 2 through 6 are inadequate in that there are significant differences between alternative 2 and between the group of 3 through 6. But among alternatives 3 through 6 the differences are minimal. Alternatives 3 through 6 overlap considerably. All include similar studies and pallid sturgeon habitat options and mechanical construction of ESH. The real differences among 3 and 6 are only in flow releases, two for ESH habitat one as a spawning cue. But even these differences are minor considering how infrequently the flow releases are likely to occur. For example, alternative 4 includes a spring ESH release, but that is anticipated to fully occur less than one in ten years. (MRRMP EIS at 2-70) Alternatives 3 through 6 are too similar to contribute significantly to the Corps's requirement to provide a reasonable range of alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640120 **Coder Name:** jgutierrez

Comment Text: The most meaningful difference is between Alternative 2 and Alternatives 3-6. So the Corp has in essence provided only two alternatives, plus the no action alternative. Many reasonable options fall between Alternative 2 and the 3 through 6 group. Several criteria vary between Alternative 2 and the 3-6 group. Among the most significant are the difference in time frame used to calculate actions and costs, the difference in strength of adaptive management approaches, floodplain connectivity, and options for pallid sturgeon habitat.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640187 **Coder Name:** jgutierrez

Comment Text: We recommend that the Corps develop a new range of alternatives. A reasonable alternative would include a commitment to using mitigation/restoration as a tool to meet recovery goals. It would also include some mechanical habitat creation to fill in where the river cannot due to human impacts. It would employ a flexible adaptive management approach.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640492 **Coder Name:** jgutierrez

Comment Text: We urge the Corps to formulate a new alternative in the final EIS that incorporates recovery actions that will: â€¢ Reconnect the river to its floodplain â€¢ Restore wetlands â€¢ Provide quality habitat for self-sustaining populations of fish and wildlife â€¢ Incorporate BSNP Mitigation in all recovery actions â€¢ Utilize natural processes for habitat restoration whenever possible We believe these actions will also provide additional benefits, such as improved water quality, flood risk reduction, and increased recreational opportunities.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640498 **Coder Name:** jgutierrez

Comment Text: For decades the Missouri River has not been allowed to be itself. The man-made changes have, for the most part, kept the river in a straightjacket. The League urges inclusion of recovery actions that allow the river to resume a more natural state, in selected areas such as on state and federally owned lands and on land acquired from willing sellers , and let it heal itself.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640499 **Coder Name:** jgutierrez

Comment Text: We want to see actions that restore wetlands and backwater areas to reconnect the river to its floodplain. We also favor additional top width widening projects such as Deer Island to create slow, shallow water habitat. We strongly support the inclusion of the Bank Stabilization and Navigation Project Mitigation in the recovery process. We also want to see the removal of man-made pinch points on the lower river. This can be done with more levee setbacks, reducing flood risk and lowering the river's stage, especially during high flow events.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640708 **Coder Name:** jgutierrez

Comment Text: In Section 2.5.3.1, it states that channel reconfiguration is a management action considered with multiple types of practices that could be implemented (e.g., bank notches, dike notches, revetment notches, placement of new structures, side channels, chutes, and channel widening/top-width widening). In the Upper Mississippi River Habitat Rehabilitation Program (HREP), they have successfully conducted multiple large scale projects that include the creation of islands, backwater areas, etc. and return the river to a more natural state. We believe these much larger scale practices should be considered in the Missouri River in the future so meaningful restoration can be accomplished. There is also evidence to support that young-of-year Scaphirhynchus spp., Paddlefish, and Channel Catfish utilize these large scale island habitats in the Middle Mississippi River (Phelps et al; 2009; Phelps et al. 2010; Phelps et al. 2011, Love et al. 2016). Larger projects such as those completed in the Upper Mississippi River that includes numerous varieties of habitats may be more likely to support multiple life stages of Sturgeon spp. These large scale habitat improvements are also likely to benefit other fish species, least turns (nesting site documented on Deer Island top widening project), piping plovers, waterfowl, invertebrates, vegetation, and recreation that smaller scale projects (e.g., dike notches, revetment notches, etc.) will not likely be able to provide. Connecting multiple habitat complexes together may be beneficial as well to help reduce fragmentation and increase the chances of young of year fishes to utilize these resources. Large scale habitat rehabilitation projects that include a variety of habitats will not only provide benefits to fish and wildlife, but could also create habitats in the floodplain (e.g., emergent wetlands, woodlands, grasslands, etc.) and backwater areas. These new variety of floodplain habitats would increase the hydraulic capacity of the river and associated floodplain, as well as reduce the amount of nutrients entering the river through the uptake of terrestrial and aquatic vegetation that could be created. The preferred alternative 3 consists of constructing interception and rearing complexes, largely through small scale projects (e.g., dyke notching, top widening, etc.) in the state of Missouri. Projects that include structure modifications and channel widening projects, while a step in the right direction, are largely small scale projects that have not, and will not likely reach anticipated results. We believe the Upper Mississippi River HREP program could be used as a good example of all agencies and stakeholders working together to make an ecologically relevant difference while meeting all needs and authorized purposes.

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641212 **Coder Name:** jgutierrez

Comment Text: The inevitable and ongoing channel degradation below dams means there will be ever-less production of natural sandbars into the near future. That is, unless the navigation channel below Sioux City is modified to have a more natural cross-section. This should also have significant benefit for pallid sturgeon. If that is a solution for a separate EIS, I urge you to get on it. As everyone should know by now, the System isn't designed, nor does it function, to provide absolute flood control, esp. farther down the

river. Between System high-year flows and tributary inflows, the lower river will always be subject to flooding that devastates human lives and infrastructure in the river valley. The channel and flow modifications that are good for native wildlife along the river and good for reduction of flood damage, as well.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641264 **Coder Name:** jgutierrez

Comment Text: Unbalancing would have a better chance for success, I believe, if March 1 storage targets were lower and navigation service levels were reduced. Commercial navigation has so little value on the river it's hardly missed now in drought years. Reduced navigation service will give the Corps more flexibility in storage and flow targets. It will allow more "conservation" of water in the rsrvs if releases aren't wasted for a few barges.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641265 **Coder Name:** jgutierrez

Comment Text: Lowering pools, on average- -the March 1 target- -is practically a taboo idea in the MR basin, even in the wake of the truly frightening flood of 2011. I believe that lower pools will give you more flexibility in storage and releases that will permit real rsrvr unbalancing in more years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that have too often flooded tern and plover nests on sandbars below the dams.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 163 **Comment Id:** 641276 **Coder Name:** jgutierrez

Comment Text: As Missouri citizens, we know that our state has far more people and infrastructure at risk from flooding and also more risks to drinking water supplies and to navigation on the Mississippi River below the confluence from low flows than any other state in the basin. We acknowledge the constraints under which the Corps must operate to reduce these risks. We would point out, however, that these risks have been heightened by the Corps' construction and maintenance of the Bank Stabilization and Navigation

Project and failure to enforce the 3,000 to 5,000-foot-wide floodway mandated in the 1944 Flood Control Act. Hence we believe the Corps must pursue every opportunity to acquire available lands in the floodway and to remove or set back the levees in order to reduce flood risks.

Organization: Audubon Missouri

Commenter: Anita C Randolph **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641440 **Coder Name:** jgutierrez

Comment Text: We urge the Corps to formulate a new alternative in the final EIS that incorporates recovery actions that will: i, · Reconnect the river to its floodplain i, · Restore wetlands & sandbars i, · Provide quality habitat for self-sustaining populations of fish and wildlife i, · Incorporate BSNP Mitigation in all recovery actions

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641453 **Coder Name:** jgutierrez

Comment Text: For decades the Missouri River has not been allowed to be itself. The man-made changes have, for the most part, kept the river in a straightjacket. We urge inclusion of recovery actions that allow the river to resume a more natural state, in selected areas such as on state and federally owned lands and on land acquired from willing sellers, and let it heal itself.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641455 **Coder Name:** jgutierrez

Comment Text: We want to see actions that restore wetlands and backwater areas to reconnect the river to its floodplain. We also favor additional top width widening projects such as Deer Island to create slow, shallow water habitat. We strongly support the inclusion of the Bank Stabilization and Navigation Project Mitigation in the recovery process. We also want to see the removal of man-made pinch points on the lower river. This can be done with more levee setbacks, reducing flood risk and lowering the river's stage, especially during high flow events.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 181 **Comment Id:** 641472 **Coder Name:** jgutierrez

Comment Text: Given all the science behind two decades of study on the Missouri River and the evidence developed by community planning and management flood prone landscapes, we recommend that the Corps develop a new range of alternatives. A reasonable alternative would include a commitment to using state of the art ecosystem science as a tool to meet recovery goals, not settling for avoiding jeopardy. This new alternative would incorporated the goals of mitigation and restoration acres through the BSNP mitigation program, which in turn would lead to floodplain connectivity. In addition, meaningful flows that approximate the historic natural flows is critical for the Pallid Sturgeon as well as the native turbid river cyprinids species the Pallid depends upon.

Organization: Nebraska Chapter Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 190 **Comment Id:** 641582 **Coder Name:** jgutierrez

Comment Text: The Iowa Chapter believes that it is now time to plan for terminating barge traffic on the stretch of the Missouri River bordering Iowa and begin restoring the natural course of the river. The barge traffic has required the Corps to riprap, channelize, and modify the flow of the river. It is this set of actions that have caused the piping plover, interior least tern, and pallid sturgeon species to become threatened or endangered in Iowa.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 190 **Comment Id:** 641599 **Coder Name:** jgutierrez

Comment Text: By restoring habitat in Iowa and by eliminating barge traffic on the Iowa stretch of the Missouri River, pallid sturgeon may have a chance to increase their foothold in the river.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 192 **Comment Id:** 641664 **Coder Name:** jgutierrez

Comment Text: The level 1 and 2 actions for the Pallid Sturgeon should be prioritized to efficiently use the funds available. The Pallid Sturgeon propagation and augmentation should continue unless future studies indicate otherwise. The PSPAP should continue. The lower river early life stage habitat construction should be implemented on a trial basis and fully analyzed for results before full implementation. Habitat development on MRRP lands should occur when possible.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642125 **Coder Name:** jgutierrez

Comment Text: Sioux City wishes to stress the importance of the selected alternative meeting the eight Authorized Purposes as established by the Pick-Sloan Act. Sioux City does not feel that adequate time was allocated to the process, thus limiting the number of alternatives.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643110 **Coder Name:** jgutierrez

Comment Text: While this plan is looking specifically at avoiding jeopardy for Pallid Sturgeon, the Nebraska Game and Parks Commission believes that a systematic plan of top-width widening for the entire channelized reach in Nebraska would provide huge positive economic benefits to the Missouri River system not considered in any of the alternatives presented. The 2011 flood on the Missouri River resulted in an estimated \$2 Billion dollars in damage (Dept. of Commerce, 2012), much of that occurred along the Nebraska reach of the river, while the U.S. Army Corp of Engineers spent over \$500 Million to repair flood control works in the Missouri River Basin (Blechinger, comments to MRRIC, 2012). The 2011 flood was the result of decisions made in the name of navigation that has resulted in a Missouri River channel in Nebraska that lacks channel capacity and has intentionally eliminated the habitat diversity that is necessary to support Pallid Sturgeon and the ecosystem upon which they depend. The 2011 event should not have resulted in a flood, it was simply the channel capacity in the upper channelized river below Sioux City which was engineered out of the system to provide a 9 foot deep self-scouring channel to support a navigation industry that has not substantially developed. With the capacities of the large main stem and tributary reservoir system in the basin that have subsequently developed, a systematic widening of the channelized Missouri River in Nebraska would substantially decrease, if not eliminated, the impacts of another 2011

event. If \$2.5 Billion would or could be spent on increasing channel capacity and habitat diversity and availability, both the citizens of the basin as well as Pallid Sturgeon and the Missouri River Ecosystem would benefit.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643827 **Coder Name:** jgutierrez

Comment Text: We recommend that the USACOE define plover habitat as all those habitat types known to be successfully used by piping plover for reproduction and not limit it to ESH. If a broader definition of habitat is adopted then expanding the General Management Action(s) column of Table 2-1 to include habitats such as oxbows, sand spoil areas, alkaline lakes, and reservoir management actions such as diking of bays making islands etc. greatly increases the like hood of meeting plover objectives and likely at a reduced cost that proposed in Alternative 3.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643860 **Coder Name:** jgutierrez

Comment Text: Section 2.5.3.1, Page 2-28 - 2) there has been considerable discussion regarding the placement of spawning and IRC habitats. Given the long distances pre-spawning pallid sometime travel, the potential for larval pallids to drift out of the Missouri River (and into the Mississippi River) should not deter development of such habitats in the very lower portion of the Missouri River or even the Mississippi River.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643931 **Coder Name:** jgutierrez

Comment Text: The USFWS recommends that the Corps identify and define actions which could be implemented immediately.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643936 **Coder Name:** jgutierrez

Comment Text: The USFWS believes there is high uncertainty that the least tern, piping plover and pallid sturgeon objectives could be met if there are continued delays to implementing flows during critical life history phases for these species. The USFWS recommends the Corps commit to use other tools such as flows to meet the objectives. We recognize that it may take many years to clear the impediments to use flows to restore the ecological function of the Missouri River. However, incorporating and using the authorities of the Bank Stabilization and Navigation Fish and Wildlife Mitigation Project (BSNFWMP), will benefit both listed and non-listed species, provide increased conveyance and capacity for flood waters, and reduce flood risk to residents, property and infrastructure along the Missouri River. The Corps should focus initial efforts in reaches where flood risk is the highest such as the reach below Fort Randall Dam and other previously identified reaches where pinch points and low-lying land are at risk. Efforts such as this would highlight the Corps commitment to action and ultimately achieving the purpose and objectives of the Draft MRRMP/EIS.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644045 **Coder Name:** jgutierrez

Comment Text: The MRRMP fails to benefit pallid sturgeon in Montana within a realistic timeframe and I question its ability to avoid a jeopardy determination. As written, the MRRMP is not a recovery document, rather it is an expensive, long-term research program for the USGS that unnecessarily delays implementation of management actions that could recover pallid sturgeon in Montana. In Montana, what does this plan recover? What habitats are improved? What USACE-caused impacts that threaten this species with extinction are eliminated? None.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644100 **Coder Name:** jgutierrez

Comment Text: Comment 1: No actions are proposed that will recover Montana pallid sturgeon populations, the least hybridized populations in the species' range and, therefore, the most valuable. The preclusion from consideration of modifications to Fort Peck Dam to address the downstream impacts of hypolimnetic dam discharge severely limit the list of possible management actions in Montana that would benefit pallid sturgeon and their habitats.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644420 **Coder Name:** jgutierrez

Comment Text: Along the Missouri River from St Louis, Missouri to Montana, there are different areas that deal with different segments and different circumstances. These areas could be divided up in to lengths along the river and the habitat could be enhanced in different ways, for the different circumstances. I don't believe that we can rubber-stamp each mile of the Missouri River, but have the ability to make it doable in each segment, for the best benefit of the area and what it will support, such as any of the things that are dependent upon the river habitat, recreation, industry, etc. We have a growing population in our country and in the world, so a SUSSESS is to develop projects of differences, without destroying valuable assets that support the renewing of the Missouri River and Habitat for the future generations.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644786 **Coder Name:** jgutierrez

Comment Text: 8. Changes in flow, without enhancing sediment load delivered from the reservoir system, have no value and are a waste of precious water in the system. It appears that the DEIS and the other evaluations purposefully neglect the issue of material trapped in the system behind the mainstem dams and the dramatic reduction of material movement as a result. We believe that all the flow hypotheses are incomplete with regard to the pallid sturgeon unless additional sediment load is placed back into the system from that which is currently trapped behind the mainstem dams in their reservoirs.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644802 **Coder Name:** jgutierrez

Comment Text: Simply put, we see no demonstration that releasing relatively clear lake water from Gavins Point results in any inducement to the pallid to reproduce. Releasing clear lake water into the channel does not appear to be a spawning cue worthy of further experimentation. This is a paradigm without success.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644823 **Coder Name:** jgutierrez

Comment Text: There is no dispute by any science body, the Corps, FWS or any State conservation authority that the lower Missouri River is sediment starved. In 2010, the National Academy of Science conducted a review at the Corps' expense and verified the conclusion. The dredging EIS reached the same conclusion in 2011. The FWS took specific positions arguing that the pallid needed greater load to be successful in the NSF hearings. Ironically, after all the determinations that the river is sediment starved, the issue has disappeared. We have spent years challenging the fact that the mainstem reservoirs create the sediment problem and force the river's reliance on tributary load to recover bed conditions and restore historical load factors. Reservoirs in the system are filling with material. Yet the management plan perpetuates the fiction that riverine habitat must only be adjusted by flow without reintroduction of material from behind the mainstem dams. Currently, when an action is taken, load is created by compromising channel characteristics (notching and shallow water habitat) versus enhancing natural load and turbidity by allowing material to be moved from behind mainstem dams. None of the alternatives, including the preferred alternative, address the sediment starved river due to retention behind the mainstem dams, the spawning affects related to that trapped material, and the impact on the species.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644824 **Coder Name:** jgutierrez

Comment Text: We recognize that land acquisition for mitigation purposes is an imposition on landholders in the floodplain. We do not agree with the position of the Corps focusing on high dollar lands to "double dip" to meet their mitigation requirement and their ESA responsibilities. The Corp is required to purchase 167,000 acres to mitigate for the imposition of the BSNP. They have acquired approximately 60,000 acres to meet that objective. There are two distinct issues regarding land acquisition - mitigation and ESA. Mitigation does not require premium landholdings with direct connectivity to the river. We encourage the Corp to continue to meet the mitigation objectives from willing sellers by purchasing less costly land holdings worthy of habitat substitution for ALL species - not just those endangered.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644830 **Coder Name:** jgutierrez

Comment Text: The Corps should design a strategy to reintroduce sediment into the lower river to enhance both bird and pallid habitat and extend the life expectancy of the reservoir system.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644924 **Coder Name:** jgutierrez

Comment Text: The range among alternatives 2 through 6 are inadequate in that there are significant differences between alternative 2 and between the group of 3 through 6. But among alternatives 3 through 6 the differences are minimal. Alternatives 3 through 6 overlap considerably. All include similar studies and pallid sturgeon habitat options and mechanical construction of ESH. The real differences among 3 and 6 are only in flow releases, two for ESH habitat one as a spawning cue. But even these differences are minor considering how infrequently the flow releases are likely to occur. For example, alternative 4 includes a spring ESH release, but that is anticipated to fully occur less than one in ten years. (MRRMP EIS at 2-70) Alternatives 3 through 6 are too similar to contribute significantly to the Corps requirement to provide a reasonable range of alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644925 **Coder Name:** jgutierrez

Comment Text: The most meaningful difference is between Alternative 2 and Alternatives 3-6. So the Corp has in essence provided only two alternatives, plus the no action alternative. Many reasonable options fall between Alternative 2 and the 3 through 6 group. Several criteria vary between Alternative 2 and the 3-6 group. Among the most significant are the difference in time frame used to calculate actions and costs, the difference in strength of adaptive management approaches, floodplain connectivity, and options for pallid sturgeon habitat.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644945 **Coder Name:** jgutierrez

Comment Text: 2. The differences in spawning habitat construction are unreasonable. In addition to the substantial differences in the amount of ESH construction between Alternative 2 and Alternatives 3 through 6, the differences in spawning habitat construction, a management action intended to avoid jeopardy to the pallid sturgeon, are significant and unexplained. Spawning habitat construction is not included as a management action in Alternative 2 but is included in Alternatives 3 through 6. Spawning habitat construction calls for the Corps to "construct up to three high-quality spawning habitat sites"⁵⁶ which would be continually monitored for "the relative spawning success, as determined by hatch rate, catch per unit effort of free embryos, and other indicators."⁵⁷ In theory, the use of spawning habitat sites would help protect the pallid sturgeon, but "sufficient understanding to characterize the necessary features of high quality pallid sturgeon spawning habitat does not exist."⁵⁸ Even though "sites would be constructed following initial studies to further clarify habitat specifications," there is a possibility that the sites would not provide any significant benefits to the pallid sturgeon spawning season or overall population. ⁵⁹ Spawning habitat construction would be time-consuming due to waiting on initial studies to be concluded before commencing construction. It would also be expensive with a total cost of \$1,109,735 and an annual cost of \$123,304. Given the uncertainty surrounding spawning habitat construction, these funds could be put to better use on management actions that have proven benefits to the pallid sturgeon, such as early life stage habitat construction. The use or nonuse of spawning habitat construction is a substantial difference between Alternative 2 and Alternatives 3 through 6 because Alternative 2 does not incorporate this management action at all. There are other options that are available and reasonable other than simply excluding or including the creation of spawning habitat. Since spawning habitat creation has not been sufficiently studied, it is reasonable to consider an alternative in which proactive AM, including Level 1 and 2 studies, is first used to assess the specifications of spawning habitat construction and to determine whether the action would have positive impacts on the pallid sturgeon. An alternative using a middle-ground approach to spawning habitat construction would potentially be more effective than either including or excluding spawning habitat construction.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644948 **Coder Name:** jgutierrez

Comment Text: Along with these differences in the management actions of Alternative 2 and Alternatives 3 through 6, there is a huge cost difference between the alternatives, which leaves room for middle ground alternatives. Table 4 below shows some of the total costs associated with early life stage habitat construction for each alternative: [Table 4: Total Costs of Early Life Stage Habitat Construction Per Alternative] In every category, Alternative 2 is much more expensive than Alternatives 3 through 6. Alternative 2 has much greater costs than the No Action Alternative with differences ranging from about 60 to 150 percent whereas Alternatives 3 through 6 save much more than the No Action Alternative with differences ranging from about -30 to -120 percent. There is clearly

room for additional reasonable and feasible alternatives to create early life stage habitat with costs that fall between the ranges of Alternative 2 and Alternatives 3 through 6.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644950 **Coder Name:** jgutierrez

Comment Text: Alternative 6's recurring spawning-cue flow release likewise differs only slightly from Alternatives 3 through 5. 88 Alternatives 3 through 5 contain a one-time spawning cue flow, which is replaced by the recurring release in Alternative 6. The recurring release requires the Corps to "attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May."89 However, just as with the flow releases in Alternatives 4 and 5, the spawning-cue release will "be adjusted to respond to hydrologic conditions at the time."90 The model for Alternative 6 "indicates that over the 82-year POR, the spawning-cue release as defined here would have been implemented 11 times and would have been partially implemented 33 times."91 This means that the spawning cue release is only fully implemented 13.4% of the 82-year POR. As in Alternatives 4 and 5, the lack of frequent implementation in Alternative 6 shows that there is no evidence that the spawning cue release would have significant positive impacts on pallid sturgeon goals. In addition, the spawning-cue release has not yet been proven to be effective to the spawning patterns of the pallid sturgeon: "the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. The Independent Science Advisory Panel (ISAP) found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning."92 Just as the infrequency of the flow releases and the unlikelihood that ESH would be created meant that Alternatives 4 and 5 differed only slightly from Alternative 3, the infrequency of the spawning-cue release and the consequential lack of a positive impact on the species make it very much like Alternative 3. Table 5 below outlines the years of full and partial implementation of flow releases over the 82 year POR for Alternatives 4, 5, and 6 showing the infrequency of the flow releases and ultimately the ineffectiveness of flow releases as a management action: [Table 5: Implementation of Flows in Alternatives 4, 5, and 6] The management actions that supposedly distinguish Alternative 3 from Alternatives 4 through 6 will occur less than 14% of the time over an 82-year period. It is also likely that the management actions will provide little assistance to the species beyond that found in Alternative 3. Furthermore, none of Alternatives 4 through 6 have additional costs associated with them because of their varying flow releases, so they purportedly cost the same as Alternative 3.93 Because Alternatives 3 through 6 are essentially the same, the range of alternatives falls short of meeting the requirements of NEPA.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644952 **Coder Name:** jgutierrez

Comment Text: C. The Corps Should Produce Reasonable and Feasible Alternatives Combining the Best Management Actions Among Alternatives 2 Through 6. Due to the lack of a reasonable range of alternatives in the MRRMP-EIS, and the large differences between Alternatives 2 and 3 through 6, there should be reasonable and feasible alternatives that combine the most cost-effective actions from each. ESH Construction. As described above, Alternative 2 differs from Alternatives 3 through 6 in the amount of ESH construction. The amount of ESH construction proposed in Alternative 2 varies by 88.97% from Alternative 3. 94 In addition, the cost of the proposed ESH construction for Alternative 2 is 91.7% greater than the cost of ESH construction for Alternative 3.95 Both Alternatives 2 and 3 only create ESH through mechanical means and so it makes sense to compare them directly.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644953 **Coder Name:** jgutierrez

Comment Text: Adaptive Management Planning. Spawning habitat construction, spawning cue releases, and IRC for early life stage habitat construction need further study before they can be effectively implemented. The alternatives present two types of iterative actions that could be utilized to study the effectiveness of these management details: proactive AM97 and Level 1 and 2 studies. 98 The Corps endorses both as effective means of understanding how to prevent jeopardy to the species, but neither is included in Alternative 2. The Corps should propose at least one alternative that contains the most effective actions of Alternative 2 but also incorporates proactive AM and Level 1 and Level 2 studies. Such an alternative could be designed to meet the species goals without immediately using spawning cue releases or spawning habitat construction as described in Alternative 2, but could utilize the new AM Plan to implement spawning cue releases and spawning habitat construction if further study finds them to be effective ways of protecting the pallid sturgeon. This alternative could make use of SWH while waiting on completion of the Level 1 and 2 studies for IRC. The immediate implementation of SWH could benefit the species while the IRC could later be implemented more fully if its effectiveness is demonstrated. Alternatives that include a mix of SWH and IRC are viable options because they could provide the most benefit to the species without wasting time and money. Additionally, if the IRC is not found to be effective then there is already some SWH in place to provide benefit to the species.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 206 **Comment Id:** 645133 **Coder Name:** jgutierrez

Comment Text: During the process of developing management alternatives for inclusion in the MRRMP and EIS, sediment transport from above Gavins Point Dam to the Missouri River below the dam was not included in management actions considered for review and comment by MRRIC. Increasing sediment transport downstream from the impounded section of the Missouri River needs to be included in the MRRMP alternatives. It should also be evaluated in the EIS with regards to potential benefits to the listed species and to overall ecosystem health. Some degree of increased downstream sediment transport will be needed to halt the loss of connectivity between the river and its riparian corridor and to provide needed turbidity and sedimentation for recovery of the listed species. The 2011 National Research Council report Missouri River Planning: Recognizing and Incorporating Sediment Management states that the pre-dam annual sediment load at Yankton for the 1940-1952 period was 125 million metric tons, compared to 0.25 million metric tons today. This is over a 99% reduction in sediment input. The Missouri River below Gavins Point Dam is sediment starved and feeding off its bed and banks. It is obvious sediment augmentation of the Missouri River below Gavins Point Dam needs to be pursued as a part of any long-term management plan to allow the recovery and subsequent sustainability of the listed species.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645200 **Coder Name:** jgutierrez

Comment Text: However, Alternative 2 has been made untenable by the excessive cost for land and acres, far greater than any other alternative, almost guaranteeing it won't be acceptable to Congress or the public. We therefore ask that the Corps re-work the alternatives analysis, develop a greater range of alternatives, revise Alternative 2's costs and add the new Adaptive Management Plan to it, develop a more specific Purpose and Need Statement, and reduce the over-reaching of the Human Considerations impacts.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645216 **Coder Name:** jgutierrez

Comment Text: A better range of alternatives needs to be offered - . Alternatives 4, 5, and 6 should have been merged into one single alternative because they are similar in all ways except for the specifics of each of their flows and the limiting conditions. Alternative #4 has a spring release and #5 has a fall release - to occur every four years IF all three stipulated conditions are met, which in reality will likely happen only half the time, at best. They each will also attempt a one time spawning cue release after about ten years! #6 has a spring bimodal spawning cue release every 3 years, if again, all conditions are met. Each of these releases should be revised and

be of some consequence rather than a token gesture towards releases. The restrictions attached to these releases and the time period over which they are to adhere to almost make these alternatives ridiculous from a biological point of view.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645217 **Coder Name:** jgutierrez

Comment Text: Levee setbacks and a riparian corridor along the full length of the mainstem river. The NE Game and Parks Commission have proposed for a number of years an erodible corridor. This provides significant acres of adjacent lands capable of holding excess water and of providing infiltration and evaporation - all contributing to Flood Risk Reduction. This corridor would also provide habitat, connectivity to the floodplain and prevention of fragmentation of habitat.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645220 **Coder Name:** jgutierrez

Comment Text: Maintaining the reservoirs at lower levels - The reservoirs clearly indicate that one of their main functions is to assist in flood control for the Basin. But what good are they for flood control if they are always kept full, for the purpose of having sufficient water for releases for navigation throughout the navigation season and to have full reservoirs for the local fishing industry. For true flood control, reservoirs should be kept at 46.8 maf on March 1st, 10 maf lower than the current level maintained. Lower pools augment benefits for the listed birds.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645225 **Coder Name:** jgutierrez

Comment Text: Require barges which operate on the Missouri River be of the shallow draft type - This would allow for more habitat construction and shallower water in the channel for spawning habitat construction. Also more river water could be used to widen the river in coordination with top widening modifications to banks, be used to fill backwaters, and to have greater connectivity to the

flood plain. The Missouri River is not locks and dams, and does not have the deep pools associated with that system. It makes sense that barges that operate on the river should require less draft and at the same time, makes channel habitat construction more possible.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645226 **Coder Name:** jgutierrez

Comment Text: USFWSs String of Pearls - The Services outstanding concept of the development of habitat sites distributed along the Missouri River, giving a diversity of habitats for all species. The Corps never advocated for it at any MRRIC meeting, and obviously, doesn't want to have to do it. But there is not a better habitat plan anywhere, including this DEIS, that has been suggested. Features of the String of Pearls fit well with habitat for this DEIS.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645297 **Coder Name:** jgutierrez

Comment Text: Page 1-2: "Dams also trap suspended sediments and closure of the dams coincided with a decline in suspended sediment loads in downstream reaches." Comment: Thank you for including sediment redistribution in the scoping process for the MRRMP DEIS at Section 2.5.1.14. The Lewis and Clark Lake Sediment Management Study (USACE 2013) concluded that additional scenarios exist that warrant examination. As a part of Phase II of this study, we request that the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service implement a pilot project utilizing beach nourishment technologies¹ to transfer sediment from past a main stem dam into a downstream reach of the Missouri River. As the agencies are aware, stream bed degradation in certain reaches of the Missouri River below the dams is an issue that must be addressed in the coming decades. See MLDDA comments dated April 15, 2017 on Sediment Redistribution.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645325 **Coder Name:** jgutierrez

Comment Text: The preferred alternative would benefit from additional measures, some of which are described in more detail below. -Habitat: Creation of IRC or other hydraulic roughness in the Upper Missouri section. The preferred alternative includes the creation of IRC habitat in the lower Missouri River. However, the scientific studies on the Yellowstone and Upper Missouri River indicate that drift distance is insufficient to support survival of young pallid sturgeon. The EIS could consider additional steps to improve anoxic conditions at reservoir arms which also tend to serve as nursery habitat. -Modifications at Fort Peck could be put in place to support flows, warmer temperatures, and hydraulic roughness.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645330 **Coder Name:** jgutierrez

Comment Text: Until the Corps can provide a level of accountability necessary to provide reasonable assurance to the public, none of the alternatives should be implemented. Given that the Corps has not implemented these flow-based RP As for more than a decade, the Corps should identify what checks and balances are in place to ensure these requirements will be implemented. The Corps could implement a good faith reallocation of reservoir uses to better serve the needs of endangered fish and native warm water fish. This recommendation may be the most needed action to ensure the Corps will fully implement any alternative selected, and not just some portions. Examples of how this could be accomplished are discussed briefly below: -Reservoir Reallocation is needed to support implementation Although there appear to be vast amounts of water available in the basin, significant water deficits continue to occur: "Shifting population concentrations, and increasing numbers of industrial and agricultural developments across the state have resulted in a situation where North Dakota's ground and surface water resources are becoming more fully appropriated. Thus, the presence or absence of water has become one of the primary factors in locating industrial plants, or any other developments requiring large amounts of water." 25 Per the Water Supply Act of 1958, storage in Army Corps reservoirs may be reallocated, or new storage may be added, for municipal and industrial (M&I) water supply. The Corp Chief's approval authority for reallocations is limited to 50,000 AF or 15% of the total usable storage, whichever is less. Otherwise, the Assistant Secretary of the Army must approve the plan. Reallocation may occur under one or more conditions: 1) Temporary use of storage allocated for future conservation purposes and sediment; 2) Storage made available by change in conservation demand or purpose; 3) Seasonal use of flood control space during dry seasons; 4) Reallocation of flood control space; 5) Modification of reservoir water control plan and method of regulation; 6) Raising existing dams; 7) System regulation of Corps and Non-Corps reservoirs; 8) Use of water supply storage not under contract. Lastly, a basin wide approach could be taken to regulate flows throughout the basin.²⁶ A number of these options could be used to enhance fisheries populations in Missouri River reservoirs. Additional space is available for reallocation to support pallid sturgeon. The Corps notes that sedimentation has not occurred at the rate expected in the reservoirs,²⁷ and additional water is available from an under-utilized Bureau of Reclamation water right allocated to irrigation. These allocations could be immediately used to develop an

effective plan to enhance and conserve native riverine and reservoir fisheries in the region. Though only seven dams are controlled by the Corps, another 70 exist in the basin, many owned by the Bureau of Reclamation. Managing this system holistically would be beneficial to fisheries. An effective reallocation plan should include the cumulative impact of any reallocation, an assessment of the current status of the authorized uses, and an indication of whether they are currently being met. Flows for downstream fisheries, particularly for the pallid sturgeon, have not been implemented as required by the 2000/2003 Biological Opinion, and full navigation downstream has not been met in the past 13 years. If surplus water is available, it could be reallocated to fish and wildlife and recreation, as these are the most important uses in the Upper Missouri (instead of transportation in the Middle Missouri). Without reallocation of reservoir storage, successful implementation of flow modifications under the alternatives outlined in the EIS are unlikely to occur.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645339 **Coder Name:** jgutierrez

Comment Text: Additionally, the EIS states the importance of sediment in the health of native fish species in the river. Riverine fish species in the Missouri River are adapted to warm, turbid waters. Any adjustments to Fort Peck should also include considerations for life cycle needs and turbidity. The EIS notes that sediment, turbidity, and phosphorus concentrations downstream from Fort Peck Dam are much lower than upstream concentrations. The natural level of turbidity does not recover until the Upper Missouri River meets with the Yellowstone River.⁵⁰

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645481 **Coder Name:** jgutierrez

Comment Text: Ultimately, the Draft EIS fails to establish that the preferred alternative will meet the reproduction requirements for the pallid sturgeon. The alternatives are not adequate for the requisite hard look and comparative analysis required by the National Environmental Policy Act. At the very least, a dam-removal alternative should be included, for baseline analysis of a full range of opportunities for restoration of water temperature needed for sturgeon reproduction.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645490 **Coder Name:** jgutierrez

Comment Text: We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns we don't feel the proposed alternatives go far enough to restore the river and its aquatic and terrestrial habitat. We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645541 **Coder Name:** jgutierrez

Comment Text: We also have serious concerns with hybridization of pallids and shovelnose sturgeons (AMP 2- page 327). We believe this is an additional complicating factor for pallid recovery. What will be done to address this and what additional research is needed to learn more?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645552 **Coder Name:** jgutierrez

Comment Text: We also ask that more research be conducted on the hypothesis that the velocity and turbulence of navigation channel may be fatal to free embryos of pallid sturgeon in the lower river. It is critical to determine if the navigation channel is lethal to the young pallids, and if so, then the upper portions of the navigation channel should be de-authorized. The DEIS reports that "river currents in the lower Missouri River are swift, and pushing loaded barges upstream is more costly in terms of fuel consumption," (V2- page 249). Recovery efforts that reestablish additional stretches of slow and shallow water would provide a multitude of benefits.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645568 **Coder Name:** jgutierrez

Comment Text: The proposed alternatives are designed for the pallid sturgeon, least tern, and piping plover. However, many other native species will also benefit from these efforts. The DEIS (V2-page 127) refers to the many species that spend their entire life in the low-velocity areas of the river. These areas are lacking and we urge the Corps to implement recovery actions that return this type of aquatic habitat to the river to provide long-term, large, beneficial impacts to fish and wildlife. We encourage the Corps to implement recovery actions that restore needed habitat for the 51 of 67 native fish species that are rare or declining on the river. We believe this can be accomplished through restoring slow and shallow water habitat, levee setbacks, and river widening projects. In addition, also consider the species that have special-status designation at the federal or state level including 18 plants, 31 birds, 11 mammals, 18 reptiles and amphibians, 20 mussels, and 4 insects (V2-page 148).

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645841 **Coder Name:** JGUTIERREZ

Comment Text: We encourage more research to determine if the high turbulence of the navigation channel is fatal to free drifting embryos.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 645990 **Coder Name:** jgutierrez

Comment Text: The Corps should consider an alternative in which the average ESH construction in build years falls between the 3,546 acres of Alternative 2 and the 391 acres constructed in Alternative 3, 96 capturing the economy of Alternative 3 and the effectiveness of Alternative 2's ESH construction.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 206 **Comment Id:** 646270 **Coder Name:** JGUTIERREZ

Comment Text: Actively working to increase the channel capacity in this river reach would benefit a flow-based management action and is a necessary prerequisite to any use of flow as an acceptable management action.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 646288 **Coder Name:** JGUTIERREZ

Comment Text: 1) We support habitat enhancement studies which may potentially provide spawning and rearing habitat for pallid sturgeon, however the location of such habitats should be located to minimize impact to existing water intakes,

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

AL450 Alternatives: Alternative 4 (non-substantive) (Non-Substantive)

Correspondence Id: 27 **Comment Id:** 626695 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented to us for review and comment, the Coalition supports a mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to alternatives 2, 4, 5 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645520 **Coder Name:** jgutierrez

Comment Text: The League does not support Alternative 4.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645125 **Coder Name:** jgutierrez

Comment Text: Draconian flow changes in alternatives 2, 4, 5, and 6 are not acceptable options. There is no credible science that supports flow changes for the recovery of the threatened and endangered species. And, the flow changes would negatively impact the

economy of the entire Missouri River Basin. In alignment with the bi-partisan, basin-wide Congressional letter sent to the Corps on December 17, 2015, AWO strongly opposes any flow changes.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644699 **Coder Name:** jgutierrez

Comment Text: In analyzing flow regime effects, Alternatives 4, 5, and 6 would appear to offer the least impacts on water intake operation during the release periods. However, there are concerns of these releases creating a cause for low flows in the later winter periods of the year if the system does not receive enough inflow to replenish reservoir levels.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 28 **Comment Id:** 627554 **Coder Name:** JGUTIERREZ

Comment Text: We will not support proposals that weaken flood control, initiate pulses or reduce flows in the summer. We do not support construction as chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil being deposited into the river. Given past experience, we're skeptical of adaptive management and what we consider to be very expensive experiments. For the reasons stated, several of the alternatives under consideration are nonstarters. Given the prescribed flow modifications, we do not support alternatives 2, 4, 5 and 6.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 74 **Comment Id:** 627544 **Coder Name:** JGUTIERREZ

Comment Text: Alternatives 2, 4, 5 and 6 are unacceptable due to the prescribed flow modifications.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AL500 Alternatives: Alternative 5 (Substantive)

Correspondence Id: 33 **Comment Id:** 628008 **Coder Name:** jgutierrez

Comment Text: Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 645762 **Coder Name:** jgutierrez

Comment Text: It is also difficult to believe that the Alternatives 3 through 6 would reach the goal of 11,886 acres of ESH on the Missouri River.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 645761 **Coder Name:** jgutierrez

Comment Text: But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645144 **Coder Name:** jgutierrez

Comment Text: Fall Flows to Create Emergent Sandbar Habitat (Alternative 5) If System storage is 54. 5 MAF or greater, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow limits are not exceeded. flow release would be implemented on October 17 with a release of up to 60, 000 cfs out of Gavins Point Dam, and as often as every four years. 1. Fall releases of the magnitude described have the potential to negatively affect reservoir system storage and the elevation of Lake Oahe. Efforts should be made to manage flows after the fall flow release to restore the elevation of the big-three storage

reservoirs to the base of the annual flood control pool by March 1st, if possible. The upper Missouri River basin is in a state of drought much more often than it is in prolonged wet periods. As South Dakota has recommended in the past, we request that recent and current conditions in soil moisture and water yield be considered when developing reservoir elevation forecasts, rather than assuming normal water yield will occur during the forecasted period.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644951 **Coder Name:** jgutierrez

Comment Text: The spring and fall flow releases found in Alternatives 4 and 5 do not represent a meaningful difference because their effects are virtually indistinguishable. Nor do the flow releases distinguish Alternatives 4 and 5 from Alternative 3 because they will take place too infrequently to matter. Although the flow releases are intended to "create ESH for the least tern and the piping plover," the MRRMP-EIS at no point discusses the amount of ESH that would result, stating simply that the flow releases will "be adjusted to respond to hydrologic conditions at the time."⁸⁵ Practically speaking, the years that the flow releases will not occur are far more frequent than the years in which they will occur partially or to completion. In terms of the modeling for Alternative 4, the MRRMP-EIS indicates that during the 82-year period of record (POR), "the spring habitat-creating flow release as defined here would have been implemented 10 times and would have been partially implemented 7 times."⁸⁶ This means that the flow release is only fully implemented 12.2% of the 82-year POR. The modeling for Alternative 5 indicates that during the 82-year POR, "the fall habitat-creating flow release as defined here would have been implemented 7 times and would have been partially implemented 2 times."⁸⁷ This means that the flow release is only fully implemented 8.54% of the 82-year POR. The infrequency of the habitat creating flow release raises doubt that the ESH goals of the 2003 Bi Op will be met through utilization of flow releases. The infrequency of the flow releases and the unlikelihood that the ESH goals of the 2003 Bi Op will be met show that Alternatives 4 and 5 are neither meaningfully different from, nor more effective than, Alternative 3.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 166 **Comment Id:** 644928 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS. But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643885 **Coder Name:** jgutierrez

Comment Text: Section 2.8.6, Page 2-72 - Same comment as above [Section 2.8.5, Page 2-69 -The water released from reservoirs to create ESH has the potential to impact multiple stakeholder groups throughout the basin, especially thermal power. The value for the water released from reservoirs for creating ESH should be determined and included, similar to the costs the USACOE is looking at for surplus water, then the total cost of the alternative and impacts to stakeholders can be assessed.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643872 **Coder Name:** jgutierrez

Comment Text: Alternative 2 appears to be minimally beneficial to upstream sources. We believe this alternative, as well as Alternative 5, would have a degree of uncertainty in impacts in certain years depending on USACE holding back flows to maintain volume in upstream reservoirs. As such, Alternatives 2 and 5 would pose unacceptable risk to Heskett operations.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643867 **Coder Name:** jgutierrez

Comment Text: Section 2.7.3, Page 2-40 - The DEIS should indicate whether these flow and duration parameters have been verified in the river?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641563 **Coder Name:** jgutierrez

Comment Text: Also, I am opposed to flow manipulations in Alternatives 4, 5 and 6 that would cause precious water in the system to be wasted running environmental flow experiments for the pallid sturgeon when independent science panels have been unable to prove any benefit.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640276 **Coder Name:** jgutierrez

Comment Text: The geomorphology of the Garrison Reach on the Missouri River is predominantly controlled by the interaction of Garrison Dam on the upstream end, and Lake Oahe on the downstream end (Skalak et al. 2013). Garrison Dam acts as a sediment trap and releases are essentially free of sediment. These releases have a high sediment carrying capacity and primarily erode the riverbanks and riverbed on the upstream end of the Garrison Reach. Further downstream, the sediment load of the flows increases. In addition, as flows move downstream, control of the geomorphology of the river channel transitions from Garrison Dam to Lake Oahe. The reservoir and its backwater effects decrease the sediment carrying capacity of the flows and causes aggradation. Therefore, the ability of the Garrison Reach, and the river in general to continuously create sandbar habitat with flows over the long term is questionable.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633916 **Coder Name:** jgutierrez

Comment Text: I farm in the Tri-County Levee District which spans Gasconade, Montgomery and Warren Counties in Missouri. At a river stage of 14 feet on the Hermann gauge - which is seven feet below flood stage - our levee district begins to have challenges with interior drainage. Alternatives 2, 4, 5, and 6 which raise flows, some for considerable amounts of time, are absolutely deal-breakers for my farming operation.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633684 **Coder Name:** jgutierrez

Comment Text: Further, we wholeheartedly oppose flow modifications of up to 60,000 cfs for 35 days in Alternatives 4 and 5. The Corps is effectively abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases. Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633520 **Coder Name:** jgutierrez

Comment Text: Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631571 **Coder Name:** jgutierrez

Comment Text: We too believe Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall to our farmers, increasing downstream flood control constraints and doubling releases from Gavins Point.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

AL5000 Alternatives: Alternatives Considered but Eliminated from the Analysis (Substantive)

Correspondence Id: 34 **Comment Id:** 628339 **Coder Name:** jgutierrez

Comment Text: Changes in flow without enhancing the sediment load have no value and are a waste of precious water in the system.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645838 **Coder Name:** jgutierrez

Comment Text: For this reason, resources should be dedicated to preserve this source population.⁴⁶ This includes investing in actions below Fort Peck to increase water temperatures, turbidity and habitat to enhance relative drift distance. -Warmer temperatures would support improved survival of pallid sturgeon. Supporting appropriate releases from Fort Peck dam should be part of the EIS, as the reach is currently part of the 2016 Biological Opinion.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 645821 **Coder Name:** jgutierrez

Comment Text: TNC acknowledges USACE lacks the authority to directly act on the alkali lakes region, but the information being presented at the 2017 Missouri River Natural Resources Conference and in other forums related to the metapopulation study for piping plovers appears compelling enough to be captured or caveated in the AMP. Robust exchange and use by plovers between the alkali lakes, reservoirs, and river segments could have significant management implications impacting not only bird actions, but added budgetary and management flexibility in regards to the pallid sturgeon.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 645820 **Coder Name:** jgutierrez

Comment Text: TNC acknowledges USACE lacks the authority to directly act on the alkali lakes region, but the information being presented at the 2017 Missouri River Natural Resources Conference and in other forums related to the metapopulation study for piping plovers appears compelling enough to be captured or caveated in the AMP. Robust exchange and use by plovers between the alkali lakes, reservoirs, and river segments could have significant management implications impacting not only bird actions, but added budgetary and management flexibility in regards to the pallid sturgeon.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645771 **Coder Name:** jgutierrez

Comment Text: 2. Consider and test sediment supplementation for the river below Gavins Point Dam.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645398 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.4.1, p. 3-85 Comment: This section reiterates the geographic scope for the piping plover and least tern. The USFWS and USACE should not confine the geographic scope for the birds to the mainstem Missouri River only, but also consider other habitat (i.e. non-ESH habitat, and alkali lakes) to assist in achieving their goals.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645374 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.8.1.1, p. 2-48 Comment: The alkali lakes region of North Dakota should be included in the scope of the document as it relates to piping plovers. Recent work by the USGS Northern Prairie Wildlife Research Center has shown a stronger connection between populations of piping plovers on the Missouri River and alkali lakes region than once believed. Including these birds in the overall evaluation of population health could change the implementation of the MRRMP, including the target acreage of ESH needed in any given year. This would give a better overall picture of population health and increase the ability of the USACE's goal of avoiding jeopardy for piping plover on the Missouri River.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645371 **Coder Name:** jgutierrez

Comment Text: Section and Page Number: 2.5.2.1, pg 2-26 Comment: Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative analysis due to the "high level of uncertainty" of the actions' ability to achieve the desired result. How can these actions be considered in any section of the AMP if the actions were not analyzed in the EIS?

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645368 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.5.1.4, p. 2-16 - 2-17 Comment: This section states that "off-channel" habitat creation was eliminated as a management action for the MRRMP-EIS. The USFWS and USACE should not confine the geographic scope for the piping plover to the mainstem Missouri River only, but also consider other habitat (i.e. non-ESH habitat) to assist in achieving their goals. If science confirms that there is a significant connection between the Missouri River and alkali lakes, consider implementing actions in the alkali lakes region to help achieve the Missouri River goals.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645362 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.3, p. 2-9 "USACE did not consider Fort Peck dam removal reasonable for consideration within the scope of this EIS because of the uncertainties regarding the effectiveness of this management action towards meeting pallid sturgeon objectives and the availability of other actions that would be less impactful." Comment: This section should state that the USACE does not have the authority to remove Fort Peck Dam.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645219 **Coder Name:** jgutierrez

Comment Text: Low summer flows; Natural flow regime -The low summer flow was rejected by the Corps as a stand-alone Alternative early in the process because of strong lobbying by certain interests (Intakes, Navigation) on MRRIC. However, this would have embraced the natural flow regime that should have been included in the range of alternatives. All rivers and streams in this region of the country have lower flows in late summer or early fall, the dryer portions of the years weather patterns.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645134 **Coder Name:** jgutierrez

Comment Text: We realize there is a significant expense associated with sediment transport from above to below Gavins Point Dam but this is an issue that needs to be addressed, regardless of expense. Adding sediment below Gavins Point Dam would help reduce shoreline erosion and degradation of the river bed and removing sediment from the Niobrara River delta would help reduce flow constraints that hamper the ability to use flow as a tool to aid in species recovery.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644804 **Coder Name:** jgutierrez

Comment Text: We concede that changing factors accompanying flow volume may have a different outcome. Increasing sediment releases from the retained material behind the mainstem dams along with flow may stimulate spawning cues. The failure to address sediment load throughout the DEIS is an inherent flaw of the entire exercise. Without additional sediment in releases the outcome is predetermined to be one thing - a waste of precious water. The Corps should develop alternative scenarios for flow releases of retained material in the reservoirs that increase sediment load downstream changing the flow cue strategy, or abandon all flow alternatives going forward.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644441 **Coder Name:** jgutierrez

Comment Text: Based on experience with AM on the Platte River NPPD believes that all habitat types should be considered and that if benefits to the species can be obtained by habitat creation, improvement or protection in areas within the Missouri River floodplain it should be in the list of potential management actions. Given the current data on movement between the alkali lakes in North Dakota and Lake Sakakawea and Oahe it would appear the alkali lakes provide a buffer for when conditions on the Missouri are bad such as in 2011 and hasten recovery when conditions improve. Likewise non-traditional habitats such as sand mines along the Platte River and ash pits near the Missouri River have documented successful plover reproduction. While creation of these habitat types may not be feasible at the scale that ESH is being contemplated they may provide opportunity for habitat where no other exists and actually increase the persistence of a population by expanding the occupied area. Experience on the Platte would indicate that anytime a statement is made about the longevity or cost of maintaining a certain habitat type is presented without data it should be scrutinized closely as it is often based on supposition and not fact.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644440 **Coder Name:** jgutierrez

Comment Text: The draft AMP at the instance of the USFWS takes a very narrow view of piping plover habitat defining it as having to be hydrologically connected to the main stream river or reservoirs. This view is not based in biology or insuring the continued existence of the species. Plovers thrive - successfully nest and survive in many habitats not hydrologically connected to the Missouri River. This approach appears to be related to mitigating impacts to the river and the effort to benefit and recover of the species has become secondary. A plover produced from an alkali lake, a reservoir habitat or other off river habitat contributes to the piping plover population the same as one produced on a Missouri River sandbar. Increasing recruitment from habitats not hydrologically connected to the rivers has same effect as increasing recruitment from ESH.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644106 **Coder Name:** jgutierrez

Comment Text: Comment 5: Realizing that the scope for the DEIS is 15 years, it is still dismaying that Big Question 5 Components 5 and 6 (studies with temperature control device at Fort Peck Dam) do not appear on the schedules for Proposed Implementation of Actions for the Upper Missouri River (Figure 4.4, 4 - 4, {1/344} in Volume 4 of the DEIS and in the SAM Plan). If unnatural temperatures in Missouri River below Fort Peck Dam constitute take, how can USACE avoid jeopardy without addressing the effects of hypolimnetic withdrawals? Is it acceptable to the USFWS that these important components are not planned on occurring within 15 years?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644087 **Coder Name:** jgutierrez

Comment Text: Comment 2: Pages 2-25 - 2-26 (121/190 -122/190) of DEIS Volume 1 DEIS describes reasons USACE has eliminated consideration of any meaningful actions at Fort Peck Dam: The water intakes for Fort Peck Dam are on the bottom of the

reservoir making it challenging to develop and implement design options to discharge warm surface waters downstream. In 2009, USACE completed the Fort Peck Dam Temperature Contra/ Device Reconnaissance Study. Ten alternatives to improve downstream water temperatures were evaluated for further consideration (USACE 2009b). The use of a flexible curtain to act as a submerged weir became the focus through subsequent investigations (USACE 2012b). This option uses a flexible curtain that is suspended a set distance from the water surface using a float system with the curtain bottom being anchored to the Joke bottom with ballast and anchors. This option works by passing the warmer water from the upper portion of the water column over the weir crest into the intake area, rather than drawing cold water from the bottom of the reservoir (USACE 2012b). USACE does not consider this option feasible due to an estimated short life cycle (i.e., 10-20 years), uncertainties with meeting downstream temperature targets, emerging science on larval drift distances, high construction and operation and maintenance costs, and significant dam operation safety concerns. Modeling predicts that if there is no delay in drift, then all combinations of aforementioned management actions on the Missouri River (alteration of Fort Peck flows, temperature modifications at Fort Peck, and drawdown of Lake Sakakawea) are likely to result in recruitment failure (Fischenich et al. 2014). As stated previously, a reconnaissance study conducted in 2009 cited the challenges presented by management options at Fort Peck Dam (USACE 2009b). Prohibitively high costs and/or risk and uncertainty related to dam operations and dam safety were associated with each option. Actively managing the hydrology below Fort Peck Dam to provide the appropriate volume and temperature at the correct time would be a significant challenge containing hydrological, physical, and biological uncertainty with a small probability for success (USFWS 2015b). Approximately 90 percent of the tagged adult pallid sturgeon in the upper Missouri River population use the Yellowstone River during the spawning period (May-July) (Braaten et al 2015). The only exception was during a historic flood when some fish chose the Missouri River, although most still chose the Yellowstone River. There is no evidence that pallid sturgeon could be attracted away from the Yellowstone River with reasonable manipulations in flow from Fort Peck Dam. Therefore, implementation of Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative development due to the high level of uncertainty regarding their feasibility to achieve desired biological results and documented issues regarding their technical feasibility. The AM Plan identifies a comprehensive framework for research and studies to address the uncertainty regarding the effectiveness of management actions for pallid sturgeon in the upper basin.

Organization:**Commenter:** Unaffiliated Individual **Page:** **Paragraph:****Kept Private:** No**Correspondence Id:** 183 **Comment Id:** 643933 **Coder Name:** jgutierrez

Comment Text: As the result of ongoing research, appears there may be potential for survival/recruitment of larval pallid sturgeon within the Missouri River below Fort Peck Dam (Ryan Wilson. pers. comm. 2017). The USFWS encourages consideration of MRRP actions within that reach of the Missouri River, pending the additional information and subsequent review. The following are

examples of potential actions the Corps should consider to expand the scope of the MRRMP/EIS: â€¢ Flow and temperature modifications - utilize surface water discharges from Fort Peck and Fort Randall Dams to increase river water temperatures; Implement summer low flows from Gavins Point, Fort Randall, and Fort Peck dams to increase seasonal water temperature and habitat heterogeneity; â€¢ Discontinue hydro-peaking from Fort Peck and Fort Randall dams to increase recruitment of pallid sturgeon; â€¢ Increase floodplain connectivity to allow for nutrient and sediment inputs; â€¢ Implement top-width widening to increase organic and sediment input and habitat diversity.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643924 **Coder Name:** jgutierrez

Comment Text: Section 3.7.2.4, Page 3-194, paragraph 1 - Notes a small temporary adverse impact to water quality to constructing ESH. If breeding habitat is done off-channel it would minimize such impacts. Same for other alternatives where ESH is being created.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643857 **Coder Name:** jgutierrez

Comment Text: Section 2.5.1.4, Pages 2-16&17 - The USACOE's 2015 Annual Report for the Biological Opinion indicates that 40-50% of all piping plovers nests and fledglings are on the shorelines of Lake Oahe and Lake Sakakawea. These reservoirs account for a large percentage of the plover recruitment despite the fact that 80% of all incidental take of plover eggs and chicks occurs on these same shorelines. Because the DEIS does not differentiate between nests on riverine and reservoir shorelines except to document that most incidental take occurs on reservoir shorelines it is misleading the public, and the science, as to the true role of the reservoirs. It is possible reservoirs and the increased shore line habitat would be a benefit to piping plover. NPPD does not believe that water level management utilizing all reservoirs to reduce the instance of incidental take on Lake Oahe and Lake Sakakawea has been adequately addressed in the DEIS or the Draft Adaptive Management Plan (AMP). Additionally, constructed habitats that are designed to consider this fluctuation would also significantly benefit the success of the nesting birds.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643824 **Coder Name:** jgutierrez

Comment Text: Section 2.3, Page 2-5, Table 2-1 - With approximately half of all Missouri River plover nesting occurring on reservoirs and reservoirs also accounting of most of the USACOE take of plover nests (see page 2-16) it seems like one of the most relevant management hypothesis would be to reduce incidental take through reservoir management or habitat management on the reservoirs. Specifically water level management to create and provide habitat as well as minimize take of nests on Lake Oahe and Lake Sakakawea needs to be done in much more robust manner than what appears to have been done (see page 2-44). There may be some fairly minor management actions (raising levels in Lake Sakakawea a few days later) that may result in much less take of nests and increased productivity of this significantly important nesting.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642694 **Coder Name:** jgutierrez

Comment Text: TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study. TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641811 **Coder Name:** jgutierrez

Comment Text: Mid-West supports a slightly revised Corps's Preferred Alternative. The one revision to the Preferred Alternative Mid-West proposes is the addition of more off-channel, non-ESH work for plovers. As the work highlighted in the recent MRRIC Annual Forum (Michael Anteau, U.S.G.S., Conservation of Piping Plovers on the Missouri River: Thinking Beyond the Banks) suggests, there are productive habitat opportunities beyond the banks of the Missouri River that could prove very useful to piping plover recovery.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641731 **Coder Name:** jgutierrez

Comment Text: The six alternatives do not place enough emphasis on habitats in the reservoirs. Missouri River Piping Plovers that used the reservoirs for nesting between 2000 and 2016 ranged between 39% (2010) and 71% (2004). There are no recommendations in the alternatives to add nesting habitat on the reservoirs other than flow management. The costs of habitat (ESH) are entirely within the riverine segments.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641730 **Coder Name:** jgutierrez

Comment Text: The experiences of NPPD, on the Platte River, indicate the advantages of off channel habitat for recruitment of the Interior Least Tern and Piping Plover.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641729 **Coder Name:** jgutierrez

Comment Text: The six alternatives presented do not include the range of habitat options for the Piping Plover and Interior Least Tern that should be considered. The Draft Missouri River Recovery Management Plan (Plan) does not include off channel habitats as suggested by the Missouri River Recovery Implementation Committee (MRRIC). These habitats include meander scars, alkaline lakes, deltas, oxbows and sand pits. The advantages of other habitats rather than Emergent Sandbar Habitat (ESH) may include reduced ESH damage from river flows, increased habitat longevity and reduced cost. Many areas could be used for habitat development including area sand mines (gravel pits), DeSoto Bend, Boyer Chute, Omadi Bend, Middle Decatur Bend, Union County South Dakota sites, Kenslers Bend, Bow Creek and others.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641711 **Coder Name:** jgutierrez

Comment Text: 6. Off channel habitat for the least tern and piping plover should be attainable and at a lesser cost both in terms of capital costs and maintenance costs.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 193 **Comment Id:** 641696 **Coder Name:** jgutierrez

Comment Text: Such a pilot project also helps fulfill two of the tasks in the Recovery Plan: Recovery Outline 1.1.5. Restore the dynamic equilibrium of sediment transport within the Missouri River. Recovery Outline Narrative 1.1.5. Main Stem Missouri River dams have trapped sediments in reservoirs and bank stabilization has reduced erosion in riverine reaches. Additional sediment input, initially within high-priority recovery areas, is necessary to restore instream habitats and turbid waters. Opportunities to restore the dynamic equilibrium of sediment transport should be pursued. Additional research is needed to determine mechanisms for transporting sediment past dams and into river reaches downstream. Recovery Outline Task 2.2.4. Develop pilot projects on selected dams to transport sediment past the dam and into the river reaches downstream. Recovery Outline Narrative 2.2.4. The U.S. Army Corps of Engineers and U.S. Bureau of Reclamation should design and develop pilot projects to increase sediment transport past selected dams.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 193 **Comment Id:** 641694 **Coder Name:** jgutierrez

Comment Text: Implementing a pilot project for such sediment transfer from a dam to the Missouri River is squarely within the Corps' Flood and Coastal Storm Damage Reduction Program. One of the purposes of this program is to accelerate the study and design process for inland flood damage reduction including the sedimentation response of flood-control channels.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 193 **Comment Id:** 641678 **Coder Name:** jgutierrez

Comment Text: Sediment transfer is a way to restore habitat and function to the Missouri and Mississippi River ecosystems while maintaining storage capacity for flood control, reducing bank erosion, and minimizing impacts on other uses of the rivers. The main stem dams trap sediment resulting in a less turbid river. According to the Recovery Plan for the Pallid Sturgeon (Recovery Plan),² pallid sturgeon historically occupied turbid river systems. ³ They adapted to this turbid habitat, so increasing the turbidity of the river will ostensibly benefit the pallid sturgeon.⁴ Taking sediment from behind the dams to increase the turbidity of the river also will help maintain the flood-storage capacity of the system. In addition, turbid water would erode banks less than clear water, all other things equal. Moreover, sediment transfer should not significantly impact the authorized purposes of the Missouri River Main Stem Reservoir System that rely on flow management or water temperature: hydropower, downstream power supply (thermal cooling), flood control, and navigation (provided the largely self-scouring design of the system is unchanged).

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 193 **Comment Id:** 641673 **Coder Name:** jgutierrez

Comment Text: As a part of Phase II of this study, we request that the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service implement a pilot project utilizing beach nourishment technologies' to transfer sediment from past a main stem dam into a downstream reach of the Missouri River. As the agencies are aware, stream bed degradation in certain reaches of the Missouri River below the dams is an issue that must be addressed in the coming decades.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641657 **Coder Name:** jgutierrez

Comment Text: The experiences of NPPD, on the Platte River, indicate the advantages of off channel habitat for recruitment of the Interior Least Tern and Piping Plover. The six alternatives do not place enough emphasis on habitats in the reservoirs. Missouri River Piping Plovers that used the reservoirs for nesting between 2000 and 2016 ranged between 39% (2010) and 71% (2004). There are no recommendations in the alternatives to add nesting habitat on the reservoirs other than flow management. The costs of habitat (ESH) are entirely within the riverine segments.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641650 **Coder Name:** jgutierrez

Comment Text: The six alternatives presented do not include the range of habitat options for the Piping Plover and Interior Least Tern that should be considered. The Draft Missouri River Recovery Management Plan (Plan) does not include off channel habitats as suggested by the Missouri River Recovery Implementation Committee (MRRIC) and recommended by MRRIC's Science Adaptive Management Work Group (SAM), the Independent Science Advisory Panel (ISAP) and the Independent Social Economic Technical Review (ISETR). These habitats include meander scars, alkaline lakes, deltas, oxbows and sand pits. The advantages of other habitats rather than Emergent Sandbar Habitat (ESH) may include reduced ESH damage from river flows, increased habitat longevity and reduced costs. Many areas could be used for habitat development including area sand mines (gravel pits), DeSoto Bend, Boyer Chute, Omadi Bend, Middle Decatur Bend, Union County South Dakota sites, Kenslers Bend, Bow Creek and many others.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641442 **Coder Name:** jgutierrez

Comment Text: We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns the proposed alternatives do not go far enough to restore the river and its aquatic and terrestrial habitat. Regarding terns and plovers in particular, the EIS discusses their nesting on reservoir shorelines, notably the issue of the reservoir serving as ecological traps in some years. Yet we can't find where the alternatives address this problem directly, especially by trying to prevent it.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641266 **Coder Name:** jgutierrez

Comment Text: Lower pools also produce lower river flood damage reductions, and I hope you will consider an alternative that incorporates a lower storage target and navigation service levels, better unbalancing, and overall better management of pools for terns and plovers and other wildlife benefits. The Corps manages hundreds of miles of reservoir shoreline via water levels, and it's a shame to be overlooking opportunities for creative habitat enhancements over that long shoreline. [end of Michael Melius's comments]

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641233 **Coder Name:** jgutierrez

Comment Text: Regarding terns and plovers in particular, the EIS discusses their nesting on reservoir (rsvr) shorelines, notably the issue of the rsrvs serving as ecological traps in some years. Yet I can't find where the alternatives address this problem directly, esp. by trying to prevent it. Rsvr unbalancing is the management technique that comes closest. Recent history shows it's been challenging for the Corps to carry out effectual unbalancing. I think they could try harder, and hope that the final plan will direct them to do so.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640654 **Coder Name:** jgutierrez

Comment Text: CMEPC supports a slightly revised Corps Preferred Alternative. The one revision to the Preferred Alternative CMEPC proposes is the addition of more off-channel, non-ESH work for plovers. As the work highlighted in the recent MRRIC Annual Forum (Michael Anteau, U.S.G.S., Conservation of Piping Plovers on the Missouri River: Thinking Beyond the Banks) suggests, there are productive habitat opportunities beyond the banks of the Missouri River that could prove very useful to piping plover recovery. CMEC believes that if the goal is to recover the species, it is imperative that for a societal economic as well as a species impact this work must be considered and implemented unless the science proves the benefits are not as robust as many believe they will be.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 157 **Comment Id:** 637705 **Coder Name:** jgutierrez

Comment Text: Regarding terns and plovers in particular, the EIS discusses their nesting on reservoir (rsvr) shorelines, notably the issue of the rsrvs serving as ecological traps in some years. Yet I can't find where the alternatives address this problem directly, esp. by trying to prevent it. Rsvr unbalancing is the management technique that comes closest. Recent history shows it's been challenging for the Corps to carry out effectual unbalancing. I think they could try harder, and hope that the final plan will direct them to do so.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 81 **Comment Id:** 636788 **Coder Name:** jgutierrez

Comment Text: But beyond that, where are provisions for designation of critical habitat for the endangered pallid sturgeon; for unbalanced reservoirs to address the situation at a particular reservoir; for the application of the best science currently available? Habitat loss, fishing and caviar harvesting, entrainment and watercraft propellers, contaminants, hybridization, invasive species, and iridovirus all threaten the endangered pallid sturgeon. None of the alternatives provide adequate response. The pallid sturgeon requires shallow-water habitat. Designation of critical habitat is necessary! The Corps of Engineers seemingly acknowledges that with the phrase "avoid jeopardizing the continued existence of pallid sturgeon or its critical habitats" in the accompanying Draft Science and Adaptive Management Plan. Perhaps having unbalanced reservoirs as a management tool in the Missouri River Mainstem Reservoir System Master Water Control Manual is adequate, but perhaps not.

Organization: Sierra Club, Audubon, Nature Conservancy

Commenter: Anne Millbrooke **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 94 **Comment Id:** 633681 **Coder Name:** jgutierrez

Comment Text: I would like to submit this statement to the Corps of Engineers as a record of my concerns about the Missouri River (Mni Sose). Please add a section called Tribal Concerns to the Adaptive Management Plan (ADMP) preferred alternatives. There should also be a dam removal alternative added to the DEIS.

Organization: Standing Rock Sioux Tribe

Commenter: Diana Spotted Horse **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 52 **Comment Id:** 631121 **Coder Name:** jgutierrez

Comment Text: We're completely ignoring the saline lakes in South Dakota. The thing that started this whole thing was that, oh, if these birds don't nest in that 40 miles below Gavins Point, they won't nest at all. But the truth of the matter, that's a failed hypotheses. The number of birds that are there now and the number that were there at the 2011 flood is zero to 1,832. You can't go from zero to 1,832 in five years, no matter what you do, unless the birds are coming in from different locations. And the white paper that the Corps had worked with said there's only a 200th of a percent chance that this dispersal will take place, so that's bad science.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AL550 Alternatives: Alternative 5 (non-substantive) (Non-Substantive)

Correspondence Id: 5 **Comment Id:** 625206 **Coder Name:** jgutierrez

Comment Text: Sir, I would be interested in placing my support with Alternative 5, that increases autumn flows supporting migrating waterfowl. It is sad to have such a beautiful resource so close, but to be so short sighted about it's potential for recreational use.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645522 **Coder Name:** jgutierrez

Comment Text: The League does not support Alternative 5.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645125 **Coder Name:** jgutierrez

Comment Text: Draconian flow changes in alternatives 2, 4, 5, and 6 are not acceptable options. There is no credible science that supports flow changes for the recovery of the threatened and endangered species. And, the flow changes would negatively impact the economy of the entire Missouri River Basin. In alignment with the bi-partisan, basin-wide Congressional letter sent to the Corps on December 17, 2015, AWO strongly opposes any flow changes.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644699 **Coder Name:** jgutierrez

Comment Text: In analyzing flow regime effects, Alternatives 4, 5, and 6 would appear to offer the least impacts on water intake operation during the release periods. However, there are concerns of these releases creating a cause for low flows in the later winter periods of the year if the system does not receive enough inflow to replenish reservoir levels.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644459 **Coder Name:** jgutierrez

Comment Text: Alternative 5 - Flow Event Detail System Storage Preclude: 54.2 MAF on October 17 (full service) Fall flow event, as often as every 4 years Starts on October 17 Gavins Point release up to 60 kcfs for 35 days Flood Control Constraints adjusted by flow increase: Kansas City:= 126 kcfs

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 127 **Comment Id:** 636939 **Coder Name:** jgutierrez

Comment Text: All the above stated, I think the best alternatives are Alternate 3 (No Spring Rise) or alternative 5 (Fall Rise). A fall rise is unlikely to have a large economic impact on us because not much wheat is planted in the river bottoms and No Spring rise gets back to the rationale for funding the dams for flood control.

Organization: Reveaux Levee Distric President

Commenter: CLarence A Trachsel **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 142 **Comment Id:** 633887 **Coder Name:** jgutierrez

Comment Text: Alternative 5 ESH Fall Release Release if Service Level is 35,000cfs (54.2 MAF in System) October 17th and 250 Acres of Habitat Have Not Occurred in Previous 4 Years and Downstream Flow is Below Flood Control Constraints (71kcfs at Omaha, 82 kcfs at Nebraska City, 126 kfs at KC) Fall Rise Up to 60,000 cfs October 17th as Often as Every 4 Years Duration Increases as Magnitude is Decreased 45 kcfs = 175 Days, 50 kcfs = 77 days, 55 kfs = 49 days, 60 kcfs = 35 days Flood Control Constraints Adjusted by Flow Increase If Flood Control Constraints are Exceeded, Reduce by 5 kcfs Until no Longer Exceeded. Terminated if Falls Below 45 kcfs Fort Randall Similar to Gavins Point, Garrison Approximately 17.5 kcfs Less Than Gavins Point.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 28 **Comment Id:** 627554 **Coder Name:** JGUTIERREZ

Comment Text: We will not support proposals that weaken flood control, initiate pulses or reduce flows in the summer. We do not support construction as chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil being deposited into the river. Given past experience, we're skeptical of adaptive management and what we consider to be very expensive experiments. For the reasons stated, several of the alternatives under consideration are nonstarters. Given the prescribed flow modifications, we do not support alternatives 2, 4, 5 and 6.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 74 **Comment Id:** 627544 **Coder Name:** JGUTIERREZ

Comment Text: Alternatives 2, 4, 5 and 6 are unacceptable due to the prescribed flow modifications.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 27 **Comment Id:** 626695 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented to us for review and comment, the Coalition supports a mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to alternatives 2, 4, 5 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

AL600 Alternatives: Alternative 6 (Substantive)

Correspondence Id: 27 **Comment Id:** 626700 **Coder Name:** jgutierrez

Comment Text: Regarding alternative 6, our members do not support the implementation of a full bi-modal release because of the risks to flood control and impacts to interior drainage.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 646371 **Coder Name:** JGUTIERREZ

Comment Text: Regarding alternative 6, AWO opposes the implementation of a full bi-modal spring release because of the risk to flood control and its negative impacts to navigation and the lack of science that confirms that these flows would facilitate the recovery of species.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 646364 **Coder Name:** JGUTIERREZ

Comment Text: Regarding Alternatives 6, our members don't support the implementation of a full bi-modal release because of the risks to flood control, and the impacts to interior drainage are far too great.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 646363 **Coder Name:** JGUTIERREZ

Comment Text: Regarding Alternative 6, AWO opposes the implementation of a full bi-modal spring release because of the risks to flood control, its negative impacts to navigation, and the lack of science that confirms that these flows would necessarily facilitate the recovery of the species.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 645762 **Coder Name:** jgutierrez

Comment Text: It is also difficult to believe that the Alternatives 3 through 6 would reach the goal of 11,886 acres of ESH on the Missouri River.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 645761 **Coder Name:** jgutierrez

Comment Text: But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645450 **Coder Name:** jgutierrez

Comment Text: The CPRs members who live and operate businesses along the lower Missouri River experience flooding each spring caused by inflows from various tributaries. In April 2017, the Missouri River has risen approximately twelve feet in a weeks time in the central Missouri reach. For this very reason, the CPR is wary of attempts to boost pallid sturgeon population by increasing flows from Gavins Point Dam. Further, no science has been developed to prove its value. The DEIS states: The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning (Doyle, et, al. 2011). Therefore, we remain opposed to the bimodal spring rise provision within Alternatives 1, 2 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645378 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.8.7, p. 2-73 "After the first occurrence of a March pulse, the preclude for System storage would change to 40.0 MAF." Comment: It is not clear what is meant by "the preclude" and this should be clarified. It is also not clear what the preclude would be before it changed to 40.0 MAF.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645376 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.8.1.1, p. 2-49 "Alternative 6 includes a flow release for the intended benefit of pallid sturgeon but of a magnitude that creates ESH." Comment: It is not clear from this sentence if the magnitude of the bimodal spawning cue in Alternative 6 is at all based on the needs of the pallid sturgeon.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644928 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is described as meeting the minimum of floodplain connectivity and inundation as recommended by USFWS. But this seems absent entirely from alternatives 3-6. The Corps does not provide an explanation as to how they will ensure that they meet the goal of reproducing the effect of those inundated acres in those alternatives.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643886 **Coder Name:** jgutierrez

Comment Text: Section 2.8.7, Page 2-73 - As previously stated, spawning cues are not supported by the science (ISAP report and pallid Expert Workshop) and should not be considered in this or any other alternative, but rather remain as a hypothesis in the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641563 **Coder Name:** jgutierrez

Comment Text: Also, I am opposed to flow manipulations in Alternatives 4, 5 and 6 that would cause precious water in the system to be wasted running environmental flow experiments for the pallid sturgeon when independent science panels have been unable to prove any benefit.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633916 **Coder Name:** jgutierrez

Comment Text: I farm in the Tri-County Levee District which spans Gasconade, Montgomery and Warren Counties in Missouri. At a river stage of 14 feet on the Hermann gauge - which is seven feet below flood stage - our levee district begins to have challenges with interior drainage. Alternatives 2, 4, 5, and 6 which raise flows, some for considerable amounts of time, are absolutely deal-breakers for my farming operation.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633683 **Coder Name:** jgutierrez

Comment Text: Our members who live, farm and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are extremely wary of any attempt to increase flows from the Gavins Point Dam because to date, no science has been developed to prove this boosts the pallid sturgeon population. This is the basis for our opposition to bimodal spring rise provisions in Alternatives 1, 2 and 6.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

AL650 Alternatives: Alternative 6 (non-substantive) (Non-Substantive)

Correspondence Id: 27 **Comment Id:** 626695 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented to us for review and comment, the Coalition supports a mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to alternatives 2, 4, 5 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645525 **Coder Name:** jgutierrez

Comment Text: The League does not support Alternative 6.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645125 **Coder Name:** jgutierrez

Comment Text: Draconian flow changes in alternatives 2, 4, 5, and 6 are not acceptable options. There is no credible science that supports flow changes for the recovery of the threatened and endangered species. And, the flow changes would negatively impact the economy of the entire Missouri River Basin. In alignment with the bi-partisan, basin-wide Congressional letter sent to the Corps on December 17, 2015, AWO strongly opposes any flow changes.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644699 **Coder Name:** jgutierrez

Comment Text: In analyzing flow regime effects, Alternatives 4, 5, and 6 would appear to offer the least impacts on water intake operation during the release periods. However, there are concerns of these releases creating a cause for low flows in the later winter periods of the year if the system does not receive enough inflow to replenish reservoir levels.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 142 **Comment Id:** 633888 **Coder Name:** jgutierrez

Comment Text: Alternative 6 Bi-Modal Spawn Cues Run Full Bi-Modal Spring Rise. Both Rises in Same Year Every 1 out of 3 Years. 2 Spring Rises First Rise: First Day Flow to Target Navigation Flow is Reached Release is 2X the First Day of Flow to Target Flow Increase 2,200 cfs per Day, Peak = 2 Days, Decrease 1,700 cfs per Day Until Back to Flow to Target Second Rise: If 40MAF in System March 15th, Steady Releases Set and Run 3 Days Start May 18th or Later Based on Water Temperature Increase 2,200 cfs per Day, Peak = 2 Days, Decrease 1,900 cfs per Day Until Back to Study Flow Increase Flood Control Targets at Full Service by the Spring Rise Magnitude Omaha Example: If Spring Rise is 31,600 cfs, Then Normal Flow Target of 41,000cfs Goes to 72,600 cfs

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 50 **Comment Id:** 628624 **Coder Name:** jgutierrez

Comment Text: Alternative 6 also should not be ignored. It is the old spring rise, and this duplicates what's been going on for eons. The river comes down out of the Rockies, there's snowmelt and spring rains, and the river rises. And this is true of all rivers to one degree or another.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 91 **Comment Id:** 627568 **Coder Name:** jgutierrez

Comment Text: Pallid sturgeon reproduction is poorly understood. Alternative 3 or 6 seem to provide the best chance for further Pallid sturgeon study with the least adverse effect on all parties using the Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 28 **Comment Id:** 627554 **Coder Name:** JGUTIERREZ

Comment Text: We will not support proposals that weaken flood control, initiate pulses or reduce flows in the summer. We do not support construction as chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil being deposited into the river. Given past experience, we're skeptical of adaptive management and what we consider to be very

expensive experiments. For the reasons stated, several of the alternatives under consideration are nonstarters. Given the prescribed flow modifications, we do not support alternatives 2, 4, 5 and 6.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 74 **Comment Id:** 627544 **Coder Name:** JGUTIERREZ

Comment Text: Alternatives 2, 4, 5 and 6 are unacceptable due to the prescribed flow modifications.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AL700 Alternatives: Actions Common to All Alternatives (Substantive)

Correspondence Id: 20 **Comment Id:** 626651 **Coder Name:** jgutierrez

Comment Text: The Draft Environmental Impact Statement out for comment contains six alternatives. Unfortunately, all six alternatives contain some level on increased flood risk via a spring rise. This runs directly contrary to the Corps flood control mission. In addition, there continues to be zero science that supports a spring rise and its benefit to pallid sturgeon. MCGA has never wavered in its opposition to the spring rise as a management tool. Though alternative three has less commitment to the rise, it still unfortunately leaves the door open. As mentioned before, science has failed to support a spring rise and therefore it should not be a component of any of the alternatives. We must not increase the risk of flooding during this critical time of year, planting season.

Organization: Missouri Corn Growers Association

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 645848 **Coder Name:** jgutierrez

Comment Text: Sioux City feels that the lower river early life stage habitat construction should be done on a trial basis first and then assessed to determine its success rate prior to full construction and implementation.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645842 **Coder Name:** jgutierrez

Comment Text: Spring bimodal spawning cues: As stated in the EIS spawning cue releases with both March and May pulses would occur 20 percent, 12 percent, and 13 percent of the time under Alternatives 1, 2, and 6, respectively. Deliberate spring flow releases under Alternative 4 would occur 12 percent of the time, while deliberate fall flow releases under Alternative 5 would occur eight percent of the time. Flow release levels under Alternatives 4 and 5 would be achieved "naturally" during normal project operations in eight years (10 percent of the time) during spring and fall, based on the 82-year record. The Corps should provide evidence that the frequency of spawning cue releases is sufficient to support pallid sturgeon or at the very least a comparison with both current, actual operation and historic, pre-reservoir hydrographs.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645838 **Coder Name:** jgutierrez

Comment Text: For this reason, resources should be dedicated to preserve this source population.⁴⁶ This includes investing in actions below Fort Peck to increase water temperatures, turbidity and habitat to enhance relative drift distance. -Warmer temperatures would support improved survival of pallid sturgeon. Supporting appropriate releases from Fort Peck dam should be part of the EIS, as the reach is currently part of the 2016 Biological Opinion.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645836 **Coder Name:** jgutierrez

Comment Text: Furthermore, actions which do not result in substantial changes in the field (e.g. Level 1 and 2 research actions) are insufficient and not likely to enhance survival and reproduction of pallid sturgeon. While these studies are important, Level 3 and 4 actions should also be implemented which will result in population level changes.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645792 **Coder Name:** jgutierrez

Comment Text: Second, the Corps states that if some Shallow Water Habitats (SWH) potentially serve a dual role as IRCs, that the Corps could instead rehabilitate existing SWHs instead of creating new IRC habitats. This determination appears to be double-dipping, by depending on mandated habitat construction to support new habitat.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645791 **Coder Name:** jgutierrez

Comment Text: We also object to any alternative that contains a low summer flow provision that would severely harm river navigation and public utility operations.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 645777 **Coder Name:** jgutierrez

Comment Text: and (2) we recommend that the management actions for providing Piping Plover nesting habitat outside the active river channel be included in the management actions for this Alternative.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 645775 **Coder Name:** jgutierrez

Comment Text: WCI opposes alternatives 2,4,5, and 6 and any alternative or actions that would modify the flows of the river and require a change to the Missouri River Master Manual.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 645749 **Coder Name:** jgutierrez

Comment Text: Of further consideration is the use of average temperatures for the lower River. KCMO routinely experiences high water temperatures during low flow periods coinciding with warm summer season. These high temperatures along with low turbidity normally associated with low summer flows create potential conditions for the formation of cyanotoxins. Although no firm maximum contaminant level has been established by EPA, Health Advisories have been issued by EPA and are defacto regulations of these compounds. In accordance with EPA Health Advisory, MO is one of the states," reviewing or developing an approach to address cyanotoxins in water. "(JAWWA Vol 109 p42.) Anecdotally KCMO has experienced "blooms" characteristic for cyanotoxins formation during previous low flow summer periods. No attempt was made to analyze for toxins as methods are just being developed and no EPA requirements were in place. This is no longer the situation. We are concerned that any Alternative considered with low summer flows may create river conditions requiring more extensive treatment than is currently required.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645583 **Coder Name:** jgutierrez

Comment Text: The AMP states (AMP 1-page 246), "At level 2, field experimentation would require flow manipulations and/or channel reconfigurations that could be perceived as risks to flood control, power generation, water supply, navigation, and floodplain farming." We urge the Corps to provide more details in the EIS and communicate with stakeholders to alleviate this misperception.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645535 **Coder Name:** jgutierrez

Comment Text: The DEIS (V1-page 150) focuses on hatchery practices. The League is concerned that the Corps places too much emphasis on hatchery raised pallids for the Missouri River. Stocking creates a population that is not self-sustaining. Our concerns about stocking also include disease and water quality issues in the hatcheries and the effects on the health of the fish raised. If hatchery pallids are transporting disease to wild fish, then restoration efforts are going backward. We also have concerns about the high cost of raising pallids in the hatcheries. We encourage more habitat restoration in the upper and lower river to ensure natural production and recruitment.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645530 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page382) also mentions that post-construction monitoring of Intake would need to continue until results indicate whether or not the project has resulted in successful recruitment. The final EIS must address how long monitoring would continue before AM is implemented to make the needed adjustments to assure the project becomes successful for pallid recruitment.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645512 **Coder Name:** jgutierrez

Comment Text: 3.11 - Commercial Sand and Gravel General Analysis: 1. Modifications in flow as presented in Alternatives 2, 4, 5 and 6 undermine the primary congressionally authorized purposes of navigation and flood control, making them problematic. 2. The states of Missouri, Kansas, Iowa and Nebraska own the bed of the lower river. The states have a sovereign right to their real estate and federal actions that compromise the real estates resources are a takeover in regard to states real estate and natural resources. 3. The use of the HEC-RAS model for decision making in the DEIS is flawed. Commercial sand dredgers have continually presented their objections to HEC-RAS being used for any permitting related decisions and the Corps has previously agreed during MRRIC sessions. In the DEIS however, this important point is missing from the document and needs to be included in the content for this section. 4. The DEIS fails to address the issue of sediment in the system and the lack of material movement. We call on the Corps to create a true sediment analysis that examines this important component for pallid sturgeon recovery. Changes in flow, without enhancing sediment load are not impactful and are a true waste of water in the system. 5. Regarding IRC construction and maintenance, the Corps must give commercial sand dredgers absolute assurance that these new habitat areas will not impact their operations by making its related regulatory strategy clear. Of utmost importance to dredgers are the issues of channel response, impacts to navigation, bed and hydraulic conditions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645470 **Coder Name:** jgutierrez

Comment Text: Nearly all of the DEIS alternatives call for a shift in habitat construction to the building of 12 interception rearing complexes (IRCs) over the course of six years. We do not object to the advancement of scientific theory, including IRCs, as long as they are coupled with proper evaluation and introduced gradually. If the Corps is to truly follow the AM plan process, we suggest it take a measured approach regarding IRC construction and initially develop only one in the lower river. The Corps should first prove this theory's viability with one IRC site by constant evaluation before other IRCs are constructed. As part of the evaluation, the Corps has to ensure IRCs will not negatively impact activities within the channel such as navigation and commercial sand dredging.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645417 **Coder Name:** jgutierrez

Comment Text: The MRRMP-EIS includes spawning cue releases as a management action without adequately explaining their effects and without adequate knowledge of what the specific beneficial impacts of the actions would be on the species. The spawning cue releases in Alternative 2 must have two prerequisite characteristics: "(1) flows to cue spawning that are sufficiently high for an adequate duration; and (2) flows that provide for connection of low-lying lands adjacent to the channel."¹⁰⁸ Alternatives 3 through 5 "would include a one-time spawning cue test release from Gavins Point if Level 1 studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important."¹⁰⁹ In Alternative 6, "USACE would attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May."¹¹⁰ Each of these spawning cue releases could potentially be ineffective because "the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. The ISAP found no evidence that managed spring pulses are necessary to provide cues for pallid sturgeon spawning."¹¹¹ Therefore, the use of these potentially ineffective spawning cues would waste money and time that could be utilized on other management actions. It might be that the spawning cue is effective and that it will aid the pallid sturgeon. But the spawning cue should be analyzed over time while other management actions are being used to meet the species goals until the release is established as a viable management action.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645399 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.4.2.4, p. 3-98 **Comment:** Vegetation management is North Dakota's preferred method to obtaining target habitat acreages for piping plover and least terns in the Missouri River. Furthermore, the State of North Dakota recommends that the USACE maintain the agreed upon moratorium of management actions in the Bismarck-Mandan area where

management actions for piping plover and least tern are not implemented as decided upon by the North Dakota Interagency ESH Team. This would be from RM 1310 to RM 1325. Also, it is necessary to maintain a buffer of 1 mile around boat ramps with the same restrictions. This stretch of river supports a high volume of recreation. The attraction of piping plovers and least terns to the area by implementing management actions brings unnecessary human/bird conflicts. These conflicts would do more harm to the public perception of tern and plover recovery than the benefits the management actions would bring.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645387 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.1.3, p. 3-16 Comment: In Table 3-2, channel capacity based on hydraulic model results for the various Missouri River reaches are displayed. The Fort Peck to Lake Sakakawea Reach and the downstream portion of the Garrison Reach have estimated channel capacities of 35,000 to 40,000 cfs. Flows for any alternative should be managed to be at or below this level, unless impacts are mitigated.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645370 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.5.1.12, p. 2-20 - 2-21 Comment: This section states that human restriction measures were retained as a management action for the MRRMP-EIS. This action is already implemented in the Garrison Reach. The State of North Dakota is not supportive of restricting human access to sandbars in areas of high human use, such as the Missouri River in the Bismarck-Mandan area.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645369 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.5.1.9, p. 2-19 "(2) the reduced flow can potentially decrease the rate of erosion of existing ESH." Comment: It should also be noted that the reduced flow can potentially increase the rate of erosion as the reduced

flows will likely result in higher flows later in the year to evacuate flood storage in the reservoirs, the increased erosion would be even more likely if the higher flows occur under ice cover.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645367 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.5.1.2, p. 2-15 and 2.8.1.1, p. 2-48 Comment: Due to the extremely temporal nature of existing sandbars in the Garrison Reach, North Dakota has long questioned the costs versus benefits of constructing artificial islands or sandbars in this area. Additionally, several of North Dakota's natural resource agencies have consistently opposed dredging or fill activities in the Garrison Reach (since the early 1990s), except for those public works projects that are of an emergency nature. As a result, regulatory agencies have taken a fairly conservative approach to issuing permits for projects of this nature. Implementing ESH projects that require dredging or fill would also no doubt create considerable new interest among private riparian property owners. North Dakota is in favor of mechanical creation as it relates to vegetation removal from existing ESH for the free-flowing stretches of the Garrison Reach. Should mechanical creation by buildup of sand in the river be necessary, to promote longevity of the project we recommend it only occur in the aggradating reach and in the Lake Oahe delta, but not between River Mile (RM) 1310 and RM 1325, and that the material used come from within the existing channel or preferably from the Oahe delta - pending approval of required state permits.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645366 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.5.1.1, p. 2-14 - 2-15 Comment: This section states that the ESH-creating flow release was retained as a management action for consideration in the MRRMP-EIS. This management action involves releasing high flows from the dams for the purposes of creating sandbar habitat for the piping plover and least tern. The ability of the Garrison Reach, and the river in general, to continuously create sandbar habitat with flows over the long term is questionable. Since construction of the dams, the geomorphic trend of the Garrison Reach is erosion at the upstream end, and aggradation on the downstream end. Skalak et al. (2013) showed that Garrison Dam exerts considerable morphological control on the channel until the backwater effects of the Oahe Dam and reservoir begin to influence the channel. The paper suggested that there would be a continued loss of islands in the upper portion of the Garrison Reach and management of habitat in this area would become more difficult. The paper also suggests

that management of habitat in the downstream portion of the Garrison Reach, especially in the Bismarck-Mandan area, would increase conflict between birds and people recreating on the river. Skalak et al. (2016) confirmed that large hydrologic pulses, such as the 2011 flood, do not revert the geomorphic pattern created by Garrison Dam and Oahe Reservoir, nor do they uniformly impact the different river zones or geomorphic features. Ultimately, the paper suggests that a change in conditions other than high-magnitude flooding would be required to return the Missouri River to its pre-dam condition, or restore the ecosystem to a self-maintaining state. Skalak, K.J., Benthem, A.J., Schenk, E.R., Hupp, C.R., Galloway, J.M., Nustad, R.A., and Wiche, G.J., 2013, Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River: *Anthropocene* 2 (2013): 51-64. <http://dx.doi.org/10.1016/j.ancene.2013.10.002> Skalak, K.J., Benthem, A.J., Hupp, C.R., Schenk, E.R., Galloway, J.M., and Nustad, R.A., 2016, Flood effects provide evidence of an alternate stable state from dam management on the upper Missouri River: *River Research and Applications*. <http://onlinelibrary.wiley.com/doi/10.1002/rra.3084/full>

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645359 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 1.5.2, p. 1-23 Comment: The USFWS proposes using acres of ESH as a target to ensure a resilient population of birds on the Missouri River. Acres of ESH would be calculated in two ways: (1) Standardized ESH, and (2) Available ESH. It is not clear from the EIS and supporting documents why tracking Standardized ESH is necessary. For the Garrison Reach, the definition for Standardized ESH states that it is the area above water when releases from Garrison Dam are 23.9 kcfs. Releases from Garrison Dam do not always reach 23.9 kcfs in a given year. If the "standard" release does not occur in a given year, it is not clear how Standardized ESH is determined if it is not measured.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645333 **Coder Name:** jgutierrez

Comment Text: 4) Proposed frequency of enhanced flows is not supported by scientific evidence and is likely insufficient for pallid sturgeon recovery The Corps proposes flow modifications that would likely be of too little frequency to support pallid sturgeon recovery. If evidence exists to the contrary, the Corps should include them in the EIS. Examples of the limited flow releases are highlighted below. Each of these should be justified with statistics and data on historic flows to allow the public to assess the scientific validity and usefulness of the proposed approach to pallid sturgeon recovery. The EIS states that naturally high flow pulses

may trigger migration and aggregation of pallid and that other scientific studies of sturgeon species support this hypothesis. Additionally, a number of migratory species depend on pulse flows to trigger migration. Yet, the Corps states a "high degree of uncertainty is associated with this management action and it is possible that there could be no effect on pallid sturgeon."²⁹ It remains unclear how the Corps defines levels of uncertainty for pallid sturgeon recovery in light of the science supporting naturalized and pulse flows. Lastly, the Adaptive Management Plan states that pallid sturgeon adults will be tracked over a range of flow conditions over a period of nine years. After nine years, the Corps may then consider implementing spawning cues from Gavins Point. Implementing Dow-based modifications are critical for pallid sturgeon and native fish in the basin. Streamflow is viewed as a master variable,^{30, 31} one that shapes many fundamental ecological characteristics of riverine ecosystems. Entire foodwebs are altered as flows change, and in general less species survive in stressful low flow conditions. For fish, flow doesn't just influence oxygen levels, it influences all of life's necessities: temperature, habitat for spawning and escaping predators, and flushing sediment from the rocks on which many fish lay eggs. Scientific studies evaluating timing and duration of flows find fewer young-of-year fish, a disruption in spawning cues and an increased frequency of recruitment failures when the hydrograph is modified.³² Reservoirs in the Missouri River system have nearly reversed the timing and amount of water flowing through the river. Because flow is a controlling variable, it is critical that the Corps adopt and implement an alternative that takes flow into account. Since their construction, reservoirs on both the mainstem and tributaries of the Missouri River have tamed flows to produce a flat, controlled hydrograph that eliminates spring pulses from plains and mountain snowmel,³³ and leads to a decline in native fish and their prey.³⁴ Potentially important low flows in the Missouri River in the late summer and fall and winter disappear as water is used for downstream navigation and hydropower.³⁵ The dams also hold back nearly 80% of the historical sediment load, an important loss in a river dominated by native fish preferring turbid, warm waters.³⁶ The National Research Council of the National Academy of Sciences has recommended a more natural flow system, including a spring pulse to begin the recovery process. ³⁷ However it is recognized that this pulse may be insufficient³⁸ and the hope of inundating floodplains for fisheries would require a combination of higher flows, in-river and bank restoration, and selective floodplain easements.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645327 **Coder Name:** jgutierrez

Comment Text: 2) The Implementability and Viability of Proposed Alternatives is Questionable: The No Action Alternative and Alternatives 3 and 6 include flow modifications to Corps-operated reservoir releases to support the pallid sturgeon. These would require the Corps to implement minor, discrete changes in water releases from the reservoir to support spawning and reproductive cues. However, to date the Corps has not successfully implemented changes in reservoir operations to support pallid sturgeon recovery. As stated in the introduction, implementability is a key factor not considered in the EIS, as discussed below. Since 2000, FWS has

required a series of RP As from the Corps that would allow for recovery of a minor section of the natural hydrograph, including an approach that depended on concurrent, holistic implementation of flow regime modifications, habitat restoration, and the purchase and restoration of floodplain easements.¹⁵ In doing so, FWS set up a scientific experiment that, with full compliance, might have provided river managers and the Army Corps with critical information to modify reservoir operations for the benefit of not just the pallid, but also many native species and game fish in the Missouri RiYer system. These RPAs would have addressed some of the gaps in knowledge of the pallid sturgeon's life cycle by specifically implementing adaptive management practices, modifying flow to increase spring flows, decreasing summer flows, and implementing test flows from Fort Peck to understand the impacts of increasing temperature and flows concurrently. However, because the Corps has failed to implement most of the RP As, the FWS, and other scientists has been hamstrung and unable to adequately conduct scientific studies necessary for the recovery of the pallid sturgeon. Additionally, throughout the EIS the Corps incorrectly interprets and truncates the expert opinion of their own panel of independent scientists. For example, in Volume 2, p. 3-71, the Corps states: "The Missouri River Independent Science Advisory Panel (ISAP) considered the available information on the efficacy of flow pulses in relation to pallid sturgeon spawning and concluded "the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning in pallid sturgeon." The statements and recommendations from the Independent Science Advisory Panel are stated below and clearly support enhanced flows and a number of other actions to support pallid sturgeon recovery. This resistance by the Corps to implement even a baseline set of recovery strategies for the pallid sturgeon was reflected in the 2013 Missouri River Recovery Program's Independent Science Advisory Panel's (ISAP) Report: There is " ... no evidence that managed spring pulses have improved ecological conditions for native fish, invertebrates, or other species, consistent with the observation that the pulses have been of such limited magnitude and durations that they appear to be unable to generate the specific habitat features and conditions that are believed to be important for those species" (emphasis added).

16

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645324 **Coder Name:** jgutierrez

Comment Text: Many wild adult pallid sturgeon appear to be nearing the end of their lifespans⁹ and wild spawning is rare, ¹⁰ though has been demonstrated, particularly in the wake of high flow events. Additional limits placed on available habitat will likely continue the species on the path to extirpation. Not only would implementation of flow modifications potentially benefit pallid sturgeon, but it will benefit the entire fish community, including paddlefish, sauger, goldeye, blue sucker, and a vast array of other native species - a benefit that would contribute to the substantial recreational fishery. The Corps has instead decided to place downstream needs first, leaving the pallid sturgeon and other native fish to struggle to reproduce. We ask the Corps and sister agencies to take a hard look at their ability to implement the alternatives as stated. The Corps could 1) assess the likelihood that they

will implement each alternative, 2) establish a set of criteria that would place the needs of pallid sturgeon on - at a minimum - equal footing with downstream water users and 3) establish a set of performance criteria that would ensure accountability with the final alternative. To do this, the Corps will need to conduct additional analyses to inform the alternatives and their viability and scientific validity.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645241 **Coder Name:** jgutierrez

Comment Text: Pg. 42, Table 7 - So, after 6 years, there will be 12 pairs of IRCs and assessment will continue through for 10-11 years. Only after 10 years will implementation might begin. This is a long time. Couldn't the assessment begin with the first sets and be enough to at least put in more pairs? It just seems to be a delaying tactic - it will be 20 years before all 12 sites will have given the go ahead to fully implement! This clearly is a commitment to the special interests who don't want these things in or near the navigation channel.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645208 **Coder Name:** jgutierrez

Comment Text: Alternative 2 is described as meeting the minimum of floodplain connectivity as recommended by USFWS. But this seems absent entirely from Alternatives 3-6. But though the Corps speaks of Naturalization of the flow regime four times in Table 5 of the Adaptive Management Executive Summary, it doesn't discuss it in the text. Allowing for a natural flow regime, inundation of floodway/floodplain areas for re-connectivity as a result of naturalization of the flow regime is excellent and a far more sustainable way to recover habitat. We encourage the Corps to expand on this and continue this discussion more fully in the DEIS.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645157 **Coder Name:** jgutierrez

Comment Text: Scientific data indicates that previous spring releases have been ineffective as a spawning cue for the pallid sturgeon. The ISAPs 2011 Final Report on Spring Pulses and Adaptive Management indicates that spring pulses, as currently implemented, are not accomplishing their intended outcomes. Specifically, the ISAP Report concludes that the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning pallid sturgeon. The more recent ISAP Evaluation of MRRMP v3 AM Plan and Pallid Level 3 Action, released in November 2015, states that the flow needs of the pallid sturgeon are imprecisely known at all life stages, therefore considerations of flow manipulations to benefit pallid sturgeon are now based on imprecise knowledge. This document further confirms that the Spawning Cue Flows action presents a hypothesis without compelling technical support. The Action Description of bi-pulse flows and frequency is very detailed, but without scientific justification. In addition, the Corps acknowledges in the DEIS that the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. AWO is opposed to any future spring or fall pulse/release that threatens navigation without scientific foundation.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644954 **Coder Name:** jgutierrez

Comment Text: Moreover, the mapping done by the Corps shows that "156,480 acres of floodplain connectivity are currently present, not including the area of the main channel," and the USFWS gave the Corps criteria which "stated that this management action should maximize floodplain habitat by ensuring that 77 ,410 acres of connected floodplain are inundated at a 20 percent annual chance exceedance." 100 The difference in acreage shows that improving floodplain connectivity of the Missouri River is an effective tool for benefitting the pallid sturgeon. However, the MRRMPEIS does not explain how floodplain connectivity would occur within the river, instead simply stating that "it is assumed that operations would result in floodplain connectivity of at least 77,410 acres as indicated by the mapping results described previously" for Alternative 2. 101 Alternative 2 is the only alternative that mentions floodplain connectivity, so it can be reasonably assumed that Alternatives 3 through 6 do not actually meet the floodplain connectivity goals. It is unclear why floodplain connectivity was not considered in Alternatives 3 through 6. The MRRMP-EIS states that there is "no implementation cost" to floodplain connectivity and so there is no economic reason not to consider the management action within the other alternatives. 102 Therefore, middle ground alternatives between Alternative 2 and Alternatives 3 through 6 should include varying levels of floodplain connectivity to ensure beneficial impacts to the pallid sturgeon.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644947 **Coder Name:** jgutierrez

Comment Text: Furthermore, the MRRMP-EIS does not sufficiently discuss the differences between SWH and IRC. While the MRRMP-EIS does assess the process of channel widening, the types of needed habitat for the pallid sturgeon, and the types of structures, nowhere does it explain which types of structures would need to be utilized. The IRC habitat also requires additional "research and assessment to determine whether and why IRC's contribute to increased growth and survival," meaning that it is possible that IRC's may not be beneficial to the pallid sturgeon. 76 In contrast, the creation of SWH does not have the same level of uncertainty. Because of the difference, SWH and IRC should not be considered comparable or interchangeable techniques for habitat creation. The MRRMP-EIS does not specify what would happen if the results of the research on IRC show that it does not benefit the pallid sturgeon. If the results are negative and there is no substitute action, then Alternatives 3 through 6 lose a large portion of their beneficial effects for the pallid sturgeon. It is therefore unclear why there are no alternatives in which both SWH and IRC habitat creation are proposed. While they have the same goal of providing benefits to the pallid sturgeon, they are different methods of achieving this goal and thus it would be reasonable to include variations of both in the alternatives analysis.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644946 **Coder Name:** jgutierrez

Comment Text: The amount of land and SWH creation in Alternative 2 is drastically different than the amounts of IRC that are outlined for Alternatives 3 through 6. Those alternatives make no mention of how the acreage of IRC relate to the 2003 BiOp's species goals, nor do they mention how many acres of habitat would actually be constructed. They do state that approximately 260 acres of channel widening would occur per year in 13 out of the 15 years, reflecting about 3,380 acres of "accommodation space for new IRC habitat."71 This amount of acreage would require 230 acres of acquired habitat land and 1,772 acres of total additional acquired land.72 The difference in acreage of early life stage habitat construction is large between Alternative 2 and Alternatives 3 through 6. While Alternative 2 creates almost 10,000 acres of SWH through channel widening, it is unlikely that the 3,380 acres of channel widening found in Alternatives 3-6 would create IRC in an amount anywhere close to Alternative 2. The gap between the amounts of habitat created in Alternative 2 and Alternatives 3-6 calls for the consideration of other viable alternatives. Alternative 2 discusses how many acres of habitat would be created through channel widening but makes no mention of how many acres of channel widening would occur, and Alternatives 3 through 6 do not mention how many acres of habitat will be created but do mention how many acres of channel widening will occur. The MRRP-EIS uses different sets of units in Alternative 2 and Alternatives 3-6 and fails to explain the correlation between them. However, when describing Alternative 3 in Tables 2-20 and 2-21, the units change but the numbers stay the same. 73 For example, Table 2-20 has a column with the heading "Target Acres of Channel Widening." Table 2-21 uses those same values in a column headed "Target Acres of SWH."74 This creates confusion over the meaning of the acreage

numbers and makes it impossible to assess the validity of the range of alternatives based on the early life stage habitat management action. The data is inconsistent and cannot be directly compared. Table 3 below outlines the amount of early life stage habitat created by Alternative 2 in comparison to Alternatives 3-6, showing a 68.6% difference in target acreage. It is difficult to believe that this significant difference in acreage does not impact the alternatives' ability to meet species goals. [Table 3: Target Acres of Shallow Water Habitat in Alternatives]

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644944 **Coder Name:** jgutierrez

Comment Text: Alternatives 3 through 6 include the creation of ESH in slightly different amounts. Those differences are small, especially when compared to the differences between Alternative 2 and Alternative 3, and may not be correct due to the uncertainty of the effects of flow releases on habitat creation. To meet the 2003 BiOp's recommended 11,886 total acres of ESH creation, the USFWS has recommended subdividing ESH construction on segments of the river: Below Garrison Dam - 50 acres of ESH per river mile Below Fort Randall Dam - 20 acres of ESH per river mile Lewis and Clark Lake - 80 acres of ESH per river mile Below Gavins Point Dam- 80 acres of ESH per river mile⁵¹ The MRRMP-EIS presents the ESH data in terms of: average ESH construction in build years, average ESH construction in all years, percent of years construction is anticipated, the 2.5% construction amount, the median ESH construction amount, and the 97. 5% construction amount. ⁵² When comparing all of these values for Alternatives 3 through 6, Alternative 3 has the highest value in each category and Alternative 4 has the lowest value in each category. ⁵³ While these high and low values for Alternatives 3 and Alternative 4 vary greatly in comparison to each other, they barely compare to the differences between Alternative 2 and Alternative 3. That discrepancy can be seen in Table 2 below in the category of average ESH construction in build years. Alternative 2 would achieve 3,546 acres of ESH, Alternative 3 would achieve 391 acres of ESH, and Alternative 4 would achieve 240 acres of ESH. ⁵⁴ Therefore there is an-160.3% difference between Alternative 2 and Alternative 3, making the difference between Alternative 3 and Alternative 4 (the alternative with the least ESH creation between Alternatives 3 through 6) negligible. Table 2 shows these extreme differences between the alternatives for ESH construction: [Table 2: Average Emergent Sandbar Habitat Construction] The differences in ESH creation among Alternatives 3 through 6 are negligible: "under Alternative 3-6 mechanical construction amounts vary because this management action would be used to create enough ESH to meet bird habitat targets after accounting for the amount of ESH created by System operations under each alternative."⁵⁵ Therefore, those four alternatives would be creating virtually the same amount of ESH.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644943 **Coder Name:** jgutierrez

Comment Text: 1. The differences in mechanical emergent sandbar habitat construction are unreasonable. One of the most dramatic differences separating Alternative 2 from the remainder of the alternatives is the relative amount of mechanically constructed ESH and its associated costs. Alternative 2 would have the Corps construct about nine times more ESH per year than the next highest amount of Alternative 3 (3,546 acres versus 391 acres).⁴⁵ The MRRMP-EIS states that construction amounts vary to reflect what would need to be built after accounting for ESH created by flow releases. However, the amounts of ESH created by the various flow releases of Alternatives 3 through 6 are nowhere clearly identified. In fact the Corp's 2011 EIS, which was devoted to analyzing ESH construction, affirmatively concluded based on prior Corps studies that flow releases were not an effective or certain means of ESH creation to meet the goals of the 2003 BiOp.⁴⁶ The MRRMP-EIS's reliance on flow releases in the context of required ESH construction is therefore highly questionable. Alternative 2's ESH construction is projected to cost \$8.6 billion over 50 years (relative to No Action), which is more than half the total Alternative 2 implementation cost of \$15.8 billion.⁴⁷ Moreover, Alternative 2 is the only alternative that yields a net increase in total implementation costs, and the cost increase is 378%.⁴⁸ Table 1 below compares each alternative's ESH construction amounts, total program expenditures, and the percentage increase or decrease of program expenditures relative to the No Action Alternative:⁴⁹ [Table 1: Emergent Sandbar Habitat Construction] Considering the expenditures necessary to meet Alternative 2's ESH targets, Table 1 shows that the range of alternatives is unreasonable under NEPA based on ESH construction alone. The Corps does nothing more than intimate that the flow releases of Alternatives 3 through 6 may bridge the gaps in ESH between Alternative 2 and the rest by creating sandbar habitat through sediment deposition: "flows that are high relative to the elevation of existing sandbars have the potential to mobilize and deposit sediment at high enough elevations to create new sandbars when water levels recede," and "the amount of habitat created depends on the magnitude and duration of the flow release and the area of sandbar present prior to the release."⁵⁰ The Corps provides no details on estimated amounts of ESH created through flow releases.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 245 **Comment Id:** 644915 **Coder Name:** jgutierrez

Comment Text: There appears to be weak support for the benefits of channel widening to recruitment of age-0 pallid sturgeon, particularly given its proposed high cost. IRCs are proposed in the DEIS and supporting documents to be superior to SWH for pallid sturgeon age-recruitment, yet channel widening is the management action proposed to create both SWH and IRC projects under alternatives 1 and 2 (SWH) and 3-6 (IRC) . A major purpose of the no-action alternative is as a comparison or reference against which to evaluate all other alternatives. It appears the proposed no-action and BiOp alternatives misrepresents what management

actions were taken in the past to create SWH by largely equating SWH creation to channel widening and grossly overestimating construction costs. Inflating the costs for the no-action and BiOp alternatives relative to historical expenditures prevents the public and resource management agencies from accurately evaluating proposed alternatives including the preferred alternative against the no-action-(alternative 1) and BiOp alternatives (alternative 2). RECOMMENDED ACTIONS TO RESOLVE. Clarify why channel widening appears as the proposed primary management action to create SWH under Alternatives 1 and 2 and also IRCs under alternatives 2-6 when was it seldom be employed by the MRRP to create existing SWHs and when the AM Plan (e.g. Section 4.2.6.3.5) states that while IRCs and SWH share some attributes, they are different relative to food production and foraging habitat. Provide explicit evidence for the anticipated benefit to cost of channel widening to achieve IRCs and review the 'best available science' that shows IRCs are superior to SWH (not hypothesized benefits), or other channel reconfigurations when SWH has not been shown to benefit recruitment of age-0 pallid sturgeon (e.g., Schapaugh et al 2010; Schloesser et al. 2012). What alternative hypotheses (under an active AM approach) were considered to create pallid sturgeon early life history habitat and the science to support them? Revise proposed management actions and associated costs for SWH construction for the no-action and BiOp alternatives to reflect historical actions employed and actual costs used to create SWH, or justify why the proposed no-action and BiOp alternatives SWH proposed costs to continue the existing program have escalated so much. Revise proposed costs for IRC construction via channel widening for alternatives 3-6 to be in line with observed costs to create the 3 identified IRCs or justify why proposed costs for any additional IRCs have escalated so much.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644910 **Coder Name:** jgutierrez

Comment Text: Additionally, channel widening is described (2.5.3.1) as a type of channel reconfiguration distinct from structure modifications (e.g., bank notches, dike notches, revetment notches and lowering), placement of new structures (e.g., chevrons, rootless dikes, and reverse sills), and off-channel habitat (e.g., creating of chutes and backwaters). The fact is channel widening has never been a primary mechanical action employed to create SWH between 2004 and 2013. Evidence for this comes from the Corps map of mitigation sites (file:///C:/Users/galatd/Downloads/SWH ESH llx17 2013opt.pdf) which identifies 64 SWH-ESH sites along the Lower Missouri River and the management actions used to create them. Only one of the 48 SWH sites (Deer Island - under construction as of 2013) lists channel widening as the primary mode of construction. Chutes, backwaters, dike notching, bank notching and revetment lowering were the management actions used to create the remaining 47 sites. Additionally, Table 47 P 379 of the DEIS Vol 2 indicates that channel widening was employed as a main channel modification in only 3 of 2,173 SWH construction actions. With so little past emphasis on employing channel widening to create SWH it is no surprise that there is scant scientific evidence for it benefitting pallid sturgeon recruitment. Why then has it channel widening become the proposed management action of

choice for all DEIS for early life history habitat construction alternatives? Lastly, in the DSAMP channel widening is indicated to be the primary management action proposed to create IRCs: (P88, L10-13): For the purposes of evaluating potential impacts to the human environment, modeling assumed that about 3,380 acres of channel widening would be implemented to create IRCs under Alternatives 3-6 (Table A.3.9). Collectively these excerpts from the DEIS and supporting documents indicate that channel widening is the primary management action proposed to be implemented to create IRCs (or SWH under alternatives 1 and 2) to benefit pallid sturgeon early life history - considered the most critical

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644909 **Coder Name:** jgutierrez

Comment Text: STATEMENT OF CONCERN 2.1. Channel widening is the largest expense under Early Life History Habitat construction and the largest single expense of all management actions for all alternatives. Nevertheless, its potential benefit to pallid sturgeon early life history recruitment is circumstantial at best and not supported by the effects analysis. 2.2. The proposed cost of channel widening to create additional SWH (largely by channel widening) under the no-action alternative appears unrealistically high relative to historical costs for creating SWH under the MRRP. 2.3. The proposed cost of channel widening to create IRCs under alternatives 3-6 appears unrealistically high relative costs proposed for IRCs already identified. BASIS FOR CONCERN 2.1. What is channel widening and how will it benefit age-0 pallid sturgeon recruitment? Channel widening or top-width widening is described as follows (2.5.3.1): Channel widening projects involve the use of mechanical equipment to lower the adjacent floodplain and bank of the Missouri River to create habitat and widen the top-width of the river channel. Excavation is typically performed by hydraulic dredge. Some of the excavated material would be distributed in the main channel adjacent to the excavation zone. The remaining material would be discharged into the thalweg of the Missouri River where it would become entrained into the bedload of the river. For clarification, under Table 2-14 channel widening is described as a type of shallow water habitat creation under the no action Alternative 1 and in section 2.8.4.4 channel widening was identified as the primary means to develop IRC habitat (p 2-67). Thus importantly, the same action identified a primary means to create SWH under the 2003 BiOp (alternatives land 2) is also proposed to be applied to create IRC habitat under alternatives 3-6, including the preferred alternative (#3). The raises the obvious question of how SWH and IRCs differ other than identifying interception, and rearing as the function of IRCs - as if these functions were not implied for SWH if age-0 pallids were to settle and survive there!

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644903 **Coder Name:** jgutierrez

Comment Text: TNC is concerned at the characterization of the Alternative Development process throughout the draft MRRMP-EIS. As stated at the beginning our comments, TNC has been and is supportive of this unique EIS process and its products, and believes USACE should apply the process in other appropriate areas. TNC believes it is important to accurately capture the alternative development process as it pertains to MRRIC involvement in the MRRMP-EIS and requests USACE do this by addressing inadequacies parts of Section 2.1- Overview of Alternative Development Process and the Pallid Sturgeon and Bird Alternative Development sections. Instead of detailing the inaccuracies, TNC believes a basic and accurate overview of the alternative development process involving MRRIC would contain: An initial set of alternatives were developed by the MRRMP-EIS Product Development Team (PDT) and the Effects Analysis Teams. This initial set of alternatives was shared with MRRIC members through a series of Human Consideration Proxy Webinars. After the webinars, the initial set of alternatives was revised by MRRMP-EIS PDT and presented and discussed to MRRIC at the May 2015 Plenary meeting. At this meeting MRRIC members could share their initial reactions verbally and could provide written feedback and ranking of alternatives if they chose to. No specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the May 2015 meeting the MRRMP-EIS PDT revised the initial and developed a second set of alternatives which were presented and discussed at the August 2015 MRRIC Plenary meeting. Again, no specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the August 2015 Plenary meeting, the MRRMP-EIS PDT analyzed the second set of alternatives and forwarded six "plan" alternatives (including a No Action alternative) for detailed evaluation in the draft MRRMP-EIS.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644829 **Coder Name:** jgutierrez

Comment Text: Flow changes presented in alternatives 2, 4, 5, and 6 impact navigation and other authorized purposes and should be rejected.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644810 **Coder Name:** jgutierrez

Comment Text: The IRC's should be introduced patiently after considerable monitoring and data collection. Modifications should be made based upon the information learned and suggested and accepted through the adaptive management process. The data collection MUST include channel response and the impacts on navigation, bed, and hydraulic conditions. This information on performance should be collected and examined prior to any proliferation of the IRC experiments. Upon a successful result, they should be increased and only upon a successful result.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644809 **Coder Name:** jgutierrez

Comment Text: Interception Rearing Complexes (IRC's) are a new methodology proposed under all alternatives for pallid sturgeon population improvements. They are unproven and untested. They are experiments and hypothetical. Like prior shallow water habitat proposals such as chutes and channels, these experiments need to be field tested to determine their success. We believe the prospects for success of IRC's are favorable and do not object to them being introduced with proper caveats. As presented, IRC's will be adjacent to the navigation channel, should not impact the channel or navigation, and address various early life stages of the pallid. Their development is based upon field observations. None have ever been designed. None have ever been tested. There is NO justification presented for advancement of numerous modifications adjacent to the channel for IRC's until one or two have demonstrated success for the stated purpose. The Corps and FWS intend to jump into IRC development with both feet based upon the DEIS and presentations at MRRJC, advancing a dozen IRC prospects. We object, not to the principal and experiment, but to what we believe is an overzealous response to an unknown idea.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644790 **Coder Name:** jgutierrez

Comment Text: 11. The DEIS implies that IRC's will not impact activities within the channel, which include navigation and commercial sand production. The Corps must provide to the stakeholders their regulatory strategy with regard to the IRC's. Otherwise, the economics of the river in this document are incomplete.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644789 **Coder Name:** jgutierrez

Comment Text: 10. Interception Rearing Complexes are, by both the Fish & Wildlife's ("FWS") and Corps' admissions, experiments. We do not object to the advancement of hypotheticals, including IRC's, provided proper evaluations are performed and a graduated introduction taken. We believe the Corps is moving too quickly with regard to the IRC hypothesis and therefore avoiding the adaptive management process. We suggest that only one IRC be developed in the lower river, that it have constant evaluation regarding impacts on channel integrity where structures are modified to create these types of complexes, have enhanced data collection, and then evaluated by the adaptive management team for success prospects prior to implementation of other IRC's.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644762 **Coder Name:** jgutierrez

Comment Text: "WCI strongly opposes the various flow modifications common to alternatives 2, 4, 5, and 6. The flow changes in these alternatives would negatively impact navigation on both the Missouri and Mississippi rivers, with particularly severe impacts to agriculture. Agricultural exports are one of the few resources that provides the country with a positive trade balance.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644747 **Coder Name:** jgutierrez

Comment Text: Further, there is no credible science to support flow changes in the name of the recovery of threatened and endangered species.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644744 **Coder Name:** jgutierrez

Comment Text: WCI opposes any flow changes that will adversely impact commercial navigation, including the potential one-time test flow in Alternative 3, but especially the drastic flow changes in Alternatives 2, 4, 5 and 6.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644738 **Coder Name:** jgutierrez

Comment Text: The Action Description of bi-pulse flows and frequency, while very detailed, is devoid of scientific justification. In addition, the Corps acknowledges in the DEIS that the exact characteristics of a spawning cue pulse that would elicit a spawning response are not known. WCI opposes any future spring or fall pulse/release that threatens navigation without a comprehensive scientific foundation. While the spawning cues for pallid are unknown, its very well known that actions on the Missouri River have immense impact to navigation on the Mississippi River, the resource moving hundreds of millions of short-tons each year, serviced by or for thousands of manufacturing facilities, docks, terminals, grain elevators and other facilities relying on the Mississippi River for transportation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644111 **Coder Name:** jgutierrez

Comment Text: On page 2-27 (123/190) in Volume 1 of the DEIS it states: Three federal hatcheries (Gavins Point National Fish Hatchery in Yankton, South Dakota, Garrison Dam National Fish Hatchery in Riverdale, North Dakota, and Neosho National Fish Hatchery in Neosho, Missouri) and three state hatcheries (Blind Pony State Fish Hatchery in Sweet Springs, Missouri, Miles City State Fish Hatchery in Miles City, Montana, and Bozeman Fish Technology Center in Bozeman, Montana) are involved with propagation of Missouri River pallid sturgeon. Comment 1: Bozeman FTC is a federal facility and although it active in pallid sturgeon research, it is no longer producing pallid sturgeon for conservation stocking.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644101 **Coder Name:** jgutierrez

Comment Text: Comment 2: Level 1 research and most of Level 2 experiments do not meet the definition of a management action and should not be considered as management actions in the alternatives. Only those actions that manipulate or change in situ conditions or limiting factors with the expectation of population level results should be considered as management actions.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644095 **Coder Name:** jgutierrez

Comment Text: Comment 3: On page 2-26 (122/190) in Volume 1 of the DEIS it states: As a result, the Yellowstone River retains a near-natural hydrograph and temperature profile as well as near-natural habitat-forming processes. The impacts of the Yellowtail Dam on the thermograph, hydrograph, turbidity and bedload of the Yellowstone River should not be ignored and references to "near-natural" conditions in the Yellowstone should not be used.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644080 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 4.1, page 49, last paragraph - Points out that a number of plants would have to shut down or de-rate as a result of low flow or river stages or increased river temperature. Any alternative or a component of an alternative that results in shut downs or re-rates should not be implemented.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644019 **Coder Name:** jgutierrez

Comment Text: The MRRMP does not advance pallid sturgeon recovery or improvements to pallid sturgeon habitats impacted by USACE operations in Montana, as no management actions are planned to occur during the fifteen-year timeframe of this plan. I do not consider USACE funding of Intake as a USACE management action to benefit pallid sturgeon as this project 1) does not address USACE-caused take of pallid sturgeon in Montana and, (2) the project's primary purpose is to provide water to eastern Montana irrigators, not recover pallid sturgeon. But the work at Intake and its expectations and outcomes are not within the scope of this letter.

Research is not a management action. The approach of the MRRMP is to take no management actions until the related science is conducted at the peer-reviewed publication level. State management agencies have successfully managed and recovered wildlife populations without this level of science. The MRRMP process only delays implementation of needed management actions by requiring prior and often redundant research into the minutiae of already successful Upper Basin pallid sturgeon programs such as propagation and stocking.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643933 **Coder Name:** jgutierrez

Comment Text: As the result of ongoing research, appears there may be potential for survival/recruitment of larval pallid sturgeon within the Missouri River below Fort Peck Dam (Ryan Wilson. pers. comm. 2017). The USFWS encourages consideration of MRRP actions within that reach of the Missouri River, pending the additional information and subsequent review. The following are examples of potential actions the Corps should consider to expand the scope of the MRRMP/EIS: â€¢ Flow and temperature modifications - utilize surface water discharges from Fort Peck and Fort Randall Dams to increase river water temperatures; Implement summer low flows from Gavins Point, Fort Randall, and Fort Peck dams to increase seasonal water temperature and habitat heterogeneity;. â€¢ Discontinue hydro-peaking from Fort Peck and Fort Randall dams to increase recruitment of pallid sturgeon; â€¢ Increase floodplain connectivity to allow for nutrient and sediment inputs; â€¢ Implement top-width widening to increase organic and sediment input and habitat diversity.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643932 **Coder Name:** jgutierrez

Comment Text: Section 3.17.2.1, Page 3-468, 1st paragraph - The location of constructed spawning or IRC habitats needs a thorough siting evaluation to ensure constructed habitat avoids locations such as intakes where the benefits of the habitats can be reduced.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643930 **Coder Name:** jgutierrez

Comment Text: Specifically, it should be recognized that success may ultimately only be achieved through the implementation of an array of actions which are not currently contained in any one alternative in the Draft MRRMP EIS. To facilitate a more robust approach to adaptive management the USFWS recommends the Corps include a broader spectrum of potential management actions (including flow actions which are described in other alternatives) in the final selected alternative. A more thorough evaluation of when such actions may take place while minimizing impacts to stakeholder interest should also be conducted. The USFWS recognizes many of these additional actions may not be implemented immediately, however, having them accessible pending a myriad of potential needs and conditions exemplifies a robust and needed adaptive management approach. A final solution may include elements of the alternatives currently presented in the Draft MRRMP EIS and recommendations presented in this letter.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643922 **Coder Name:** jgutierrez

Comment Text: The USFWS is also concerned about the commitment of the Corps to implementing actions sufficient to achieving the purpose and objectives of the Draft MRRMP/EIS. As intimated above, the vast majority of efforts are Level 1 and Level 2 in nature, in which no population level response is expected by the species the pathways, criteria and descriptions to Level 3 actions (actions at a magnitude where a population response is expected), are often ambiguous and in many cases not defined, and require more clarity/definition in the Final MRRMP/EIS.. Moreover, Level 4 management actions, the ultimate scale of implementation to remove a limiting factor, are for the most part non-existent within the Draft MRRMP/EIS. (Reference Table 4-1 within Volume 1: Summary of Time Limits for Level 3 Implementation and Scope of Actions). The USFWS has maintained that commitment to action both in the context of continuous learning through adaptive management as well as in the face of ambiguous or equivocal results is essential to success. The USFWS recommends clearer articulation of commitment for implementation to Level 3 actions. The Corps should define and analyze the scope of Level 3 actions for all proposed management actions to remove ambiguity or in many cases absence of management actions at Level 3.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643906 **Coder Name:** jgutierrez

Comment Text: Section 2.10.1.2, Page 2-91 - It is our understanding that spawning and IRC habitats are currently being implemented for the lower river, prior to evaluation by this DEIS. Do we know enough about pallid sturgeon spawning and rearing habitat requirements to determine we need 3 spawning and 12 IRC habitats as indicated. Coordination between the USACOE and stakeholders regarding design, location, and implementation is important.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643892 **Coder Name:** jgutierrez

Comment Text: Section 2.9.2.1, Page 2-78 - Alternative 1 is not an appropriate baseline case under NEPA and based on the science it does not benefit the species, with regard to pallid sturgeon spring pulses and SWH. Additionally spring sturgeon pulses which are carried through the 82 period records have in reality been implemented very infrequently. Additionally the SWH has not been developed to anywhere near the level of the no action alternative. As such it is not a reference or base case and really represents impacts of the alternatives that have not been realized. Additionally the impacts to thermal power, should not be compared to the impacts modelled for Alternative 1 in an incremental or comparative manner as done in the DEIS. The DEIS must present the NED and RED results for each alternative in a total and individual manner as is done in the hydropower section. The comparison of impacts of Alternatives 2-6 to Alternative 1 as presented makes the impacts appear less than as currently described in Alternative 1.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643881 **Coder Name:** jgutierrez

Comment Text: Section 2.8.1.1, Page 2-49, last paragraph - The issue of erosion of ESH is discussed the continual need to have sediment available to construct new habitat needs to be evaluated for sustainability. All modeling is done for 50 years and assumes sediment suitable (and available in quantities needed) for ESH construction will always be available. The concept that ESH erodes also supports the development of nesting habitat for plovers which are located somewhere other than in the active channels of the river.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643113 **Coder Name:** jgutierrez

Comment Text: While the preferred alternative, Alternative 3, and other new Alternatives, 4, 5, and 6, cost less than the Alternative 2, in our agency's opinion other than for IRC and spawning habitat, they lack action to address the previously identified habitat losses that we believe are necessary to support all life stages of Pallid Sturgeon as well as a substantial prey base upon which they as a top predator ultimately depend. As stated previously, the Nebraska Game and Parks Commission believes that the habitat goal of 20 to 30 acres of aquatic habitat per mile remains the most fundamental means to address the critical needs of Pallid Sturgeon and the native fish community upon which they depend. And rather than just building habitat of general design, this effort could be greatly improved by targeting specific habitat needs for both Pallid Sturgeon and the native fish community. Functional habitat can be built on the Missouri River as has been demonstrated at Deer Island on the main channel and at the Upper and Lower Hamburg Bends and Deroin chutes off channel. Means to develop a targeted habitat restoration program have recently been developed by biologists at Nebraska Game and Parks and the Missouri Department of Conservation. We also believe that the costs to implement Alternative 2 would be substantially reduced by replacing the impracticable target of 3,546 acres per year with the much more reasonable target described in Alternative 4.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643064 **Coder Name:** jgutierrez

Comment Text: The Nebraska Game and Parks Commission supports the continuation of Propagation and Augmentation of pallid sturgeon as long as pallid sturgeon are genetically confirmed "pure" pallid sturgeon, the numbers stocked are based on the best available science and that stocking is only considered a temporary measure as we work to reestablishing the necessary levels of reproduction and recruitment.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643036 **Coder Name:** jgutierrez

Comment Text: Rather than continuing the existing monitoring and research efforts and the adaptive management approach identified under Alternative 2, we would support adopting the new Science and Adaptive Management Plan that was developed through the Effects Analysis process. The Nebraska Game and Parks Commission has been involved with and fully supports the

Effects Analysis process which bases management actions, monitoring and research on current scientific findings and priorities. We believe that the emphasis for monitoring and research should target the most critical information needs and be reevaluated on a regular basis.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643034 **Coder Name:** jgutierrez

Comment Text: We recommend the construction of lower elevation habitats along the channel border which would be more easily inundated providing benefits for fish and wildlife more frequently.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643028 **Coder Name:** jgutierrez

Comment Text: The Nebraska Game and Parks Commission highly supports Floodplain Connectivity on the mainstream Missouri River. The entire fisheries community would benefit from regular connectivity because it would increase food availability, increase availability of spawning habitat and increase the area of refuge habitat for young fishes thereby increasing survival. Because of the current river configuration (e.g., highly incised river channel), floodplain connectivity generally takes fairly extreme flow events.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642704 **Coder Name:** jgutierrez

Comment Text: TNC is concerned at the characterization of the Alternative Development process throughout the draft MRRMP-EIS. As stated at the beginning our comments, TNC has been and is supportive of this unique EIS process and its products, and believes USACE should apply the process in other appropriate areas. TNC believes it is important to accurately capture the alternative development process as it pertains to MRRIC involvement in the MRRMP-EIS and requests USACE do this by addressing inadequacies parts of Section 2.1 - Overview of Alternative Development Process and the Pallid Sturgeon and Bird Alternative Development sections. Instead of detailing the inaccuracies, TNC believes a basic and accurate overview of the alternative

development process involving MRRIC would contain: An initial set of alternatives were developed by the MRRMP-EIS Product Development Team (PDT) and the Effects Analysis Teams. This initial set of alternatives was shared with MRRIC members through a series of Human Consideration Proxy Webinars. After the webinars, the initial set of alternatives was revised by MRRMP-EIS PDT and presented and discussed to MRRIC at the May 2015 Plenary meeting. At this meeting MRRIC members could share their initial reactions verbally and could provide written feedback and ranking of alternatives if they chose to. No specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the May 2015 meeting the MRRMP-EIS PDT revised the initial and developed a second set of alternatives which were presented and discussed at the August 2015 MRRIC Plenary meeting. Again, no specific or deliberate alternative trade-off discussions or interest-based negotiations with MRRIC were held at or after the meeting. After the August 2015 Plenary meeting, the MRRMP-EIS PDT analyzed the second set of alternatives and forwarded six plan alternatives (including a No Action alternative) for detailed evaluation in the draft MRRMP-EIS. All determinations for inclusion of the six alternatives were made by USACE as was the designation of Alternative Three as the Preferred Alternative in the draft MRRMP-EIS. TNC does not find the use of collaboration or ProACT process or ProACT discussions accurate in describing alternative development involving MRRIC. As Section 1.2 states USACE and USFWS collaboratively have tailored the generic ProACT approach to meet the needs of this MRRMP-EIS planning process. USACE and USFWS may have applied an approach fully internally, just not with MRRIC.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642138 **Coder Name:** jgutierrez

Comment Text: Additionally, any low summer flow provisions should be removed from the Corps' consideration. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Having navigation as a reliable transportation mode is extremely important to be able to receive inputs at reduced cost and to have another shipping option for my harvested crops headed to market across the globe. The Missouri River's role as a marine highway will only increase with the recent expansion of the Panama Canal, which will multiply the "draw area" to the Mississippi River.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642132 **Coder Name:** jgutierrez

Comment Text: I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641733 **Coder Name:** jgutierrez

Comment Text: The level 1 and 2 actions for the Pallid Sturgeon should be prioritized to efficiently use the funds available. The Pallid Sturgeon propagation and augmentation should continue unless future studies indicate otherwise. The lower river early life stage habitat construction should be implemented on a trial basis and fully analyzed for results before full implementation. Habitat development on MRRP lands should occur when possible.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641712 **Coder Name:** jgutierrez

Comment Text: 7. The pallid sturgeon recommendations are similar in all alternatives and should be prioritized for implementation.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641449 **Coder Name:** jgutierrez

Comment Text: We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641443 **Coder Name:** jgutierrez

Comment Text: Lowering pools, on average- -the March 1 target- -is practically a taboo idea in the Missouri River basin, even in the wake of the truly frightening flood of 2011. We believe that lower pools will give you more flexibility in storage and releases that will permit real reservoir unbalancing in more years. Lower pools also have the crucial advantage of reducing the need for high summer flood-control releases that have too often flooded tern and plover nests on sandbars below the dams.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 175 **Comment Id:** 641399 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641392 **Coder Name:** jgutierrez

Comment Text: Further, we urge the Corps not to rush into construction of 12 Interception Rearing Complexes (IRCs) for pallid sturgeon during a six year timespan as specified in the DEIS. Instead, the Corps should rigorously study effects of one such IRC to determine its effectiveness before committing to building the entirety. We should not go down the same path as failed shallow water habitat projects, which had a negative impact on navigation and private property rights while doing nothing for endangered species.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641386 **Coder Name:** jgutierrez

Comment Text: Our members who live and work along the Missouri River experience flooding each spring caused by tributary inflows. Hence, we are wary of any attempt to boost pallid sturgeon population by increasing flows from Gavins Point Dam,

especially given there is zero science to back up these actions. Our growers simply cannot be the collateral damage of a grand science experiment that has yet to prove results. For these reasons we remain strongly opposed to a spring rise in any form.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641166 **Coder Name:** jgutierrez

Comment Text: 3) Managing the releases to encourage more natural gravel bars, both more natural and more bars that are natural. Studies have shown that the natural habitats help bird populations thrive more than mechanical habitats; for one example, "Management and Mother Nature: Piping Plover Demography and Condition in Response to Flooding on the Missouri River," thesis by Kelsi Layne Hunt, VPI, 2016, https://vtechworks.lib.vt.edu/bitstream/handle/10919/73480/Hunt_KL_T_2016.pdf?sequence=1&isAllowed=y/

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 161 **Comment Id:** 641131 **Coder Name:** jgutierrez

Comment Text: There is great concern among our members impacted by these alternatives that any of them could lead to an imbalance in current river uses and navigation, and result in spring rises that are disruptive to agriculture drainage, crop production and Mississippi River barge traffic. The other alternatives are unacceptable to their possible flooding impacts, altered flows that may impact navigation and agricultural trade, negative impacts on corridor economic development, and western Iowa power generation, are unacceptable.

Organization: Iowa Farm Bureau Federation

Commenter: Rick Robinson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 161 **Comment Id:** 641121 **Coder Name:** jgutierrez

Comment Text: We also oppose the dumping or designed erosion of soil into waterways. Iowa farmers are working hard to reduce off-farm movement of phosphorus and nitrogen through the Iowa Nutrient Reduction Strategy. Alternatives that utilize Shallow Water

Habitat practices need to reduce their sediment impacts downstream. The use of Shallow Water Habitat practices is contrary to the goals of the strategy.

Organization: Iowa Farm Bureau Federation

Commenter: Rick Robinson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 161 **Comment Id:** 641113 **Coder Name:** jgutierrez

Comment Text: Farm Bureau policy opposes any plans by the U.S. Army Corps of Engineers or any federal or state agencies that would alter the flow levels of the Missouri or any river and would adversely affect domestic water supplies, drainage, irrigation and transportation, that would cause traffic bottlenecks on the Missouri or any navigable river and take private property without compensation.

Organization: Iowa Farm Bureau Federation

Commenter: Rick Robinson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640756 **Coder Name:** jgutierrez

Comment Text: While pleased the Corps and USFWS are moving away from the construction of chutes, concern remains about Interception Rearing Complexes (IRC) or Shallow Water Habitat 2.0. Little is known about the impacts of IRCs, yet plans call for 12 to be constructed over a six year period. It would make sense to construct one pilot IRC and conduct research to determine its effectiveness before spending the time and money on a dozen.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640734 **Coder Name:** jgutierrez

Comment Text: Additionally, any alternative that includes low summer flow provisions should be removed from the Corps' consideration due to its impacts on navigation and public utility operations. Low flows would kill the navigation industry, which has seen a recent resurgence due to improved conditions on the river. Commercial navigation is dependent upon flow certainty and there are numerous advantages to increasing utilization of our inland waterway system. The combination of water-compelled rates and the importance of flows from the Missouri River to the Middle Mississippi River should spell doom for any serious consideration of

summer low flows. The Missouri River's role as a marine highway will only become more important as U.S. farmers continue seeking new markets for their products.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640500 **Coder Name:** jgutierrez

Comment Text: We favor actions that provide the best opportunities for recovery of the pallid sturgeon, piping plover, and least tern, as well as leading to self-sustaining populations of other native fish and wildlife. We support actions that bring back aspects of the natural river and the historic Missouri River flows. We believe these efforts will be good for the health of the river, the listed species, native fish and wildlife, and all the people of the basin.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 246 **Comment Id:** 640485 **Coder Name:** jgutierrez

Comment Text: I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management the Corps should build one interception rearing complex (IRC) and study its effects before committing to build more. I believe species recovery can and should be done in a responsible way that doesn't cause economic damage to stakeholders.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 246 **Comment Id:** 640481 **Coder Name:** jgutierrez

Comment Text: In April I have seen the river rise approximately 12 feet in one week. All of the alternatives except Alternative 1 would raise the current flood constraints to release more water in another experiment for the pallid sturgeon. No science has been developed to prove increased flow equate to greater pallid sturgeon population.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640186 **Coder Name:** jgutierrez

Comment Text: Even considering that the chart the Corps provided as a summary document is especially poorly presented and misleading. This chart is found in the executive summary page xxvii and in the glossy thirty one page document which served as the primary handout to the public. The chart uses different metrics for different impacts. This makes comparisons difficult. How to compare digits one and two to the dollar ratings in other categories. The fact that the chart rates all alternatives the same for ecosystem services is absurd. Costs and expenditures are totals, when in the text we know that ranges are available and all alternatives include great uncertainty is how much of several proposed actions will actually be performed. This was a point explained at MRRIC meetings, but is not reflected in the expenditure chart. And of course per our comments on Alternative 2, the large cost is largely based on an unrealistic projection.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640166 **Coder Name:** jgutierrez

Comment Text: Throughout the DEIS it often appears that human considerations are almost solely driving decision making. The DEIS is not forthright on the degree to which the Corps is placing what it has defined as human considerations in its determinations. The agency seems to operate on the assumption that the first priority for recovery actions is that they impinge little or none on any other consideration. Again this first principle keeps the Corps from considering longer term ecosystem restoration goals as a way to species recovery. In the long run, restored and mitigated acres with predictable flow modifications would do more for recovery. That approach also would have benefits of flood risk reduction and recreation enhancement on river stretches. And in the long run would cost less and limit the disruption of excessive ongoing mechanical habitat creation. It could eventually provide more modest impact on other uses.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640113 **Coder Name:** jgutierrez

Comment Text: The Corps's five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives

with reference to likelihood of success of recovery and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 63 **Comment Id:** 640076 **Coder Name:** jgutierrez

Comment Text: The alternatives also dramatically differ in amounts of early life stage habitat construction. The BiOp outlines a restoration goal of 20 to 30 acres of shallow water habitat per river mile. Alternative 2 would achieve the upper end of this acreage target by creating a total of 10,758 acres of habitat. Alternatives 3 through 6 would create about a third of the habitat created in Alternative 2.

Organization: Missouri Coalition for the Environment

Commenter: Gabby Rier **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 29 **Comment Id:** 638526 **Coder Name:** jgutierrez

Comment Text: The State of Missouri supports the preferred alternative identified by the Corps in the Draft EIS with the exception of the potential one-time flow event. This one-time flow event was neither modeled nor were the impacts assessed in the Draft EIS 'because of uncertainty of the hydrologic conditions present'. Given our high frequency of flood events in our state, we have always been very concerned about any proposed environmental flows from Gavins Point Dam that exceeded flood control constraints. Let me be clear: The State of Missouri cannot support any alternative that includes environmental flows that exceed current flood control constraints.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 29 **Comment Id:** 638525 **Coder Name:** jgutierrez

Comment Text: In Missouri, the river is already highly variable where it's known to rise 15 feet within a 12-hour period from localized rain events. The 2011 Independent Science Advisory Panel noted that the natural rise had "...not been adequately or

systematically assessed." Because of this, we believe there is no additional - - there is no need for additional water to be released from Gavins Point.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637643 **Coder Name:** jgutierrez

Comment Text: Further, we urge the Corps not to rush into construction of 12 Interception Rearing Complexes (IRCs) for pallid sturgeon during a six year timespan as specified in the DEIS. Instead, the Corps should rigorously study effects of one such IRC to determine its effectiveness before committing to building the entirety.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 135 **Comment Id:** 637269 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 71 **Comment Id:** 635262 **Coder Name:** jgutierrez

Comment Text: We are, once again, opposed to each of the alternatives that includes any increased flow modifications that inherently increases that flood risk. I want to remind the Corps of their flood control mission.

Organization: Earth City Levee District, Riverport Levee District, Howard Bend Levee District, Monarch Levee Distr

Commenter: David Human **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 71 **Comment Id:** 635245 **Coder Name:** jgutierrez

Comment Text: Using Corps vernacular and risk reduction, we are opposed to any alternative that poses any increased flood risk.

Organization: Earth City Levee District, Riverport Levee District, Howard Bend Levee District, Monarch Levee Distr

Commenter: David Human **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 635141 **Coder Name:** JGUTIERREZ

Comment Text: The department supports the Corps' intention to use natural flow events to improve our scientific understanding. In Missouri, the river is already highly variable where it is known to rise 15 feet within a 12-hour period from localized rain events. The 2011 Independent Science Advisory Panel noted that the natural rises had, and I quote, not been adequately or systematically assessed, unquote. Because of this, we believe there is no need for additional water to be released from Gavins Point.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633922 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633914 **Coder Name:** jgutierrez

Comment Text: I'm concerned that all of the alternatives besides Alternative 1 (no action) would relax the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633866 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 138 **Comment Id:** 633853 **Coder Name:** jgutierrez

Comment Text: I would encourage the Corp to go back to the drawing board and start over, none of the plans follow the Flood Control Purpose of the River. We need to follow the original plans.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633849 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633839 **Coder Name:** jgutierrez

Comment Text: In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633838 **Coder Name:** jgutierrez

Comment Text: As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633836 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted particularly with respect to sills. I don't want the Corps to go down the same road of failed shallow water habitat chutes that now need modification. Additionally, there have been no studies to determine if larval pallid sturgeon can survive in such areas. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633831 **Coder Name:** jgutierrez

Comment Text: All of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633823 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633807 **Coder Name:** jgutierrez

Comment Text: In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633689 **Coder Name:** jgutierrez

Comment Text: Further, we urge the Corps not to rush into construction of 12 Interception Rearing Complexes (IRCs) for pallid sturgeon during a six year timespan as specified in the DEIS. Instead, the Corps should rigorously study the effects of one such IRC to determine its effectiveness before committing to building the entirety.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633682 **Coder Name:** jgutierrez

Comment Text: We have concerns with each of the six alternatives in the DEIS. In general, with the exception of Alternative 1 (No Action), each of the alternatives relax current flood control constraints within the Missouri River Reservoir Mainstem Water Control Manual (Master Manual) in an effort to provide flow support to the pallid sturgeon. Not accounting for additional rainfall, this could equate to an increase in a river stage of nine feet at Omaha, NE or as much as six feet at St. Joseph, MO. We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we have long opposed. In 2015, twenty members of Congress from Missouri to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 93 **Comment Id:** 633676 **Coder Name:** jgutierrez

Comment Text: By proposing such a wide range of alternatives or options it appears to me that you are only guessing at what may save the endangered species. There should be proven science behind these options before implementing any of them. Any excess water stored behind the dams to implement your alternative or option is a flood risk. You are unnecessarily risking lives and property with these plans. I believe the most important consideration in this project should be flood control to protect the businesses, personal properties, farmland and human life that has flourished along the river for many generations. That was the number one reason the system was built in the first place and it should still be the number one reason to maintain it. If even one person were to lose his or her life due to unnecessary flooding of the river it would be too high a price to pay just to potentially save our endangered species.

Organization: Husz Farm Corp

Commenter: Del Husz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 68 **Comment Id:** 633531 **Coder Name:** jgutierrez

Comment Text: To think that we can recover enough spawning to reduce jeopardy for the endangered pallid sturgeon by only flawed attempts to increase shallow water habitat within the narrow existing channel is ludicrous. We must stimulate a spring rise and fall. And without doing that, we are essentially trying to open a clogged artery without oxygen or a surgical stint. These few minimally added costly side channels sloughs and alterations of management structure has already been shown to later sediment in, a further waste of taxpayer money.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 66 **Comment Id:** 633525 **Coder Name:** jgutierrez

Comment Text: We will not support proposals that weaken flood control, initiate pulses, or reduce flows in the summer. We do not support the construction of chutes and oppose actions that could damage private property, weaken levees or lead to large quantities of soil being deposited into the river. Given past experience, we're skeptical of adaptive management and what we consider to be very expensive experiments.

Organization: Missouri Farm Bureau

Commenter: Adam Jones **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633519 **Coder Name:** jgutierrez

Comment Text: However, AWO strongly opposes the various flow modifications common to Alternatives 2, 4, 5 and 6. Low summer flow provisions in Alternative 2 will cause irreparable harm to the navigation industry by creating a split season on the Missouri River virtually killing navigation on the river. In addition to this, the low summer flows in Alternative 2 will have severe negative impacts on navigation on the Mississippi River from St. Louis all the way downstream to Cairo, Illinois. During drought years, over 80 percent of the water flowing by the St. Louis Arch comes from the Missouri River. These flows are necessary to keep this commercial superhighway open.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 61 **Comment Id:** 632127 **Coder Name:** jgutierrez

Comment Text: We do not need any more water released at any times. Our levee systems are getting tore up as is. We cannot handle what we are getting. This is a very bad idea.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 59 **Comment Id:** 632125 **Coder Name:** jgutierrez

Comment Text: I know I don't like the pulses, the pulses in the river where they raise them. On the lower end where we are at, we're a week to ten days from - - what's the name of that dam up there, the last one, Gavins Point. And they can't forecast the weather that good. Say there's a pulse coming down the river and we get a big thunderstorm and everything goes bad.

Organization: Dorist Levee District and Augusta Levee

Commenter: Robert Struckhoff **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628578 **Coder Name:** jgutierrez

Comment Text: Given our high frequency of flood events in our state, we have always been very concerned about any proposed environmental flows from Gavins Point Dam that exceed flood control constraints. Let me be clear, the State of Missouri cannot support any alternative that includes environmental flows that exceed current flood control constraints.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628571 **Coder Name:** jgutierrez

Comment Text: The 2011 independent science advisory panel noted that the natural rises had not been adequately or systematically assessed. Because of this, we believe that there is no need for additional water to be released from Gavins Point.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628530 **Coder Name:** jgutierrez

Comment Text: Furthermore, the proposed flow events use water from the carryover storage pool, which is the pool we rely on during times of water shortage. The navigation flow support releases from the system benefit many uses on the lower river, such as water supply, energy production, recreation, and fish and wildlife.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628511 **Coder Name:** jgutierrez

Comment Text: Very specifically, I would like to see IRCs that are proposed in the plan increased fourfold from two a year to eight a year. We have 750 miles of river to deal with.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 35 **Comment Id:** 628449 **Coder Name:** jgutierrez

Comment Text: Our association as always and will continue to oppose using increased flows as management options. This type of management by the Corps - - by the Corps' own admission in federal court is designed to cause intentional flooding. We believe the threatened and endangered species can be recovered while the Corps continues to provide flood control. The Corps and the US Fish & Wildlife Service should and can find ways to protect the species without harming our communities.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 35 **Comment Id:** 628391 **Coder Name:** jgutierrez

Comment Text: I'm here tonight to remind the Corps of their flood control mission. The Draft Environmental Impact Statement contains six alternatives. I find it appalling each alternative increases the risk of flooding. It is clear the Corps and Fish & Wildlife Services turned their back on flood control. All the alternatives - - all the alternatives propose a spring or fall rise. Alternatives 4 and 5 represent the most audacious lack of concern for the citizens impacted by Missouri River management. The 60,000 cfs release found in these two alternatives is an outrageous demonstration of the Corps' disregard for and the failure to pursue its flood control mission.

Alternative 1, 2 and 6 contain lesser rises, but still threaten those downstream with increased flows. Alternative 3 contains a stipulation containing its own possible spring rise after a few years of monitoring. This caveat is an open door for those managing the river to dump more water on those downstream. At what point will the United States Army Corps of Engineers understand it is wrong to intentionally flood those they have been directed to protect?

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

AL750 Alternatives: Actions Common to All Alternatives (non-substantive) (Non-Substantive)

Correspondence Id: 13 **Comment Id:** 626256 **Coder Name:** jgutierrez

Comment Text: Flood protection needs to also be a consideration in the operation of the Missouri River.

Organization: AgriVision Equipment Group, Hamburg Store Manager

Commenter: Jon Graves **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 646275 **Coder Name:** JGUTIERREZ

Comment Text: Section 3.15 Navigation General Analysis: 1. We do not support any alternative involving flow changes that would adversely affect navigation on the Missouri River. Because of reliable flows, barge traffic has consistently increased on the Missouri River in the last five years and most operators expect this trend to continue.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645446 **Coder Name:** jgutierrez

Comment Text: The CPR has identified various concerns with each of the six alternatives contained in the DEIS. To begin, all except Alternative 1 (No Action) relax flood control constraints within the current Missouri River Mainstem Reservoir System Water Control Master Manual (Master Manual). The CPR believes that any future flow changes must be implemented solely by Master Manual revision.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 179 **Comment Id:** 645205 **Coder Name:** jgutierrez

Comment Text: And that Alternatives #3-6 have uncertainties associated with their effectiveness in meeting the species objectives. This means that two-thirds of the alternatives offered (actually 5/6ths, because we know that Alternative #1, No Action, has problems with meeting species needs since the current actions have led us to the place we are in now), will have problems with meeting species objectives. Why would the Corps select so many of the alternatives which they deem, themselves, will have trouble effectively meeting the species objectives? Is it because they dont want to offer other alternatives such as a natural flow regime or levee setbacks for re-connectivity and flood risk reduction? Additionally, the public can only assume that the Corps knows that these alternatives likely arent going to work very effectively so they will state it now to avoid being held responsible later.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 222 **Comment Id:** 644801 **Coder Name:** jgutierrez

Comment Text: Prior pulse experiments have not demonstrated any successful propagation or the creation of a desired spawning cue. Flow changes continue to be a speculative aphrodisiac for this ancient fish. In fact, the ISAP questioned the practice.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 183 **Comment Id:** 643952 **Coder Name:** jgutierrez

Comment Text: Flow modification should be retained as a viable alternative to exclusively using mechanical construction of emergent sandbar habitat. Utilizing flow modification to create emergent sand bar habitat is a reasonable and desirable action that is consistent with the USFWS Biological Opinion for the Master Manual.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 227 **Comment Id:** 642730 **Coder Name:** jgutierrez

Comment Text: If mechanical means allow providing habitat that could be acceptable but we remain extremely opposed to any releases being a part of any options under your consideration.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642391 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.13, p. 3-328 - 3-356 Comment: Regarding the entire section on hydropower, any action or alternative that adversely affects hydropower production and increases costs for the consumer is undesirable. Hydropower is the only authorized purpose that provides revenue directly to the federal government.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641732 **Coder Name:** jgutierrez

Comment Text: The six alternatives presented have common recommended actions for the Pallid Sturgeon including: Pallid Sturgeon propagation and augmentation Pallid Sturgeon Population Assessment Project (PSPAP) Monitoring and evaluation of Pallid Sturgeon Recruitment Lower river Pallid Sturgeon early life stage habitat construction Habitat development and land management of MRRP lands

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641727 **Coder Name:** jgutierrez

Comment Text: The six alternatives presented have common and logical recommended actions for the Piping Plover and Interior Least Tern including: • Vegetation management on the bird habitat • Predator management on the bird habitat • Human access restriction on the bird habitat • Flow management to reduce take of the Piping Plover and Least Tern • Piping Plover and Least Tern monitoring and research

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641658 **Coder Name:** jgutierrez

Comment Text: The six alternatives presented have common recommended actions for the Pallid Sturgeon including: - Pallid Sturgeon propagation and augmentation - Pallid Sturgeon Population Assessment Project (PSPAP) - Monitoring and evaluation of Pallid Sturgeon Recruitment - Lower river Pallid Sturgeon early life stage habitat construction - Habitat development and land management of MRRP lands

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641643 **Coder Name:** jgutierrez

Comment Text: The six alternatives presented have common and logical recommended actions for the Piping Plover and Interior Least Tern including: - Vegetation management on the bird habitat - Predator management on the bird habitat - Human access restriction on the bird habitat - Flow management to reduce take of the Piping Plover and Least Tern - Piping Plover and Least Tern monitoring and research

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641579 **Coder Name:** jgutierrez

Comment Text: We would recommend that you go back to the drawing board and bring forth a new plan that truly allows the Missouri River to recover.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640577 **Coder Name:** jgutierrez

Comment Text: The Pick-Sloan customers are committed to maintaining the long-term value of have these hydroelectric projects. These customers, including CMEPC, have agreed to provide over \$1 billion in capital over the next twenty years to the Corps of Engineers to support repair and rehabilitation of the six mainstem Missouri River dams. A significant reduction in the amount of power generated by these projects could result in these capital investments becoming uneconomic.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 133 **Comment Id:** 637107 **Coder Name:** jgutierrez

Comment Text: Very simple, NO SPRING RISE IS ACCEPTABLE.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 126 **Comment Id:** 633754 **Coder Name:** jgutierrez

Comment Text: The stated purpose of such change is the protection of one fish, and two of bird species, which have been designated as endangered. The question, which should be asked, is at what cost and to what lengths should we go to protect these creatures? Keeping in mind there is no actual proof the proposed alternatives will protect these creatures or stimulate breeding patterns.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 55 **Comment Id:** 632092 **Coder Name:** jgutierrez

Comment Text: We urge the Corps to robustly fund and support comprehensive monitoring and research efforts of any management actions undertaken. We feel this will help ensure the actions are performing and getting the desired response from the species. Additional research will hopefully close some of the data gaps and the uncertainty that currently exists in recruitment, especially for the pallid sturgeon.

Organization: Izaak Walton League of America (South Dakota, Nebraska, Iowa)

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631569 **Coder Name:** jgutierrez

Comment Text: The Coalition supports mechanical sandbar habitat construction contained in each of the alternatives. However, we cannot support various flow modifications common to Alternatives 2, 4, 5 and 6.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 60 **Comment Id:** 631150 **Coder Name:** jgutierrez

Comment Text: These artificial spring rises and fall rises just are not an alternative

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 45 **Comment Id:** 628649 **Coder Name:** jgutierrez

Comment Text: My first thoughts on that, since my career was in excavation, if we're going to artificially create nesting habitats and sandbars, artificially made sandbars, I just know, from experience, that the cost per fledged bird will be just astronomical and just a terrible waste of taxpayer money. And I think that money could be well - - spent better to use to buy habitat. Or, in my mind, when I see how many birds are produced on some of these sandbars along the lower Platte River, much less money could be spent creating habitat off the river, buying and creating habitat, put sand out there, put water out there, put an electric fence to prevent predators from coming in. And as far as taxpayer dollars per bird that you'd spend on a fledged bird, it'd be a lot less, I'm very sure.

Organization: Nebraska Wildlife Federation

Commenter: Jarel Vinduska **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628545 **Coder Name:** jgutierrez

Comment Text: The department supports the Corps' intention to use natural flow events to improve our scientific understanding.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 628002 **Coder Name:** jgutierrez

Comment Text: However, AWO strongly opposes the various flow modifications common to alternatives 2, 4, 5 and 6.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 628000 **Coder Name:** jgutierrez

Comment Text: Of the six alternatives presented to us for review and comment, the AWO supports mechanical sandbar habitat construction contained in each of the alternatives, including the preferred alternative number 3.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 16 **Comment Id:** 626324 **Coder Name:** jgutierrez

Comment Text: When developing these plans, I know USACE try to balance between environmental, recreation, and farming communities. What percent is each master given, regarding flood protection?

Organization: Mayor, City of Hamburg

Commenter: Cathy Crain **Page:** **Paragraph:**

Kept Private: No

AL800 Alternatives: General Costs (Substantive)

Correspondence Id: 97 **Comment Id:** 636851 **Coder Name:** jgutierrez

Comment Text: We also believe that the cost estimates for the plan may not be accurate.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645641 **Coder Name:** jgutierrez

Comment Text: 13. We are concerned about the massive cost to the nation incurred to date by the MRRMP. Since 1992, this program has consumed over \$825 million in taxpayer funds. The DEIS does not include the budgetary impact of implementation of the alternatives. The impacts to the human environment in this effort must be addressed.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645635 **Coder Name:** jgutierrez

Comment Text: 7. Operational costs under a low summer flow regime are severely underestimated and should be reexamined. The Corps must identify all potential regulatory burdens in advance of the implementation of any management plan action

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645517 **Coder Name:** jgutierrez

Comment Text: The DEIS (AMP 2-page 221) states that the budget will determine the extent to which management actions can be implemented. Mechanical habitat construction and modification are most likely to be constrained by budget, and other management, monitoring, and research activities may also be constrained. Again, this is the primary flaw with Alternative 3. The League is sensitive to the probability of future funding being jeopardized by Congress, bringing recovery efforts to a complete halt. The Corps should address these funding concerns in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645510 **Coder Name:** jgutierrez

Comment Text: We urge the Corps to reevaluate the estimated costs of Alternative 2. Please reexamine the amount of mechanically created habitat included and factor in the economic benefits derived from improved ecosystem services including flood risk reduction, improvements to water quality, increased recreation, and benefits to native fish and wildlife. The League supports these aspects of Alternative 2 as the best of the six proposed alternatives.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645212 **Coder Name:** jgutierrez

Comment Text: Land for acquisition has been valued in the document at \$4000-6000/acre. Although a mix of land valuation has been used, most of the land along the river that would be acquired is not top-quality farmland and the \$4000-6000 range is too high. Much of that land is sandy (from centuries of the river moving back and forth and depositing light silt and sand) or a mix of sand and clay. Additionally, many pieces of land along the river offered by willing sellers are irregular in shape, making farming with large machinery more difficult to do and less desirable. The irregularity also means there are corners and patches of shrub and wooded vegetation and uneven terrain. Also, land prices have been declining in the last 12 months, and as long as grain prices remain low (grain buyers have predicted low prices to continue into the significant future because of increased production in South America and Asia), land prices will continue to decline. The cost of land has therefore been over-priced in Alternative #2.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644915 **Coder Name:** jgutierrez

Comment Text: There appears to be weak support for the benefits of channel widening to recruitment of age-0 pallid sturgeon, particularly given its proposed high cost. IRCs are proposed in the DEIS and supporting documents to be superior to SWH for pallid sturgeon age-recruitment, yet channel widening is the management action proposed to create both SWH and IRC projects under alternatives 1 and 2 (SWH) and 3-6 (IRC) . A major purpose of the no-action alternative is as a comparison or reference against which to evaluate all other alternatives. It appears the proposed no-action and BiOp alternatives misrepresents what management actions were taken in the past to create SWH by largely equating SWH creation to channel widening and grossly overestimating construction costs. Inflating the costs for the no-action and BiOp alternatives relative to historical expenditures prevents the public and resource management agencies from accurately evaluating proposed alternatives including the preferred alternative against the no-action-(alternative 1) and BiOp alternatives (alternative 2). RECOMMENDED ACTIONS TO RESOLVE. Clarify why channel widening appears as the proposed primary management action to create SWH under Alternatives 1 and 2 and also IRCs under alternatives 2-6 when was it seldom be employed by the MRRP to create existing SWHs and when the AM Plan (e .g. Section 4.2.6.3.5) states that while IRCs and SWH share some attributes, they are different relative to food production and foraging habitat. Provide explicit evidence for the anticipated benefit to cost of channel widening to achieve IRCs and review the 'best available

science' that shows IRCs are superior to SWH (not hypothesized benefits), or other channel reconfigurations when SWH has not been shown to benefit recruitment of age-0 pallid sturgeon (e.g., Schapaugh et al 2010; Schloesser et al. 2012). What alternative hypotheses (under an active AM approach) were considered to create pallid sturgeon early life history habitat and the science to support them? Revise proposed management actions and associated costs for SWH construction for the no-action and BiOp alternatives to reflect historical actions employed and actual costs used to create SWH, or justify why the proposed no-action and BiOp alternatives SWH proposed costs to continue the existing program have escalated so much. Revise proposed costs for IRC construction via channel widening for alternatives 3-6 to be in line with observed costs to create the 3 identified IRCs or justify why proposed costs for any additional IRCs have escalated so much.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644914 **Coder Name:** jgutierrez

Comment Text: [IRC Project Costs table] 1. June 2016. PROJECT IMPLEMENTATION REPORT WITH INTERGRATED TIERED ENVIRONMENTAL ASSESSMENT, FINDING OF NO SIGNIFICANT IMPACT AND SECTION 404(b)(1) EVALUATION, Langdon Bend Interception and Rearing Complex Habitat Project. USACE Omaha District 2. May 2016. Missouri River Recovery Program - Environmental Assessment & Section 404(b)(1) Evaluation Searcys Bend Interception-rearing-complex Habitat Project. USACE, Kansas City District 3. July 2016. MISSOURI RIVER RECOVERY PROGRAM - July 209 Baltimore Bend Interception Rearing Complex Project. Definite Project Report and Integrated Environmental Analysis & Section 404(b)(1) Evaluation. USACE, Kansas City District SIGNIFICANCE OF CONCERN. The DEIS falsely presents channel widening and the comparatively high costs associated with it as a primary management action to create SWH under alternatives 1 and 2. The historical evidence indicates that other management actions were used to create the majority of SWH sites and at a much lower cost than is presented in the DEIS and specifically the Cost Estimates Table in appendix F.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644913 **Coder Name:** jgutierrez

Comment Text: 2.3. What does it cost to build an IRC? Under the preferred Alternative (Alternative 3 - Pallid Habitat Construction & ESH Mechanical) average annual costs for IRC construction in the Kansas City Reach is \$40,181,427 (39% of total program costs). According to the DEIS, two IRCs will be constructed per year over six years in this reach to yield a total of 12 for the Level 2 phase.

Thus, on average the proposed total cost to acquire and build a typical IRC is about \$20,090,173. At least three IRCs have already been identified and EAs published: Langdon Bend, Searcys Bend and Baltimore Bend). Table IRC Project Costs summarizes total project costs and can be used to approximate what average annual total costs for 2 IRCs per year might be - assuming these represent typical future IRCs? The average total cost is per site is \$2,553,854 or 2 per year for \$5,107,707 per year. Why is the proposed annual cost for channel widening IRC construction for Alternative 3 (also alternatives 4-6) 10 times higher than observed cost for per site per year?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644912 **Coder Name:** jgutierrez

Comment Text: 2.2. Why is channel widening proposed to cost so much even under the no-action alternative? Under the no-action alternative (p. 2-55): Existing habitat on the System combined with SWH projects have created a total of 11,832 acres, leaving 3,999 acres to be created (Table 2-13). Total 2004-2016 cost for creating SWH was \$218,112,900 assuming all site acquisition was for SWH (a generous assumption) adds an additional \$130,407,000 for a total of \$348,519,900 or 47.7% % of MRRP total expenses. This provides a liberal estimate of total expenditures to acquire and create the 11,832 acres of SWH under the no-action alternative or \$29,456 /acre of SWH. In contrast the no action alternative for the remaining 3,999 acres of SWH allocated as channel widening (3,519 acres) and backwaters (480 acres) under the DEIS Table 2-14 is \$1,836,033,033 for channel widening and an additional \$65,529,009 for backwater construction. These total \$1,901,562,042 (57.7% of total estimated cost) or \$475,509 /acre of SWH under the no-action alternative #1. How is it possible that projected cost per acre of SWH under the no-action alternative is now 16X higher than the observed cost per acre for the bulk of SWH creation?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644908 **Coder Name:** jgutierrez

Comment Text: One would assume that should Alt 1 be implemented annual program costs would approximate historical costs (adding a bit for inflation). This is not the case as demonstrated below: DEIS Alternative 1 (no-action) has an estimated MRRP average annual cost of \$121,513,501 (Appendix F, Table MRRP EIS Alternatives - Cost Estimates) over double that of the MRRP average annual cost from FY2004 -2016 of \$56,149,126 (Table Missouri River Recovery Program1 (MRRP) Allocations). The average annual cost for the no action alternative is higher than any maximum annual expenditure for the MRRP program

(\$85,000,000 in FY2007} over the 13 year period of record. How can a no-action alternative that is required to represent "no change" from current management direction or level of management intensity" cost over 2x that of the existing level of the no-action management intensity? Note: Comparisons of historical and DEIS cost estimates throughout these comments are generally reported comparatively (e .g. order of magnitude or percentage) rather than estimates examined in isolation as recommended by D. Ponganis, Jan 2017 MRRIC meeting, Kansas City, MO. SIGNIFICANCE OF CONCERN. A major purpose of the no-action alternative is as a comparison or reference against which to evaluate all other alternatives. Given that the no-action alternative appears to misrepresent what actions were taken in the past and grossly overestimates their costs we are left with an inability to accurately evaluate proposed alternatives including the preferred alternative. ACTIONS RECOMMENDED. Include annual expenditures for the duration of MRRP by analogous categories shown in EIS Alternatives - Cost Estimates as an addendum to Appendix F (i.e. Table Missouri River Recovery Program (MRRP) Allocations; Harburg 2017) and used in the text when comparing costs of various alternatives to the non-action alternative. This will enable the reader to compare actual expenses for the MRRP to those given for all alternatives in the DEIS. Consider revising the DEIS to include a valid no-action alt which continues the MRRP 'exactly' as it is now and reflects the USFWS definition of a 'no-action' alternative, i.e. management actions undertaken following the 2000 and 2003 BiOp RPAs and revise the budget to reflect this. All subsequent alternatives then should be compared with this current MRRP implementation 'no action' alternative - - not a misleading no-action alternative that includes millions of additional\$ and channel widening activities not a regular part of past BiOp compliance management actions. Alternatively, please explain the EIS policy implications of substituting a 'new action' alternative as the 'no action alternative'?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644825 **Coder Name:** jgutierrez

Comment Text: While we understand the purpose of the MRRP and the MRRMP, it is necessary for us to comment on the cost of continuing this program. We also comprehend the current requirements of the ESA and that economics and risk are not part of that Act. The DEIS does not include the actual budgetary impact of implementing any of the alternatives. Arguably, in the Corps defense, it is probably due to the fact that they are not the budget decision maker. That responsibility falls to Congress. However, the cost to implement has an environmental impact. Resources for habitat protection, land acquisition, wastewater projects, drinking water projects, stormwater projects, just to name some examples, are diverted by the expenditures for the alternatives presented in the DEIS.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643967 **Coder Name:** jgutierrez

Comment Text: The Corps estimates that annual costs for years one through nine of the Management Plan and AMP to be almost \$95 million with a total project cost of \$3 billion. The Final EIS should evaluate the annual and total costs of Management Plan and AMP implementation in the context of the past amounts annually budgeted for the Missouri River Recovery Program and the BSNP Mitigation Project, specifically. This relative cost comparison provides context for both the scale of costs and the likelihood of the Corps receiving funds adequate to sustain the AMP as described.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643847 **Coder Name:** jgutierrez

Comment Text: Section 2.5.1.3, Page 2-16 - The USACOE needs to provide the data to show that managing vegetation and predators on reservoir habitat areas is more expensive than management of (or continued creation of) ESH. Similar statements have been made relative to sand pit habitat along the central Platte, however, when actually evaluated such action were much cheaper per fledgling produced and produced way more fledglings than did island construction.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

AL850 Alternatives: General Costs (non-substantive) (Non-Substantive)

Correspondence Id: 28 **Comment Id:** 627557 **Coder Name:** JGUTIERREZ

Comment Text: There must also be consideration of cost. Every man, woman and child in the US currently owes over \$65,000 for their share of the \$19.9 trillion public debt. We have to be aware of expenses associated with each of the proposed alternatives.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640954 **Coder Name:** jgutierrez

Comment Text: The Corps should release the estimated cost of the six alternatives.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640496 **Coder Name:** jgutierrez

Comment Text: We also back robust future funding for all of these efforts.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 52 **Comment Id:** 631066 **Coder Name:** jgutierrez

Comment Text: We have source populations up on the alkali flats of North Dakota, which the people up there say they can have again the number of birds up there and make it consistent for less than a million dollars a year. And one person even said for probably less than 100,000, and yet we're presuming that somebody is going to give us 200 million to do the same thing and not do it as well. And at the end of the time, we just have a status quo, according to the figures that they give us, and they can give us recruitment.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 53 **Comment Id:** 630861 **Coder Name:** jgutierrez

Comment Text: And another thing you folks have not spoke of yet tonight was 500 floodplain - - the 500-year floodplain. I don't know if that has anything to do with this tonight. But, you know, we go from 100-year and 500-year and start paying insurance on that, and it's going to be kind of tough. Crop insurance, anything else, any federal money into these areas will be affected.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

AM1000 Adaptive Management (Substantive)

Correspondence Id: 15 **Comment Id:** 626301 **Coder Name:** jgutierrez

Comment Text: How does the Corps prove that these Rises actually help?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646301 **Coder Name:** JGUTIERREZ

Comment Text: We recommend that the USACE, through the MRRMP-EIS and integrated SAMP, does more to collaborate with the State to develop conservation and management strategies.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646300 **Coder Name:** JGUTIERREZ

Comment Text: Close collaboration would ensure seamless coordination and cooperation between agencies. We continue to work cooperatively with the U.S. Fish and Wildlife Service (USFWS) under ESA Section 6(c) to conserve Pallid Sturgeon within Montana and we have remained financially committed to cost-sharing opportunities with the USFWS and other sources of private funding. Furthermore, the State continues to manage the aquatic community (e.g., sport fishes, species of concern, and potential candidate species) in a manner that helps avoid listing and impairment. Our institutional knowledge and local expertise in the connected Missouri River-Yellowstone River ecosystem is unmatched. Yet, the State has not been included in the development of fundamental objectives in the MRRMP-EIS; particularly, to "avoid jeopardizing the continued existence of the Pallid Sturgeon from the USACE actions on the Missouri River."

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646299 **Coder Name:** JGUTIERREZ

Comment Text: As such, Montana must be actively engaged in planning and implementation to develop and address any decisions involving monitoring, research, and implementation of management strategies.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 646297 **Coder Name:** JGUTIERREZ

Comment Text: If the process for analyzing social and economic impacts has been developed it must be included in the DEIS so it can be evaluated. If it has not been developed, the process is incomplete and the DEIS is incomplete. Impacts and outcomes on an incomplete process cannot be determined or and comments and considerations cannot be adequately informed. The complete process must be developed and the plans for its deployment and execution must be clearly delineated in the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645824 **Coder Name:** jgutierrez

Comment Text: The final EIS must address how long monitoring would continue before AM is implemented to make the needed adjustments to assure the project becomes successful for pallid recruitment.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 645816 **Coder Name:** jgutierrez

Comment Text: As it is the State's policy to protect and preserve Montana's fish and waters within the State, we feel that it is imperative that the State is accepted as an active participant in any future decisions that might affect not only Pallid Sturgeon, but all of Montana's fish and wildlife and their habitats.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645813 **Coder Name:** jgutierrez

Comment Text: Our greatest concern is not accuracy at the outset (although it must be accurate both in terms of direction and relativity). Our most pressing comment is the lack of delineation of thorough review of economic impacts throughout the adaptive management process. Detailed methodology, check points, stakeholder engagement, how impacts will be agreed upon and how they

will affect decision making must be spelled out. We are concerned there is no set aside or clear opportunity for that review or for how the outcomes of such a review would influence further management actions. We don't know what will change in the AM process and there are obviously myriads of questions swirling around the accuracy and predictability of impacts from management actions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645812 **Coder Name:** jgutierrez

Comment Text: The DEIS must be amended to include detailed economic and social review of the AM process. Concluding that initial predictions from truncated modeling are sufficient is wholly inadequate and can lead us to employ management actions that can have severe and lasting negative impacts on all species, including humans.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645810 **Coder Name:** jgutierrez

Comment Text: 7. The DEIS does not specify a robust process for ongoing analysis of economic impacts of adaptive management actions. Just as adaptive management hypothesizes, tests actions and then assesses outcomes on the species, it must allow for the inclusion of economic outcomes to inform the process and inform decisions regarding changes to management actions. Adaptive management recognizes that we do not yet know what management actions are required or how those actions will impact the species. We will not argue against the logic of taking an adaptive management approach to recovery. The MRRIC process of independent scientific review has revealed that what was once represented as science was, at best, informed hypotheses. Proceeding forward with unproven theories on spawning cues, recruitment and habitat is foolish and greatly increases the potential for doing more harm than good.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645639 **Coder Name:** jgutierrez

Comment Text: 11. The Corps should truly follow the AM plan process by slowing down IRC construction plans and commit to studying the species and human effects of one IRC site before building all 12 as planned in the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645499 **Coder Name:** jgutierrez

Comment Text: Alternative 2 - Alternative 2 (V1-page 16) states, "Actions would ultimately be implemented through AM as impediments to implementation were removed". Greater clarification is needed as to how the AMP would respond to changing implementation conditions. The DEIS states the Corps has management discretion in achieving acreage goals and whether those goals are accomplished through mechanical construction or river flows. The Corps can also achieve the acreage goals listed in Alternative 2 incrementally.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645377 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.8.1.1, p. 2-53 Comment: Regarding the monitoring program for the piping plover, the State of North Dakota strongly encourages the USACE to make improvements as outlined in Shaffer et al. (2013). This study determined that adult numbers were substantially underestimated and the detection rate varied from area to area. Improvements are necessary so that resources (i.e. money, water, etc.) are used more efficiently in implementing recovery actions. Shaffer, T.L., M.H. Sherfy, M.J. Anteau, J.H. Stucker, M.A. Sovada, E.A. Roche, M.T. Wiltermuth, T.K. Buhl, and C.M. Dovichin. 2013. Accuracy of the Missouri River Least Tern and Piping Plover Monitoring Program Considerations for the future: U.S. Geological Survey Open-File Report 2013-1176, 74 p., with 4 appendixes, <http://pubs.usgs.gov/of/2013/1176/>.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645329 **Coder Name:** jgutierrez

Comment Text: ISAP further suggested the need for higher magnitude flows than even FWS had requested. Eleven years after the first Biological Opinion requesting modified flows from reservoirs, the ISAP, a group of nationally renowned river scientists selected by the Corps, stated: -An integrated management plan, to be effective, should include managing flows, temperature and sediment, and implementing floodplain easement purchases and restoration. Without such an approach, where all three actions are taken, the Pallid Sturgeon would likely continue to decline. -An adaptive management plan should be developed below Gavin's Point, a plan originally set as an RPA, but never implemented by the Corps; and -A need for restoration practices to prevent declines in listed and other desired species ... include providing flows higher than those currently prescribed spring pulses, lower baseflows, and increased sediment.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645322 **Coder Name:** jgutierrez

Comment Text: Our comments below evaluate the MRRP-EIS with these goals in mind. Where possible, we include additional factors that may be important for the species based on the current state of the science. While the two stated goals are important, the metrics outlined in this DEIS for assessing success in meeting them are insufficient. As an example, the stated goal of increasing pallid sturgeon recruitment to age 1 is too simplistic in nature to understand the mechanism behind the metric and thus insufficient to meet the goals of the Adaptive Management Plan. In this specific example, the Corps should develop sub-metrics of the overall goal to support revised management actions. Specific sub-metrics could include prey species abundance, competitor abundance, type of substrate and habitat, turbidity and other factors considered important in the conceptual models.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645137 **Coder Name:** jgutierrez

Comment Text: Current constraints on the volume of flows which can be used to create sandbar habitat or potentially benefit pallid sturgeon need to be addressed as part of any management alternative implemented. The current channel capacity of the Missouri River from Fort Randall Dam to Lewis and Clark Lake is 35,000 to 40,000 cfs (Table 3-2 of the MRRMP and EIS) and is obviously the main flow constraint for ESH-creating or pallid sturgeon bimodal spring pulse flow magnitude. As an example, the fall ESH-creating flows from Gavins Point Dam would involve flows of up to 60,000 cfs, with Fort Randall Dam releases being increased a similar amount. With a channel capacity of 35,000 to 40,000 cfs in this reach, flooding would occur. However, if flow limits

downstream of Gavins Point Dam are exceeded, Gavins Point release would be reduced by 5,000 cfs until flood targets are no longer exceeded. In instances where Gavins Point releases fall below 45,000 cfs, releases would be terminated. There is no mention of flows being reduced if they exceed the channel capacity and flooding occurs in the Ft. Randall to Lake Lewis and Clark reach.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644916 **Coder Name:** jgutierrez

Comment Text: 3. Pallid Sturgeon Population Augmentation. STATEMENT OF CONCERN. Stocking proposals for pallid sturgeon throughout the DEIS and supporting documents address only stocking 'optimal size classes and in optimal numbers'. These criteria have little relevance to fitness and survival of stocked fish to reproduction. BASIS FOR CONCERN. Despite stocking thousands of pallid sturgeon to the Lower Missouri River, few are reproducing and condition of stocked pallids is declining. Both hatchery conditions (Kittle and Small 2014, Deslauriers et al 2016, Meyer et al. 2016) and environmental factors (Steffensen and Mestl 2016, Randall et al 2016) are believed responsible. Recommendations to improve the Middle Basin Propagation Program (Basin-wide Pallid Sturgeon Propagation Committee 2016) are a step in the right direction, but the overall philosophy of sturgeon population augmentation in the DEIS is misplaced on numbers of stocked fish. SIGNIFICANCE OF CONCERN. Only three larval pallid sturgeon have been collected in the Lower Missouri River over the past decade (Middle Basin Pallid Sturgeon Work Group annual meeting, January 2017, Blue Springs, MO) despite an intensive sampling program under HAMP and PSPAP. Adult stocked pallids are routinely collected under these programs (see HAMP and PSPAP annual reports), yet few appear to be spawning (Deloney et al. 2015). Reducing jeopardy under the BiOp RPAs is highly dependent on survival and reproduction of hatchery stocked pallids. All proposed efforts of the MRRMP (and specifically Pallid Sub-Objective 2) will be in vain if healthy, reproductively mature pallid sturgeon do not spawn in sufficient numbers in the upper and lower Missouri River. RECOMMENDED ACTIONS TO RESOLVE. The overall philosophy of Pallid Sturgeon population augmentation needs to shift to a focus on quality of stocked fish over quantity. 'Quality' of stocked fish should also be identified as a potential limiting factor and addressed in the DSAMP. Quality criteria should include physiological and ecological factors such as overall health of fish when stocked, the ability of newly stocked pallids to adapt to natural river conditions (e.g., feeding, positioning in current and habitat selection) and grow and perform as well as wild fish. Actions to improve the quality of propagated and stocked pallid sturgeon so they reach sexual maturity and spawn in the wild should be identified in the Effects Analysis and SAMP. This can be achieved Under Big Question #6 Population Augmentation, components 1 and 2.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644900 **Coder Name:** jgutierrez

Comment Text: TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study. TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644898 **Coder Name:** jgutierrez

Comment Text: Volume Four of the draft MRRMP-EIS is titled "Implementation of Preferred Alternative under Adaptive Management" and contains only select components of the larger AMP. Volume 4 also labels the AMP as a "companion document" to the MRRMP-EIS. The AMP is much more than a companion document; it is integral and its full contents should be recognized and its acceptance documented by the ROD. The ROD should also acknowledge the living nature of these documents as Volume 4 does. The ability to draw readily from the other alternatives fully analyzed in this NEPA process and the entire AM Plan should not be hindered by a limited ROD.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644890 **Coder Name:** jgutierrez

Comment Text: While the "skinny fish" problem has been, and is being, addressed as "new information" within the Adaptive Management context, we are concerned that the Adaptive Management design does not have an "on ramp" or design specification for inclusion of new endangered species listings to occur in the future. In particular, Sturgeon Chub and Sicklefin Chub have a new petition for listing, pending review by the Fish & Wildlife Service. A hypothesis might be generated that recovery of pallid sturgeon is dependent on recovery of one or more of these fish.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644886 **Coder Name:** jgutierrez

Comment Text: There are multiple lines of evidence that ecosystems in various reaches continue to show stress and declines in food webs essential to the survival of pallid sturgeon. The DEIS refers to many of these lines of evidence. And, it is our hope that Adaptive Management- - as adopted in the Record of Decision and implemented- - would be aggressively adaptive enough to ascertain ecosystem signals of distress against a background noise of degraded values and constant extraction and exploitation in time to prevent further endangered species listings.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644851 **Coder Name:** jgutierrez

Comment Text: It is extremely unlikely that Big Questions 1 through 4 (SAMP-draft 6- Sect 4.2.4, table 43; and elsewhere) which refer to, and study, "naturalized flows" can be efficiently or definitively answered by passively monitoring existing, or historical record, Corps operated flows. Of the five hypotheses deemed, by the Corps, to meet or exceed criteria stipulated by the Effects Analysis documents for "avoiding jeopardy", only Alternative 2 aims at approximating "naturalized flows". Alternatives 4 through 6 aim at remediating interventions for the attenuation of naturally occurring flow regimes; but these interventions for attenuations caused by the dams, reservoirs and BSNP channelization are not, in and of themselves, natural. Moreover, even as some of the corollary hypotheses already benefit from Level 1 reflection on past operations data, these hypotheses become bootless and cannot be tested by falsification if they cannot ascend the stepwise decision process through levels 2, 3 and 4- - which is the implicit effect, if Alternative 3 is retained as preferred to become the selected alternative. Level 2 lab studies would have no effect on pallid sturgeons living in the river and insufficient statistical power to overcome what is, essentially, a policy decision preference for an intervention (Alt 3) that may not work.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644411 **Coder Name:** jgutierrez

Comment Text: While we appreciate the concept of adaptive management and the need to be flexible as conditions in the Missouri River basin change over time, the State is concerned that the adaptive management provisions laid out in the draft EIS will result in more uncertainty for landowners with respect to the impacts of water flow management and timing of pulses that may contribute to

flooding on agricultural lands. Many of the evaluated alternatives include spring or fall flow pulses that could contribute to flooding of thousands of acres of agricultural land at times when farmers are either trying to plant or harvest crops. Of particular concern are the average annual NED flood risks in the Gavins Point to Rulo reach of Alternatives 4 and 6, and the full release years impacts of Alternatives 5 and 6 in the same reach, as projected in the Flood Risk Management Environmental Consequences Analysis Technical Report. Also of concern are the Interior Drainage NED risks of Alternatives 2 and 4 as projected in the area of MRLS 575-L, some of which occur beyond the release year, as reported in the Agriculture and Interior Drainage Environmental Consequences Analysis Technical Report. If these pulse flows are components of an adaptive management strategy, we are concerned that decisions made with respect to water flow management could result in spring flooding that would prevent timely planting or fall flooding that would occur before crops are ready and able to be harvested. Furthermore, many business and agronomic decisions are made by farmers well in advance of a crop year, and impacted producers will be faced with increased risks associated with land management decisions if adequate lead time is not factored into adaptive management. Therefore, we request that any implemented alternative which incorporates adaptive management include provisions that maximize the amount of time between approving and implementing flow pulses and associated water level rises, particularly in the spring and early fall. This will give states and impacted residents and businesses appropriate opportunity to weigh in on implementation decisions and prepare for potential impacts.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644408 **Coder Name:** jgutierrez

Comment Text: The big questions for the Lower Missouri River appear to be focused solely on age-0 Pallid Sturgeon. The State believes this should be expanded to the full range of Pallid Sturgeon life stages and potential management actions to meet the full range of needs, as they are likely all interrelated. Providing for the requirements of Pallid Sturgeon throughout all life stages is likely the only way to provide a successful self-sustaining population. Also, consideration of other native species should be included as to avoid listings of additional species.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644031 **Coder Name:** jgutierrez

Comment Text: The organization and process described in the DEIS is too complex and convoluted to maintain the proposed schedule of work and decisions. There are just too many parts and committees to get to the decisions needed to implement management actions. The plan's complexity will doom it to failure.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644028 **Coder Name:** jgutierrez

Comment Text: In its 2003 amendment to the 2000 BiOp the USFWS took issue with the USACE's design of its adaptive management approach. Fearing delays in implementing management actions by performing research as a surrogate for evaluating the effects of management actions, the USFWS explained what an adaptive management is supposed to be: "Adaptive Management is founded on simplicity: identify desired outcomes; take reasonable management actions that are believed to yield positive results; monitor those actions to determine if the expected results were achieved; and make management changes based on the new information." The USACE should adopt this approach to adaptive management.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643958 **Coder Name:** jgutierrez

Comment Text: The NPS recommends that the interagency coordination language in the last paragraph of Section 6.10.1 of the MRRMP also be incorporated within the Science and Adaptive Management Plan (AMP) component of the DEIS.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643955 **Coder Name:** jgutierrez

Comment Text: It is stated that the Pallid Sturgeon Population Assessment Program will be continued in some form; however, there are no specifics given about what activities (e.g. inventory, monitoring, or research studies) will continue and at what level. The EIS should elaborate upon existing inventory, monitoring, and research that is underway and/or planned in the future - - this may include existing science actions in the Missouri River Recovery 2017-18 annual work plans. The current level of monitoring (including fish

community monitoring) should be continued and made more robust to give the most complete picture of what is occurring in the river and how the sturgeon is affected.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643944 **Coder Name:** jgutierrez

Comment Text: Monitoring priorities should include population structure, dynamics, and status and trends information, which are essential to the pallid sturgeon population augmentation program. The USFWS believes monitoring forage fish that are important in the diet of the pallid sturgeon, and serve as short-term indicators of effect of actions. Finally, the USFWS recommends the use telemetry technology to evaluate habitat use.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643943 **Coder Name:** jgutierrez

Comment Text: The USFWS envisions true population monitoring as appropriate for Levels 3 and 4. Because Levels 1 and 2 represent research studies, the data collection at these levels should be integral to the specific research and will likely be completed by a wide array of entities conducting the studies. The USFWS envisions monitoring crews assist with data gathering or accomplishing tasks for Levels 1 and 2, when they overlap efficiently with Level 3 and 4 monitoring activities. Many Level 1 and 2 studies will transition to Level 3 and 4 actions. When this occurs, the pallid sturgeon monitoring program will need to be revised to address the broader implementation scale or new needs for adaptive management associated with the original question/hypotheses, the USFWS looks forward to continued engagement in this process

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643925 **Coder Name:** jgutierrez

Comment Text: Decision trees within the Draft MRRMP EIS adaptive management plan (adaptive management plan) describe the ecological responses and knowledge acquisition considerations within the adaptive management process to move to higher levels of

action, e.g. Level 3 and Level 4. Additionally, the governance process engages the partners and stakeholders who have interest in the decision process. However, the USFWS is concerned that the numerous administrative and regulatory process requirements may slow movement within the adaptive management plan. Hence, the USFWS recommends the Corps include and describe 'action forcing' criteria to ensure appropriate changes are made in a timely matter within both the scientific and administrative portions of the adaptive management plan. The USFWS has consistently maintained that the MRRMP EIS should contemplate and evaluate the full suite of actions that the Corps can take so as to reduce the potential for further process delays during implementation of the Missouri River Recovery Program (MRRP).

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643064 **Coder Name:** jgutierrez

Comment Text: The Nebraska Game and Parks Commission supports the continuation of Propagation and Augmentation of pallid sturgeon as long as pallid sturgeon are genetically confirmed "pure" pallid sturgeon, the numbers stocked are based on the best available science and that stocking is only considered a temporary measure as we work to reestablishing the necessary levels of reproduction and recruitment.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 643015 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 4.9, p. 4-33 "The MRRMP-EIS establishes an AM plan for the next 15 years (approximate) that is flexible and should allow many of the management actions specified within the Preferred Alternative to proceed without additional NEPA analysis. Information gathered through the adaptive management process will be used to adjust operations within the range of the impacts analyzed in this EIS." Comment: This statement illustrates how broad and open-ended the AMP is. As framed, it is difficult to understand what substantive limits govern the range of allowable adaptive adjustments. And, after reviewing the EIS, the limit of the Preferred Alternative itself is not clear. The actions contained in the Preferred Alternative are outlined in Section 2.10, but then that section has the following sentence regarding pallid sturgeon actions in the upper basin: "After this research and monitoring the intent is to follow the decision criteria and governance process described in Chapter 4 of the AM Plan to guide implementation of subsequent activities." Figure 4-4 (page 4-7) lists actions to be implemented within the next 15 years for the pallid sturgeon in the upper basin. The table includes actions such as "Fort Peck Flows" and "Drawdowns." Based on a review of the AMP,

it is assumed that "Drawdowns" means a drawdown of Lake Sakakawea. It is not clear if the USACE considers all of these actions as part of the Preferred Alternative. If they are part of the Preferred Alternative, it is even more unclear if the USACE considers the effects of these actions to have been evaluated in this EIS. A drawdown of Lake Sakakawea was not simulated in the hydrology and hydraulics models; however, in consideration of how this is framed in the EIS, it could be interpreted to be inherently a part of the Preferred Alternative that is proposed. The adaptive management portion of the Preferred Alternative is severely lacking in clarity and boundaries. To be clear, the State of North Dakota opposes any action outside the constraints of the current Master Manual - unless there is meaningful consultation specific to such action with the state government (apart from the MRRIC, FWCA, and AOP processes). Commenting on an EIS or other NEPA document will not satisfy the need for such direct consultation. This applies to any flow management action that could be interpreted as inherently part of the Preferred Alternative (i.e. Fort Peck flow changes, Lake Sakakawea drawdowns), any flow management action outside the Preferred Alternative but evaluated in this EIS (i.e. ESH-creating flows), and any flow management action beyond this EIS that is a result of future adaptive management.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642902 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 4.7, p. 4-31 "The AM Plan lays out how different types of decisions could be made that are outside the scope of real-time water management." Comment: This statement should be clarified, does it mean the AMP does not apply to water management (which we assume means water release from the dams), or does it mean the AMP will be used to decide on releases outside the bounds of the current Master Manual.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642838 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 4.4.2, p. 4-7 Comment: Figure 4-4 presents AMP initial actions in the Preferred Alternative. The major area of concern and in need of clarification is Big Question 5: Passage, drift and recruitment Level 2 initial action "drift experiments, Fort Peck flows and drawdowns." North Dakota has serious concerns and lacks understanding of what if any sideboards or constraints are placed on flow modification and drawdown. The AMP does not adequately define what types of flow modification or drawdowns are under consideration. Flow modification out of Fort Peck Dam has been a topic of discussion for a long time and identified in the 2003 Amended Biological Opinion as a need.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641807 **Coder Name:** jgutierrez

Comment Text: - The Adaptive Management Process needs a stronger "stop doing" function.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637641 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full NEPA review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633688 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full National Environmental Policy Act (NEPA) review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 628023 **Coder Name:** jgutierrez

Comment Text: AWO is very concerned about the implementation of any preferred alternative under an Adaptive Management Plan. Our members are particularly concerned with the section of the Adaptive Management Plan dealing with management actions outside

the Record of Decision. Whenever new actions are proposed or existing actions modified, those changes must be subject to thorough review, including public comment and environmental impact statements under NEPA.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

AM1050 Adaptive Management (non-substantive) (Non-Substantive)

Correspondence Id: 55 **Comment Id:** 631113 **Coder Name:** JGUTIERREZ

Comment Text: The League supports and welcomes the Adaptive Management component of the plan. Under AM, recovery actions would be adjusted much quicker to provide needed benefits to the species.

Organization: Izaak Walton League of America (South Dakota, Nebraska, Iowa)

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645804 **Coder Name:** jgutierrez

Comment Text: Additionally, under section 5.3.1 of the draft AM Plan, it refers to the states as cooperating agencies in the Management Plan process and that all the cooperating agencies are also members of MRRIC. South Dakota formally requested to be a cooperating agency in the MRRMP development process but that request was not acted upon by the USACE, with the idea that state participation would be through MRRIC. In previous Missouri River management efforts, like the Missouri River Ecosystem Restoration Plan and the Missouri River Authorized Purpose Study, South Dakota was a cooperating agency. While South Dakota does participate in MRRIC, we desire to fulfill our role as a cooperating agency with regards to participation in the MRRMP and the AM Plan. With four of the six mainstem dams constructed on the Missouri River within the boundaries of the state of South Dakota, we certainly have a vested interest and expertise in both the recovery of the listed species and impacts to basin stakeholders that may result from management actions.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644828 **Coder Name:** jgutierrez

Comment Text: No actions should be taken under the adaptive management processes that are outside the boundaries of the current Master Manual.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643779 **Coder Name:** jgutierrez

Comment Text: NPPD supports implementation of the Adaptive Management (AM) approach as presented in the DEIS as a component of the Missouri River Recovery Plan. Adaptive management will enable the USACOE to better understand the needs of the species, reduce uncertainties and to implement science-based management actions to benefit the Piping Plover and Pallid Sturgeon.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643296 **Coder Name:** jgutierrez

Comment Text: The State has made significant contributions to Pallid Sturgeon recovery in the Upper Missouri River Basin for decades, implementing the USACE's Pallid Sturgeon Population Assessment Program and leading research in describing the relationship between flow, adult Pallid Sturgeon movement, and larval Pallid Sturgeon drift dynamics.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641719 **Coder Name:** jgutierrez

Comment Text: 1. A selected alternative should generally stay within the parameters of the Master Manual.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641704 **Coder Name:** jgutierrez

Comment Text: 1. The alternative selected should stay with the parameters that were established in the Master Manual.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 163 **Comment Id:** 641271 **Coder Name:** jgutierrez

Comment Text: Incorporation of the best scientific research and monitoring driven by adaptive management methodologies will help ensure that the piping plover, least tern, pallid sturgeon and other species will benefit from ecosystem recovery activities.

Organization: Audubon Missouri

Commenter: Anita C Randolph **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640546 **Coder Name:** jgutierrez

Comment Text: The Adaptive Management Process needs a stronger stop doing function

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 100 **Comment Id:** 633708 **Coder Name:** jgutierrez

Comment Text: The Adaptive Management Process needs a stronger "stop doing" function.

Organization: City of Barnesville Municipal Utility

Commenter: Guy A Swenson **Page:** **Paragraph:**

Kept Private: No

AMP1000 Governance of the Adaptive Management Program (Substantive)

Correspondence Id: 25 **Comment Id:** 626689 **Coder Name:** jgutierrez

Comment Text: At this point, I must stress its importance the Corps working with the state through the implementation of adaptive management of Missouri River Recovery Program. We have serious concerns with respect to potential changes in the Master Manual.

The EIS includes alternatives with several flow-of-management actions that would deviate from the current Master Manual. The Adaptive Management Plan adds another layer of uncertainty due to its lack of sideboards and vagueness in how the states would be involved in the decision-making process if the Master Manual were to change. For these high-consequence decisions, there needs to be an avenue for direct consultation with experts from various state agencies who understand their authorities and responsibilities, know what questions to ask, and can recognize concerns. This is necessary to ensure that the federal government complies with state regulations and does not do something that significantly, adversely impacts the states and their right to manage natural resources within their borders. In order to alleviate these concerns, there needs to be a guarantee in the Adaptive Management Plan that if any actions are proposed to occur outside the conditions of the Master Manual, the Corps will consult with states before making any substantive modifications, apart from MRRIC, Fish and Wildlife Coordination Act, and the Annual Operating Plan process. State representatives on MRRIC are striving to reach consensus on language to be included in the Adaptive Management Plan that articulates this stipulation.

Organization: North Dakota State Water Commission

Commenter: Garland Erbele **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646301 **Coder Name:** JGUTIERREZ

Comment Text: We recommend that the USACE, through the MRRMP-EIS and integrated SAMP, does more to collaborate with the State to develop conservation and management strategies.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646300 **Coder Name:** JGUTIERREZ

Comment Text: Close collaboration would ensure seamless coordination and cooperation between agencies. We continue to work cooperatively with the U.S. Fish and Wildlife Service (USFWS) under ESA Section 6(c) to conserve Pallid Sturgeon within Montana and we have remained financially committed to cost-sharing opportunities with the USFWS and other sources of private funding. Furthermore, the State continues to manage the aquatic community (e.g., sport fishes, species of concern, and potential candidate species) in a manner that helps avoid listing and impairment. Our institutional knowledge and local expertise in the connected Missouri River-Yellowstone River ecosystem is unmatched. Yet, the State has not been included in the development of fundamental objectives in the MRRMP-EIS; particularly, to "avoid jeopardizing the continued existence of the Pallid Sturgeon from the USACE actions on the Missouri River."

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646299 **Coder Name:** JGUTIERREZ

Comment Text: As such, Montana must be actively engaged in planning and implementation to develop and address any decisions involving monitoring, research, and implementation of management strategies.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 645816 **Coder Name:** jgutierrez

Comment Text: As it is the State's policy to protect and preserve Montana's fish and waters within the State, we feel that it is imperative that the State is accepted as an active participant in any future decisions that might affect not only Pallid Sturgeon, but all of Montana's fish and wildlife and their habitats.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645809 **Coder Name:** jgutierrez

Comment Text: 4. Governors of each of the basin states should have much larger input into AM than what is currently proposed and the AM governance structure should be reexamined to accommodate this.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645803 **Coder Name:** jgutierrez

Comment Text: Therefore, we ask that the language in the third paragraph under the "States" heading of section 2.3.8 "Basin states, other federal agencies, and tribal roles outside the MRRIC collaborative process" in the AM Plan be changed to that listed below:

"With regard to the regulation of the Missouri River Mainstem Reservoir System, the USACE will continue to provide a draft and final Annual Operating Plan (AOP) that describes the planned operation of the reservoir system within the conditions of the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) for the coming year under a variety of runoff conditions. States will have the opportunity to provide comments on the draft and final AOP at the public meetings or by providing written comments during the comment periods. If at any time during AM Plan implementation, the Basin States or USACE determine the actions proposed to occur are outside of the conditions of the Master Manual, the Corps will first consult with all the Basins States, their designated representatives and/or other interstate organizations consisting of Missouri River Basin State representatives before making any substantive modifications. Additionally, states retain the right to comment or request consultation outside of MRRIC, FWCA, and AOP processes on any issue related to the Management Plan or ongoing AM process via official letter at any time."

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645802 **Coder Name:** jgutierrez

Comment Text: We also believe the AM plan fails to preserve the rights of states and their governors to sovereign and executive decisions relating to their interests in the Missouri River. Governors of each of the basin states should have much larger input than what is currently proposed under the AM plan governance and should not be relegated to a lower stance in the AM plan pyramid.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645154 **Coder Name:** jgutierrez

Comment Text: With regards to the draft AM Plan, South Dakota would like the language defining the role of states in governance to include that consultation between the USA CE and the State will occur when any management action outside of the scope of the current Master Manual is considered.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645151 **Coder Name:** jgutierrez

Comment Text: Adaptive Management Plan Comments South Dakota and other state representatives on MRRIC have been discussing the role of states in the governance process of the MRRMP with the USA CE for over two years. The Fish and Wildlife Coordination Act gives states the opportunity to provide input to the USAGE, through the USFWS, on ecological and biological considerations of management actions and alternatives to benefit the listed species. However, it does not adequately provide states the opportunity to be briefed and consult with the USAGE on implementation of management actions which will affect Missouri River stakeholders within each state. South Dakota appreciates the effort made by you and your staff General, to come to Pierre in early December of 2016 to discuss the MRRMP, EIS, and governance of the AM Plan with the Governor's staff and representatives from the departments of Environment and Natural Resources and Game, Fish and Parks. That is the type of interaction between the USAGE and the State of South Dakota that we would like referenced in the governance portion of the adaptive management plan, in association with any changes to the Master Water Control Manual.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644831 **Coder Name:** jgutierrez

Comment Text: The adaptive management governance should be reexamined to include greater participation by the governors of the States.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644822 **Coder Name:** jgutierrez

Comment Text: As much as we complain about elected officials, they are the representatives of the people. The governors are the highest level of the peoples' interest. The governance structure reduces the States' authority to protect States' interests by not providing a platform for their "direct" involvement other than participation through MRRIC. This is unacceptable. In addition, membership in MRRIC is selected by the Corps. While we respect the current Corps leadership, a structure must be protective of the risk of the federal government choosing membership most biased to its position. For that reason alone, MRRIC cannot be presumed to represent the public interest in decisions on the management of the river. Its charter can also be revised removing key current presumptions, such as requiring unanimous consensus. For these reasons we believe the adaptive management governance is flawed and requires revision.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644818 **Coder Name:** jgutierrez

Comment Text: We have concerns that the adaptive management governance for the Missouri River Recovery Management Plan places too much emphasis on the birds and fish and insufficient emphasis on people.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644784 **Coder Name:** jgutierrez

Comment Text: 6. Adaptive management actions and decisions should not contradict current regulatory paradigms and requirements. The adaptive management governance does not include the authority to change, modify or circumvent current regulations without appropriate rulemaking consistent with federal requirements. This includes attempts to modify current permits for any actions on the river.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644783 **Coder Name:** jgutierrez

Comment Text: 5. The adaptive management governance framework isolates stakeholders and relegates them to a lower stance in the pyramid. The adaptive management process compromises the authority of the governors in the basin to a lower priority in decision making. These elected representatives of the various states should have the highest position with regard to the adaptive management governance process. At a minimum, the governors, as representatives of the citizens in each of the various states in the basin, should have a substantially greater input than currently structured under the adaptive management governance.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644644 **Coder Name:** jgutierrez

Comment Text: The AM Plan describes a proposed governance structure (Section 1.2.2, page 18) for decision-making where composition of the Technical Team may include Federal and state agency personnel, university professors, and contractors selected to address the underpinning science for the program. It is unclear whether state fish and game agencies would be included on the Technical Team, or serve as contractors. Actions taken under the EIS and AM Plan will affect wildlife under the jurisdiction of state fish and game agencies. Actions taken will also have an impact on recreation in basin states. However, USACE plans for engagement and state fish and game agency roles within the process remain undefined.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644434 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7.5, page 100, lines 4-38 - These potential interactions were utilized for the development of the AMP, but are likely not necessary for implementation of the AMP. The different levels of communication will be determined by the MRRIC Team members and the WGs. We recommend eliminating this from the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644433 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7.4, page 98 - The TPSN role is coordination and facilitation of the Panel, it is important the TPSN represent the Panel from a coordination perspective, not as a review or opinion perspective.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644432 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7.3, page 97 - We strongly recommend that there be an ISAP and a Separate ISETER panel as recommended by MRRIC for the reasons stated in MRRICs recommendation. We recommend that MRRIC and the USACOE establish a rotational process for the Independent Panel. Bringing new members onto the Panel refreshes

the review and provides new insights into hypotheses of the AMP. We recommend that the Panel elect a chairperson to prepare all responses to questions posed by MRRIC/Agencies. The third party science neutral would be used to identify replacement candidates for the rotational process. An alternative process for the Independent panels is to select the members who will participate in questions from MRRIC/Agencies as selected for each review task. For example if it is strictly a science question related to pallid sturgeon, it may not be necessary for the expert economist to participate, but they would be aware by being a panel member. This section should be modified to address the two roles of the Panel, review and advisory. It is important that the Panel remain neutral which is difficult if they are directly engaged in development and implementation of the MRRP. As the AMP is implemented, while there is an advisory role for the Panel, it should be implemented in a manner to preserve the independent review capabilities of the pane as much as possible. This is different than has occurred through the development of the AMP in which the Panel has been used in many cases as an advisory group.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644431 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.2.7.2, page 94, line29 Work Groups for MRRIC should have Co-POCs to help them manage the work load.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644430 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7.3, page 97 - We strongly recommend that there be an ISAP and a Separate ISETER panel as recommended by MRRIC for the reasons stated in MRRICs recommendation.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644429 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7.2, pages 92-97- We recommend that to stream line the process, that MRRIC as a whole replace the HC WG. This also considers that MRRIC members can (and are willing), are participating in the Technical Teams (Bird, Fish and HC). In other words the Bird, Fish and HC teams would be open to MRRIC members who choose to participate. If there is a need for Bird and Fish Work Groups they should be in the MRRIC structure and be the vehicle for Team members to report to. As stated above we do not believe an HC Work Group is necessary, MRRIC can serve that role.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644428 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7.2, page 95, lines 5-13 - The Fall Science Meeting , Annual AM Workshop and WP review scheduling needs to be flexible rather than at prescribed times. They need to occur when the data and analysis are available and time has been allocated for Team review (see also above recommendations that MRRIC members can participate on Teams, but the Work Groups are separate within MRRIC, eg. Replacing the SAM Work Group).

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644426 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.7, page 92, and Figure 15 (Also 2.3.7.2 line 15-17) - We recommend the SAM work group is not needed as the AMP is implemented. The Bird, Fish and HC Work Groups can bring appropriate information and recommendations to the MRRIC without going through SAM. This will save valuable time in the AMP process. Should other work efforts be needed they could be achieved through other work/task/Ad Hoc groups.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644425 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Sections 2.3.2- 2.3.6 - We recommend the USACOE consider consolidating the roles and responsibilities for the AMP into fewer positions. This would greatly improve the process and reduce program costs (required taxpayer dollars).

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644417 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.4, - page 84. The Technical Support group makes up and roles needs to be better defined. We assume the USACOE has the authority to determine who is on Technical Support group. The make-up and membership of this group should be developed by the USACOE, AM Process Manager, and provided to MRRIC for comment and any recommendations. The membership and roles of each Technical Support group member should be maintained on an active list. Changes to the list shall be provided to MRRIC as changes to the group occur.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644415 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.4, page 83, lines 17-19 - Technical Support should not have the authority to unilaterally engage the ISAP or ISETER. The communication line to communicate with the ISAP needs to be through the appropriate Team and MRRIC as well as the USACOE as prescribed in panel documents.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644410 **Coder Name:** jgutierrez

Comment Text: In the draft Adaptive Management Plan, the State is concerned about the lack of a defined role for state fish and wildlife agencies. The General Engagement Process for Science and Development of the Work Plan does not depict a role for state fish and wildlife agencies. It is unclear how these entities would fit into the process, although they are responsible and have jurisdictional authority for fish and wildlife in their respective states. Similarly, while the statutory role of state fish and wildlife

agencies is acknowledged in section 2.3.8.1, the proposed governance structure described in Adaptive Management Plan documents and Section 4.6 appear developed in large part for collaboration with the Missouri River Recovery Implementation Committee (MRRIC), and does not seem to cover duties assigned to state fish and wildlife agencies. The role of state fish and wildlife agencies in decision making could be better defined.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644389 **Coder Name:** jgutierrez

Comment Text: Section 2.3.3.2, - page 82, line 3 -. The HC Team will likely have a membership similar to MRRIC membership. We also believe the HC Work Group should be the full MRRIC (that is why MRRIC was formed in the first place). We would recommend the MRRIC meet at different times from the Fish and Bird teams to allow MRRIC members to participate on a species team and HC Team. We also believe the HC Workgroup should be the full MRRIC.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644387 **Coder Name:** jgutierrez

Comment Text: Section 2.3.1, page 73 - The last paragraph lists a number of roles for USFWS Regional Director including the role as the development of or changes to targets, criteria, hypothesis, etc. Seems like this level would approve those recommendations coming from the adaptive management plan, not initiate them?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644386 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3, page 70, Figure 14 - see Figure 7 comment above. We would recommend that there can be MRRIC members on the Teams but it does not necessarily need to be a workgroup; however the workgroups would exist outside the teams but within MRRIC. MRRIC Team members then report back Work Groups who would make recommendations to MRRIC. The selection for the Team members would be as described but it would aid in the understanding

of the commitment team members must make. It would also help with the existing understanding of MRRIC that work groups participation is broad, and commitment is more or less as available. Recommend the Technical Team be renamed to Technical Support. This group is different than the Bird, Fish and HC teams from a membership and participation perspective as well as roles and responsibilities and should not use the same Team name.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644297 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 1.2.2, page 18, Figure 7 - This Figure would better depict the needed relationships to make AM successful if the Agency Management Team Box overlapped the Team levels. Interactions of the Management Team and Bird, Fish and HC teams are necessary to making AM and the AMP successful. This process will likely need to be adapted in the future because communication and decision making timelines will be imperative in implementation of the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643946 **Coder Name:** jgutierrez

Comment Text: The USFWS supports and appreciates the Corps collaborative approach to decision making within the governance section of the Draft MRRMP/EIS. Continued engagement with partners and stakeholders including Missouri River Recover Implementation Committee, Basin Tribes, Federal and State Agencies will prove invaluable to the success of our conservation efforts in the Missouri River Basin.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643312 **Coder Name:** jgutierrez

Comment Text: The AM plan contemplates that the States will have an additional role through their representation at MRRIC. It is imperative that MRRJC State representatives are able to effectively relay information presented as MRRIC to interested state agencies and bring their concerns back to the MRRIC table. MRRIC representatives will be able to reach a broader group of interests than the

outside statutory structure contemplates being able to inform decisions. State agency expertise also has a potential role to play on various work groups.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643306 **Coder Name:** jgutierrez

Comment Text: Under the Fish and Wildlife Coordination Act (FWCA), FWP is provided with a framework to have fish and wildlife conservation measures considered for incorporation into federal water development projects; however, this opportunity is unavailable to other state agencies (e.g., DNRC). The State supports efforts to broaden the opportunity for input outside of the FWCA and outside of the Missouri River Recovery Implementation Committee (MRRIC) to ensure the State's perspective is fully considered. As such, the State of Montana, in collaboration with other Missouri River Basin state government agencies, _developed the following suggested replacement language for the section pertaining to the roles that basin states, other federal agencies, and tribes would be afforded outside of the MRRIC collaborative process (p. 103, sec. 2.3.8.1, SAMP, MRRMP-EIS): Each state has responsibilities through various federal and state statutory and constitutional authorities, for management of water quantity, water quality, and fish and wildlife resources within their boundaries that could be affected in this process (in either a positive or negative way). As previously stated this governance structure does not change or impede any of the rights and responsibilities of a state codified by law.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 158 **Comment Id:** 640079 **Coder Name:** jgutierrez

Comment Text: Unfortunately, the current AM Plan language fails to outline options for notification to states if or when any of the potential MRRMP implementation actions may occur outside of the Corps's Missouri River Reservoir System Master Water Control Manual (i.e.- - the one-time spring pulse test release under the current agency-preferred Alternative #3). Consultation with states at specified trigger points - or at least under high consequence circumstances - that are in addition to the standard legally-required AOP process is a crucial step toward effective federal/state coordination. We request that the Corps add provisions to the AM Plan that address this concern.

Organization: State of Wyoming

Commenter: Beth Callaway **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 34 **Comment Id:** 628335 **Coder Name:** jgutierrez

Comment Text: Adaptive management's governance framework isolates stakeholders and relegates them to a lower status in the pyramid. The adaptive management process compromises the authority of the governors in the basin to a lower priority in the decision-making. These elected representatives of the various states should have some of the highest position with regard to this process.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

AMP1100 Decision Needs to Adaptively Manage the MRRP (Substantive)

Correspondence Id: 134 **Comment Id:** 640684 **Coder Name:** jgutierrez

Comment Text: The proposed AMP needs a much stronger stop doing function as part of its structure. The description on page 12 of the Draft Adaptive Management Plan suggests that a theory may be discarded after implementation, monitoring and evaluation show it is not workable. However, the primary path seems to be for the advocates to propose variations to their theory and additional research to see if the revised theory works any better. A weak stop doing function provides an endless do loop for theories early and stifles innovation by preventing other theories from being considered due to limited research resources. The stop doing element of the AMP needs to be strengthened considerably to quickly eliminate theories that lack quantitative scientific support in order to make room to test other theories.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 646289 **Coder Name:** JGUTIERREZ

Comment Text: I encourage the USACE to streamline its process to identify and implement management actions to mitigate USACE impacts to pallid sturgeon and their habitats in Montana; abandon unneeded, repetitious research that duplicates work already completed in the Upper Basin and further delays implementation of actual management actions in Montana; and use a more aggressive approach to actually address take of pallid sturgeon by USACE operations.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 645779 **Coder Name:** jgutierrez

Comment Text: More emphasis should be placed on ensuring available empirical information is utilized in the process of evaluating hypotheses and developing alternatives for management and implementation. Working with the State to utilize our expertise and local knowledge of the connected Missouri River Yellowstone River ecosystem would substantially improve the effectiveness of recovery actions and would be far more cost-effective. The Science and Adaptive Management Plan (SAMP) was developed to " ... address the uncertainty associated with potential Pallid Sturgeon limiting factors," (p. 1-17, sec. 1.3.1 , Volume 1, MRRMP-EIS). Unfortunately, the document arbitrarily ignores uncertainties associated with attaining successful two-way fish-passage at the Intake Diversion Dam (a structure not operated by the USACE) while postponing needed improvements to Fort Peck Dam operations that are inexplicably deemed infeasible. The predecisional opposition to modify discharge or correct thermal pollution at Fort Peck Dam is surprising, given that the 2003 Biological Opinion (BiOp) clearly states, "In the Upper Missouri River, continued operation of Fort Peck Dam as proposed will continue to significantly impair the reproduction and recruitment of Pallid Sturgeon in this reach. These factors affect the production of forage fish which are important to the overall survival of Pallid Sturgeon," (p. 179, 2003 Amendment to the 2000 BiOp). Selective withdrawal devices are operational at other USACE-operated projects, including Libby Dam in western Montana, and their implementation has greatly benefited the federally-listed Bull Trout and other native fishes. Addressing Pallid Sturgeon limiting factors objectively (e.g., in parallel approach) in the connected Missouri River Yellowstone River ecosystem would serve to more effectively avoid jeopardy to Pallid Sturgeon and would exemplify the" ... demonstrated need to develop a management plan comprised of actions informed by best available science," (p. 1-17, sec. 1.3.1, Volume 1, MRRMP-EIS). As such, the State recommends that the MRRMP-EIS address the Missouri and Yellowstone rivers as connected Pallid Sturgeon habitat and work in parallel to develop alternatives for management and implementation. Specifically, the State requests that efforts to improve Fort Peck Dam operations for the benefit of Pallid Sturgeon and the downstream Missouri River ecosystem not be conditioned on the success of Pallid Sturgeon passage at Intake Diversion Dam in the MRRMP-EIS.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645586 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 469) says that major events, such as floods, are occasionally the subject of post-event investigations that can be used to update information on the effects of flows on HCs. We applaud this step but would also ask that major droughts be considered a major event. The historic hydrograph shows many more years of below average runoff in the upper basin than above average. When President Roosevelt signed the 1944 Flood Control Act, he wondered where the water to support the

purposes would come from, given the upper basin is semi-arid. Prolonged drought conditions are a concern of the League and we think it will become an even greater concern as more and more users extract water from the reservoir system.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645499 **Coder Name:** jgutierrez

Comment Text: Alternative 2 - Alternative 2 (V1-page 16) states, "Actions would ultimately be implemented through AM as impediments to implementation were removed". Greater clarification is needed as to how the AMP would respond to changing implementation conditions. The DEIS states the Corps has management discretion in achieving acreage goals and whether those goals are accomplished through mechanical construction or river flows. The Corps can also achieve the acreage goals listed in Alternative 2 incrementally.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645342 **Coder Name:** jgutierrez

Comment Text: 6) Habitat creation (e.g. IRC Cs) metrics should be better defined and approach expanded to the upper Missouri population According to the EIS, where alternatives focus on the creation of IRC habitat, performance metrics could be more defined and provide additional certainty. The EIS includes two conditional statements about the performance of IRC habitat that call into question whether IRC construction will be implemented. In the first, the EIS states "In the event that results are positive or equivocal, additional IRC sites would be constructed in the following years to accelerate determinations regarding these uncertainties." The Corps should both define equivocal and the range of results that would be considered positive and in particular whether statistical significance would be required for the Corps to move to the next phase of IRC construction.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644765 **Coder Name:** jgutierrez

Comment Text: "The Adaptive Management (AM) Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional NEPA requirements. In its present state, the DEIS allows the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. The Corps does not have independent authority to proceed on flow changes without Congressional authorization and utilization of the NEPA process.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644648 **Coder Name:** jgutierrez

Comment Text: It seems appropriate for the pallid sturgeon Decision Criteria to include whether additional species are listed as threatened or endangered. This criterion could serve as a basis for evaluating the current listed species approach to the Missouri River Recovery Program. Additionally, Decision Criteria depicted in Figure 64 (Diagram of a decision tree addressing contingent information in the Lower Missouri River) of the Adaptive Management Plan might include whether there are relationships between flow, turbidity, and food availability/foraging efficiency.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644646 **Coder Name:** jgutierrez

Comment Text: Decision Criteria for some targets are described in the Adaptive Management Plan, while others are yet to be developed. While the AM Plan focuses hypotheses on three listed species, including addressing pallid sturgeon decline and the recruitment bottleneck from Age-0 to Age-1, ecosystem function could be more thoroughly considered. The 2000/2003 Biological Opinion identified alteration of big river ecologic functions and habitat as a primary cause of declines in reproduction, growth, and survival of pallid sturgeon (page 104). A number of additional species are known to be in decline in the Missouri River currently, including species petitioned for listing in August 2016 which are part of the pallid sturgeon diet. As proposed in the AM Plan, new information would be integrated into hypotheses, including underlying causes of pallid sturgeon in poor body condition documented by Nebraska Game and Parks Commission (January 2016, page 292 of the AM Plan). Later work that year by R. Jacobson confirmed declines in fish condition in the lower Missouri River basin.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644436 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.4.3, page 111, Figure 17 - This figure significantly ignores the role of the Teams in the process and what goes to the USACOE and MRRIC.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644435 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.4.2.2, page 107 - Fall Science meeting should be for the Teams, likely not many results for WG or MRRIC - Results are likely in a Spring- Summer time frame, eg. Annual AM workshop.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644383 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.2.4, page 67, line 17 - Indicates that in some cases decision criteria cannot be developed until details of actions are known. What process does the AMP employ to ensure decision criteria are developed at the earliest time. Should there be an annual review or some other process?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644371 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 1.4.5, Page 43, 2nd full paragraph -This description is missing a critical component of IRC development and that is where the habitat needs to be located. It states it will be in the lower Missouri River but this may miss the location that benefits the species which could be in the Mississippi River. The location of the habitat based on the drift needs to be understood before habitats are built as described in this paragraph and Table 7.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644103 **Coder Name:** jgutierrez

Comment Text: Comment 4: Commitment to implementing Level 3 & 4 actions must be included in the final EIS and must be initiated within the timeframe of the plan. Further, the whole purpose of the AM process is to spend money and time to get to Level 3 & 4 actions. Without a commitment to implementing actions supported by the expensive and lengthy adaptive management process, why begin the process?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 642101 **Coder Name:** jgutierrez

Comment Text: The proposed AMP needs a much stronger stop doing function as part of its structure. The description on page 12 of the Draft Adaptive Management Plan suggests that a theory may be discarded after implementation, monitoring and evaluation show it is not workable. However, the primary path seems to be for the advocates to propose variations to their theory and additional research to see if the revised theory works any better. A weak stop doing function provides an endless redo loop for theories early and stifles innovation by preventing other theories from being considered due to limited research resources. The stop doing element of the AMP needs to be strengthened considerably to quickly eliminate theories that lack quantitative scientific support in order to make room to test other theories.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

AMP1200 Adaptive Management Decision Process, Critical Engagement and Workflow (Substantive)

Correspondence Id: 29 **Comment Id:** 626824 **Coder Name:** jgutierrez

Comment Text: The State of Missouri would also like to reiterate to the Corps that decision-making within the Adaptive Management Plan needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governors' offices on matters of high consequence is imperative.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645627 **Coder Name:** jgutierrez

Comment Text: The DEIS gives the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. Though the DEIS states there is a governance structure for the AM Plan, it simultaneously permits actions that are not part of the preferred alternative, if those options are warranted and feasible. Yet, the DEIS fails to clarify what constitutes warranted and feasible, beyond that which yet-unknown science deems necessary. As a result, the DEIS and the AM Plan open the door to actions that go beyond the established ROD without automatically triggering a full NEPA process to produce a supplemental EIS, as is required by law.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645625 **Coder Name:** jgutierrez

Comment Text: Section 4.0 Adaptive Management Plan General Analysis: 1. By definition and design, adaptive management (AM) means the management actions are not yet identified. We can only speculate on the direction of impacts because we only know the direction of management actions. It is impossible to provide the appropriate quality and scope of comments on management actions when not even the Corps or the FWS knows what actions they will take. AM plan decisions made outside of the ROD and Master Manual must go through full NEPA review and a separate EIS and must include independent peer review of the science and be coupled with full public review and comment before finalized. 2. The Corps should communicate what actions they believe to be implementable under AM. If stakeholders are to participate in a meaningful way, no decisions should be made in a vacuum or come as a surprise. 3. The Corps should commit to the use of two independent panels in AM plan independent review. We believe socio-economic impact review and analysis to be a key part of AM and it should continue to be utilized. As weve pointed out, the DEIS modeling and assessment of human impacts is woefully inadequate, highlighting the important need for review by both panels.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645553 **Coder Name:** jgutierrez

Comment Text: Most of all were concerned over the lack of provisions for actual measurement, how it will be conducted and how it will inform the AM decision making process. It must be spelled out and be an integral part of the AM process. The AM process cannot be limited to adapting management actions for just one species. We should not be so cautious as to avoid experimentation and application of successful actions, nor so arrogant as to believe simple modeling accurately reflects economic impact.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645371 **Coder Name:** jgutierrez

Comment Text: Section and Page Number: 2.5.2.1, pg 2-26 Comment: Fort Peck management actions or a drawdown of Lake Sakakawea were not retained for alternative analysis due to the "high level of uncertainty" of the actions' ability to achieve the desired result. How can these actions be considered in any section of the AMP if the actions were not analyzed in the EIS?

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645253 **Coder Name:** jgutierrez

Comment Text: The Adaptive Management (AM) Plan envisions a rigorous science program. If executed properly, meaningful steps can be made towards understanding species needs while minimizing impacts to the human environment and other uses. The Corps and the FWS must focus on further developing the science necessary to understand what is needed for species survival. For example, rather than committing the vast majority of budgetary resources to habitat construction, the Corps should also emphasize research and monitoring to understand the species habitat needs. Furthermore, the feedback loop of the adaptive management process was largely forgotten in the years following the 2003 Bi Op. During that time hundreds of millions of dollars were spent on the Missouri River Recovery Program and very little time and focus was spent on learning from the research and monitoring. It is extremely important that this is changed.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645185 **Coder Name:** jgutierrez

Comment Text: In its present state, the DEIS allows the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. Though the DEIS states there is a governance structure for the AM Plan, it simultaneously permits actions that are "not part of the preferred alternative," if those options are "warranted and feasible." Yet, the DEIS fails to clarify what constitutes warranted and feasible, beyond that which yet-unknown science deems necessary. As a result, the DEIS and the AM Plan open the door to actions that go beyond the established ROD without automatically triggering a full NEPA process to produce a supplemental EIS, as required by law.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644438 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.4.6.7, page 140 and 2.4.6.8, page 141 - Recommend that a step for decisions related to moving between pallid sturgeon implementation levels needs a NEPA check in addition to the workgroup flow.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644437 **Coder Name:** jgutierrez

Comment Text: Section 2.4.3.1 and Figure 18- page 112 - These sections 2.4.3.1, etc. are far too prescriptive as to when the events are / have to occur.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644411 **Coder Name:** jgutierrez

Comment Text: While we appreciate the concept of adaptive management and the need to be flexible as conditions in the Missouri River basin change over time, the State is concerned that the adaptive management provisions laid out in the draft EIS will result in more uncertainty for landowners with respect to the impacts of water flow management and timing of pulses that may contribute to

flooding on agricultural lands. Many of the evaluated alternatives include spring or fall flow pulses that could contribute to flooding of thousands of acres of agricultural land at times when farmers are either trying to plant or harvest crops. Of particular concern are the average annual NED flood risks in the Gavins Point to Rulo reach of Alternatives 4 and 6, and the full release years impacts of Alternatives 5 and 6 in the same reach, as projected in the Flood Risk Management Environmental Consequences Analysis Technical Report. Also of concern are the Interior Drainage NED risks of Alternatives 2 and 4 as projected in the area of MRLS 575-L, some of which occur beyond the release year, as reported in the Agriculture and Interior Drainage Environmental Consequences Analysis Technical Report. If these pulse flows are components of an adaptive management strategy, we are concerned that decisions made with respect to water flow management could result in spring flooding that would prevent timely planting or fall flooding that would occur before crops are ready and able to be harvested. Furthermore, many business and agronomic decisions are made by farmers well in advance of a crop year, and impacted producers will be faced with increased risks associated with land management decisions if adequate lead time is not factored into adaptive management. Therefore, we request that any implemented alternative which incorporates adaptive management include provisions that maximize the amount of time between approving and implementing flow pulses and associated water level rises, particularly in the spring and early fall. This will give states and impacted residents and businesses appropriate opportunity to weigh in on implementation decisions and prepare for potential impacts.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643925 **Coder Name:** jgutierrez

Comment Text: Decision trees within the Draft MRRMP EIS adaptive management plan (adaptive management plan) describe the ecological responses and knowledge acquisition considerations within the adaptive management process to move to higher levels of action, e.g. Level 3 and Level 4. Additionally, the governance process engages the partners and stakeholders who have interest in the decision process. However, the USFWS is concerned that the numerous administrative and regulatory process requirements may slow movement within the adaptive management plan. Hence, the USFWS recommends the Corps include and describe 'action forcing' criteria to ensure appropriate changes are made in a timely matter within both the scientific and administrative portions of the adaptive management plan. The USFWS has consistently maintained that the MRRMP EIS should contemplate and evaluate the full suite of actions that the Corps can take so as to reduce the potential for further process delays during implementation of the Missouri River Recovery Program (MRRP).

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642913 **Coder Name:** jgutierrez

Comment Text: The Nebraska Game and Parks Commission believes that the habitat goal of 20 to 30 acres of aquatic habitat per mile remains the most fundamental critical need of Pallid Sturgeon and the native fish community upon which they depend. We do believe that this effort could be improved by targeting specific habitat needs for both Pallid Sturgeon and the native fish community that they depend upon. Interception habitat should be described and quantified to determine if there is an adequate amount available throughout the river, not just below Kansas City. Rearing and feeding habitats for all life stages of Pallid sturgeon should also be described and quantified throughout the river to guide restoration efforts where they are most needed. These same efforts should be carried out for native fish species critical to the life history of Pallid Sturgeon and to the overall health of the Missouri River ecosystem. The Nebraska Game and Parks Commission strongly believes that much of the main channel habitat work, specifically those bends that had dike notching and removal, to increase top width and create shallow water habitat actually have less shallow water habitat in their in-completed state than they had prior to modification. Because these actions have occurred on nearly 40% of the bends in the channelized reach in Nebraska, if these shallow water habitats projected remained uncompleted, we would be in much worse shape than if this work had never been started.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637641 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full NEPA review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 635176 **Coder Name:** JGUTIERREZ

Comment Text: The State of Missouri would also like to reiterate to the Corps that decision-making within the Adaptive Management Plan needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governor's office on matters of high consequence is imperative.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633688 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full National Environmental Policy Act (NEPA) review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 34 **Comment Id:** 628333 **Coder Name:** jgutierrez

Comment Text: We support adaptive management as a method to expedite knowledge, generate scientific information and test hypotheses. We believe that adaptive management provides for a more nimble position for the Corps in making decisions for our protection of endangered species. However, we find no legal premise for the adaptive management scenario to exceed the guidelines and provisions of the Master Manual on its own accord. As such, we believe that this process does not allow or endorse changes to the manual without appropriate manual review, analysis, procedure and public hearings.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

AMP1300 Protocols and Procedures for Adaptive Management Program Implementation (Substantive)

Correspondence Id: 33 **Comment Id:** 628023 **Coder Name:** jgutierrez

Comment Text: AWO is very concerned about the implementation of any preferred alternative under an Adaptive Management Plan. Our members are particularly concerned with the section of the Adaptive Management Plan dealing with management actions outside the Record of Decision. Whenever new actions are proposed or existing actions modified, those changes must be subject to thorough review, including public comment and environmental impact statements under NEPA.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 645818 **Coder Name:** jgutierrez

Comment Text: Also, a process must be developed that clearly defines state consultation and agreement prior to implementing any Level 2 testing or implementation (level 3 and 4) of the AMP.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645814 **Coder Name:** jgutierrez

Comment Text: Prior to implementing specific actions, the State of Missouri strongly urges the Corps and FWS to communicate to MRRIC and the public at large the rationale behind decisions made by the agencies. If the AM Plan is working as intended, no decisions should be made without the knowledge of stakeholders, nor should these decisions be a surprise to those involved in the other components of the AM Plan (Figure 14, p. 70). To aid in that transparency, the State of Missouri requests the In-Progress Review meetings discussed in Section 2.5.1 be shared with the MRRIC members, as well. Failure to do so could call into question the legitimacy of the process and erode stakeholder trust.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 645800 **Coder Name:** jgutierrez

Comment Text: While extensive modelling was used to develop management alternatives, predictive estimates must be reconciled with actual conditions and the AMP defines the process to adjust accordingly. We believe this approach is essential in order to best utilize science to both understand the species needs and human consideration implications.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645267 **Coder Name:** jgutierrez

Comment Text: We strongly support independent review of not only the AM Plan but continued independent review of the Recovery Program as a whole. Seeking viewpoints from outside the Missouri River basin is critical to the success of the Recovery Program. A competitive proposal process would also engender more trust as it would entail more disclosure of the details of the scientific process.

Knowing who has submitted proposals, how that research would be conducted, and if it is in line with the hypotheses and objectives laid out in the AM Plan, as well as how the results will be communicated with stakeholders, is also instrumental in building a robust scientific program.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645254 **Coder Name:** jgutierrez

Comment Text: Missouri encourages the Corps to continue moving toward an effective, science-based decision making process through implementation of the AM Plan. With active execution of adaptive management, certain actions identified in the Preferred Alternative have the potential to not only benefit pallid sturgeon and other fish and wildlife, but enhance all authorized purposes. All of the basin states agree it is imperative that the adaptive management process remain open and transparent with consultation and coordination with basin States through their respective Governor's offices. Missouri's participation in MRRJC should in no way be construed as a waiver of its status as a sovereign state (see "Adaptive Management Plan" enclosure for further comment).

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644442 **Coder Name:** jgutierrez

Comment Text: In conclusion, when it comes time to implement the adaptive management plan, the document cannot be V.6 as it now exists with its massive volume and extensive appendices. The AM V.6 document should be archived and replaced with a concise and streamlined version laying out the hypothesis, and monitoring /evaluation to address those hypotheses. Additionally the goals and objectives will need to be stated and the plan must include decision making criteria in order to implement adaptive management.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644439 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.5.1, page 146, lines 33-36 - MRRIC Team members may also want to make WG and MRRIC aware of concerns so recommendation can be made as well.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644411 **Coder Name:** jgutierrez

Comment Text: While we appreciate the concept of adaptive management and the need to be flexible as conditions in the Missouri River basin change over time, the State is concerned that the adaptive management provisions laid out in the draft EIS will result in more uncertainty for landowners with respect to the impacts of water flow management and timing of pulses that may contribute to flooding on agricultural lands. Many of the evaluated alternatives include spring or fall flow pulses that could contribute to flooding of thousands of acres of agricultural land at times when farmers are either trying to plant or harvest crops. Of particular concern are the average annual NED flood risks in the Gavins Point to Rulo reach of Alternatives 4 and 6, and the full release years impacts of Alternatives 5 and 6 in the same reach, as projected in the Flood Risk Management Environmental Consequences Analysis Technical Report. Also of concern are the Interior Drainage NED risks of Alternatives 2 and 4 as projected in the area of MRLS 575-L, some of which occur beyond the release year, as reported in the Agriculture and Interior Drainage Environmental Consequences Analysis Technical Report. If these pulse flows are components of an adaptive management strategy, we are concerned that decisions made with respect to water flow management could result in spring flooding that would prevent timely planting or fall flooding that would occur before crops are ready and able to be harvested. Furthermore, many business and agronomic decisions are made by farmers well in advance of a crop year, and impacted producers will be faced with increased risks associated with land management decisions if adequate lead time is not factored into adaptive management. Therefore, we request that any implemented alternative which incorporates adaptive management include provisions that maximize the amount of time between approving and implementing flow pulses and associated water level rises, particularly in the spring and early fall. This will give states and impacted residents and businesses appropriate opportunity to weigh in on implementation decisions and prepare for potential impacts.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644288 **Coder Name:** jgutierrez

Comment Text: Adaptive Management Plan (Version 6) Section 1.1.3, page 8 - It needs to be recognized that the USACOE will be reinitiating Section 7 Consultation with the USFWS as the 2003 BiOp does not reflect the best available science. The AMP needs to be based on the best available science and not the 2003 BiOp.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 185 **Comment Id:** 641492 **Coder Name:** jgutierrez

Comment Text: In addition, the AMP as presented appears to negate the premise of the MRRIC "consensus" decision approach and the implementation of future operational and river management changes. No changes or deviations, either temporary or permanent, from the current Master Manual should occur without direct consultation with and input from the States, prior to implementation. Acceptance of Alternative #3 occurred through the MRRIC process, and so should future management variations. Future knowledge gained by plan implementation and monitoring, including river alterations for habitat creation, will provide scientific insight to effective or detrimental measures regarding management changes, which in our opinion need to continue to be made in a collaborative and not unilateral manor.

Organization: Friends of Lake Sakakawea

Commenter: Terry Fleck **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 160 **Comment Id:** 633988 **Coder Name:** jgutierrez

Comment Text: If at any time during AM Plan implementation, the Basin States or the Corps determine the actions proposed to occur are outside of the conditions of the Master Manual, I strongly urge the Corps to first consult with Nebraska and other basin States, through their designated representatives before making any substantive modifications.

Organization: NE Department of Natural Resources

Commenter: Jeff Fassett **Page:** **Paragraph:**
Kept Private: No

AMP2000 Plover and Tern Monitoring (Substantive)

Correspondence Id: 239 **Comment Id:** 642876 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 4.5.3.2, p. 4-21 - 4-22 Comment: This is a reiteration of the comments made for Section 2.8.1.1 (p. 2-53) about the monitoring program for the piping plover. The State of North Dakota strongly encourages the USACE to make improvements as outlined in Shaffer et al. (2013). This study determined that adult numbers were substantially underestimated and the detection rate varied from area to area. Improvements are necessary so that resources (i.e. money, water, etc.) are used more efficiently in implementing recovery actions. Shaffer, T.L., M.H. Sherfy, M.J. Anteau, J.H. Stucker, M.A. Sovada, E.A. Roche, M.T.

Wiltermuth, T.K. Buhl, and C.M. Dovichin. 2013. Accuracy of the Missouri River Least Tern and Piping Plover Monitoring Program Considerations for the future: U.S. Geological Survey Open- File Report 2013-1176, 74 p., with 4 appendixes, <http://pubs.usgs.gov/of/2013/1176/>.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645559 **Coder Name:** jgutierrez

Comment Text: Also the AMP (AMP 2-page 235) - Table 22 says "when navigation requirements allow." We ask for an explanation on what this means. We also ask how one purpose (navigation) can control other purposes (fish and wildlife and recreation).

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645377 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.8.1.1, p. 2-53 Comment: Regarding the monitoring program for the piping plover, the State of North Dakota strongly encourages the USACE to make improvements as outlined in Shaffer et al. (2013). This study determined that adult numbers were substantially underestimated and the detection rate varied from area to area. Improvements are necessary so that resources (i.e. money, water, etc.) are used more efficiently in implementing recovery actions. Shaffer, T.L., M.H. Sherfy, M.J. Anteau, J.H. Stucker, M.A. Sovada, E.A. Roche, M.T. Wiltermuth, T.K. Buhl, and C.M. Dovichin. 2013. Accuracy of the Missouri River Least Tern and Piping Plover Monitoring Program Considerations for the future: U.S. Geological Survey Open-File Report 2013-1176, 74 p., with 4 appendixes, <http://pubs.usgs.gov/of/2013/1176/>.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

AMP2100 Plover and Tern Evaluation (Substantive)

Correspondence Id: 148 **Comment Id:** 642694 **Coder Name:** jgutierrez

Comment Text: TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study. TNC supports the modeled quantitative

relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645546 **Coder Name:** jgutierrez

Comment Text: The AMP also states that there is some evidence that the presence of protective cages meant to protect nesting birds attracts predators. We urge additional research to develop other methods to protect nests that won't attract avian and mammalian predators.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643865 **Coder Name:** jgutierrez

Comment Text: Section 2.7.2, Page 2-39- The relationships between flows and ESH are based on models developed in the effects analysis. More information needs to be provided to determine if models are reflective of habitat development since the model was develop (model verification).

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643832 **Coder Name:** jgutierrez

Comment Text: Section 2.4.3, Pages 2-12&13 - (Bird Habitat/Population Modeling) This section should include the caveats that are listed in (Modeling to support the Development of Habitat Targets for piping plovers on the Missouri River, May 2015) so that the reader understands the limitations of this modeling. It should also reflect the variability and uncertainty associated with the acres of ESH needed to meet the persistence targets.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

AMP2200 Plover and Tern Decisions and Planning Contingencies (Substantive)

Correspondence Id: 107 **Comment Id:** 643780 **Coder Name:** jgutierrez

Comment Text: The Adaptive Management Plan (AMP) will help to direct the development of Piping Plover habitats (ESH and non-ESH), and aid in the reconciliation of the various hypothesis regarding the successful reproduction and recovery of the Pallid Sturgeon. However, the AMP needs to include more definitive decision making criteria to enable timely decisions regarding management actions to be made.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645577 **Coder Name:** jgutierrez

Comment Text: Also in regards to interior drainage, the AMP (AMP 1-page 225) states "an engineering study may be conducted to evaluate effects of experimental flow releases on other authorized purposes such as interior drainage and tern/plover nesting habitat." Interior drainage is not one of the eight congressionally authorized purposes. We ask this be corrected in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

AMP3000 Pallid Sturgeon Monitoring (Substantive)

Correspondence Id: 107 **Comment Id:** 643915 **Coder Name:** jgutierrez

Comment Text: Section 3.3.2.1.1, Pages 3-82&83 - Points out impacts resulting from the construction and operation of the BSNP but also points out stocking of non-native sport fish and introduction of invasive species which compete with pallid sturgeon as potential obstacles to recovery of pallid sturgeon.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645537 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 446) addresses monitoring of pallids. We agree that accurate estimates of population size are very important. We wonder how an accurate population estimate will be done. What criteria will be used? How extensive a search will be made? How big an area will the geographic scope of the pallid monitoring be? The final EIS should address these questions so that accurate data about the population is ascertained.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645530 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 382) also mentions that post-construction monitoring of Intake would need to continue until results indicate whether or not the project has resulted in successful recruitment. The final EIS must address how long monitoring would continue before AM is implemented to make the needed adjustments to assure the project becomes successful for pallid recruitment.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644650 **Coder Name:** jgutierrez

Comment Text: The AM Plan describes three levels of monitoring. At least two of the three types would occur over many years before a change in the population could be detected. While awaiting monitoring results before implementing an action, inaction could result in a continued decline in pallid sturgeon. Appendix D describes the current Pallid Sturgeon Population Assessment Program (PSPAP) objectives, sampling design and protocols were developed by an interagency team of Missouri River Basin experts (i.e., state fish and wildlife agencies) and guided by the USACE Project Delivery Team. By contrast, the proposed objectives, sampling design and protocols appear in development by the USACE and a group of scientists outside of the state agencies. Recently, a workshop was held to explain to state agency representatives the PSPAP that was recently developed. Also in that Appendix, the current proposed PSPAP sampling would seek only larval (non-drifting) pallid sturgeon below Kansas City. Drifting free embryos have been captured upstream of the Platte River. The recommendation to only sample below Kansas City for larval sturgeon is based on flow models that have not yet been validated.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643955 **Coder Name:** jgutierrez

Comment Text: It is stated that the Pallid Sturgeon Population Assessment Program will be continued in some form; however, there are no specifics given about what activities (e.g. inventory, monitoring, or research studies) will continue and at what level. The EIS should elaborate upon existing inventory, monitoring, and research that is underway and/or planned in the future - - this may include existing science actions in the Missouri River Recovery 2017-18 annual work plans. The current level of monitoring (including fish community monitoring) should be continued and made more robust to give the most complete picture of what is occurring in the river and how the sturgeon is affected.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643944 **Coder Name:** jgutierrez

Comment Text: Monitoring priorities should include population structure, dynamics, and status and trends information, which are essential to the pallid sturgeon population augmentation program. The USFWS believes monitoring forage fish that are important in the diet of the pallid sturgeon, and serve as short-term indicators of effect of actions. Finally, the USFWS recommends the use telemetry technology to evaluate habitat use.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643943 **Coder Name:** jgutierrez

Comment Text: The USFWS envisions true population monitoring as appropriate for Levels 3 and 4. Because Levels 1 and 2 represent research studies, the data collection at these levels should be integral to the specific research and will likely be completed by a wide array of entities conducting the studies. The USFWS envisions monitoring crews assist with data gathering or accomplishing tasks for Levels 1 and 2, when they overlap efficiently with Level 3 and 4 monitoring activities. Many Level 1 and 2 studies will transition to Level 3 and 4 actions. When this occurs, the pallid sturgeon monitoring program will need to be revised to address the broader implementation scale or new needs for adaptive management associated with the original question/hypotheses, the USFWS looks forward to continued engagement in this process

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**
Kept Private: No

AMP3100 Pallid Sturgeon Evaluation (Substantive)

Correspondence Id: 131 **Comment Id:** 640136 **Coder Name:** jgutierrez

Comment Text: The Corps admits many unknowns in the life cycle of the pallid sturgeon. The recent phenomenon of skinny fish is one of those yet unexplained parts. Is part of the channelized Missouri river a food desert for the sturgeon? Is competition with native or invasive species a factor? Is lack of sediment reducing sturgeon's ability to catch prey? Is there another water quality issue? We may eventually learn details of these problematic dynamics, but we can be sure part of their resolution will be to recreate a more natural Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 645822 **Coder Name:** jgutierrez

Comment Text: Competition (direct or indirect) from non-native fish species has to be determined and must be included in the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645544 **Coder Name:** jgutierrez

Comment Text: Another concern we have in the AMP in regards to pallids is in AMP 2-page 436. "This could mean that additional engineered spawning habitat needs to be in place (see section 4.2.6.5), but presently available spawning sites may suffice to address behavioral metrics." This is a great concern for the League. Available sites cannot "suffice" when there has been very little spawning activity and virtually no documented spawning or recruitment success. We feel enhanced or restored spawning habitat must be in place for pallids prior to any flow test to adequately address if the flow and habitat is sufficient for the pallids.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645533 **Coder Name:** jgutierrez

Comment Text: Table 2-5 refers to the fitness of adult pallids. We believe this needs much closer examination. The existing population in both the upper and lower river must be healthy in order to have a chance to reproduce and expand recruitment. The data provided to the Corps from the Nebraska Game and Parks Commission in 2015 revealed some alarming findings on the condition of adult pallids in the lower river. We urge more research be done to find the cause and help identify what can be done to increase the health and productivity of these fish.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645529 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 375) states that without successful passage at Intake, a transplant experiment could be conducted. This would entail capturing pallids below Intake and hauling them above the diversion to be released. We have concerns that this will likely place high stress levels on the fish and could possibly lead to the loss of individuals in a population that is already teetering on the edge of extinction. Please provide more information about this in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645514 **Coder Name:** jgutierrez

Comment Text: Alternative 3 also includes Early Life Stage Habitat Construction or Interception Rearing Complexes (IRC) proposed for 12 sites in the first 6-7 years. This would include monitoring of these shallow water habitat sites. The League urges much more communication on IRCs with the Missouri River Recovery Implementation Committee (MRRIC), as well as the general public. Very little information and communication on IRCs has been done thus far. This concept has promise for pallid sturgeon recruitment, provided that adequate drift distance for free embryos exists. We would like to see more on the IRC concept and believe it needs much more communication and collaboration with MRRIC and the public.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645336 **Coder Name:** jgutierrez

Comment Text: Management actions should be designed to support native prey species. Tributaries and side channels in the Missouri River watershed provide some of the best natural flows, water temperature regulation, and water quality regulation in the basin.⁴⁰ Of 85 species studied in the basin, 77 spawn in tributaries of the Missouri River, while 25 spawn in tributaries or the mainstem.⁴¹ These habitats serve as refugia for juvenile fish and provide water quality benefits such as warm water, turbidity, and preferred substrate.⁴² Sediment input from these tributaries, now lacking due to dam construction, is important to fisheries and in providing sediment to develop or augment sandbars and in-channel islands.⁴³ ⁴⁴ Essentially, without tributary habitat, the prey species the pallid sturgeon depends on would disappear. A holistic watershed-based approach should quantify the habitat needs of important prey species as well as the pallid sturgeon and develop management actions to enhance habitat for the most important prey species.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645334 **Coder Name:** jgutierrez

Comment Text: The Corps should also provide a decision tree highlighting the future changes in operations that could occur if the spawning cue releases are shown to benefit pallid sturgeon recovery. -The above proposed changes in reservoir releases to support spawning cues is the outcome from the best-case scenario. The Corps notes in the EIS that these spawning cue releases would not be started or would be terminated whenever downstream flow limits are exceeded. For instance, the Corps states in the EIS that they would initiate a March pulse once navigation releases were met at downstream target locations. The peak Gavins Point release would be two times the navigation release on the pulse initiation day. Further the Corps states that "When conditions and rules allow, pallid sturgeon spring flow releases under Alternative 2 would consist of two pulses of water released in spring from Gavins Point Dam-one pulse in March and a second pulse in May. If both pulses meet their flow design specifications, a low summer flow would be initiated." These conditional statements provide a level of uncertainty not supported by the Biological Opinion. - The Corps should conduct a scenario analysis, develop decision criteria and performance metrics to communicate the likelihood the proposed flow modifications will occur given the conditional statements cited above. The need for this was highlighted in the Adaptive Management Plan, which stated, "At present, there are no programmatic-level triggers for the introduction of new management actions."

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645322 **Coder Name:** jgutierrez

Comment Text: Our comments below evaluate the MRRP-EIS with these goals in mind. Where possible, we include additional factors that may be important for the species based on the current state of the science. While the two stated goals are important, the metrics outlined in this DEIS for assessing success in meeting them are insufficient. As an example, the stated goal of increasing pallid sturgeon recruitment to age 1 is too simplistic in nature to understand the mechanism behind the metric and thus insufficient to meet the goals of the Adaptive Management Plan. In this specific example, the Corps should develop sub-metrics of the overall goal to support revised management actions. Specific sub-metrics could include prey species abundance, competitor abundance, type of substrate and habitat, turbidity and other factors considered important in the conceptual models.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645233 **Coder Name:** jgutierrez

Comment Text: The one-time spawning cue test: From a scientific point of view, a one-time test is virtually worthless, certainly it is not adequate for data quantity. There needs to be enough repeat of the testing in order to rule out variability and background noise, and to have a minimal data points at least to have some kind of statistical analysis. Using natural rises in data gathering is great, but data collection will be a challenge. The time span of 10 years before a release would be conducted is simply a caving-in to the anti-spring rise, anti-release interests - plain and simple. It is accommodating the very vocal ag and levee districts. The wild pallid sturgeon population is aging and there really isnt time for a ten year delay before a scientifically designed release can be studied.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645130 **Coder Name:** jgutierrez

Comment Text: Plans for development of spawning habitat and interception rearing complexes (IRC) for larval pallid sturgeon as outlined in Alternative 3 should be implemented. Expanding the budget for Level 1 and 2 research on the effectiveness of physical habitat creation and modification within the current river channel needs to be a priority. However, if research indicates these habitats are contributing to reproduction and recruitment of pallid sturgeon, we recommend the goal of 20 acres of shallow water habitat or IRC per river mile be increased to 30 acres per river mile, the upper end of the range specified in the 2003 Amended Biological Opinion. An additional justification for an increase in effort on Level 1 and Level 2 studies in the years immediately following plan implementation is the requirement that if Level 1 studies during the first 9-10 years do not provide a clear answer on whether a

spawning cue is important, a one-time, bimodal spawning cue test release from Gavins Point Dam, as outlined for Alternative 6, be conducted. South Dakota recommends the research effort be increased such that in 9-10 years, there is sufficient information to determine if flow modifications to annual operations of the system are needed to support pallid sturgeon recovery.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644911 **Coder Name:** jgutierrez

Comment Text: What is the evidence supporting this management action and the high estimated cost to create it? What other management actions were considered to benefit survival of age-0 pallid sturgeon? There is only a single statement in Vol 2 of the DEIS identifying benefits of channel widening for pallid sturgeon recruitment: P 89. L7-9 (also on P88 L9-10 of DSAMP appendices). Under Alternatives 3-6, construction of habitat to support early life history requirements of pallid sturgeon would occur following the /RC (interception and rearing complexes) concept. Best available science indicates that future acreage required to construct IRCs would most likely be achieved through channel widening. One expects this 'best available' science' would be described in the pallid sturgeon effects analysis volumes. However, in Jacobson et al 2015 (P26) there is only a single reference to channel widening as an action to benefit pallid sturgeon and it is unsupportive or equivocal as to the benefits of SWH - including channel widening: The report from the assessment (Schapaugh and others, 2010) cited the HAMP as an excellent design to achieve active adaptive management; however, the report also documented that assumptions underlying the BACJ designs were not being met under real-world conditions, and, therefore, the ability to detect effects of SWH was limited. In particular, the authors reported that the actions of dike notching and channel widening did not result in detectable changes in the fish community. Moreover there is not a single reference to observed or proposed benefits of channel widening in the Pallid Sturgeon Effects Analysis Integrative Report (Jacobson et al 2016) or as part of any working hypothesis linking management of the Missouri River to pallid sturgeon population dynamics (Jacobson et al 2016b). There are two references to channel widening in the DSAMP (P43, L 23; Table 47, P376) - but both just describe implementing the management action, not its anticipated benefits. Numerous references to channel widening are in the DAMP appendices, but again, all but the aforementioned statement that best available science supports channel widening, are details of acreages, locations and implementation processes.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644900 **Coder Name:** jgutierrez

Comment Text: TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study. TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644851 **Coder Name:** jgutierrez

Comment Text: It is extremely unlikely that Big Questions 1 through 4 (SAMP-draft 6- Sect 4.2.4, table 43; and elsewhere) which refer to, and study, "naturalized flows" can be efficiently or definitively answered by passively monitoring existing, or historical record, Corps operated flows. Of the five hypotheses deemed, by the Corps, to meet or exceed criteria stipulated by the Effects Analysis documents for "avoiding jeopardy", only Alternative 2 aims at approximating "naturalized flows". Alternatives 4 through 6 aim at remediating interventions for the attenuation of naturally occurring flow regimes; but these interventions for attenuations caused by the dams, reservoirs and BSNP channelization are not, in and of themselves, natural. Moreover, even as some of the corollary hypotheses already benefit from Level 1 reflection on past operations data, these hypotheses become bootless and cannot be tested by falsification if they cannot ascend the stepwise decision process through levels 2, 3 and 4- - which is the implicit effect, if Alternative 3 is retained as preferred to become the selected alternative. Level 2 lab studies would have no effect on pallid sturgeons living in the river and insufficient statistical power to overcome what is, essentially, a policy decision preference for an intervention (Alt 3) that may not work.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644652 **Coder Name:** jgutierrez

Comment Text: In the Departments most intensive and best effort with trotlines (brood stock collection), around 100 pallid sturgeon are captured in 21 straight days of sampling. The proposed target sampling effort for mark-recapture of pallid sturgeon in Recovery Priority Management Area 4 (RPMA) is based on sampling approximately 1,550 pallid sturgeon juveniles and adults annually to reach the desired 5% recapture rate for the population. The target may be an unrealistic number for captures, even if all RPMA state catches are combined. Will population modeling results and reliability be compromised if these criteria are not met?

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 177 **Comment Id:** 644651 **Coder Name:** jgutierrez

Comment Text: The AM Plan references Steffensen et al. 2013 population estimates of wild pallid sturgeon in the Missouri River, and acknowledged these estimates may not be applicable to all of the lower river segments. The plan would benefit by reporting other population estimates done in other stretches of the lower river to give a better range of pallid populations below Gavins Point Dam.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 177 **Comment Id:** 644649 **Coder Name:** jgutierrez

Comment Text: A key sub-objective of the AM Plan is to increase pallid recruitment to Age-1, while using the metric of catch rates on Age-2 and Age-3 pallid sturgeon. Current catch rates for these age classes are low and comprised primarily of hatchery reared fish. For the metric to be meaningful, other questions should be addressed regarding the low numbers of wild caught fish in these age groups, such as: Is there gear bias? Are the correct habitats sampled? Are pallid sturgeon not reaching these age classes?

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 224 **Comment Id:** 644408 **Coder Name:** jgutierrez

Comment Text: The big questions for the Lower Missouri River appear to be focused solely on age-0 Pallid Sturgeon. The State believes this should be expanded to the full range of Pallid Sturgeon life stages and potential management actions to meet the full range of needs, as they are likely all interrelated. Providing for the requirements of Pallid Sturgeon throughout all life stages is likely the only way to provide a successful self-sustaining population. Also, consideration of other native species should be included as to avoid listings of additional species.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 644341 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 1.4.5, page 41 -The first sentence of this section identifies uncertainties related to the lower Missouri River centered around pallid sturgeon use of the Mississippi River and references Table 5, but the relationship to the Mississippi is not one of the hypotheses in Table 5.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644312 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 1.4.2, pages 35&36, Tables 4 and 5 - What are the alternative hypotheses to the Associated Hypotheses? The alternative hypothesis should be listed if not here somewhere in the AMP and a note provided as to where they can be found.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644101 **Coder Name:** jgutierrez

Comment Text: Comment 2: Level 1 research and most of Level 2 experiments do not meet the definition of a management action and should not be considered as management actions in the alternatives. Only those actions that manipulate or change in situ conditions or limiting factors with the expectation of population level results should be considered as management actions.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644060 **Coder Name:** jgutierrez

Comment Text: Comment 1: The following statement on page 25 (32/40) in Development of Working Hypotheses - Pallid Sturgeon is inaccurate for the Upper Basin Recovery Priority Management Areas (RPMAs): "However, it should be noted that despite the large and increasing knowledge base on pallid sturgeon reproductive ecology, research has yet to prove one or more critical processes that are responsible for lack of population growth." Work by Braaten, Delonay, Guy, Bramblett and others and the age structure of extant wild adult pallid sturgeon in Montana yields the conclusion that lack of population growth in the Upper Basin is caused by a total lack

of natural recruitment and, further, entrainment of drifting free embryos into toxic headwater habitats is the cause of this lack of natural recruitment. To continue to ignore this fact is unreasonable.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643945 **Coder Name:** jgutierrez

Comment Text: The USFWS recommends that the Corps commit to funding and prioritizing the analysis and synthesis of the data beyond annual project completion reports by sampling segment. The lack of data analyses inhibits our ability to understand uncertainty related to pallid sturgeon ecology. This must be corrected before a new monitoring program is implemented.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643923 **Coder Name:** jgutierrez

Comment Text: Section 3.7.1.3, Page 3-190 - Tracks water quality at various river segments along the river, in the lower river detection of higher concentrations of different contaminants and pesticides may be contributing to poor pallid reproduction. This hypothesis must be made part of the active AMP to answer the question of impacts to pallid sturgeon spawning and young of the year survival in the lower river.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643829 **Coder Name:** jgutierrez

Comment Text: Section 2.3, Page 2-9, last paragraph - Given the all the unknowns regarding the reproductive and early life stages of the pallid sturgeon excluding the water quality hypothesis for in the lower river may be an oversight. What is important in the AMP is determining the reason why pallid sturgeon are not recruiting to the population, then this can be dealt with through inter-agency agreements.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640690 **Coder Name:** jgutierrez

Comment Text: Throughout this entire report, there is a lot of focus on age-0 Pallid Sturgeon and the specific management actions (e.g., spawning cues, food and forage, spawning habitat temperature manipulation, etc.) that may help increase recruitment to age-1. We believe there should be a summary of how all of these factors are likely interrelated and how accomplishing only one or a few of these actions may not result in sought after results due to the specific needs of fishes at different life stages. Focusing on only young of year Pallid Sturgeon is narrowly focused because recent evidence from Steffensen and Mestl (2016) determined adult Pallid Sturgeon body condition has decreased in the Lower Missouri River. These body condition decreases have the potential to lead to changes in periodicity of spawning, spawning success, and egg/larvae survival.

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

AMP3200 Pallid Sturgeon Decisions and Planning Contingencies (Substantive)

Correspondence Id: 191 **Comment Id:** 644102 **Coder Name:** jgutierrez

Comment Text: Comment 3: The preferred alternative only commits to Level 1 & 2 research but not to implementation of management actions that adaptive management research demonstrates are required for pallid sturgeon recovery in Montana. If Level 3 and 4 actions are not implemented, no population level changes are to be expected, therefore jeopardy will still exist, as limiting factors are not alleviated or mitigated.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645770 **Coder Name:** jgutierrez

Comment Text: 1. Increase the emphasis on pallid sturgeon physical habitat creation and associated research.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645552 **Coder Name:** jgutierrez

Comment Text: We also ask that more research be conducted on the hypothesis that the velocity and turbulence of navigation channel may be fatal to free embryos of pallid sturgeon in the lower river. It is critical to determine if the navigation channel is lethal to the young pallids, and if so, then the upper portions of the navigation channel should be de-authorized. The DEIS reports that "river currents in the lower Missouri River are swift, and pushing loaded barges upstream is more costly in terms of fuel consumption," (V2- page 249). Recovery efforts that reestablish additional stretches of slow and shallow water would provide a multitude of benefits.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645541 **Coder Name:** jgutierrez

Comment Text: We also have serious concerns with hybridization of pallids and shovelnose sturgeons (AMP 2- page 327). We believe this is an additional complicating factor for pallid recovery. What will be done to address this and what additional research is needed to learn more?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645240 **Coder Name:** jgutierrez

Comment Text: Pg. 34, lines 5-19 - In all of the discussions about Level 1-4, there is never a timeline provided. I would like for the Corps to list their expected amount of time it will take for an average management action to move through to the Level 4 implementation stage.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644653 **Coder Name:** jgutierrez

Comment Text: Finally, Appendix D acknowledges the integrated approach to population-level monitoring, assessment, and modeling sacrifices data on other species that would allow for inferences on inter-species interactions or multi-species responses to stressors. USACE proposes to address this via specific hypotheses about interactions from specific, short-term science projects. While

these projects may provide insight into single species interactions, they will be unable to determine impacts on the fish community as a whole.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

AMP4000 Human Considerations Adaptive Management (Substantive)

Correspondence Id: 197 **Comment Id:** 645268 **Coder Name:** jgutierrez

Comment Text: The Corps began implementing the first two adaptive management mechanisms when it established the Independent Science Advisory Panel (ISAP). The ISAP has been highly beneficial to the Corps, and especially to the Missouri River Recovery Implementation Committee (MRRIC), and has brought a measure of trust to a process where little existed. Establishing the Independent Socio-Economic Technical Review Panel (ISETR) was also an important step in building trust within MRRIC as this panel reviewed the Corps' evaluation of human considerations. In Section 2.3.7.3 the Corps suggests that only one panel should be utilized moving forward. The State of Missouri is concerned with this approach as the membership suggested is heavily slanted toward the biological and species science. We request a more socio-economic focus in this process.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 646298 **Coder Name:** JGUTIERREZ

Comment Text: Were sincere in our engagement to recover the species. If we were not, the lack of complete and serious planning and analysis would be sufficient to call a halt to our involvement. But even though these voids are substantial, we believe they can be corrected. We have concluded that we should not be so cautious as to avoid experimentation and application of successful actions, nor so arrogant as to believe simple modeling accurately reflects economic impacts and provides a reasonable basis on which to proceed. The human species, and the impacts to its condition, must be given the same consideration, thought, data based reviews and adaptation of the process as are the species to be recovered.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 646296 **Coder Name:** JGUTIERREZ

Comment Text: 5. Just as adaptive management employs hindsight to compensate for the inability of existing science to predict outcomes for the species, it must also provide detailed and adaptive processes for reviewing, commenting and changing the impacts and outcomes for social and economic consideration.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

AMP5000 Data Acquisition, Management, Reporting and Communication related to AM (Substantive)

Correspondence Id: 242 **Comment Id:** 645583 **Coder Name:** jgutierrez

Comment Text: The AMP states (AMP 1-page 246), "At level 2, field experimentation would require flow manipulations and/or channel reconfigurations that could be perceived as risks to flood control, power generation, water supply, navigation, and floodplain farming." We urge the Corps to provide more details in the EIS and communicate with stakeholders to alleviate this misperception.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645607 **Coder Name:** jgutierrez

Comment Text: AMP 2 6.3.3 - Reporting and Communication - page 543 - We urge the Corps to consider utilizing an existing communication template for recovery program information. We ask you consider using the same method as the Water Management Division to communicate with elected officials, cities, local governments, media and staff from congressional delegations throughout the basin. The process has worked well to keep people engaged and interested in water updates. We feel the same process could be used to provide updates to this group on the recovery program at least once or twice a year or more often if needed.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

AMP6000 Effects Analysis in relation to AM (Substantive)

Correspondence Id: 34 **Comment Id:** 628340 **Coder Name:** jgutierrez

Comment Text: We believe that all the hypotheses are incomplete with regard to the pallid sturgeon unless additional sediment load is put back into the system.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644916 **Coder Name:** jgutierrez

Comment Text: 3. Pallid Sturgeon Population Augmentation. STATEMENT OF CONCERN. Stocking proposals for pallid sturgeon throughout the DEIS and supporting documents address only stocking 'optimal size classes and in optimal numbers'. These criteria have little relevance to fitness and survival of stocked fish to reproduction. BASIS FOR CONCERN. Despite stocking thousands of pallid sturgeon to the Lower Missouri River, few are reproducing and condition of stocked pallids is declining. Both hatchery conditions (Kittle and Small 2014, Deslauriers et al 2016, Meyer et al. 2016) and environmental factors (Steffensen and Mestl 2016, Randall et al 2016) are believed responsible. Recommendations to improve the Middle Basin Propagation Program (Basin-wide Pallid Sturgeon Propagation Committee 2016) are a step in the right direction, but the overall philosophy of sturgeon population augmentation in the DEIS is misplaced on numbers of stocked fish. SIGNIFICANCE OF CONCERN. Only three larval pallid sturgeon have been collected in the Lower Missouri River over the past decade (Middle Basin Pallid Sturgeon Work Group annual meeting, January 2017, Blue Springs, MO) despite an intensive sampling program under HAMP and PSPAP. Adult stocked pallids are routinely collected under these programs (see HAMP and PSPAP annual reports), yet few appear to be spawning (Deloney et al. 2015). Reducing jeopardy under the BiOp RPAs is highly dependent on survival and reproduction of hatchery stocked pallids. All proposed efforts of the MRRMP (and specifically Pallid Sub-Objective 2) will be in vain if healthy, reproductively mature pallid sturgeon do not spawn in sufficient numbers in the upper and lower Missouri River. RECOMMENDED ACTIONS TO RESOLVE. The overall philosophy of Pallid Sturgeon population augmentation needs to shift to a focus on quality of stocked fish over quantity. 'Quality' of stocked fish should also be identified as a potential limiting factor and addressed in the DSAMP. Quality criteria should include physiological and ecological factors such as overall health of fish when stocked, the ability of newly stocked pallids to adapt to natural river conditions (e.g., feeding, positioning in current and habitat selection) and grow and perform as well as wild fish. Actions to improve the quality of propagated and stocked pallid sturgeon so they reach sexual maturity and spawn in the wild should be identified in the Effects Analysis and SAMP. This can be achieved Under Big Question #6 Population Augmentation, components 1 and 2.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644294 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 1.1.4, Page 9 - This section describes all of the models that have been assembled (Figure 4). Each and every model has a few to numerous assumptions built into the models. The USACOE needs to assemble those assumptions for each model and regularly review those assumptions and fields verify to ensure they reflect the latest knowledge related to each assumption.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643960 **Coder Name:** jgutierrez

Comment Text: Page 35, Section 1.4.2, Table 4, Sediment Augmentation - Include sediment bypass below Gavins Point Dam within the umbrella question and related hypothesis.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643838 **Coder Name:** jgutierrez

Comment Text: Section 2.4.4, Page 2-13 - Regarding development of a 2-D hydrodynamic models for pallid sturgeon, a comment is made that Hamburg and Lisbon-Jameson bends are representative of the best conditions. Do we really know what the best conditions are for the pallid sturgeon in the lower river to make this statement? Additionally, the best conditions for pallid sturgeon larval growth and development may be in the Mississippi River. This should be a hypothesis investigated in the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

BG100 Background: General Background (Substantive)

Correspondence Id: 107 **Comment Id:** 643786 **Coder Name:** jgutierrez

Comment Text: Section 1.1.1, Page 1-2, last paragraph - Points out the negative impacts of the mainstream dams. The paragraph should also include a statement of the benefits of the dams/reservoirs including to produce hydroelectric power (renewable), mitigate

flooding, provide recreation, navigation, provides water for multiple human uses (drinking water, cooling water, wastewater treatment, etc.).

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644904 **Coder Name:** jgutierrez

Comment Text: All determinations for inclusion of the six alternatives were made by USACE as was the designation of Alternative Three as the Preferred Alternative in the draft MRRMP-EIS. TNC does not find the use of "collaboration" or "ProACT process" or "ProACT discussions" accurate in describing alternative development involving MRRIC. As Section 1.2 states "USACE and USFWS collaboratively have tailored the generic ProACT approach to meet the needs of this MRRMP-EIS planning process." USACE and USFWS may have applied an approach fully internally, just not with MRRIC.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644792 **Coder Name:** jgutierrez

Comment Text: 12. The DEIS' and the Corps' present land acquisition has an Endangered Species Act ("ESA") priority position. We do not concur and believe that the Corps' primary obligation on land acquisition is to provide mitigation for the impacts of the BSNP. The Corps' position requires the acquisition of the highest cost lands versus lower cost properties that meet the mitigation obligations.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

CC1000 Consultation and Coordination: General Comments (Substantive)

Correspondence Id: 25 **Comment Id:** 626692 **Coder Name:** jgutierrez

Comment Text: Also of significant importance is a continuation of annual consultation with the North Dakota Emergent - - Interagency Emergent Habitat Sandbar Team. This consultation has occurred for several years and allows discussion of recovery program management actions planned in North Dakota for the coming year. This annual meeting has greatly improved

communication between the Corps and North Dakota. It is expected this annual consultation will continue during future implementations of adaptive management.

Organization: North Dakota State Water Commission

Commenter: Garland Erbele **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628581 **Coder Name:** jgutierrez

Comment Text: The State of Missouri would also like to reiterate to the Corps that decision-making within the adaptive management plan needs to be open and transparent. All of the states represented in MRRIC agree that consultation and coordination with the states' governor's offices on matters of high-consequence is imperative.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631574 **Coder Name:** jgutierrez

Comment Text: Should the Corps choose something other than Alternative 3, the process for creating flow changes needs to be clear to stakeholders and be aligned with the Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 635065 **Coder Name:** jgutierrez

Comment Text: Third, if the Corps were to consider changing the Master Manual, that would require a separate public process and cannot be embedded in any other process. Should the Corps pursue a deviation to the Master Manual for a one-time flow event, it is imperative that the Corps consult with the governors of the states before implementing this high consequence action.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 158 **Comment Id:** 640080 **Coder Name:** jgutierrez

Comment Text: Specific language that addresses federal/state consultation outside of the standard AOP process is articulated in the Bureau of Reclamation's "2007 Colorado River Interim Guidelines Record of Decision." The 2007 Interim Guidelines explicitly state that the Secretary of Interior shall consult with Colorado River Basin states in circumstances where any substantive modification to the Guidelines may occur in respect to Reclamation-operated Colorado River basin reservoirs. We highly recommend that the Corps use this framework as a benchmark for federal/state consultation.

Organization: State of Wyoming

Commenter: Beth Callaway **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640144 **Coder Name:** jgutierrez

Comment Text: The state looks forward to continuing to work with the U.S. Army Corps of Engineers (USACE) on further development of the MRRMP-EIS and implementation of adaptive management. This partnership is critical in ensuring that sound decisions are made for the good of all that rely on the Missouri River in North Dakota. To be a true partnership, the final EIS should provide for direct consultation with North Dakota, and other affected states, for consideration of flow modifications or deviations outside the bounds of the current Master Manual. It is also requested that the USACE incorporate their responses to comments submitted for the MRRMP-EIS in the final EIS.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640960 **Coder Name:** jgutierrez

Comment Text: MFB believes species recovery can and should be done in a responsible way that does not cause economic hardship to those associated with the Missouri River. This entails a continued working relationship with stakeholders throughout the Missouri River Basin and adoption of management practices that reflect the importance of flood control and navigation as well as the other uses authorized by Congress.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 185 **Comment Id:** 641485 **Coder Name:** jgutierrez

Comment Text: One concern we have however is that the State is lumped into the plan's content as a "stakeholder". This is inadequate as there are specific state's rights issues to consider, therefore the "States" need to be identified independently in the document.

Organization: Friends of Lake Sakakawea

Commenter: Terry Fleck **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 643023 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 6.2.1, p. 6-2 "Coordination will also continue to occur during implementation of the recommended plan after the Final MRRMP-EIS and ROD." **Comment:** This coordination must include continued consultation with the North Dakota Interagency ESH Team.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643864 **Coder Name:** jgutierrez

Comment Text: Section 2.7, beginning at Page 2-7 - Indicates USACOE engaged MRRIC on alternative development - this is not true to the full extent of the statement. USACOE received feedback on their proposed alternatives. USACOE never requested input from MRRIC on management actions that could be taken to benefit the species. In, fact USACOE and MRRIC debunked MRRIC member recommendations on alternative habitats to ESH and the location of those habitats.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643957 **Coder Name:** jgutierrez

Comment Text: In addition to MNRR, the NPS administers several other units of the National Park System within and along the Missouri River and its tributaries. These are the Knife River Indian Villages National Historic Site, Fort Union Trading Post National Historic Site, and the Lewis and Clark National Historic Trail. In the event that these units may be directly or indirectly affected by project actions, additional coordination may be required.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643959 **Coder Name:** jgutierrez

Comment Text: Page 27, Section 1.3.1, Table 2, Lines 13-14 - Southern Region standardized emergent sandbar habitat acres shown as available is contingent upon continued interagency coordination and consideration of the set-aside acres NPS has identified within its Draft ESHMP.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 196 **Comment Id:** 644163 **Coder Name:** jgutierrez

Comment Text: The Mississippi River Commission along with the landowners protected, and those not protected, by the MR&T project should be considered and involved in the decision process of any modifications within the Mississippi Watershed that impacts downstream flood control and navigation. The Little River Drainage District respectfully requests the Mississippi River Commission's immediate involvement along with outreach and involvement of the downstream landowners prior to any changes to the management of the Missouri River Basin.

Organization: The Little River Drainage District

Commenter: Dustin Boatwright **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644758 **Coder Name:** jgutierrez

Comment Text: "Only five economic models on human considerations were presented to the ISETR for review and evaluation. The ISETR is still waiting on eight other sets of economic models on human considerations. Moving forward on any Alternatives prior to the completion of these economic models is inappropriate.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644884 **Coder Name:** jgutierrez

Comment Text: If spatial location output is available, then make it public and show us the maps- preferably, in a form that can be compared with other datasets. We hope for this kind of transparency to emerge from the MRRMP and AM plans.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645373 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.7, p. 2-37 - 2-38 Comment: This section on "Bird Alternatives Development" states that the bird alternatives were refined with consideration of MRRIC feedback. As a member of MRRIC, the State of North Dakota does not know how its feedback was utilized to refine the alternatives. The state had made it clear early on that it had serious reservations about any action outside of the current Master Manual, especially given the uncertainty regarding how states would be involved in those high-consequence decisions. This feedback is not reflected in the current version of the MRRMP-EIS.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645382 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.10.2, p. 2-93 "This action would require extensive coordination with the Tribes in developing site-specific plans for construction in the Garrison Reach in order to avoid sensitive areas." Comment: Similar to the Tribes, the state would also require coordination and consultation on mechanical ESH construction. This is another instance, as mentioned previously in these comments, where the USACE has not recognized state governments as sovereign entities that have authority over managing natural resources within their boundaries. For at least the last decade, the USACE has met annually with the North Dakota Interagency ESH Team to discuss their planned actions in North Dakota for the MRRP. We expect this annual consultation to continue as it allows an opportunity to discuss regulatory issues and other concerns related to the MRRP. State involvement as a part of the ESH Team has been a positive partnership in the past and important to maintaining a good working relationship on Missouri River issues with the USACE.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645420 **Coder Name:** jgutierrez

Comment Text: B. The Corps Should Produce a New Biological Assessment Before Selecting a Preferred Alternative. The ESA requires agencies to reinitiate formal consultation when "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered."115 The Corps cannot rely on a patchwork of scientific data far-removed from the consultation process because "[i]t is well settled that a previous agency determination in a Biological Opinion cannot be amended or supplemented with post-determination analysis or evidence without reinitiating the consultation process."116 In the "Need for the Plan" section of the EIS, the Corps stresses the substantial amount of scientific data that has been generated on the species since the 2003 BiOp, including effects analyses for all three species produced between 2014 and 2016. 117 The Corps recognizes that the "emergence of this new information created a need for its evaluation an integration into USA CE management actions on the Missouri River for the listed species and the associated AM Plan." 118 The Corps' management actions would be better informed by synthesizing this information through the production of a new biological assessment for submission to the USFWS prior to a full EIS. This would help ensure use of the best scientific information available.119 Indeed, the acquisition of significant data shortly before the issuance of the 2000 BiOp appears to have motivated the production of the 2003 Biological Assessment: The 2003 Biological Assessment was provided because of new information concerning the effects of USACE actions that had previously not been considered and because USACE believed certain components of the RPA did not comport with the regulatory criteria for an RPA (USACE 2003a). Additionally, critical habitat had been designated for the piping plover, new information on the mortality of interior least terns and piping plovers was available, and an updated hydrology and hydraulics analysis indicated that some flow modifications could erode more emergent sandbar habitat than they would create. 120 Yet nowhere in the MRRMP-EIS does the Corps explain why thirteen years of data-collection since the 2003 Bi Op does not create a clear impetus for a new biological assessment. Rather than conduct a new round of formal consultation in uniformity with Section 7, the Corps jumps immediately to the analysis of alternatives through the MRRMP-EIS, and an updated biological assessment is rendered an afterthought: After the public comment period, the MRRMP-EIS and its supporting technical analyses and reports will serve as an information base for a Biological Assessment (BA) to be prepared by the USACE and a subsequent Bi Op to be prepared by the USFWS. The actions described in the BiOp will be reflected in the final MRRMP-EIS and ROD. 121

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645588 **Coder Name:** jgutierrez

Comment Text: The Missouri River Recovery Implementation Committee (MRRIC) plays a unique role in river recovery. The League has been a member of the committee since it started in 2008. The DEIS (V1-page 140) refers to MRRIC. In the final EIS, we

ask that this specific reference clearly state that MRRIC did not reach a consensus agreement, and that there was little or no tradeoff discussion before the committee.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645589 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 505) again references the committee and says that it "could instead be a simple assessment of pros and cons of each of the alternatives." This discussion has not happened at a MRRIC meeting and we believe it needs to happen.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645590 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 512) references human considerations (HCs) and states "decision makers and, time permitting, MRRIC, would be informed to understand the trade-offs involved and given an opportunity to express preferences for one approach over another." We believe the final EIS needs to address what issues might prevent the Corps from having time to engage MRRIC.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 645807 **Coder Name:** jgutierrez

Comment Text: Greater clarity should be provided on USACE plans to engage the state fish and wildlife agencies about federal actions that would affect management of endemic wildlife within their borders.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 645808 **Coder Name:** jgutierrez

Comment Text: Additionally, states retain the opportunity right to comment or request consultation outside of MRRIC, FWCA, and ADP processes on any issue related to the Management Plan or ongoing AM process via official letter which can be submitted to the USA CE at any time.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

DUP1000 Duplicate Correspondence (Non-Substantive)

Correspondence Id: 106 **Comment Id:** 636895 **Coder Name:** jgutierrez

Comment Text: April 20, 2017 U.S. Army Corps of Engineers Omaha District ATTN: CENWO-PM-AC - MANAGEMENT PLANS COMMENTS 1616 Capital Avenue Omaha, NE 68102 To Whom It Concerns: RE: Draft Missouri River Recovery Management Plan and Environmental Impact Statement Comments Nebraska Public Power District (NPPD) appreciates the opportunity to provide comments on the December 2016 Draft Missouri River Recovery Plan and Environmental Impact Statement (DEIS). NPPD owns and operates the Cooper Nuclear Station just downstream of Brownville, Nebraska at river mile 532.6, and also partners in the Omaha Public Power Districts Nebraska City Plant located at river mile 556.3. Both power plants were sited along the Missouri River due to access to a reliable water source. These power generating plants are an important and critical asset to NPPDs generating mix and represent approximately 31% of NPPDs generating capability.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 182 **Comment Id:** 643911 **Coder Name:** jgutierrez

Comment Text: WaterOne is an independent, public water supply utility that has been operating within the State of Kansas since 1957. The Kansas Legislature established WaterOne to serve the drinking water needs of the public in the suburban areas west of Kansas City. We currently serve over 425,000 Kansas residents, which is approximately 15% of the state's population. This population will grow to 600,000 residents by 2050. Many of WaterOne's staff members, including Mike Armstrong, Darci Meese, Tom Schrempp, Greg Totzke, Emily Wicoff and Michelle Wirth, have been actively involved with the US Army Corps of Engineers (Corps) projects and studies. This involvement includes, the Missouri River Bed Degradation Study, the Missouri River Recovery

Implementation Committee (MRRIC), the Missouri River Authorized Purposes Study (MRAPS), the Missouri River Ecosystem Restoration Program Study (MRERPS), the Kansas Governor's 50 Year Water Vision as well as many other studies over the years.

Organization: WaterOne

Commenter: Michael J Armstrong **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 209 **Comment Id:** 643303 **Coder Name:** JGUTIERREZ

Comment Text: We thank you for this opportunity to make comments on this very important issue. Very Truly Yours, Tom Poer, P.E., PMP, ENV SP CC: U.S. Army Corps of Engineers, Omaha District ATTN: CENWO-PM-AC - Management Plan Comments 1616 Capitol Avenue Omaha, NE 68102

Organization: Missouri and Associated Rivers Coalition

Commenter: Tom Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 231 **Comment Id:** 640505 **Coder Name:** jgutierrez

Comment Text: TO WHOM IT MAY CONCERN: The city of Nebraska City, its citizens and businesses support the USA CE implementation of MRRMP Alternative 3 and is opposed to any plans which involve creating an additional flow release from Gavins Point Dam, increasing the risk of flooding that would affect our community. We believe this alternative best fits the USACE Planning Account objective to evaluate species objectives including consideration for the effects of each action or alternative on a wide range of human considerations including economic, social and cultural values associated with the natural resources of the Missouri River.

Organization: City of Nebraska City

Commenter: Grayson Path **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 150 **Comment Id:** 639329 **Coder Name:** jgutierrez

Comment Text: April 24, 2017 Major General Scott A. Spellmon Northwestern Division Commander, U.S. Army Corps of Engineers ATTN: CENWO-PM-AC-Management Plan Comments 1616 Capitol Avenue Omaha, Nebraska 68102 Dear Major General Spellmon: The Coalition to Protect the Missouri River (CPR) appreciates the opportunity to offer comments on the Draft Missouri River Recovery Program Management Plan and Environmental Impact Statement (DEIS). The CPR, established in 2001, represents a broad base of interests throughout the lower Missouri River, including flood control, navigation, agriculture, and public

energy and water utilities. We support responsible management of the Missouri River resources and maintenance of congressionally authorized purposes of the river, including flood control, navigation, water quality and water supply. The CPR also supports responsibly managed and properly balanced, science-based habitat restoration for endangered or threatened species. Many of the CPRs members have been involved in the DEIS process through active participation in the Missouri River Recovery Implementation Committee (MRRIC).

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 215 **Comment Id:** 637242 **Coder Name:** jgutierrez

Comment Text: On Page 15, last paragraph, and Page 16, Table 6. NRCS Comment: The amount of irrigation water shown on Table 6 appears to be the net amount applied to the field. The gross amount pumped from the river is not shown or discussed. The difference between the gross and net amounts of water would include loss in conveyance, wind drift, evaporation, deep percolation, and runoff. In addition, water is not applied evenly across the field. The total amount of water pumped from the river would be greater than the amount applied to the field. It is not clear that the USACE analysis accounts for this difference. WATER SUPPLY ENVIRONMENTAL CONSEQUENCES ANALYSIS TECHNICAL REPORT Page 8 - the second to last paragraph, states: "The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1. These impacts are occurring in both the upper and lower river and along riverine areas, as well as reservoirs though the reasons for these effects vary by location." NRCS Comment: The 57.1 days referenced here is not clear. Is this over the period of record, per year, or in dry years? This average number of days is also referenced on pages 14, 20, 22, 27, and 32. Thank you for the opportunity to comment. If you have any questions, please contact David Heffington, Ecologist, NRCS/USACE National Partnership Liaison, NRCS National Water Management Center (David.heffington@ar.usda.gov), or Verlon Barnes, NRCS Missouri River Basin Coordinator, (Verlon.barnes@wdc.usda.gov) . Doris Washington, Director USDA/Natural Resources Conservation Service National Water Management Center cc: Jimmy Bramblett, Deputy Chief for Programs Noller Herbert, Director, Conservation Engineering Division, NRCS Terrell Erickson, Director, Ecological Sciences Division Kim Berns, Director, Easement Programs Division Andree DuVarney, National Environmental Coordinator Kevin Wickey, Central Regional Conservationist Verlon Barnes, NRCS Missouri River Coordinator Jamie Danesi, Senior Public Affairs Officer, USACE, Omaha District

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 215 **Comment Id:** 637240 **Coder Name:** jgutierrez

Comment Text: The following comments are provided by the USDA Natural Resources Conservation Service (NRCS) regarding the USACE Draft Missouri River Recovery Management Plan-EIS. The NRCS is supportive of USACE and USFWS efforts to improve conditions for the endangered Pallid Sturgeon, Piping Plover, Least Tern, and overall habitat restoration efforts in and along the Missouri River. Under federal conservation programs authorized by the Farm Bill, NRCS has worked with private landowners to restore wetland habitats and protect floodplains in areas immediately adjacent to the Missouri River in the area covered by the subject recovery plan. Various types of easements have been put in place, many of them perpetual, to meet specific congressionally authorized program purposes. Locations of properties with these conservation easements can be found at the following web page: <http://conservationeasement.us/> and/or by contacting the appropriate NRCS State Office. The various alternative habitat improvement activities proposed (including, but not limited to: Shallow Water Habitat, Top-Width Widening, Interception Rearing Complex, Emergent Sandbar Habitat, channel reconfiguration, Flow Management, and Land Management activities) have the potential to impact lands that have NRCS easements in place. Pursuant to 7 CFR 1468.6, USACE must obtain prior authorization from NRCS for any activities that will impact NRCS easement lands. Where a Compatible Use Authorization cannot be granted, USACE must replace the impacted easement area using NRCS' existing easement administration action procedures to exchange for replacement acres. Replacement acres must be solely under administrative control of NRCS. NRCS also offers the following specific comments on the Technical Reports noted below (pages listed are from the page numbers in the document): IRRIGATION ENVIRONMENTAL CONSEQUENCES ANALYSIS TECHNICAL REPORT On Page 9, first full paragraph, starting with "Counties..." in the last sentence the text states: "For example, Dewey County in South Dakota would experience an increase of 323 days when water surface elevations would fall below minimum operating requirements from 1942 to 2012 under Alternative 6, which resulted in this county being selected for further analysis." NRCS Comment: These 323 days do not have a basis in time, so it is not clear what the effect would be. Is this 323/70 years= 4.6 days per year below the minimum operating requirements? This could be explained in days per year, maximum or minimum days, or percent change in operation.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 129 **Comment Id:** 637105 **Coder Name:** jgutierrez

Comment Text: First being an engineer myself let me complement you in burying the actual data in a compendium of meaningless to me reports. Makes it hard to find real data. First Question is what is the impact inf the Pallid Sturgeon, Least tern and Piping Plover went away like dinosaurs? Secondly since that question has not been answered what is the economic impact of your alternatives? I for one can answer part of that question. Back in 2011 e=when you opened the dams and let water flow all summer we as a levee district

went out bought a pump, a tractor to run it raised our levees to avoid a flood and we lucky to save most of our crops. But as a result we ended up spending about \$100,000 dollars to protect ourselves. That has amounted to about \$50/ acre of land protected. If you do dangerous releases then we have used 1/2 of our average annual income to protect our land. By the way that income includes no return on investment it assumes the land has been paid for. Fortunately in 2011 farm prices were up so we could "afford it" (crop prices allowed the Income to be closer to \$300/Acre then. However since that time our fortunes have dimmed and we may be lucky to maintain our \$100 / acre average. Those farmers that own money for the \$5000 /acre land are not likely to survive. We have also noticed that you pull back on DIke maintenance has thrown the river dangerously close to our levees and caused sever erosion. Strange that the Corp can cause major erosion with no consequences whereas as a landowner I can't even use a tracked vehicle to clean out a drainage ditch (now designated a stream) All the above stated, I think the best alternatives are Alternate 3 (No Spring Rise) or alternative 5 (Fall Rise). A fall rise is unlikely to have a large economic impact on us because not much wheat is planted in the river bottoms and No Spring rise gets back to the rationale for funding the dams for flood control. AS a country we need to have a strong economy or we will not be in a position to protect even our most important resorces- the people.

Organization: Reveaux Levee Distric President

Commenter: CLarence A Trachsel **Page:** **Paragraph:**

Kept Private: No

EC0100 Environmental Consequences: River Infrastructure and Hydrologic Processes (Substantive)

Correspondence Id: 17 **Comment Id:** 626459 **Coder Name:** jgutierrez

Comment Text: The Drainage District has worked very hard, to the burden of the tax payers within the district, since 2011 in an effort to restore and repair the levee system that was damaged in 2011. Currently the data states that the levees would be able to withstand a rise to twenty-seven (27) feet. However, there is no question that extended flooding at that level would compromise the integrity of the recently repaired levees. Once again, forcing unnecessary burdens and risks on the people living and farming within the Drainage District.

Organization: Mumm Law Firm

Commenter: Ashley N West **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 646283 **Coder Name:** JGUTIERREZ

Comment Text: These high releases could further increase degradation of the Missouri River bottom in certain locations due to higher velocities in the channel.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 239 **Comment Id:** 645994 **Coder Name:** jgutierrez

Comment Text: For inter-dam reaches such as the Garrison Reach, construction activities would disturb the sediment in the river, causing it to flow downstream and accumulate in the delta. This action, over time, would increase aggradation in the delta, thereby increasing the backwater effect and river stage. If a sandbar was constructed in the upstream portion of the Garrison Reach, based on what is known about the geomorphic pattern of the reach one could conclude that the sandbar sediment would erode and end up downstream in the delta. It is suggested that if mechanical construction of sandbars occurs on inter-dam reaches, the sediment come from the downstream delta to alleviate this concern. This comment also pertains to the rest of the alternatives because mechanical ESH construction is included in all of them.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 156 **Comment Id:** 645904 **Coder Name:** JGUTIERREZ

Comment Text: Alternatives 2, 4, 5 & 6 would all have significant adverse effects on the local levee districts due to the projected increased discharges ranging from 87 Kcfs to 126 Kcfs which corresponds to increases in river stages of up to 8 ft. in the Kansas City reach. Such radical flow increases would increase the annual cost of local levee districts as they must implement more frequent and higher flood protection management.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 205 **Comment Id:** 645871 **Coder Name:** jgutierrez

Comment Text: Decreased river levels will impact our groundwater wells along the river with decrease capacities, decreased water quality and increased chemical and pumping costs.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 193 **Comment Id:** 645798 **Coder Name:** jgutierrez

Comment Text: Models should be used to predict effects of increased sediment supply and changing hydrographs on bed condition.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645790 **Coder Name:** jgutierrez

Comment Text: Further, the Corps needs to fully explain what impacts IRCs will have on the navigation channel, bed and hydrologic conditions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 645758 **Coder Name:** jgutierrez

Comment Text: These high releases could further increase degradation of the River bottom in certain locations due to higher velocities in the channel.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645587 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 484) constructed IRC habitat can decrease stages for most flows. We believe this information needs to be better communicated in the final EIS to show habitat projects will decrease river stages on the lower river to end fears that the restoration efforts cause flooding.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645512 **Coder Name:** jgutierrez

Comment Text: 3.11 - Commercial Sand and Gravel General Analysis: 1. Modifications in flow as presented in Alternatives 2, 4, 5 and 6 undermine the primary congressionally authorized purposes of navigation and flood control, making them problematic. 2. The states of Missouri, Kansas, Iowa and Nebraska own the bed of the lower river. The states have a sovereign right to their real estate and federal actions that compromise the real estates resources are a takeover in regard to states real estate and natural resources. 3. The use of the HEC-RAS model for decision making in the DEIS is flawed. Commercial sand dredgers have continually presented their objections to HEC-RAS being used for any permitting related decisions and the Corps has previously agreed during MRRIC sessions. In the DEIS however, this important point is missing from the document and needs to be included in the content for this section. 4. The DEIS fails to address the issue of sediment in the system and the lack of material movement. We call on the Corps to create a true sediment analysis that examines this important component for pallid sturgeon recovery. Changes in flow, without enhancing sediment load are not impactful and are a true waste of water in the system. 5. Regarding IRC construction and maintenance, the Corps must give commercial sand dredgers absolute assurance that these new habitat areas will not impact their operations by making its related regulatory strategy clear. Of utmost importance to dredgers are the issues of channel response, impacts to navigation, bed and hydraulic conditions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645397 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.2.5, p. 3-46 - 3-47 "The flow release magnitude exceeds the power plant capacity at all projects except Big Bend. Past operations experience has shown that using the spillway or flood tunnels to release flow for a prolonged period results in the need for additional maintenance of these features and adds cost to operating the system. Long-term reliability of flow release features (spillway and/or flood tunnel) may also be affected. Finally, minor changes in dam safety risk from the use of additional release mechanisms and pool levels may occur. These risks have not been quantified at this time and would require a Monte Carlo analysis to evaluate changes in operation frequency and pool probability." At the end of this section on page 3-47, the following conclusion is made: "Impacts to river infrastructure would not be significant under any of the alternatives."

Comment: First of all, understanding the changes in dam safety risk is critical. If the flows proposed under Alternatives 2, 4, 5, and 6 increase the use of the spillways, affecting long-term reliability, not quantifying that risk is irresponsible. Second, concluding the section by saying that impacts would not be significant is premature because the risk to dam safety has not been assessed.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645396 **Coder Name:** jgutierrez

Comment Text: On page 3-40 in the discussion on degradation and bank erosion in the Garrison Reach it states the following: "Alternatives 4 and 5 could result in flow releases at Garrison Dam of 42,000 cfs for approximately 1 month. Considering the observations after recorded flows in 1996 and 1997, degradation of the river channel from the much shorter Alternatives 4 or 5 flow releases would perhaps be on the order of up to 0.5 foot in the mid-section of the Garrison Dam to Lake Oahe reach for each release. Considering the temporary impacts from individual releases and because Alternatives 4 and 5 full flow releases would occur only approximately every 10 or 7 years (Table 3-4), respectively, long-term impacts from additional degradation and streambank erosion under Alternatives 4 and 5 would be considered small." Degradation of 0.5 feet for each release is not small. Over the long-term, this degradation would accumulate and shift the water surface profile by several feet. Also, the ESH-creating releases would continuously move sediment from upstream to downstream, perpetuating (not reversing) the geomorphic pattern that already exists in the Garrison Reach. (See comments pertaining to "Inter-Dam Sequence" for Section 3.2.1.4, p. 3-20 - 3-22.) Skalak et al. (2016) studied the effect of the 2011 flood on the Garrison Reach. While the flows during the 2011 flood were much higher than the proposed ESH-creating releases, the results of the study still demonstrate that high flows can cause significant changes in geomorphology. The 2016 study determined the effects of the flood for each morphological zone of the Inter-Dam Sequence (see Skalak et al. 2013) for the Garrison Reach. The effects were as follows: 1. Dam Proximal Zone: River Mile 1390 to 1359 (Garrison Dam to Washburn); 40% of islands were eroded - equates to 44 years of work performed by the flood 2. Dam Attenuating Zone: River Mile 1359 to 1328 (Washburn to Sundown Acres); 13% increase in islands - equates to 43 years of work performed by the flood 3. River-Dominated Transitional Zone: River Mile 1328 to 1303 (Sundown Acres to Little Heart Bottoms - through Bismarck/Mandan); 25% increase in islands - equates to 8 years of work performed by the flood 4. Reservoir-Dominated Transitional Zone: River Mile 1303 to 1272 (Little Heart Bottoms to Fort Rice Boat Ramp); Change in islands was not measured On page 3-46 the final sentence of Section 3.2.2.4 states, "Impacts to geomorphology would not be significant under any of the alternatives." This statement is incomprehensible, especially in consideration of the fact that all of the alternatives affect the geomorphology of the river. The sole purpose of the ESH-creating releases is to cause significant change in the geomorphology of the river. Skalak, K.J, Benthem, A.J., Hupp, C.R., Schenk, E.R., Galloway, J.M., and Nustad, R.A., 2016, Flood effects provide evidence of an alternate stable state from dam management on the upper Missouri River: River Research and Applications. <http://onlinelibrary.wiley.com/doi/10.1002/rra.3084/full>

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645395 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.2.4, p. 3-39 - 3-46 Comment: On page 3-39, this section regarding the "Impacts on Geomorphology from the Alternatives" states that effects to geomorphology due to Alternative 3 are not discussed because they would be similar to Alternative 1. Alternatives 1 and 3 do not include ESH-creating releases, so the hydrology is similar. They primarily rely on mechanical ESH construction. While mechanical ESH construction may not have a system-wide effect on geomorphology, that is not the case on a smaller, local scale. Constructing a sandbar could have morphological effects, such as shifting the thalweg of the river, which could cause a change in riverbank or sandbar erosion further downstream. A sandbar constructed in the upstream portion of the Garrison Reach would most likely erode and end up in the Oahe delta.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645392 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.2.3, p. 3-34 - 3-37 "Spring releases for ESH creation (Alternative 4) would start April 1 and would last between 35 days (at 60,000 cfs) and 175 days (at 45,000 cfs). Fall releases (Alternative 5) would be similar to spring releases, except they would start on October 15." Within the same section on page 3-37 it also states, "Impacts to hydrology are not anticipated to be significant under Alternatives 4 and 5." Comment: Besides the effect of the ESH-creating releases on reservoir elevations, which have been already discussed, any flows above the channel capacities identified in Table 3-2 (p. 3-16) would cause flooding. The channel capacity for the Fort Peck to Lake Sakakawea Reach and the downstream portion of the Garrison Reach is between 35,000 and 40,000 cfs. When the ESH-creating releases occur, the corresponding flow out of Garrison Dam is 17,500 cfs less than what is released from Gavins Point. This equates to releases ranging from 42,500 cfs (for 35 days) and 27,500 cfs (for 175 days). Any flows above 35,000 cfs, as determined by the hydraulic modeling, would exceed channel capacity in parts of the river and cause flooding. Saying that this change in hydrology is insignificant is disingenuous. In addition, implementing the fall ESH-creating release for 175 days would be infeasible. 175 days is nearly 6 months, making it last the entire winter. Typically, ice forms on the Garrison Reach in early to mid-December. As stated earlier, ice cover formation causes an increase in river stage of about 5 to 7 feet. High flows throughout the winter are unacceptable due to the increased risk of ice-induced flooding. In addition, ice cover on the river increases velocity for a given flow. Increased flows under ice conditions with the resulting increased velocities would increase erosion and negatively affect the longevity of sandbars.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645391 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.2.3, p. 3-28 "Overall, the elevations in the reservoirs are dominated naturally by precipitation (i.e., rainfall and snowmelt) in the watershed of the upper river (aside from System operation by the USACE). Although the six alternatives could affect the elevations in the reservoirs to varying extent throughout the year, these variations are small compared to natural variations." **Comment:** It is agreed that the effect of the alternatives on reservoir elevations is small compared to natural variations; however, that does not mean that the effect itself is insignificant. For example, the effect of the ESH-creating release on the elevation of Lake Sakakawea is a drop of up to 10 feet (discussed further in comment regarding Section 3.1.1, p. 3-4). In addition, some of the alternatives (2, 4, 5, and 6) cause lower reservoir levels during historic drought periods and the incremental effect during a drought (or flood) can be devastating. Plots of the three upper reservoirs during the historic drought periods are attached.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645388 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.1.4, p. 3-19 "Primary geomorphological processes that are relevant for the proposed management actions consist of degradation and bank erosion, reservoir sediment deposition and aggradation, reservoir shoreline erosion, and ice dynamics." **Comment:** What is not mentioned in this sentence is sandbar erosion and deposition, which is a critical part of river geomorphology and is relevant to all of the proposed alternatives.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645384 **Coder Name:** jgutierrez

Comment Text: "The 'rules' governing System operation during periods of drought and high runoff for the action alternatives are generally the same as current System operation under the No Action alternative. Therefore, the effects of the action alternatives on reservoir elevations and releases are relatively small compared to the variation caused by the extreme hydrologic events in the POR." **Comment:** It is agreed that the action alternatives do not substantially affect operations during climate extremes, such as floods and extended drought. However, some of the action alternatives, in particular Alternatives 4 and 5, cause significant changes in reservoir elevations and releases from Garrison Dam. Tables 1 and 2 display the volume released from Garrison Dam and reservoir elevation changes of Lake Sakakawea for each instance in the modeled period of record when a full ESH-creating release was implemented

(values were calculated from the Hydrovisualization Tool, version 2.27). [Table 1 - Alternative 4: Spring ESH-Creating Release; Table 2 - Alternative 5: Fall ESH-Creating Release] First and foremost, when a full ESH-creating release is implemented, the volume of water released is not insignificant. For purposes of comparison, the consumptive water use for the entire State of North Dakota in 2015 was about 343,000 acre-feet. The volume of water released to create ESH is up to nearly eight times the annual consumptive water use for our entire state. For both ESH-creating releases, Lake Sakakawea drops up to 10 feet in 5.5 weeks. Among other things, this could negatively affect boat access to the reservoir, and access to water for irrigation and municipal water supplies.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645383 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.1.1, p. 3-3 Comment: This section states that the cross sections for the HEC-RAS model were based on 2012 channel geometry. As the 2011 flood scoured the channel and moved the reservoir deltas downstream, and we are already seeing the effects of sedimentation, the 2012 geometry will generally underestimate the water surface profile. While this does not prevent comparison of the alternatives, it should be noted that the water surfaces will likely be higher than modeled.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645280 **Coder Name:** jgutierrez

Comment Text: The sand and gravel dredging industry is dependent on sediment load, yet the Corps failed to accurately analyze the amount of sediment in the system. The Corps also failed to analyze how the alternatives would impact sediment loading. The Corps' use of a 20-year period to extrapolate for the 82-year period of analysis to analyze for sediment is insufficient. A robust sediment model needs to be created to adequately analyze the impacts of sediment loading and their effect on the sand and gravel industry in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645271 **Coder Name:** jgutierrez

Comment Text: Reservoir sedimentation also has impacted the integrity of the very important flood control pools. The Corps has indicated capacity of the flood control pools is currently at or near the minimum size (16.3 MAF) and that any future sedimentation will require storage capacity to be removed from the Carryover Pool and the Sediment Pool to maintain the 16.3 MAF of flood control necessary. If the Corps simply adjusts the elevations of the top of the Carryover Pool downward to maintain the flood control storage capacity without also making adjustments to the Carryover Pool, further impacts to downstream flow support will occur. Based on the concerns outlined above, the State of Missouri requests the Corps clarify and assess the manner in which the system will operate in the future over changing environmental conditions (changes in sedimentation and hydrology).

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645270 **Coder Name:** jgutierrez

Comment Text: Unfortunately, following the issuance of the 2004/2006 Manual, the Permanent Pool is not where the Corps has accounted for sediment. Since 2004, the Corps has largely allocated the sedimentation to the Annual Flood Control (29,000 acre-feet of storage loss) and the Carryover Pools (771,000 acre-feet of storage loss). Furthermore, the Corps viewed the operational guide curves as numerically fixed, which diminished the capacity and benefits of the Carryover and Annual Flood Control Pool. The numerically-fixed guide curves and reduction in pool capacity create a condition where the downstream flow support level established by the 2004 Master Manual fail to perform as presented (see Table 2). These very real impacts to downstream flow support resulting from past management actions are neither mentioned nor assessed in the DRAFT EIS as required under CEQ regulations.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644483 **Coder Name:** jgutierrez

Comment Text: The No Action Alternative already subjects levee systems in downstream reach of the Missouri River to bi-modal spring rises. In the Kansas City area this has some moderate impacts on the local levee operations due to the fact that some units begin closing sluice gates and activating pump stations as early as Stage 19.5 ft., and in other areas with lesser levels of protection has greater impact. Without the spring rises local levee districts would not need to take action as often or for as long, thus conserving operational cost, flood fight activity and risk.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644481 **Coder Name:** jgutierrez

Comment Text: Another concern are long-lasting peak flows or sustained high-water events, as these type of flood events create even more issues for levee protection, due to seepage and continued weakening of levees during these longer duration inundations.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644480 **Coder Name:** jgutierrez

Comment Text: The St. Joseph and Kansas City metropolitan areas each have several units that function together as a flood protection system for those respective communities. Some units are separated only by an invisible boundary and are thus affected by bordering levee units. Coordination of operations and flood fighting activity becomes increasingly critical and costly as river stages increase due to increased manpower, pump station operation, stop log and sandbag gap closure, levee patrolling, etc.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644479 **Coder Name:** jgutierrez

Comment Text: Levee systems in the lower Missouri reach are already and still subject to flood risks, as evidenced by impacts in 2011 and several other significant events in recent years, including the overtopping of the levees in St. Joseph in 1993. A similar failure today would result in more than \$2 Billion in damages and potential loss or dislocation of 6,000 jobs. As such, and considering the many uncertainties associated with the proposed alternatives, we would not recommend giving up factors of safety or margins of risk to areas protected by levees.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644461 **Coder Name:** jgutierrez

Comment Text: All alternatives presented in the DEIS indicate actual likely potential of increases of river stages in the downstream reach which will, to one degree or another, cause the following: o Beginning flood action stage to occur more often o River to advance to higher flood fight action levels (Minor, Moderate & Major) o Duration of elevated river stages to be extended, thus increasing the saturation levels of levees, which research shows will adversely affect the functioning of levees over time and repeated saturation events

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643451 **Coder Name:** jgutierrez

Comment Text: Decreased river levels will also impact groundwater wells along the River with decreased capacities.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642819 **Coder Name:** jgutierrez

Comment Text: Low flow releases in the summer may where water and power utilities may have to anchor barges with pumping facilities in the River's navigation channel to reach water. Full releases from Gavin's Point in the spring could increase the potential for flooding, if a substantial rain event occurred and the USACE did not decrease releases from Gavin's Point to manageable levels. These high releases could further increase degradation of the river bank, bottom and channel in already compromised locations due to higher velocities.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641636 **Coder Name:** jgutierrez

Comment Text: 5. A selected alternative should not increase Missouri River bed degradation or lateral bank erosion.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640274 **Coder Name:** jgutierrez

Comment Text: On a related note pertaining to sediment, sediment load in the Missouri River is drastically less than during the pre-dam time period when the river was able to erode and deposit sediment with no net change in riverbanks, riverbed, sandbars, and floodplain. This decreases the ability of the river to create sandbar habitat with flows in a sustainable manner. The current riverine environment is still capable of creating sandbars, but the cumulative effects over time are still unknown.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 19 **Comment Id:** 626497 **Coder Name:** jgutierrez

Comment Text: Altering the flow will have negative effects on drainage and infrastructure near and far from the river. This is clearly evident from the 2011 flood where the effects are still a problem from a fiscal and hardship issues. Several drainage and levy districts are concerned about the tax levy's that were added to property taxes on the repairs to levy's and drainage districts might happen again. Also, everyone is worried about structural integrity of levy's since the 2011 event. Many of the fish, birds, habitat and infrastructure that you were trying to save were devastated. We feel the management of the river for flood control and drainage should be upmost importance.

Organization: West Pottawattamie County Farm Bureau

Commenter: Mike Schropp **Page:** **Paragraph:**

Kept Private: No

EC100 Environmental Consequences: Pallid Sturgeon (Substantive)

Correspondence Id: 59 **Comment Id:** 632126 **Coder Name:** JGUTIERREZ

Comment Text: And a lot of these things with the pallid sturgeon, you know, it's not scientifically proven that that will help them even. It's a good idea maybe. But they are going to put a lot of people's economy and stuff in jeopardy with these great ideas they get, and also cost quite a bit of money.

Organization: Dorist Levee District and Augusta Levee

Commenter: Robert Struckhoff **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645992 **Coder Name:** jgutierrez

Comment Text: Unfortunately, FWS' proposal to protect the pallid sturgeon was not implemented during the 10 years before ISAP's conclusion and has not yet been implemented three years later. The Corps focused primarily on managing flows for downstream navigation, while attempting to fit all other uses into prescribed navigation targets. However, the expected amount of navigation was never achieved, and most navigation on the Missouri is limited to small barge trips of about a mile used to mine sand and gravel from the river and transport it to the shore.¹⁸ The Corps rejected the implementation of low summer flows and the connection to the floodplain, stating that these were not feasible objectives under other project authorizations.¹⁹ Despite the opportunity to implement an adaptive management plan, the Corps instead kept fish and wildlife at the bottom of the barrel. As of 2016, the Corps is below target on all flow-related RP As for the pallid sturgeon.²⁰ Since some researchers have suggested that the pallid will be extirpated by 2018²¹ without further action, the Corps has effectively allowed the pallid to slide ever-closer to this fate. Since the original 2000 listing, the Corps has only fully implemented three spring pulses, and never to the levels requested in the Biological Opinion.²² Warm water discharges from Fort Peck were not implemented during the 8-year period following the Biological Opinion, and were eventually shuffled aside as fisheries managers pursued other possible options that would protect the pallid sturgeon.²³ Experts focused instead on fish passage on the Yellowstone River, requiring the Corps to allocate funds authorized for this purpose from the Water Resource Development Act of 1999.²⁴ However, this project does not provide evidence that it will adequately support the pallid sturgeon as currently designed.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 645903 **Coder Name:** JGUTIERREZ

Comment Text: Scientific data indicates that previous spring releases have been ineffective as a spawning cue for the pallid sturgeon. The Independent Science Advisory Panels (ISAP) 2011 Final Report on Spring Pulses and Adaptive Management determines that spring pulses, as currently implemented, are not accomplishing their intended outcomes. Specifically, the ISAP Report concludes that the spring pulse management action, as currently designed, is unnecessary to serve as a cue for spawning pallid sturgeon.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645840 **Coder Name:** jgutierrez

Comment Text: These higher growth rates could benefit young pallid sturgeon by supporting faster growth of newly hatched pallid sturgeon, which are susceptible to drift and mortality. While the Corps proposes to complete a temperature study at Fort Peck, the evidence already exists that the Fort Peck dam has substantially affected water temperatures. Water temperatures were modelled in the EIS. However, the Corps only used two years of water temperature data to model downstream, of Fort Peck and stated this reach did not require further analysis as it was not part of the management plan.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 645822 **Coder Name:** jgutierrez

Comment Text: Competition (direct or indirect) from non-native fish species has to be determined and must be included in the AMP.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645795 **Coder Name:** jgutierrez

Comment Text: Of great concern is the unclear reference to 'drawdowns.' It is assumed, but unclear that this is a reference to previous discussion to significantly draw down the permanent pool of Lake Sakakawea to increase larval drift distance and theoretically lead to pallid recruitment. It is highly questionable if lake drawdown would restore desirable riverine habitat needed for larval pallid survival on anything but a geological timeline. Certainly, not within the timeline of this MRRMP and AMP.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 645781 **Coder Name:** jgutierrez

Comment Text: The potential impacts to YOY and juvenile pallid sturgeon are not understood at this time and such releases should not be implemented until it can be proven that the ESH releases would not be detrimental to the early life stages of pallid sturgeon.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645547 **Coder Name:** jgutierrez

Comment Text: Another water quality concern is vegetation removal on ESH. The DEIS (V2-page 121) states that herbicides could enter the substrate when vegetation is removed during vegetation management operations. Even if approved herbicides are used, we fear potential impacts to birds, mammals, and invertebrates could occur. We are also concerned that the potential impacts from aerial spraying and herbicide drift to fish and wildlife (V2-p197). The League would like to see much more research on the possible impacts of agricultural pesticides to determine if any of these chemicals are influencing recruitment of pallids or their prey species in the lower river. The levels may not exceed water quality criteria, but may be too high for the pallid sturgeon or their forage species (V2-page 194).

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645541 **Coder Name:** jgutierrez

Comment Text: We also have serious concerns with hybridization of pallids and shovelnose sturgeons (AMP 2- page 327). We believe this is an additional complicating factor for pallid recovery. What will be done to address this and what additional research is needed to learn more?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645538 **Coder Name:** jgutierrez

Comment Text: Scientific information is lacking on what is needed to support functional spawning habitat for pallids (Volume 2 Page 79). We support robust funding for research and monitoring effort to improve understanding of the pallids reproductive cycle and what is missing from spawning habitat requirements. Currently, drifting free embryos have limited or no opportunity to get out of the thalweg in the navigation channel.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645535 **Coder Name:** jgutierrez

Comment Text: The DEIS (V1-page 150) focuses on hatchery practices. The League is concerned that the Corps places too much emphasis on hatchery raised pallids for the Missouri River. Stocking creates a population that is not self-sustaining. Our concerns about stocking also include disease and water quality issues in the hatcheries and the effects on the health of the fish raised. If hatchery pallids are transporting disease to wild fish, then restoration efforts are going backward. We also have concerns about the high cost of raising pallids in the hatcheries. We encourage more habitat restoration in the upper and lower river to ensure natural production and recruitment.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645527 **Coder Name:** jgutierrez

Comment Text: In regards to the Intake Project on the Yellowstone River (V1-page 122), we have concerns about the project's proposed fish passage. The final EIS should articulate how the Corps will measure if pallids are successfully bypassing the intake and spawning. The Intake Project is a tremendous expense (57-60M) from the MRRP. This amount demands more than just an assumption that it will work.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645521 **Coder Name:** jgutierrez

Comment Text: Alternative 5 - The League has concerns with Alternative 5. This alternative is contrary to the natural historic hydrograph of the river. Alternative 5 would have large flow releases in the fall instead of the spring, as in the natural hydrograph. We believe any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds far south of the Missouri River. We also have concerns with this alternative's potential impacts on pallid sturgeon and other native fish species, with such a large release at an unnatural time of year for the Missouri River.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645418 **Coder Name:** jgutierrez

Comment Text: Similarly, the low summer flow found in Alternative 2 has not been shown to be effective. The only explanation of its effects on the pallid sturgeon is that "the USFWS 2003 Amended BiOp (USFWS 2003) also called for the modification to System operations to allow for flows that are sufficiently low to provide for SWH as rearing, refugia, and foraging areas for larval, juvenile, and adult pallid sturgeon." 112 The MRRMP-EIS does not explain the benefits of low summer flow in terms of how much SWH would be created and thus does nothing to prove that it is a beneficial management action for the pallid sturgeon. In addition, low summer flow "would only be implemented in the two years following implementation of a complete bimodal spring pallid sturgeon flow release." 113 This would make the implementation of low summer flow infrequent because "modeling based on an 82-year POR, indicate that in practice the bimodal spring pallid sturgeon flow releases would likely only meet the conditions for implementation once in every eight years," meaning that the complete implementation of these flows would occur even less frequently than this. 114 The lack of explanation about the benefits of low summer flow, along with its infrequent implementation, show that the Corps provides no evidence of the effectiveness of this management action. It is possible that because there is a lack of evidence showing a positive effect of the low summer flow on the pallid sturgeon, the low summer flow could be ineffective. NEPA requires use of the best available scientific information, which in turn necessitates the consideration of other viable alternatives.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645326 **Coder Name:** jgutierrez

Comment Text: 1) The Use of the Shovelnose as Surrogate Species Lacks Support For much of the EIS, where data are unavailable or scarce on the pallid sturgeon, life history characteristics of the shovelnose are used. A number of reasons exist that could undermine the credibility of this approach, including differences in drift rates and distance, diet, and habitat use. For these reasons, the Corps should consider shifting the alternatives to rest solely on what is known about pallid sturgeon, rather than use the surrogate species approach. Specifically: -The transition from the drifting to the benthic life stage occurs in only 6 days after hatch for shovelnose sturgeon and at 11-17 days after hatch for pallid sturgeon. 11 -Drift simulations have found that average larval shovelnose sturgeon may drift from 94 to 250 km and the average larval pallid sturgeon may drift from 245 to 530 km. 12 -While both fish consume larval caddisflies, the diet and thus feeding position in the river differ greatly. Pallid sturgeon consume fish in the water column, including chubs, shad, and other minnows. Shovelnose sturgeon were benthic feeders, mostly eating insects that live on the river bed or in the drift. 13 -Pallid sturgeon used sandy substrate, midchannel bars islands, and areas with riparian vegetation more often than shovelnose sturgeon. 14

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 245 **Comment Id:** 644911 **Coder Name:** jgutierrez

Comment Text: What is the evidence supporting this management action and the high estimated cost to create it? What other management actions were considered to benefit survival of age-0 pallid sturgeon? There is only a single statement in Vol 2 of the DEIS identifying benefits of channel widening for pallid sturgeon recruitment: P 89. L7-9 (also on P88 L9-10 of DSAMP appendices). Under Alternatives 3-6, construction of habitat to support early life history requirements of pallid sturgeon would occur following the /RC (interception and rearing complexes) concept. Best available science indicates that future acreage required to construct IRCs would most likely be achieved through channel widening. One expects this 'best available' science' would be described in the pallid sturgeon effects analysis volumes. However, in Jacobson et al 2015 (P26) there is only a single reference to channel widening as an action to benefit pallid sturgeon and it is unsupportive or equivocal as to the benefits of SWH - including channel widening: The report from the assessment (Schapaugh and others, 2010) cited the HAMP as an excellent design to achieve active adaptive management; however, the report also documented that assumptions underlying the BACJ designs were not being met under real-world conditions, and, therefore, the ability to detect effects of SWH was limited. In particular, the authors reported that the actions of dike notching and channel widening did not result in detectable changes in the fish community. Moreover there is not a single reference to observed or proposed benefits of channel widening in the Pallid Sturgeon Effects Analysis Integrative Report (Jacobson et al 2016) or as part of any working hypothesis linking management of the Missouri River to pallid sturgeon population dynamics (Jacobson et al 2016b). There are two references to channel widening in the DSAMP (P43, L 23; Table 47, P376) - but both just describe implementing the management action, not its anticipated benefits. Numerous references to channel widening are in the DAMP appendices, but again, all but the aforementioned statement that best available science supports channel widening, are details of acreages, locations and implementation processes.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 166 **Comment Id:** 644889 **Coder Name:** jgutierrez

Comment Text: We are concerned by the absence of sufficient study of benthic macroinvertebrate food sources in the planned IRC projects at Baltimore Bend and Searcy Bend (Tadpole Island). The BACI (Before-After-Control-Impact) study designs specified in the DEIS have utilized benthic trawls to describe fish community assemblages, according to posters presented at the Missouri River Natural Resources 2017 conference (MRNRC Conference and BiOp Forum 2017 Habitat: The Pathway to Recovery Poster Abstracts,: Interception-Rearing Complexes: Age-0 Sturgeon Baseline Monitoring during 2016 Author(s): Nathan J.C. Gosch, Todd

R. Gemeinhardt, Marcus L. Miller, and Joseph L. Bonneau) and (same conference, Title: Pre-Treatment Fish Communities of Two Missouri River Bends, Prior to IRC Construction Author(s): Thomas C. Boersig, Jacob N. McQuaid, and Kyle W. Winders) Since a major hypothesis concerns Age-0 pallid sturgeon ability to forage and feed in these habitats, we believe benthic macroinvertebrate community assemblages should be described and studied rather than assuming that prey food, generally, will be present.

Macroinvertebrate Bray-Curtis Similarity Indexes and or dissimilarity indexes should be created in all phases of the BACI for IRC sites and their control comparatives. These same macroinvertebrate prey may, also, be part of the food web for the fish community assemblages already studied and cited above. This kind of data would seem essential if additional bioenergetics analysis is to be accomplished for these, or additionally planned future sites.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644419 **Coder Name:** jgutierrez

Comment Text: The Asian carp may not eat the same food as the endangered species, but common sense and science tells us they do have an impact on the endangered species and the fish which may become endangered because of them. They are invasive and this impacts the food chain, nutrients, orxgen, space, and the invasion of territories for other spieces.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644039 **Coder Name:** jgutierrez

Comment Text: Perhaps most disturbing to me is the plan's purported dependency on a high level of science to make decisions while the plan contains glaring inaccuracies presented as the "best available science". An example is the continued mention of interstitial hiding by post-hatch free embryos and its inclusion in decision-trees within the plan. While there has never been evidence of use of interstitial space by pallid sturgeon hatched free embryos, evidence from Keenlyn, Holm, Kappenman, Braaten and Delonay provide evidence that interstitial hiding is not used by pallid sturgeon. If this is a demonstration of how slow accurate information is incorporated into the MRRMP decision-making process, meaningful management actions to benefit pallid sturgeon will not occur in reasonable timeframes if at all.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643900 **Coder Name:** jgutierrez

Comment Text: Section 2.9.2.5, Page 2-86 - Indicates that a fall release for ESH would have negligible adverse impacts. It appears this statement is related to the mechanical construction component of ESH but not the pulse releases. The DEIS needs to include a thorough analysis of a fall pulse flows impacts on young-of-year and juvenile life history periods of pallid sturgeon.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643001 **Coder Name:** jgutierrez

Comment Text: The Fall ESH Creating Release described in Alternative 5 is not supported by the Nebraska Game and Parks Commission due to high probability that these high flows and associated higher velocities would result in low survival and recruitment of native fishes including Pallid Sturgeon.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642129 **Coder Name:** jgutierrez

Comment Text: Sioux City does not believe that enough study on the influence of the Asian Carp's impact on the Pallid Sturgeon has been given. It would certainly seem that predator fish feeding on the fry of the indigenous fish is one issue that should warrant more study.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641587 **Coder Name:** jgutierrez

Comment Text: The upstream damming of the Missouri River, flood control actions, and channelization of the river for barge movement has had long-term negative effects on all three of these species. The Iowa Chapter believes that those tensions and changes will provide an opportunity to return sections of the river bordering Iowa into more natural habitat. That includes creating pools and

sandbars in the river and restoring floodplains. Those efforts will provide habitat for the pallid sturgeon, piping plover, and interior least tern.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 97 **Comment Id:** 636850 **Coder Name:** jgutierrez

Comment Text: We believe that the EIS does not reflect the current state of science and that more work should be done in regards to the effects of the proposed management plan on these imperiled species.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 81 **Comment Id:** 636788 **Coder Name:** jgutierrez

Comment Text: But beyond that, where are provisions for designation of critical habitat for the endangered pallid sturgeon; for unbalanced reservoirs to address the situation at a particular reservoir; for the application of the best science currently available? Habitat loss, fishing and caviar harvesting, entrainment and watercraft propellers, contaminants, hybridization, invasive species, and iridovirus all threaten the endangered pallid sturgeon. None of the alternatives provide adequate response. The pallid sturgeon requires shallow-water habitat. Designation of critical habitat is necessary! The Corps of Engineers seemingly acknowledges that with the phrase "avoid jeopardizing the continued existence of pallid sturgeon or its critical habitats" in the accompanying Draft Science and Adaptive Management Plan. Perhaps having unbalanced reservoirs as a management tool in the Missouri River Mainstem Reservoir System Master Water Control Manual is adequate, but perhaps not.

Organization: Sierra Club, Audubon, Nature Conservancy

Commenter: Anne Millbrooke **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 76 **Comment Id:** 633563 **Coder Name:** jgutierrez

Comment Text: Fifth, the skinny fish problem has been treated as a means by which the adaptive management deals with submission of new information. The pallid sturgeons are - - many of them are malnourished. They look anorexic. Sadly, this initial treatment

shows that adaptive management as designed in the DEIS is not very adaptive. I'm concerned that other new information, even reasonably foreseeable information, will suffer the same slow grinding fate.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

EC1000 Environmental Consequences: Land Use and Ownership (Substantive)

Correspondence Id: 66 **Comment Id:** 633528 **Coder Name:** jgutierrez

Comment Text: While Alternative 3 does not call for shallow water habitat, it does require Interception Rearing Complexes, which those who know the Missouri River simply consider more hocus pocus. At a minimum, it will be important to work with landowners who could be impacted by the IRCs. Furthermore, Alternative 3 does not rule out flow modifications in years nine and ten.

Organization: Missouri Farm Bureau

Commenter: Adam Jones **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645876 **Coder Name:** JGUTIERREZ

Comment Text: It is unacceptable that interior drainage impacts are not even mentioned in Section 3.10.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645847 **Coder Name:** JGUTIERREZ

Comment Text: We object strenuously to the DEIS perpetuation of the myth that private lands are unprotected and the nomenclature in the DEIS needs to be changed to eliminate the unprotected stigma. More importantly, negative culture in some federal agencies toward private landowner stewardship requires immediate correction.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645634 **Coder Name:** jgutierrez

Comment Text: 6. The Land Use section of the DEIS is completely inadequate and fundamentally flawed. This section only examined impacts of future government land purchases and did not research at all private landowners inability to utilize their land because of impacts to interior drainage. This must be taken into account.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645578 **Coder Name:** jgutierrez

Comment Text: The DEIS states that land acquisition associated with the alternatives may reduce agricultural production due to the development of wildlife habitat on lands that would otherwise be used for agriculture (V3 Page 385). These areas will increase flood retention and improve water quality. We believe that restoring lands and natural processes to the Missouri is a positive development and feel this needs to be detailed in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645548 **Coder Name:** jgutierrez

Comment Text: Here, the DEIS states: For Alternative 2, the estimated land acquisition was 45,717 acres in the lower river. In Section 3.10.2.5, the DEIS states: Total targeted acres for acquisition of lands are estimated to be 9,333 acres in the Ponca to Rulo reach and 24,130 in the Rulo to the mouth of the river reach under Alternative 2. Which is it - 33,463 acres or 45,717 acres? There's more than a 36 percent difference between these numbers. We recognize different groups probably wrote the different sections of the DEIS, but the lack of coordination and data which varies by over third of a magnitude raises even more questions about to overall accuracy and credibility of the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645508 **Coder Name:** jgutierrez

Comment Text: The DEIS says the Regional Economic Development (RED) impacts are likely overstated (V2-page 241). This should be clearly stated in this section in the final EIS. As listed in Table 3-44, the reductions in property tax receipts would not occur at one time and would be spread over the 15-year implementation period. So the adverse impacts to local governments associated with property tax reductions would be incremental.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645505 **Coder Name:** jgutierrez

Comment Text: 3.10.2.6 - Alternatives 3-6 All comments for Alternatives 1 and 2 apply. The only differences are in the acres acquired and the degree and severity of management actions. Land use impacts rise and fall with river stages. Therefore, the more frequently flows are raised and lowered, the greater the economic impacts and risks will be.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645501 **Coder Name:** jgutierrez

Comment Text: Land acquisition by the federal government removes the property from the tax base for local government. The federal Payment In Lieu of Taxes (PILT) program is designed to offset some of the loss in revenues, but PILT payment levels can vary significantly from year to year, resulting in considerable difficulty in budgeting and planning for local governments. In any case PILT does not replace the tax revenues and is capped at \$2.64 per acre (FY 2016). The acquisition target for the no action Alternative 1 is 5,267 acres, Alternative 2, 33,462 acres and for Alternatives 3-6, 1,417 acres. Conservative estimates for average property taxes are \$5.00-\$8.00 per acres in Missouri and \$20-\$35 per acre in Nebraska. With the PILT capped at \$2.64 per acre, property tax revenue impacts can be locally severe, especially under Alternative 2. We believe the tax impacts listed in the DEIS are understated. Additionally, the DEIS lists annual impacts, which creates a perception of smaller impacts than are really incurred. Multiply the property tax impacts for 10, 20 or 50 years, and those impacts run into tens of millions of dollars. This is especially true for Alternative 2, which could have devastating effects on local revenues. Property taxes are not the only sources of revenues to local governments that are directly tied to productive cropland. The economic activity generated by farming impacts everything from individual and corporate federal income taxes down to local sales taxes, special use taxes, personal property taxes, etc. An analysis that limits itself to the impacts of property tax is incomplete and inaccurate and grossly underestimates the revenue impacts to local government. Further study of those impacts is necessary before management actions are taken. The paragraph on Other Social Effects

limits its analysis only to impacts of land acquisition and takes pains to point out the small percentage of land that would be acquired by the federal government. We believe the impacts are understated and reiterate that management actions can still be far more impactful than the act of acquisition.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645496 **Coder Name:** jgutierrez

Comment Text: Section 3.10.1.2 - Land Ownership This section ignores significant acres of habitat for various wildlife species and creates a false impression that wildlife habitat is limited to protected acres. It fails to mention the large acreages of privately held lands on which conservation practices are implemented and habitat is provided under NRCS guidelines or the thousands of acres of cropland on which wildlife routinely lives and feeds. The use of the term protected reinforces the incorrect perception that unless its owned by a government entity or a strident environmentally centered NGO, the land is unprotected.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645487 **Coder Name:** jgutierrez

Comment Text: 3.10 Land Use and Ownership General Analysis: 1. We appreciate the Corps effort to develop empirical economic modeling. Modeling to attempt to predict job losses, sales impacts and the property tax impacts to local government due to land use and ownership changes is appropriate. However, economic modeling, especially the truncated version employed to develop the DEIS, is anything but scientific. 2. It is well known the even small data or assumption errors can create fundamentally inaccurate predictions. Inaccurate assumptions, the omission or inclusion of certain data sets and the accuracy of the data sets are just a few of the limitations of modeling. Assumptions of relationships and cause and effect of various factors must be made for the baseline or starting point of modeling. 3. Synergistic effects of interrelated economic impacts are missing from the model, causing the overall economic impacts of changes to land use and ownership for all alternatives to be substantially understated. For example, the modeling does not account for the impacts of navigation on transportation costs and agricultural profitability. There are scores of examples like this in the DEIS. Additionally, the land use modeling limits baseline assumptions to those cropland acres that will be taken out of production by the result of productive land being purchased and repurposed by the federal government. Land purchases are the only metric considered. The wide range of management actions include impediments to interior drainage that can drastically alter land use and productivity. Impacts from power generation costs, local water supply, increased truck traffic on public roads as the result of

potential impacts on navigation, etc., must be considered and analyzed. Those elements and others have massive impacts on NED, RED and OSE outcomes, but they're not part of the DEIS modeling. Without inclusion of the broad impacts of critical economic interactions in the model, its outcomes are oversimplified and understated. In brief, the model is too simplistic and too limited in scope.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645292 **Coder Name:** jgutierrez

Comment Text: Page xvii, Executive Summary: "The impacts as a result of the federal government acquiring lands from willing sellers to construct pallid sturgeon early life stage habitat are evaluated using two of the four planning accounts: Regional Economic Development (RED) and Other Social Effects (OSE). Comment: The agencies must consider local impacts and payments in lieu of taxes to compensate for the correspondent reduction in the tax base.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645286 **Coder Name:** jgutierrez

Comment Text: In summarizing the change in economic activity for all agricultural land acquisition (Table 15, page 19-20), the Corps states that "Missouri would experience the greatest adverse impacts to jobs and income, with a reduction of less than one job and \$19,000 in income." A worst-case scenario estimate of one job lost and \$19,000 in income is grossly underestimated because the Corps did not include indirect labor economic impacts in their analysis. A thorough and accurate economic analysis of land acquisition would help stakeholders understand the impact on the regional economy. In the Final EIS, the Corps needs to identify the correct assumptions for its economic analysis and appropriately estimate the numbers.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645285 **Coder Name:** jgutierrez

Comment Text: As Missouri is considered to have the highest number of acres (Table 8, page 13) acquired from agriculture to meet the program objectives, the economic impacts of agricultural land acquisition should be carefully analyzed. Payment In Lieu of Taxes (PILT) is the mechanism by which Missouri counties receive money from the federal government to account for the loss of private property tax income. As the Corps acquires more land for habitat construction, property tax receipts would change significantly. The Corps needs to fully analyze the impacts of land use and ownership implications in the Final EIS and the effect federal land ownership has on local economies.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644934 **Coder Name:** jgutierrez

Comment Text: Economic evaluations On the same topic of acquired acres the Corps assumes that acres offered to the Corps from willing sellers will have been recently in crop production. Thus the Corp values their contribution to crop totals the same as other acres in the area. That is a reasonable assumption only to a point. It is likely that some, perhaps a majority, of willing sellers are willing to sell to the Corps because they have problems with productivity on their lands. Problems may be due to frequent flooding. If so removal of those acres from the agricultural base would save taxes in flood insurance and would have a lower proportional impact on regional crop productivity than other acres. The Corps also mentions loss of tax base as an economic loss. Again if such acres from willing sellers are more prone to production problems, that would reduce their past contribution to the tax base. The Corps mentions PILT payments as a buffer against that loss but does not incorporate any formula or estimate to assess that. It does though give a Dept. of Interior reference and expects the reader to figure it out.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643500 **Coder Name:** jgutierrez

Comment Text: The land use model described in Section 3.1 Land Use and Ownership uses baseline assumptions related to cropland acres that will be taken out of production by the result of land being purchased and repurposed by the Corps. The cropland acres are not the only economic impact that should be accounted for. Interior drainage will be impacted by the alternatives which can delay or even prevent crops from being planted, cause structural issues, cause the need for rehabilitation of land, cause repairs of levee, and cause infrastructure damages. This cost should be included in the economic considerations in the EIS for each alternative.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643498 **Coder Name:** jgutierrez

Comment Text: The impacts to land acquisition are understated in the Section 3.10 of the DEIS. Land Acquisition by the Corps removes property from the tax base for local government and this cost should be accounted for in the economic considerations. Property taxes are a source of revenues to local governments and schools that are tied to the productive cropland. The economic activity generated by farming, impacts local sales tax, personal property tax, special use taxes, and these impacts are underestimated in the analysis. Any conservation management plan should be voluntary and provide incentives to private landowners for protecting or enhancing habitat for the species needing protection. Non-participants in voluntary species conservation management plans should not be held to the standards of the plan. Benefit-cost ratio analysis for any alternative must result in higher benefits than the cost. Mitigation or replacement of habitat should be applied only in areas where conversion of the habitat is significant in relationship to the total amount of habitat available in the area.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 220 **Comment Id:** 642147 **Coder Name:** jgutierrez

Comment Text: One of the primary purposes of the MLDDA is to ensure that levees protect prime farmland. In the course of implementing mechanical construction under the Preferred Alternative 3 in the MRRMP DEIS, we urge the U.S. Army Corps of Engineers, in cooperation with the Department of Agriculture, to identify its effect on the conversion of prime farmland to nonagricultural uses under the Farmland Protection Policy Act ("Act"). "It is advisable that evaluations and analyses of prospective farmland conversion impacts be made early in the planning process before a site or design is selected." 7 C.F.R. Â§658.4(e).

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 186 **Comment Id:** 641525 **Coder Name:** jgutierrez

Comment Text: The various alternative habitat improvement activities proposed (including, but not limited to: Shallow Water Habitat, Top-Width Widening, Interception Rearing Complex, Emergent Sandbar Habitat, channel reconfiguration, Flow Management, and Land Management activities) have the potential to impact lands that have NRCS easements in place.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640292 **Coder Name:** jgutierrez

Comment Text: It is important to recognize that agriculture has been, and will continue to be, the driving force behind North Dakota's economy, contributing over \$32 billion in economic activity annually. That makes agriculture the largest sector of North Dakota's economy, supporting twenty-four percent of the state's workforce. North Dakota's farmers and ranchers own, operate and manage nearly forty million acres, rank number one in the nation in the production of ten commodities, and produce over fifty commodities in total. Because of North Dakota's vast global export markets, the removal of any agricultural land would affect production for North Dakota's farmers and ranchers, having a far reaching detrimental impact on North Dakota, and its global partners. As such, floodplain connectivity due to increased flows and the removal of agricultural land from production are of great concern to the North Dakota Department of Agriculture (NDDA). The removal of any amount of agricultural land from production leaves a tremendous effect to the overall economy of the state. It is an issue much greater than the suggested loss in property tax revenue. Farmers and ranchers must retain ownership and access to operate agricultural land to better support a balanced ecosystem. NDDA finds the encouragement of floodplain connectivity to be premature based on the lack of research available.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640152 **Coder Name:** jgutierrez

Comment Text: Many of the acres already acquired along the Missouri River have been incorporated in the Big Muddy Wildlife Refuge system. One can assume the same for future acres. The Corps has failed to evaluate whether proximity to a National Wildlife Refuge increases in value of neighboring lands or communities.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640151 **Coder Name:** jgutierrez

Comment Text: The Corps also mentions loss of tax base as an economic loss. Again if such acres from willing sellers are more prone to production problems, that would reduce their past contribution to the tax base. The Corps mentions PILT payments as a buffer against that loss but does not incorporate any formula or estimate to assess that. It does though give a Dept. of Interior reference and expects the reader to figure it out. (Land Use and Ownership Environmental Consequences Analysis Technical Report, footnote 1, page 5)

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640148 **Coder Name:** jgutierrez

Comment Text: On the same topic of acquired acres the Corps assumes that acres offered to the Corps from willing sellers will have been recently in crop production. Thus the Corp values their contribution to crop totals the same as other acres in the area. That is a reasonable assumption only to a point. It is likely that some, perhaps a majority, of willing sellers are willing to sell to the Corps because they have problems with productivity on their lands. Problems may be due to frequent flooding. If so removal of those acres from the agricultural base would save taxes in flood insurance and would have a lower proportional impact on regional crop productivity than other acres.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

EC1100 Environmental Consequences: Commercial Sand and Gravel Dredging (Substantive)

Correspondence Id: 187 **Comment Id:** 641557 **Coder Name:** jgutierrez

Comment Text: Low flow provisions in Alternative 2 should be removed from consideration because of the disastrous impact it would have on my business.

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645512 **Coder Name:** jgutierrez

Comment Text: 3.11 - Commercial Sand and Gravel General Analysis: 1. Modifications in flow as presented in Alternatives 2, 4, 5 and 6 undermine the primary congressionally authorized purposes of navigation and flood control, making them problematic. 2. The states of Missouri, Kansas, Iowa and Nebraska own the bed of the lower river. The states have a sovereign right to their real estate and federal actions that compromise the real estates resources are a takeover in regard to states real estate and natural resources. 3. The use of the HEC-RAS model for decision making in the DEIS is flawed. Commercial sand dredgers have continually presented their objections to HEC-RAS being used for any permitting related decisions and the Corps has previously agreed during MRRIC sessions. In the DEIS however, this important point is missing from the document and needs to be included in the content for this section. 4. The DEIS fails to address the issue of sediment in the system and the lack of material movement. We call on the Corps to create a true sediment analysis that examines this important component for pallid sturgeon recovery. Changes in flow, without enhancing sediment load are not impactful and are a true waste of water in the system. 5. Regarding IRC construction and maintenance, the Corps must give commercial sand dredgers absolute assurance that these new habitat areas will not impact their operations by making its related regulatory strategy clear. Of utmost importance to dredgers are the issues of channel response, impacts to navigation, bed and hydraulic conditions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645410 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.11.2.5, p. 3-252; 3.11.2.6, p. 3-253; 3.11.2.7, p. 3-254; 3.11.2.8, p. 3-256; 3.11.2.9, p. 3-257; and 3.11.2.10, p. 3-258 - 3-259 "...each project will be designed to not impact other authorized purposes including sand and gravel dredging." **Comment:** Sand and gravel dredging is not an authorized purpose.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645281 **Coder Name:** jgutierrez

Comment Text: Additionally, the Corps failed to analyze the effect of the one-time flow event in Alternatives 3, 4, and 5. In light of this, it is difficult for stakeholders to evaluate and provide meaningful feedback on impacts that were not analyzed. For the flow scenarios in which the Corps did assess impacts to the sand and gravel industry, the analysis is incomplete. The Corps failed to

analyze the economic impact of flow scenarios. In the Final EIS, the Corps needs to correct these deficiencies if the analysis is to be considered sufficient.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644965 **Coder Name:** jgutierrez

Comment Text: Like the discussion of Alternative 4, the discussion of Alternative 5 shows differing results in the navigation and sand and gravel sections. Table 6 shows a 0.5% difference in NED between Alternative 5 and Alternative 1, then considers it a negligible impact for sand and gravel dredging. However, as shown in Table 7, "Alternative 5 would have a relatively small adverse impact on navigation benefits compared to Alternative 1 because it could reduce the annual NED by \$0.006 million, approximately 1 percent of annual NED benefits."¹⁵⁹ While these percentage differences are not as significant as some of the other alternatives, they show conflicting results (negligible impact versus a small adverse impact). For the last alternative, Alternative 6, there is also a discrepancy between the two NED values found in each section. The sand and gravel industry section shows a negligible 0.4% difference in the NED between Alternative 6 and Alternative 1, as indicated in Table 6. Table 7 below, summarizing the navigation section, shows that "a relatively large adverse impact would occur to navigation under Alternative 6 by reducing annual NED by \$0.042 million, approximately six percent of annual NED benefits."¹⁶⁰ Once again, the two sections reach contradictory conclusions despite the similarity of the activities. Table 8 below compares the percentage difference in NED for each alternative relative to No Action for each industry. [Table 8: Alternative NED Values Compared to No Action for Navigation and Sand and Gravel Dredging]

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644964 **Coder Name:** jgutierrez

Comment Text: Regarding Alternative 3, Table 6 shows that the NED difference for the sand and gravel industry differs from Alternative 1 by 0.1 %. Table 7 below, which outlines the impacts of each alternative on navigation compared to Alternative 1, shows a difference of \$0.002 million in NED from Alternative 1, a difference of 0.28%. While the percentage values for Alternative 3 in Tables 6 and 7 are similar (0.1 % difference on Table 6 compared to 0.28%, on Table 7), the results are presented in conflicting manners. According to the section on sand and gravel dredging, "any NED impacts to the commercial sand and gravel dredging industry under Alternative 3 would be negligible due to the measurable but very small percentage change from Alternative 1."¹⁵⁵ However, the navigation section states that "Alternative 3 would have a slightly beneficial impact on navigation compared to

Alternative 1,"¹⁵⁶ even though the values differ by less than two-tenths of a percent. How can there be a negligible impact on one industry (sand and gravel dredging) but a benefit impact to the other industry (navigation) where the two are extremely similar? [Table 7: Impacts to Navigation Relative to No Action] The same factors are at work in the comparison of Alternatives 4 through 6 in the navigation and sand and gravel sections. The discussion of Alternative 4 in the two sections is like that of Alternative 2. In Table 6, sand and gravel dredging shows a -0.2% "negligible" difference between Alternative 4 and Alternative 1, while in Table 7, navigation shows an "adverse" difference of approximately 6%, "decreasing the annual NED by \$0.045 million. ¹⁵⁷ The navigation section further contradicts the sand and gravel section by stating that "relatively large adverse effects to commercial sand dredging from shortened navigation seasons would occur in some years." ¹⁵⁸ Again, it is important to note that "commercial sand dredging" differs from commercial navigation, which does not include the sand and gravel industry's barge traffic.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644963 **Coder Name:** jgutierrez

Comment Text: Both the navigation and sand and gravel dredging sections of the MRRMP-EIS include a breakdown of how each alternative would impact the industries relative to the No Action Alternative. The conclusions reached for each of the alternatives in each of the industries are confusing and self-contradictory, rendering the analysis virtually useless. Below, Tables 6 and 7 show the impacts of each alternative on the navigation and sand and gravel dredging industries. Table 6 clearly shows that there are no significant impacts to the sand and gravel dredging industry from any of the alternatives. The only quantifiable difference between the analyses of each of the alternatives can be found in their National Economic Development (NED) values. Each alternative is less than 1 % different from the No Action Alternative, which itself allegedly has negligible impacts on sand and gravel dredging. [Table 6: Impacts to Sand and Gravel Dredging Relative to No Action] However, when the section on sand and gravel dredging impacts is compared to the section on navigation impacts, there are many contradictions. The types of commodities that travel along the Missouri River are broken "into four broad categories . . . commercial sand and gravel, waterway improvement materials, other commercial cargo, and oversized goods."¹⁵⁰ Of these four categories, "since 2000, sand and gravel has represented greater than 85 percent of the commodities shipped on the Missouri River."¹⁵¹ However, there is a difference between "commercial sand and gravel" and "other commercial cargo" navigation on the river. The sand and gravel navigation was already considered in its own section, so it should be excluded from the analysis in the navigation section. Since the MRRMP-EIS treats the majority of navigation on the Missouri River as sand and gravel dredging, one would think that the navigation sections of the MRRMP-EIS would reach a conclusion similar to that reached in the sections on sand and gravel dredging - that the impact is negligible. Under the sand and gravel dredging section, a NED value was calculated "based on impacts related to transportation of material" where one of the values was "navigation transportation savings."¹⁵² Under the navigation portion, a NED value was also "calculated by subtracting the

change in non-routine repair, replacement, and rehabilitation (R, R, & R) costs from the transportation savings."¹⁵³ By using the same metrics to calculate each of the NED values, both industries should show a substantially similar impact among the alternatives. While the No Action Alternative seems to have similar results for both navigation sand and gravel dredging, the other alternatives have conflicting NED values. Table 6 above shows that the Corps has determined that the NED effects for Alternative 2 when compared to No Action are negligible with only a 0.5% difference. However, the analysis of NED effects found in the navigation section reaches a different conclusion about sand and gravel dredging: Alternative 2 would have an adverse impact to navigation by reducing NED by \$0.028 million annually, approximately four percent of annual NED benefits, due to the low summer flow reducing navigation season. There would be relatively large adverse effects to commercial sand dredging jobs and income in years with low summer flows, but negligible impacts to regional economic conditions. ¹⁵⁴ The difference between the two NED analyses on the impacts of Alternative 2 to the two industries is unexplained because the same factors were used to calculate both and a clear majority of materials currently transported on the Missouri River is performed by the sand and gravel industry (typically transporting its products fewer than ten miles each trip).

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644962 **Coder Name:** jgutierrez

Comment Text: 1. The importance of sand and gravel dredging is overstated because it is not an authorized use of the Missouri River. The primary use of dredged sand and gravel is for the "construction industry, including road and highway construction," and "the Missouri Department of Transportation is one of the largest customers of sand from the Missouri River."¹⁴¹ Dredging operations are centered around the sand and gravel companies' on-shore processing plants, typically taking place no more than 7- 10 miles upstream and no more than 3- 9 miles downstream from a plant. ¹⁴² The average production volume of sand and gravel dredged from the Missouri River between the years 2010 and 2015 was 3,763,577 tons. ¹⁴³ Figure 1 below shows that in recent years, sand and gravel barge traffic volume has fallen below the five million ton goal for navigation on the Missouri River, even when combined with commercial navigation. In addition, it shows a large difference between commercial navigation and sand and gravel dredging. This difference shows that actual commercial navigation on the river is negligible in comparison to sand and gravel dredging, and that the navigation statistics reported in the MRRMP-EIS rely mostly on sand and gravel barge traffic: ¹⁴⁴ [Traffic graphic] The sand and gravel dredging industry is regulated through permits, and "every five years the dredgers must reapply for Department of the Army permits."¹⁴⁵ In 2003 and 2004, the Corps "received 10 applications from commercial sand and gravel companies for permits to extract sand and gravel from the [Lower Missouri River]. In August 2007, the USACE Kansas City District authorized four applicants to continue existing dredging operations."¹⁴⁶ Thus the Missouri River dredging industry is relatively small. But despite its size, the industry manages to be quite environmentally destructive: "the reaches of the river most degraded- Kansas City, Jefferson City, and

St. Charles- were found to coincide with areas where commercial sand and gravel dredging was the greatest."147 The dredging industry may even have its own adverse impact on the species because "dredging and associated river bed degradation could be contributing to impacts on habitats of federally listed threatened or endangered species."148 When discussing the impacts that the ESH construction of Alternative 2 would have on the sand and gravel dredging, the Corps erroneously states "each project will be designed to not impact other authorized purposes including sand and gravel dredging as described in Section 2.5.3.1."149 But even if the impacts were stated consistently throughout the MRRMP-EIS, sand and gravel dredging is not a congressionally authorized use of the Missouri River and should afford no special protection in the development of alternatives. Therefore, the sand and gravel dredging industry should not be given undue consideration in the MRRMP-EIS. If anything, reducing dredging activity would seem to accrue benefits to species protection.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644961 **Coder Name:** jgutierrez

Comment Text: D. The MRRMP-EIS Overstates Impacts to Navigation and Sand and Gravel Dredging. The Corps "operates the System to serve eight congressionally authorized project purposes of flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife."138 The Missouri River is also used for sand and gravel dredging, which is not statutorily authorized. Since navigation is one of the System's eight authorized purposes, 139 an analysis of the Alternatives' impacts on navigation is a permissible consideration. However, the Corps overstates those impacts where it analyzes sand and gravel dredging under the topic of navigation as well as under its own category, particularly since the conclusions of the MRRMP-EIS in the section on sand and gravel dredging conflict with the conclusions in the navigation section. Navigation impacts are also overstated due to the low volume of actual commercial navigation on the Missouri River. Figure 1 below, which is provided in the MRRMP-EIS, shows that the commercial barge traffic volume on the Missouri River falls far below the navigation target of five million tons of commercial barge traffic. 140 In addition, the scale and weight of navigation and sand and gravel dredging are misleadingly inconsistent. Furthermore, the Corps overstates impacts to the sand and gravel dredging industry because it is not a congressionally authorized use of the river.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

EC1200 Environmental Consequences: Flood Risk Management and Interior Drainage (Substantive)

Correspondence Id: 7 **Comment Id:** 626206 **Coder Name:** jgutierrez

Comment Text: We want to voice our concern over the changing in priorities regarding the flows/levels of the Missouri River. We love wildlife, but not at the expense of our employees, customers and property. These are some of the facts for a small family owned company. 90 employees in St Joe \$20m investment in facilities In the flood of 2011 we incurred well over \$300k in flood fight costs and our employees lost wages. We also risk the Rosecrans Airport and the Air Guard wing that is housed there. The airbase has a significant economic impact \$160m annually for St Joe surrounding area. We can not afford to lose the base due to flooding and permanently moving.

Organization: 1974

Commenter: Scott Albers **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 646282 **Coder Name:** JGUTIERREZ

Comment Text: Full releases from Gavin's Point in the spring could increase the potential for flooding if a substantial rain event occurred and the Corps did not decrease releases from Gavin's Point to manageable levels.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645877 **Coder Name:** jgutierrez

Comment Text: The most pervasive impact on land use-imposed interior drainage-was not thought to be enough of a priority to perform modeling and analyze impacts. This omission is entirely unacceptable and it makes the DEIS incomplete and renders any appearance of actual NED, RED and OSE impacts improper and inaccurate. At best, the DEIS treats interior drainage as an afterthought. To agricultural stakeholders, it is the most concerning and most economically damaging impact of all the management actions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 645783 **Coder Name:** jgutierrez

Comment Text: Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 645782 **Coder Name:** jgutierrez

Comment Text: Implementation of Alternatives 4 and 5 would severely harm crop production by impeding interior drainage at the worst time of year to do so.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645780 **Coder Name:** jgutierrez

Comment Text: Further, with pulse constraints at 126,000 cfs, interior drainage issues will be significant. Its impossible to tell how many flap gates will be closed and how many fields will be inundated by percolating ground water or local rainfall that cannot escape due to the closed flap gates because modeling was not done for interior drainage. The economic impacts of such high flows for extended periods and the lack of information due to lack of modeling makes Alternative 4 intolerable. Economic impact conclusions on interior drainage are incomplete and inaccurate. Flows are 77 percent higher at Kansas City (126,000 CFS for Alternative 4 versus 71,000 CFS for the no action alternative). Impacts to ground water, flap gates and pumping systems would be 77 percent more severe than with the no action alternative. The abbreviated analysis for interior drainage needs substantial recalibration. All economic conclusions and modeling on Alternative 4 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 645757 **Coder Name:** jgutierrez

Comment Text: Full releases from Gavin's Point in the Spring could increase the potential for flooding, if a substantial rain event occurred and the Corps did not decrease releases from Gavin's Point to manageable levels.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645633 **Coder Name:** jgutierrez

Comment Text: 5. The DEIS calls out 10 counties from South Dakota to Illinois that would have damages in excess of \$1 million. This leads the reader to believe that only 10 counties would suffer any sort of notable damages and flooding impacts are miniscule. One individual farmer could have a loss that exceeds \$1 million. This deserves a much harder look.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645632 **Coder Name:** jgutierrez

Comment Text: 4. The RED section blames all flooding on natural hydrological cycles. There should be some mention of management of the reservoirs that has the potential to cause flooding events.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645631 **Coder Name:** jgutierrez

Comment Text: 3. Flood risk management and interior drainage models must be completed for the entire floodplain, as opposed to the miniscule effort in studying only four levee sites along the entire lower river. Given that agriculture is the largest land use sector in the basin, these two items deserve much larger attention than what they've been given in the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645618 **Coder Name:** jgutierrez

Comment Text: In this section, the DEIS indicates that the impacts to flood risk management were evaluated using two of the four economic account models: NED and OSE. By only using these two accounts to evaluate the impacts to flood risk management, the DEIS has omitted key data points resulting in a major understatement of the costs and impacts to Mississippi River flood control interests. The failure to perform a comprehensive RED analysis to measure the impacts to flood risk management on the Mississippi River is very concerning. In addition to this, the DEIS does not indicate the reason an RED impact analysis was not performed. A comprehensive RED analysis for the Mississippi River, if done properly, would illustrate the negative impacts of these alternatives on local and regional economic conditions, such as employment, labor income, sales, sales tax revenue, flood damages, and other potential costs.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645587 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 484) constructed IRC habitat can decrease stages for most flows. We believe this information needs to be better communicated in the final EIS to show habitat projects will decrease river stages on the lower river to end fears that the restoration efforts cause flooding.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645574 **Coder Name:** jgutierrez

Comment Text: The DEIS (V3-page 71) references interior drainage. In the final EIS, we ask the Corps to address the impact to interior drainage of full service navigation flows. Full service flows have impacted interior drainage in the past and we feel it needs to be addressed in the document.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645573 **Coder Name:** jgutierrez

Comment Text: Section 3.12.4.7 - Alternative 4 - Spring ESH Creating Release The DEIS says Alternative 4 has a relatively negligible adverse impact on interior drainage relative to No Action with a total increase in average annual NED impacts of \$389 or less that 0.1 percent Flow constraint in the No Action alternative at Kansas City are 71,000 cfs. Flow constraints under Alternative 4 are 126,000 cfs 77 percent higher than the No Action alternative. Yet, the impact is only \$389 a year. And, even though the flow constraints are 77 percent higher, no RED analysis was performed because the DEIS claims the impacts are so small its not worth the effort. Again, this claim is very hard to believe.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645572 **Coder Name:** jgutierrez

Comment Text: Section 3.12.4.5 - Alternative 2 - USFWS 2003 Biological Opinion Projected Actions Here, the DEIS contradicts itself by showing NED, totaling \$1.17 million annually for only the four levee sites that were studied. When multiplied by the hundreds of levee sites in the floodplain, if these sites are representative then annual impacts would be in the hundreds of millions annually. The assessment methodology is anything but methodical and lacks all credibility. The DEIS then strains credibility even further by stating impacts to RED in any year would be so negligible that a full RED analysis was not undertaken on the interior drainage NED effects. NED impacts on only four levee sites were deemed to be over a million dollars annually, but RED impacts are so small that no one bothered to study them? That reasoning is unfathomable. These impacts occur with the current management actions in place, with flow constraints at Kansas City of 71,000 cfs. The DEIS actually claims Alternative 2 has relatively small beneficial impacts relative to No Action. The flow constraint for the No Action alternative at Kansas City is 71,000 cfs. The flow constraint for Alternative 2 is 87,000 cfs at Kansas City. Thats a 22 percent increase in flow, which raises the river stage above the releases of the No Action alternative. Yet, the modeling shows the NED impact to be smaller. The site with the largest impact is MRLS 488L, which would experience a decrease of \$10,214 in average annual flood impacts. According to the DEIS, higher water levels mean less flooding. That leads us to believe its manual calculations (the hydrology model doesnt run on todays computer) need to be checked for errors and the process employed to review the logic, accuracy and credibility of the DEIS needs a major overhaul. It is not logical, accurate or credible.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645565 **Coder Name:** jgutierrez

Comment Text: Table 3-95 - Environmental Consequences Relative to Interior Drainage In the abbreviated interior drainage portion, the same occurs with Table 3-95. In the area of actions common to all alternatives no impacts were identified. Again, one must ask if the DEIS is oblivious to the effects of management actions, or if the DEIS deliberately obfuscates the substantial damages the actions precipitate.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645561 **Coder Name:** jgutierrez

Comment Text: Section 3.12.3.8 - Alternative 6 - Pallid Sturgeon Spawning Cue All economic conclusions and modeling on Alternative 6 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage impacts. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites. Economic impact conclusions on interior drainage and flood risk are highly questionable. Flows are 47 percent higher at Kansas City (101,000 to 104,500 cfs for Alternative 6 at Kansas City versus 71,000 cfs for the no action alternative). Impacts to ground water, flap gates and pumping systems would be 47 percent more severe than with the no action alternative. The abbreviated analysis for interior drainage, such that it is, needs recalibration.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645560 **Coder Name:** jgutierrez

Comment Text: Section 3.12.3.7- Alternative 5 - Fall ESH Creating Release All economic conclusions and modeling on Alternative 5 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. In addition, translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites. The fall pulse has the same high flow rates that significantly increase flood risks and cause interior drainage impedance. The difference between Alternative 4 and Alternative 5 is that under Alternative 4, many crops wont get planted or will be planted late. Under Alternative 5, they may get planted on time, but they run a higher risk of not

being harvested. It provides some variety on how to go bankrupt. Delayed harvest brings on extra costs, heavier wear and tear on equipment and harvest losses due to lodging and shattering, wildlife and wind and water damage. Harvest may be delayed until the ground freezes since ground drying conditions are almost always worse (humidity, temperature, less sunshine) in the fall than in the summer. Economic impact conclusions on interior drainage are incomplete and inaccurate. Flows are 77 percent higher at Kansas City (126,000 cfs for Alternative 5 versus 71,000 CFS for the no action alternative). Impacts to ground water, flap gates and pumping systems would be 77 percent more severe than with the no action alternative. The abbreviated analysis for interior drainage, such that it is, needs drastic recalibration.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645555 **Coder Name:** jgutierrez

Comment Text: Section 3.12.3.5 - Alternative 3 - Mechanical Construction Only We agree that the basic impacts of Alternative 3 are reduced, relative to the No Action alternative at the outset of the management actions. In general, Alternative 3 results in the least negative impacts. However, because it still contains a provision for adjusting flow regimen, and because of the broad negative impacts of higher flows, and the possibility that annual pulses can still be adopted under the adaptive management process, Alternative 3 can still be very damaging to stakeholders. But it strikes a better balance between promising species recovery actions and negative consequences. If it eliminated the potential for spring pulses it would be the only acceptable alternative. All economic conclusions and modeling on Alternative 3 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites. However, given that no alternatives exist outside the six offered, we believe this alternative is the least unacceptable of the six alternatives.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645554 **Coder Name:** jgutierrez

Comment Text: All economic conclusions and modeling on Alternative 2 are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on Interior Drainage. This alternative is unacceptable because no one knows what the

impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645551 **Coder Name:** jgutierrez

Comment Text: Here, the DEIS states: On average, the change in regional economic conditions would be negligible across all regions. We raised serious concerns about the truncated methodology used to predict outcomes in Section 3.10 - Land Use and Ownership, so we will not restate the concerns here, but they apply to Flood Risk and Interior Drainage in the same manner as they do land use. If anything, our concerns over flood risk and interior drainage are greater because the magnitude of impacts to the economy are greater in a major flood event and interior drainage impacts so much more land much more frequently.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645549 **Coder Name:** jgutierrez

Comment Text: Convoluted logic appears again. If all the acquired lands were previously in agricultural production, this means the amount of agricultural land that could be affected by flooding and the estimated agricultural losses in the lower river could be up to 3.0 percent less than the agricultural losses shown in Table 3-68. If it's not ag land any longer, the river can't flood ag land. That's just more evidence the culture that created the DEIS is anti-agriculture. They're not concerned about taking land out of production, damaging the economy, disrupting or dislocating families, eliminating jobs or threatening the food supply. The model apparently is believed to reduce some flood risk because of low summer flows. We agree that lower flows benefit flood risk, but caution that flood risk gains do not necessarily offset increased risks to navigation, public water supply, power generation or dredging.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645545 **Coder Name:** jgutierrez

Comment Text: Regional Economic Development This section blames all flooding on natural hydrologic cycles and fails to even acknowledge that the law that created the reservoirs came about because of the incredible damages caused by natural hydrologic cycles. There's a reason it's called the Flood Control Act of 1944. This section totally avoids mention that correct management of the reservoirs under the law limits the negative impacts of high water years. In fact, there is current litigation that charges mismanagement of the flood control capabilities of the reservoir system causes the flood damage. We believe natural events can occur that can overwhelm the reservoirs and levee systems. But to explicitly claim that flood damages are unrelated to management of the reservoir system is intellectually dishonest. This section then calls out 10 counties from South Dakota to Illinois that would have damage in excess of \$1 million. This follows the pattern of styling the DEIS in such a way as to trivialize the impacts of flooding. By calling out only 10 counties with damages in excess of \$1 million, the DEIS leaves the reader with the impression that these counties suffer the largest impacts from flooding but then only categorize the losses as over \$1 million. That's misleading. The damages could be in the tens or hundreds of millions but the DEIS does not call this out. Individual farms or businesses could easily have \$1 million in damages but the DEIS deftly, and we think deliberately, obfuscates that point. All economic conclusions and modeling on this alternative are inaccurate and incomplete due to the failure to provide robust and accurate modeling and impact data on interior drainage. Alternative 1 is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645542 **Coder Name:** jgutierrez

Comment Text: Section 3.12.3.3 - Alternative 1 - No Action Here, the DEIS states under NED: In addition, these impacts result from runoff events that occur downstream of the reservoir system, large upstream runoff events that result in evacuation of flood water from the reservoirs, or the combination of the two and not from the management actions under No Action. Once again, the impacts of the bimodal spring rise are not accounted for. Interior drainage impacts and flood risk impacts are not mentioned. This cannot be accurate. Table 3-63 - Summary of Damages for No Action The table shows average annual losses on the river below Gavins Point to be \$15,226,753. Using 2016 dollars, the average value of the production of corn and soybeans was roughly \$570/acre. The loss figure shown, divided by \$570, means crop loss on roughly 27,000 acres of farmland which is an annual average of losses on only 1.9 percent of the farmland in the floodplain below Gavins Point. We believe the assumptions for the modeling that developed this number need further calibration.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645539 **Coder Name:** jgutierrez

Comment Text: Table 3-61 - Environmental Consequences Relative to Flood Risk Management Changes to flow regimens are a part of each of the 6 alternatives and create the most significant impacts in 5 of the 6 alternatives, yet it is never mentioned in tables with Management Actions Common to All Alternatives. The table shows no NED, RED or OSE impacts. By never mentioning flow pulses we don't tabulate the damaging impacts to production and land values. Impacts from flow changes are neatly swept away. The table claims Alternative 2 has lower flood risk than the No Action alternative. We cannot find an Alternative 2 management action that reduces flood risk other than the low flow that occurs in summer months when significant rain events are not the norm. On the other hand, spring maximum flows during the proposed yearly spring rise in Kansas City are 16,000 CFS higher than the yearly artificial flow increases of the No Action alternative. How higher artificial flows during the rainy spring season create lower flood risk is counterintuitive and illogical. The table claims Alternative 3 has less flood risk. We would agree that since there are no spring rises for the first nine years, the flood risk is reduced. But we refer again to the lower flood risk in Alternative 2, even though it has spring pulses. If the model is delivering opposite results for the same actions, it might be wise to recalibrate the model. The table claims Alternative 4 modeling resulted in a -\$21 million to a \$48 million impact to NED. That's almost a \$70 million-dollar swing in impacts to the NED. We suggest either the model needs to be calibrated or Alternative 4 needs to be broken into two alternatives to reflect impacts more accurately. It could be that the model interprets the swing in years with no spring rise to a year with a massive spring rise to create massive flooding. That could explain some of the monumental differences, especially since the peak flow of 126,000 CFS at Kansas City puts the river over flood stage downstream from Kansas City. Any management action that deliberately floods any portion of the basin should be deemed unacceptable and be eliminated from the list of alternative actions. Alternative 5 shows the same maximum flows at Kansas City as Alternative 4, and the same four-year timetable as Alternative 4, yet Table 3-61 shows it as having a beneficial flood risk compared to the no action alternative. Alternative 5 constrains flow at 126,000 cfs, at Kansas City, 77 percent higher than the 71,000 cfs constraint in the no action alternative. The DEIS doesn't state how this is possible—one must infer it has something to do with a fall rise versus a spring rise. But, with flow constraints so much higher, the claim of flood risk reduction would seem to require further explanation, or a recalibration of the model. We would also note that the flow constraints are identical to Alternative 4 and Alternative 4 is characterized as having more flood risk than the No Action alternative. Timing and normal rainfall can impact flood risk, but a model that excludes out of the ordinary weather events from impacting the model seems risky in and of itself. Alternative 6 shows maximum flows at Kansas City in the 101,000-104,500 cfs range, running downstream flows to the action level, which at a minimum greatly impedes interior drainage. It is shown to have adverse flood risk compared to the no action alternative, which seems logical since the no action alternative has a 71,000 cfs restraint at Kansas City.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645536 **Coder Name:** jgutierrez

Comment Text: Section 3.12.2.1 - Population and Property at Risk In evaluating regional economic impacts, agriculture losses only included the change in market value of crop production In keeping with the agencies misstating negative impacts to agriculture, they were very careful to make sure they deducted any harvest costs that were not incurred because lost crops arent harvested. However, there was no inclusion of costs for rehabilitation of land, pumping costs, drainage infrastructure, repair to private levees or future yield losses due to damages to the land (sand and driftwood deposits, additional weed pressure, extra tillage requirements, etc.). Sometimes flooding causes land damage so severe the costs of rehabilitation are greater than the value of the land. Somehow those impacts are left out of the DEIS. The ongoing pattern of misstating impacts to agriculture could be construed to indicate an inherent bias in the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645532 **Coder Name:** jgutierrez

Comment Text: 4. The lack of comprehensive interior drainage modeling and impact analysis means the economic impacts of the 6 alternatives are both understated and unknown. It is unacceptable that interior drainage impacts modeling and analysis was only conducted on four small areas of the floodplain. Given the pervasive reach of drainage, it is inconceivable that the modeling software was not updated. This methodology is entirely unacceptable and proves meaningful analysis of proposed management action on land use has not been performed. The title of this section is Flood Risk Management and Interior Drainage (emphasis added). Other elements are analyzed for the entire floodplain but interior drainage gets four small plots - one in Iowa and three in Missouri. The DEIS disregards interior drainage concerns by its failure to even conduct NED analysis in either the land use section of the DEIS or the abbreviated interior drainage portion of this section. The agencies failure to recognize the importance of, and the degree of debilitating impacts of artificially high river flows, is further evidence of the lack of depth and accuracy of the studies. Again, this omission is entirely unacceptable and it makes the DEIS incomplete and renders any appearance of actual NED, RED and OSE impacts improper and inaccurate. The failure to conduct thorough analysis of interior drainage is unfathomable and profoundly unacceptable.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645531 **Coder Name:** jgutierrez

Comment Text: The DEIS disregard of interior drainage concerns is further evidenced by the failure to conduct NED analysis in either the land use section of the DEIS or the abbreviated interior drainage portion of this section. The failure to acknowledge the importance and the degree of debilitating impacts of artificially high river flows is more evidence of the lack of depth and accuracy of the studies. The critical nature of interior drainage was brought forward frequently during MRRIC discussions. The DEIS appears to ignore the interior drainage information and the extensive concerns expressed by stakeholders during numerous MRRIC discussions. The most widespread and enduring economic impact of management actions on agriculture comes from the impedance of interior drainage. At the least, the exclusion of comprehensive modeling and analysis raises questions of whether those who managed the DEIS compilation process are qualified or competent. The Missouri River would not even exist if not for the need to drain excess water, yet the DEIS treats interior drainage as an annoying afterthought, unworthy of analysis or critical thought. The lack of comprehensive modeling and analysis of management impacts to interior drainage is egregious.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645528 **Coder Name:** jgutierrez

Comment Text: Flooding occurs sporadically. Interior drainage is an everyday requirement. While the risk of flooding increases with flow management actions, interior drainage is immediately impeded by each flow management action that affects river stage. High river stages cause high water groundwater levels and increase the time required for drainage to occur. The impacts range from ground water percolating upward through the soil profile to the closing of flap gates, holding back water from entering the river. Groundwater levels that do not percolate to the surface still reduce the ability of local rainfall to drain through the soil, keeping agricultural fields wet and delaying or even preventing crops from being planted. Landowners are damaged by the cumulative impacts of lower yields, total crop loss due to prevented planting and loss of land value because of the unpredictability of production. To the federal agencies, interior drainage is treated as an afterthought. To farmers in the floodplain, it is the most concerning and most economically damaging impact of all the management actions. During the MRRIC process several potential proxies for agriculture were discussed. After lengthy consideration, MRRIC and the agencies agreed that river stage was the best indicator of impacts to agriculture. This was not because of flooding, but rather because of impacts to interior drainage. River stage determines groundwater levels and whether gravity operated flap gates will function. The agriculture stakeholders agreed to this proxy because of the pervasive and wholly negative impacts of higher river stages on interior drainage. Given the magnitude of the impacts, the duration of the discussions and the attention given to reaching the proxy decision, the failure to conduct thorough analysis of interior drainage is unfathomable.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645515 **Coder Name:** jgutierrez

Comment Text: 1. Protecting human life and safety is paramount. We are concerned about the relaxing of flood control constraints in each of the DEIS alternatives, some by nearly as 80 percent to implement environmental flow experiments, with the potential to increase river stage by over nine feet in Omaha and five to six feet in St. Joseph. These potential stage increases do not take into account additional rainfall. Equally troublesome is the large degree of inaccuracy of predicted hydrologic conditions for more than six days in advance.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645504 **Coder Name:** jgutierrez

Comment Text: 3.10.2.5 - Alternative 2 - USFWS 2003 Biological Opinion Projected Actions Land acquisition in Alternative 2 is six times that of Alternative 1. As stated earlier, we believe the economic impacts of land acquisition listed in the DEIS are understated because of the effects of truncated economic modeling. Our concerns over modeling in general apply here as well. In addition, the lack of any mention of the impacts of the management actions that occur after the land is acquired is of serious concern and needs to be incorporated. The DEIS is substantially incomplete in scope and analysis. The inclusion of specific outcomes in terms of sales jobs and labor income are so specific they are misleading and are so un-researched they are inaccurate and unreliable. Because Alternative 2 results in multiple flow management actions, the negative impacts to all land uses listed in our comments on section 3.10.2.1 apply here, but to a much greater degree. In simple terms, the more often flow rises are implemented, the more negative the results to land use.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645497 **Coder Name:** jgutierrez

Comment Text: Section 3.10.2.1 - Impacts Assessment Methodology Unfortunately, the methodology employed in the DEIS is strictly limited to impacts of land acquisition. Weve already commented in detail on the truncated modeling used to assess these impacts and reiterate the impacts are substantially understated. The extraordinarily narrow focus of the DEIS on impacts to land use is unacceptable. Land acquisition is the only causal factor assessed in terms of Regional Economic Development (RED), National Economic Development (NED) and Other Social Effects (OSE). Even without one acre of land acquisition, management actions can severely impact land use. Management actions that change flow regimens can block interior drainage and cause late planting of crops and substantial yield reductions. In some years, it can prevent planting or harvest. Management actions that impede navigation increase transportation costs of critical and difficult to transport agricultural inputs. It can lead to increased traffic on public highways and wear and tear on that infrastructure, which in turn affects the suitability of various land uses. It can also increase loads on rail infrastructure and impact public safety. Management actions can drastically reduce the predictability of land use. Flow actions that impede interior drainage or increase flood risk can drastically impact land values, which in turn has a negative effect on the tax base of local governments. Management actions that impede dredging negatively impact both private and public construction costs. Management actions that impact local water supply and quality and cost substantially impact land use everywhere from major metropolitan to rural communities. Management actions that lead to lower levels of power generation or more expensive power generation significantly impact land use as well. Yet, none of these factors appear in the land use assessment methodology section of the DEIS -only land acquisition. The failure of the DEIS to account for, or even consider, such obvious impacts as these raise serious questions. Do the agencies charged with developing management actions simply lack understanding of the impacts of proposed actions? Do the agencies have the expertise and resources to conduct thorough studies? The concerns called out above have been mentioned repeatedly in the MRRIC environment. Is the culture within certain agencies such that impacts to land uses are always subrogated in deference to the perceived needs of listed species under the Endangered Species Act? Table 3-42 - Environmental Consequences Relative to Land Acquisition, 2016 Dollars Weve already commented on the accuracy of the economic impact predictions. However, we note again that the summary table impacts only lists land acquisition as the causal factor. A change in flows is common to all six alternatives. Yet in the portion of the table devoted to Management Actions Common to All Alternatives, Table 3-42 says there are no RED impacts, no OSE impacts and no other impacts. Increased flows increase the risk of and the severity of flooding and impact interior drainage. Explicitly claiming no impact of any kind in this table brings the credibility of the entire DEIS into question.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645495 **Coder Name:** jgutierrez

Comment Text: Section 3.10.1.1 - Land Use Patterns Agricultural land often surrounds developed lands and impacts from management actions often do not discriminate between the two. Impeded interior drainage problems, for example, can lead to structural issues with expensive grain handling facilities, storage structures and important community infrastructure. The river would not even exist if not for the drainage of water from the basin. We understand that land use classifications can help in the analysis of impacts, but caution that management actions can negatively impact all classifications.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645494 **Coder Name:** jgutierrez

Comment Text: The federal agencies disregard of interior drainage concerns is further evidenced by their failure to even conduct NED analysis in either the land use section of the DEIS or the abbreviated interior drainage portion of this section. The agencies failure to recognize the importance and the degree of debilitating impacts of artificially high river flows, is further evidence of the lack of depth and accuracy of the studies. The critical nature of interior drainage was brought forward frequently during MRRIC discussions. The DEIS appears to ignore the interior drainage information and the extensive concerns expressed by stakeholders during numerous MRRIC discussions. The most widespread and enduring economic impact of management actions on agriculture comes from the impedance of interior drainage. At the least, the exclusion of comprehensive modeling and analysis raises questions of whether those who managed the DEIS compilation process are qualified or competent. The Missouri River would not even exist if not for the need to drain excess water, yet the DEIS treats interior drainage as an annoying afterthought, unworthy of analysis or critical thought. The lack of comprehensive modeling and analysis of management impacts to interior drainage is egregious.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645493 **Coder Name:** jgutierrez

Comment Text: It is telling that interior drainage impacts are not even modeled in Section 3.12, Flood Risk Management and Interior Drainage. We are told the software to evaluate impacts is not compatible with current computer operating systems, so modeling was not done. Apparently interior drainage has been given so little thought there was not even an attempt to update the software. Instead of modeling, four sites were selected as representative of the floodplain and a cursory impact study was performed. This methodology is entirely unacceptable and proves meaningful analysis of proposed management action on land use has not been performed. Further, the DEIS states: Extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage

varies between sites, Translation of damage-duration relationships between sites was not attempted and would require additional evaluation to provide a reasonable methodology and verify results.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645451 **Coder Name:** jgutierrez

Comment Text: The CPR believes the flow magnitude and duration contained in Alternatives 4 and 5 will create an unacceptable level of flooding risk in the spring and fall, respectively. The 60,000 cubic feet per second release from Gavins Point Dam for 35 days as specified in these two alternatives will cause severe impacts to agriculture - the largest land use sector in the basin - making it extremely difficult to plant and harvest crops as interior drainage will be impeded. If either of these alternatives would be implemented, the Corps would be abandoning a primary congressionally authorized purpose of flood control.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645412 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.12.3.1, p. 3-269 Comment: Table 3-62 presents the "Frequency of Releases Simulated to Equal or Exceed Channel Capacity." It should be acknowledged in the table that the "releases simulated", in other words the model, does not take into account the effects of ice, and therefore likely underestimates the frequency of exceeding channel capacity.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645411 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.12, p. 3-261 - 3-327 Comment: This comment pertains to the entire section regarding the evaluation of "Flood Risk Management and Interior Drainage." It is not understood how the term "floodplain" is defined. The USACE should make it clear if floodplain is referring to those areas that are determined by FEMA National Flood Insurance Program studies or if they are defining it using other methods. Overall, any action that adversely affects the integrity of the dams or causes the river channel capacity to be exceeded is unacceptable, unless those flood impacts are mitigated.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 247 **Comment Id:** 645353 **Coder Name:** jgutierrez

Comment Text: And with being downstream as far as we are at River Mile 92, there's too much water that comes past us and there's too much water that flows into the river where we're at to gamble on whether a pulse is or is not going to affect us. You know, if it's one-foot or three-foot, if it comes over the top, we're done for.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 1 **Comment Id:** 645351 **Coder Name:** jgutierrez

Comment Text: There should be no change in regards to the length or intensity of flow events or pulses by the Corps. If changes are made that could very well result in the reduction and/or elimination of thousands of acres of agriculture lands. In addition, some levee districts do not have the ability to pump water, increasing the flood constraints will increase the susceptibility to flooding that those areas will face. The river changes greatly with rainstorm events in very short periods of time as it is, if the length or intensity of flow events increases, and then a rainstorm event happens there will not be any where for the water to go but to flood communities and farm grounds in its path.

Organization: River User

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645296 **Coder Name:** jgutierrez

Comment Text: Page xxviii, Executive Summary: "[U]nder Alternative 3, USACE would create ESH through mechanical means at an average rate of 391 acres per year in the Garrison, Fort Randall, and Gavins Point river reaches in years where construction is needed. This amount represents the acreage necessary to meet the bird habitat targets after accounting for available ESH resulting from System operations. Alternative 3 would also include the provision for a one-time spawning cue test release from Gavins Point Dam if the results of Level 1 studies during the first 9-10 years do not provide a clear answer on whether a spawning cue is important." **Comment:** The public, i.e. USACE, must assume liability for damages to private land and crops due to any alteration to

flood control structures. A revetment has the potential to do the most damage to private property. A revetment is a blanket of stone in the river bank ostensibly to protect the river bank from eroding and sloughing. Sloughing takes place because the footing of the river bank is washed away and the bank falls into the river for lack of support. Continued sloughing can destroy adjacent levees. If a revetment is breached, a chute will develop downstream as a result of the floodplain segment eroding all levee and drainage works until it discharges back into the river. Such a breach of revetment occurred during the 1993 flood on the property of the late Bill Lay in Howard County, Missouri. The entry of flood waters onto his property created a natural chute for the entire length of his property before discharging back into the river. Unfortunately, Bill Lay was unable to show a positive Benefit: Cost Ratio for USACE Title 84-99 flood damage repairs and was forced to sell his property. It is now the Lisbon Bottom Unit of 2014 acres at river mile L 214 to 218. Bank notching is the second most damaging type of project. Bank notching has been done on public property like the Big Muddy National Wildlife Refuge. Great lengths of the bank downstream (1,000 feet or more) can be washed away in the river's attempt to reconnect with the flood plain.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645294 **Coder Name:** jgutierrez

Comment Text: Page xviii, Executive Summary: "The flood risk management impacts analysis focuses on determining if changes in river and reservoir conditions associated with each of the alternatives could result in an impact to risk of flooding. The impacts to flood risk management are evaluated using three of the four accounts (NED, RED, and OSE). An interior drainage analysis was conducted on a subset of federal levees to evaluate elevations within the landward side of federal levee areas along the Missouri River." Comment: One of the priorities of the MLDDA is to maintain farming in the bottom lands of the Missouri River. If the agencies implement a significant spring rise, such action could result in the conversion of farmland to nonagricultural uses (7 U.S.C. Â§4201(5)). The Farmland Protection Policy Act was enacted to prevent such conversions. Obviously, if prime, bottom lands are too wet to plant, they are not viable for farming.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645293 **Coder Name:** jgutierrez

Comment Text: Comment: The agencies should use the term "flood control" instead of "flood risk management." Even current management actions do not protect citizens of the basin from life threatening floods. Witness the major floods since the System was

filled: 1967, 1975, 1978, 1984, 1986, 1987, The Great Flood of 1993 (flooding that occurred below the System), 1995, 1996, 1997 (centered above the System), and The Great Flood of 2011.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645283 **Coder Name:** jgutierrez

Comment Text: The Corps inexplicably stated that "...land use would not change across alternatives under different flood conditions." To the contrary, flood events have significant impacts that change the dynamics of the land use depending on the severity of the event. Although direct impacts of flood losses are estimated, the Corps did not estimate indirect and induced economic impacts due to flooding. Agricultural losses due to flooding, loss of property value, and increased crop insurance premiums also were not evaluated. The Corps needs to include these critical components of flood risk in their Final EIS economic analysis.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645282 **Coder Name:** jgutierrez

Comment Text: The Corps' evaluation of Missouri's flood risk is inadequate. Analysis of risk and uncertainty was one of the main concerns the Independent Socio-Economic Technical Review (ISETR) panel expressed regarding flood risk, and yet the Corps did not evaluate it. Missouri faces a significant risk every year and this warrants a comprehensive risk analysis. Therefore, the Corps needs to include a flood risk assessment in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645279 **Coder Name:** jgutierrez

Comment Text: Furthermore, the Corps only considered four interior drainage sites in its analysis. This is wholly insufficient as there are numerous levee districts in Missouri that would be impacted by the flow alternatives considered in the DRAFT EIS. The Corps acknowledged the potential impacts of flow events to interior drainage during the 2005 Plenary Meetings. From that process, the Corps collected data necessary to monitor the interior drainage impacts from flow events in the 2006 Master Manual. The Corps

failed to use this same data in the DRAFT EIS analysis and failed to explain why the data was not used. Missouri requests interior drainage impacts be thoroughly analyzed using the 2005 interior drainage data, or similar data, in the Final EIS for a proper analysis of the impacts.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645278 **Coder Name:** jgutierrez

Comment Text: It is unclear if the Corps considered the implications of the repeated flooding of cropland on property taxes, payments in lieu of taxes (PILT), federal tax deductions for flooded areas, and the insurability of impacted property. The Corps only analyzed direct economic losses rather than including the indirect and associated impacts of crop losses. Moreover, the Corps has omitted the Environmental Quality (EQ) evaluation from the analysis even though such analysis is required by 1983 Principles and Guidelines (P&G). Missouri requests the Corps conduct a full Regional Economic Development (RED) analysis and include an EQ evaluation for the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645257 **Coder Name:** jgutierrez

Comment Text: The NOAA Weather Prediction Center routinely verifies QPF performance. A score of 1 in the threat analysis indicates that the forecasted precipitation is accurate for the period analyzed. It is noteworthy that the months in which Alternatives 2, 4, 5, and 6 would be conducted do not have more than 50% accuracy for even a 0.5-inch rainfall event. Therefore, the Corps cannot rely on forecasts as the deciding factor in determining whether a flow event should be conducted. [Figure 1. National Weather Service, Weather Prediction Center, Quantitative Precipitation Forecast Verification.

<http://origin.wpc.ncep.noaa.gov/html/scorcomp.shtml>] Furthermore, flow events of the magnitude the Corps is contemplating frequently occur on the lower Missouri River. Alternatives 4 and 5 have flow events with a peak magnitude of 60,000 cfs in April and October. That is approximately 30,000 - 40,000 cfs more than the Corps would typically release based on Annual Operating Plan statistics (see Table 2 above and 2016-2017 Final Annual Operating Plan, Plate 3). Not only would such flow events raise the flood risk in the lower basin, but they are also completely unnecessary. Since the Missouri River Reservoir System became fully operational in 1968, there have been 487 occurrences in which a rise of 30,000 cfs or more has occurred at St. Joseph, Missouri, and 1,857 occurrences at Boonville, Missouri.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645255 **Coder Name:** jgutierrez

Comment Text: Flood control was one of the two main reasons the Missouri River Mainstem Reservoir System (System) was created, the other being navigation. As such, the Corps established flood control constraints, or "target flows," with the 1979 Master Manual. Flood control constraints are one of the techniques the Corps utilizes to prevent, or not contribute to, downstream flooding. Nevertheless, several of the alternatives in the DRAFT EIS would relax the existing flood control constraints some by almost 80 percent in support of environmental flows (Table 1). [Table 1. Flood control constraints under each of the alternatives in the Draft EIS. Note: The flood control constraints in Alternatives 2 and 6 are adjusted up or down based on runoff forecasts. The numbers listed here are from the Draft EIS.] For example, at St Joseph, Missouri, the magnitude of the rises proposed in Alternatives 4 and 5 could cause the river to rise 4.5 to 6 feet as a result of reservoir releases alone (Table 2). These alternatives would increase flood risk on the lower Missouri River by both intentionally increasing releases as well as decreasing the Corps' ability to respond to downstream high water events. [Table 2. Stage changes at St. Joseph due to increased System releases given average monthly flows. Data Sources: US Geological Survey, US Army Corps of Engineers.] The Corps must be keenly aware that a vast amount of large, unregulated flow downstream of Gavins Point Dam contributes to downstream flooding. Flood risk on the Missouri River is amplified given the travel time from Gavins Point to the Missouri state line. It takes approximately five days for water to travel from Gavins Point Dam to St Joseph, Missouri, and seven days for it to reach Boonville, Missouri. There are many instances in which rain events in the lower basin have developed over a five- to seven-day period that have caused the river to rise significantly without additional water from Gavins Point Dam. The Corps maintains it will be cognizant of forecasted rainfall prior to initiating a flow operation. But in the 2006 Master Manual (p. VII-30), the Corps states, "Experience has shown that predicted hydrologic conditions that could produce large rainfalls are only mildly accurate for periods 3 to 6 days in advance and are not accurate for periods more than 6 days in advance." It would be careless to implement these flow events in the face of the known risks associated with doing so.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645248 **Coder Name:** jgutierrez

Comment Text: In the DRAFT EIS, the current 2006 Master Manual is reflected as Alternative 1, or the No Action Alternative. While the 2006 Master Manual includes a bi-modal spring pulse, it left the flood control constraints undisturbed. The State of

Missouri has consistently opposed the bimodal spring rises in the current Master Manual given that it increases flood risk (see "Spring Rise Letter Pauley to McMahon 1-27-12" and "Governor Letter to Gen. McMahon RE Spring Rise 3-9-10" enclosed). Given the high frequency of flood events in Missouri, we have always expressed opposition to any proposed spring rise releases from Gavins Point Dam.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645247 **Coder Name:** jgutierrez

Comment Text: Flood control constraints at Omaha, Nebraska City, and Kansas City are critical to insuring that actions do not cause, or contribute to, downstream flooding. Alternatives 2, 4, 5, and 6 would relax flood control constraints by almost 80 percent. This is unacceptable to the State of Missouri as it would result in flooding on the lower river. For instance, the current flood control constraint at Kansas City is 71,000 cubic feet per second (cfs) whereas under Alternative 4 it would be increased to 126,000 cfs. This increase in the flood control constraint would cause flood stage to be exceeded at downstream locations such as Napoleon and Waverly even without additional runoff into the river. Relaxing the flood control constraints is contrary to the Corps' Congressional authority and the State of Missouri strongly opposes such an action (see "Flood Control" enclosure for farther comments).

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645139 **Coder Name:** jgutierrez

Comment Text: Another flow constraint that must be better understood involves interior drainage of agricultural fields in the lower basin. In South Dakota's bi-annual comments provided to the USAGE regarding development and implementation of the Annual Operating Plan (AOP) for Missouri River mainstem water management, we have asked for downstream flow constraints to be re-evaluated, as related to interior drainage, to better model impacts of various flow regimes to stakeholders

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644885 **Coder Name:** jgutierrez

Comment Text: It is clear, from recent flood history, that nature does provide an astonishing rate of floodplain connectivity- - probably, exceeding the minimum 20% chance of inundation for the minimum acreage specified in the USFWS planning guidance paper and the 2003 Biological Opinion targets. Many acres within the floodway that were flooded in 2011 were also flooded in 2010 and 2007, probably exceeding a 20% chance ACE or 5-year frequency. However, these targets are only analyzed for Alternative 2, and seem to be disregarded for Alternatives 3-6. Moreover, the geographic footprint for analyzing floodplain connectivity probably should be the HUC 6 watersheds contiguous to the Missouri River. But, we leave it to various agency scientists to ascertain whether the footprints used in this DEIS are appropriate and sufficient for the risks entailed.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644735 **Coder Name:** jgutierrez

Comment Text: WCI opposes the massive spring and fall releases and bi-modal pulses in Alternatives 2, 3, 4, 5, and 6. The releases in these Alternatives have severe negative impacts on both flood control and commercial navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644487 **Coder Name:** jgutierrez

Comment Text: Such high flows will unnecessarily increase flood risk in the lower Missouri reach, especially so when considering that regional and local precipitation events occurring after any Gavins Point releases are uncontrolled. The naturally occurring peak with the Gavins Point release can, and will, combine to increase the already unacceptable river stage that would be produced by the proposed Gavins Point releases in each of these alternatives.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644480 **Coder Name:** jgutierrez

Comment Text: The St. Joseph and Kansas City metropolitan areas each have several units that function together as a flood protection system for those respective communities. Some units are separated only by an invisible boundary and are thus affected by

bordering levee units. Coordination of operations and flood fighting activity becomes increasingly critical and costly as river stages increase due to increased manpower, pump station operation, stop log and sandbag gap closure, levee patrolling, etc.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644479 **Coder Name:** jgutierrez

Comment Text: Levee systems in the lower Missouri reach are already and still subject to flood risks, as evidenced by impacts in 2011 and several other significant events in recent years, including the overtopping of the levees in St. Joseph in 1993. A similar failure today would result in more than \$2 Billion in damages and potential loss or dislocation of 6,000 jobs. As such, and considering the many uncertainties associated with the proposed alternatives, we would not recommend giving up factors of safety or margins of risk to areas protected by levees.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644462 **Coder Name:** jgutierrez

Comment Text: As can be seen from these flow levels; flood activation procedure levels would be reached under Alternatives 4, 5 and 6.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 230 **Comment Id:** 642780 **Coder Name:** jgutierrez

Comment Text: While we have no issues with attempts to support reestablishing habitat for protected species, we would like to see evidence that these efforts have been successful. We also request any and all efforts be made without increasing the risk of flooding. Flooding of any significant magnitude results in the closure of HWY 2 and separates our community from a substantial portion of our customer base, many of which must cross the river for work and commerce.

Organization: City of Nebraska City

Commenter: Grayson Path **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 230 **Comment Id:** 642776 **Coder Name:** jgutierrez

Comment Text: Nebraska City has been damaged by flooding before. Throughout the spring of 2011, USACE implemented release in addition to higher than normal spring runoff and rainfall resulted in devastating flooding throughout our region causing loss of homes, businesses and commerce. The resulting closure of HWY 2 and the Missouri River bridge was an economic burden on our economy for five months, which led to the failure of multiple businesses.

Organization: City of Nebraska City

Commenter: Grayson Path **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 227 **Comment Id:** 642717 **Coder Name:** jgutierrez

Comment Text: In our area mid-April through May are prime planting of corn and soybeans time frame. Also in our are normal harvesting times are from late September through mid-November. To our understanding alternative 5, 6 provide for large releases of up to 35 days and releas amounts of up to 60,000 cfs from Gavers Point Dam. With these large proposed releases the potential for flooding would be very likely as this release amount would add 5.5 to 6.0 feet to the MO River at St Joseph, MO which is the closest gauge to our properties.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 227 **Comment Id:** 642716 **Coder Name:** jgutierrez

Comment Text: We are very opposed to any alternative that contains any added releases to be released from the dam systems with Gavens Point being the lower most southern dam in the system. Any additional releases would cause increased problems with interior drainage, seepage, and wet soils either r preventing timely farming practices to be negatively impacted.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 218 **Comment Id:** 642145 **Coder Name:** jgutierrez

Comment Text: The MLDDA has repeatedly commented on the destructive impact of floods and the increased risk of flooding posed by deviations from the Master Manual. The MLDDA respectfully points out that the implementation of the following actions is Likely to trigger takings claims and that it is opposed to such Alternatives and actions: Alternative 1 Spawning Cue Release for Pallid Sturgeon Alternative 2 (U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions) Spring Habitat-Forming Flow Release Spring Pallid Sturgeon Flow Release Floodplain Connectivity 77,410 acres of connected floodplain would be inundated at a 20 percent annual chance of exceedance Alternative 4 Spring ESH Creating Release Alternative 5 Fall ESH Creating Release Alternative 6-Pallid Sturgeon Spawning Cue Attempt a spawning cue release every 3 years consisting of a bimodal pulse in March and May, even though these spawning cue releases would not be started or would be terminated whenever downstream flow limits are reached.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 218 **Comment Id:** 642143 **Coder Name:** jgutierrez

Comment Text: In *Arkansas Game & Fish Commission v. United States*, 133 S. Ct. 511, 184 L. Ed. 2d 417 (2012), the U.S. Supreme Court held that recurrent flooding, even if each flood was finite in duration, was not categorically exempt from Takings Clause liability, and that takings temporary in duration could be compensable. The Court found that there was no solid ground for setting flooding apart from all other government intrusions on property. In reaching its holding, the Supreme Court took note of the fact that the Game and Fish Commission repeatedly complained to the Corps about the destructive impact of the successive planned deviations from the Water Control Manual. Id. at 522. Furthermore, flooding of a farmer's land is a taking even though the farmer successfully reclaims most of his land which the government originally took by flooding. Id. at 519; see *United States v. Dickinson*, 331 U.S. 745, 751, 91 L. Ed. 1789 (1947).

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642133 **Coder Name:** jgutierrez

Comment Text: At a 20 foot river stage at Jefferson City, Hartsburg levee district where I farm begins to have challenges with drainage. This prevents farmers like me from planting the lower portions of the bottom during normal planting season; April 1 thru June 15.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 211 **Comment Id:** 642131 **Coder Name:** jgutierrez

Comment Text: In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 211 **Comment Id:** 642130 **Coder Name:** jgutierrez

Comment Text: Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 205 **Comment Id:** 642128 **Coder Name:** jgutierrez

Comment Text: Sioux City cannot stress enough that any plan has to protect our community from the risk of a flood. Couple with that is river degradation. While Sioux City appreciates the need for protection of endanger species, we feel that enough has not been done to deal with alternate range of habitat such as off channel habitats as suggested by The Missouri River Recovery Implementation Committee (MRRIC), and recommended by MRRIC'S Science Adaptive Management Group (SAM), the Independent Science Advisory Panel (ISAP) and the Independent Social Economic Technical Review (ISETR).

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 239 **Comment Id:** 641841 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.12.3.5, p. 3-283 "For ESH, an average of 391 acres per year would be distributed between the Garrison, Fort Randall, and Gavins Point reaches. No impacts to flood risk management are anticipated from this amount of ESH construction." Comment: Alternative 3 decreases flood risk the most compared to the other alternatives. However, there is potential to increase risk over time due to mechanical ESH construction.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 641803 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.12.3.4 and 3.12.3.6, p. 3-279 and 3-290 Comment: Page 3-279 states that under Alternative 2 Hughes and Walworth counties in South Dakota would have the largest increase in structural damages on the Garrison to Oahe reach. Page 3-290 states that Campbell County in South Dakota would have the greatest increase in structural damages on the Garrison to Oahe reach for Alternative 4. This does not make sense; these counties are located on the reservoir where the structures are located above the flood pool elevation. It would seem much more likely that Burleigh and Morton counties in North Dakota which have the largest population on the Garrison reach, and are located at the headwaters of Lake Oahe, where the delta formation has already increased flood risk, would have greater structural damages. If this is an error it should be corrected, if it is not an error it should be explained. See also our comments on the Flood Risk Management Environmental Consequences Analysis Technical Report.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 217 **Comment Id:** 641753 **Coder Name:** jgutierrez

Comment Text: We, the levee board of Holt County Levee District #7 are particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding. Providing flood control and effective interior drainage is of utmost importance us. We are concerned that all of the alternatives besides Alternative 1 (no action) would significantly increase our flood risk. The Missouri River is capable of tremendous fluctuations in height due to natural causes, without USACE intervention. It is dangerous to risk our nation's food supply on theories.

Organization: Holt County Levee District No. 7

Commenter: David Banks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641638 **Coder Name:** jgutierrez

Comment Text: 6. A selected alternative should not increase flood risk.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 189 **Comment Id:** 641573 **Coder Name:** jgutierrez

Comment Text: We are very concerned in regard to proposed alternatives 1 thru 6 containing releases of various amounts that we feel would jeopardize interior drainage, seepage issues, and cause a negative effect to farm lands that our levee protects. To our understanding alternatives 5, 6 would be large releases from Gavens Point Dam in amounts of up to 60,000 cfs either in the spring or fall for periods up to 35 days are both completely unacceptable as to the problems of crop damages as to the inability to be able to farm these lands due to the increase in Missouri River levels. These releases coupled with any rainfall events that enter into the Missouri River basin via tributary run off plus local rainfall in our area would cause great harm to our levee district farms; landowners, tenants, residents in general. St. Joseph, Missouri river gauge has a stage of 17 ft. flood stage. It is our understanding that the Gavens Point release of 60,000 cfs would add approximately 5 to 5.5 ft. to the river level which would cause all of our gravity discharge gates to be closed causing impoundment of waters on the protected side of the main levee system. Carrying this scenario even further the high chances of flooding would be quite likely especially with the spring months The fall releases would be detrimental to harvesting of farm crops along with potential flooding associated with releases and any rainfall plus run off. Not only are farmlands affected by interior drainage, seepage, impounded waters but so are infrastructure namely homes, building sites, roads, highways, interstate plus intra state travel, utilities, lives are put in danger as flooding could be highly possible.

Organization: Halls Levee District

Commenter: Lanny Frakes **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 188 **Comment Id:** 641571 **Coder Name:** jgutierrez

Comment Text: I stand opposed to the alternatives that add any additional releases from the dam systems into the Missouri River. We currently have difficulties with internal drainage and seepage when river levels run above 12 feet at the St. Joseph, Mo River gauge. Impounded waters and seepage cause the inability to plant our crops with mid April through June 1, being the planting window for our area. Also if we are unable to plant at these times the yields are reduced or possibly lands go unplanted due to these high water

events. Also if crops are timely planted and high water events come after planting crops are drowned out and or yields suffer. These farms are how I make my living, pay my bills, pay taxes. The alternatives that are proposed would be detrimental as to the additional releases from the dam at Gavens Point amounting to as much as 5 to 5 ½ ft. at St. Joseph, MO; I have been told. Local rainfall plus tributary run off flooding. Surely there must be a way to protect the habitat without placing undo problems on the farmer/stakeholder. Possible I here of being able to mechanically provide habitat and not alter flows from the dams. I could possibly give consideration to this plan as long as no increase in flows. Flood control should be number one in any consideration made.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 175 **Comment Id:** 641398 **Coder Name:** jgutierrez

Comment Text: The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 175 **Comment Id:** 641395 **Coder Name:** jgutierrez

Comment Text: In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 175 **Comment Id:** 641394 **Coder Name:** jgutierrez

Comment Text: As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641387 **Coder Name:** jgutierrez

Comment Text: In addition, flow modifications of up to 60,000 cfs for 35 days in Alternatives 4 and 5 are a complete non-starter. As mentioned above The Corps is essentially abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641385 **Coder Name:** jgutierrez

Comment Text: This could equate to an increase in river stage of nine feet at Omaha or as much as six feet at St. Joseph. That doesn't even take into consideration additional rainfall below the reservoirs. We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we have long been wary of. In 2015, 20 members of Congress from Missouri to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640945 **Coder Name:** jgutierrez

Comment Text: Flood risk management and interior drainage models must be completed for the entire floodplain rather than studying only four levee sites along the lower Missouri River.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640730 **Coder Name:** jgutierrez

Comment Text: Production agriculture is at best difficult under normal conditions; farmers do not need to contend with man-made floods that prevent/delay planting, lower yields or require additional costs for levee reinforcement, sandbagging or pumping.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 234 **Comment Id:** 640504 **Coder Name:** jgutierrez

Comment Text: In our region, March through May are the main months for fertilizing and planting of corn and soybeans. Normal harvest is September thru November. To our understanding these are additional proposed large release of water from Gavens Point Dam. These releases would add an additional 5 ½ to 6 feet to the Missouri River in St. Joseph, Missouri, which is the closest gauge to our properties. I understand fish and wildlife (plover, tern and sturgeon) need protected but it upsets me that the Corp would even consider putting wildlife above citizens means of income and devaluation of our ground. Dealing with Mother Nature can be bad enough without the additional water being released from the dam. We strongly oppose these proposed alternatives as this looks like this would have long-term effects on our farms.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 234 **Comment Id:** 640503 **Coder Name:** jgutierrez

Comment Text: We are very opposed to any alternative that contains any added releases to be released from the dam systems with Gavens Point being the lower most southern dam in the system. Additional releases would cause increased problems with interior drainage, seepage, and wet soils preventing timely farming practices.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 246 **Comment Id:** 640480 **Coder Name:** jgutierrez

Comment Text: As a farmer in the Missouri River bottoms, and I am concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan. Implementation of any of the six DE IS alternatives the Corp suggests would increase flooding.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637637 **Coder Name:** jgutierrez

Comment Text: In examining each of the DEIS alternatives, a concern common to each is the lack of hydrologic and economic modeling. We cannot even begin to understand the impacts to flood control and interior drainage because the DEIS only completed modeling for four levee sites in the entire floodplain. This is a severe flaw and we call on the Corps to complete hydrologic modeling and peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is implemented. Based upon the possible pallid sturgeon spawning cue release implementation in years 9-10 under the Preferred Alternative, we believe the Corps has adequate time to fully develop this essential modeling so our members can have a much clearer picture of how management plan actions may affect them.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637629 **Coder Name:** jgutierrez

Comment Text: Further, flow modifications of up to 60,000 cfs for 35 days in Alternatives 4 and 5 are an absolute deal-breaker. The Corps is effectively abandoning its primary Missouri River mission of flood control, defined by the 1944 Flood Control Act and upheld in subsequent court cases.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637621 **Coder Name:** jgutierrez

Comment Text: We have concerns with each of the six alternatives in the DEIS. To begin, with the exception of Alternative 1 (No Action), each of the alternatives relax current flood control constraints within the Missouri River Reservoir Mainstem Water Control

Manual (Master Manual) in an effort to provide flow support to the pallid sturgeon. Not accounting for additional rainfall, this could equate to an increase in river stage of nine feet at Omaha or as much as six feet at St. Joseph.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 135 **Comment Id:** 637271 **Coder Name:** jgutierrez

Comment Text: The amount of sediment that will be deposited into the main channel with these ICR's using Dredge Discharge type of construction will be extremely detrimental to flood control. These are environmental projects, they should be done with environmentally sound practices. I find it disturbing for the Federal Regulatory Branch of the Government to intentionally dump nutrients into a major tributary. You should lead by example not dilute soil and water samples to make them legal.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 135 **Comment Id:** 637264 **Coder Name:** jgutierrez

Comment Text: Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding. In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 101 **Comment Id:** 636856 **Coder Name:** jgutierrez

Comment Text: In the month of April, I have seen the Missouri River rise approximately 12 feet in one week. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. I'm concerned that all of the alternatives besides Alternative 1 (no action) would raise the current flood control constraints to be able to release more water in another

experiment for the pallid sturgeon, even after no science has been developed to prove increased flows equate to greater sturgeon population.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 101 **Comment Id:** 636853 **Coder Name:** jgutierrez

Comment Text: As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 90 **Comment Id:** 636827 **Coder Name:** jgutierrez

Comment Text: Because of the huge amounts of sand and debris in the river's stream our water table is higher on the lower river south of Gavins Point Dam. If you put any three out of the five alternatives in place using the spring and fall pulses, that could raise the river levels by as much as 5 feet or more in most places. This kind of raise will flood us again! This would also be the time of planting crops or harvest. We are still trying to recover from the 2011 flood so don't throw another one at us. If you had let water go in January, February, and March of 2011 making storage room in your reservoirs, we would not have suffered the huge destructive damages that incurred. I'm asking you not to change your master manual.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 85 **Comment Id:** 636791 **Coder Name:** jgutierrez

Comment Text: In short, the CNCLD supports Alternative 3 - With a no spring rise. During the Public Meeting, an array of issues were conveyed as to why Alternative 3 is the recommended option. Corps officials repeatedly heard these comments. The CNCLD, a P.L. 84-99 partner with the United States Army Corps of Engineers, further, is in support of eliminating the one time test spring rise from the preferred Alternative 3. The CNCLD is concerned that a one time flow test could potentially become part of a permanent

future spring rise, a potential flood risk to the CNCLD (L-15), a Federal-aid levee. Alternative 3, as was conveyed repeatedly during the Public Meeting, provides for a balance between human interest and species recovery. However, as already conveyed above, agriculture interest within the CNCLD is alarmed about potential flooding and interior drainage associated with a one time flow test included with Alternative 3.

Organization: Consolidated North County Levee District

Commenter: Kevin Machens **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 635173 **Coder Name:** jgutierrez

Comment Text: Given our high frequency of flood events in our state, we have always been very concerned about any proposed environmental flows from Gavins Point Dam that exceed flood control restraints. Let me be clear, the State of Missouri cannot support any alternative that requires environmental flows that exceed current flood control restraints.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633918 **Coder Name:** jgutierrez

Comment Text: The Corps hasn't completed their homework in the DEIS. Because impact studies have only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633901 **Coder Name:** jgutierrez

Comment Text: As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 142 **Comment Id:** 633878 **Coder Name:** jgutierrez

Comment Text: Major floods like those that occurred in 1993 in the downstream reaches of the Missouri River can be caused again by heavy local precipitation in the spring and fall. Since releases from the Gavins Point Dam take several days or more to reach downstream reaches of the river near cities such as St. Joseph, Kansas City, and Hermann, spring and fall rises are likely to cause flooding. For example, from the USGS data charts referenced below, one can see that flood waters can take up to three days to travel from St. Joseph to Hermann, Missouri.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633861 **Coder Name:** jgutierrez

Comment Text: As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding. Providing flood control and effective interior drainage is of utmost importance to me and my farm operation. The 1944 Flood Control Act makes clear the Mainstem Reservoir System on the Missouri River is to provide flood control and navigation. While there are additional benefits and uses for the system, Flood Control should remain the nation's top priority.

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633832 **Coder Name:** jgutierrez

Comment Text: Within 5 feet above a water level that supports navigation, all of the flap gates on drainage pipes will be closed preventing natural drainage. This hinders farming operations as well adequate drainage for public infrastructure such as highways, airports, water treatment plants, etc.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633830 **Coder Name:** jgutierrez

Comment Text: In the month of April, 2107, I have seen the Missouri River rise approximately 12 feet in one week. On more occasions, I have have seen rises over 10 feet in less than 2.5 days. With existing river gauge stages near flood stage, such rises assure overtopping of levees. Due to the time lag for lower water levels to be realized from reduced discharges from Gavins Point, flood damage is assured. Providing flood control and effective interior drainage is of utmost importance to my clients.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 93 **Comment Id:** 633677 **Coder Name:** jgutierrez

Comment Text: As a farmer I rely on the Missouri River for my farm's water drainage! It is the main component of all our interior drainage systems which consists of field ditches, road ditches and creeks. Any slowing down of flow or restriction on the Missouri River affects all of the rest of this system. Your proposed flushes will create a high river event which will cause a situation where nothing else will drain or flow for miles inland from the river. This creates a situation where it is impossible to farm and raise a crop.

Organization: Husz Farm Corp

Commenter: Del Husz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 92 **Comment Id:** 633653 **Coder Name:** jgutierrez

Comment Text: The river water level should be kept low, so that farmers can plant crops. Raising the water level can delay planting of crops and is criminal, and I wish that unnecessary and evil government interference could be prosecuted, even prosecuting senators, and congressmen for their evil laws.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631572 **Coder Name:** jgutierrez

Comment Text: The Corps' preferred Alternative 3 strikes a better balance, we believe, between human interests and species recovery. However, our members are concerned about the potential for flooding and impacts to interior drainage, as I just said, as part of a one-time flow test.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 54 **Comment Id:** 631128 **Coder Name:** jgutierrez

Comment Text: If you adopt at least three or four of these six plans and you have an event remotely close to 2011 or 2010, I mean, just remotely close, and then we have rain associated with a flood like '84 and '93 - - see, those were bad floods, but what made them really bad was all the five rivers that were trying to cram into them south of Omaha and north of Saint Joe. If you want a perfect storm, you not only have a couple bridges shut down, but our new bridge in Rulo probably would be - - the pilings would be unstable. My house would be gone, and it's been there since 1863. It would be gone. So the risk, just as you would take it off and you'd weigh out this stuff with the risk, what is the risk of what can go bad, and I haven't seen any of that in any of the data. And I haven't read all 6, 7,000 pages, but there needs to be a risk factor. There needs to be a Paragraph 6, and I haven't seen that.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 58 **Comment Id:** 630898 **Coder Name:** jgutierrez

Comment Text: Well, now here we are six years later talking about having a surge possibly twice a year. We're seven to ten days below the dams on the Missouri River. There's no way they can forecast the weather that far out, knowing what the rainfall is going to be in that time. And I feel that it's just a very dangerous situation to put us in. In our district alone, we have state highways. A flood event would split our school districts. Our availability for a hospital would be almost nil because we couldn't get to it, the closest one. We'd have to drive a half-hour to get to one instead of ten minutes. I just - - I'm not - - I don't know if there's anything that can be

done to help the pallid sturgeon and the birds, but I think we need to take care of the people first, consider what's going to happen to them and how it's going to affect their lives. For the State of Missouri, we cannot handle any type of surge.

Organization: Missouri Valley Levee District

Commenter: Al Jacob **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 56 **Comment Id:** 630889 **Coder Name:** jgutierrez

Comment Text: And what concerns us directly now is the water level of the Missouri being as high as it is at this current moment. The lowering of the water will help; more sandbars for the birds, more longer drainage area from the dams for that sturgeon. So the elevation of the silt in the basins of these dams has created less storage for flood control in the lower and upper basin, and also has created, you know, less room for the fish and other animals. The main thing that we're concerned about is the flood control and keeping that in check along with the helping of the animals.

Organization: Stanley County Commissioners

Commenter: Dana Iversen **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 22 **Comment Id:** 627256 **Coder Name:** jgutierrez

Comment Text: The river levels in the spring were too high (major release of water from Gavins dam). We only received a few inches of rain just north of us and then we were flooded. I would think after 2011 when the corps caused so much damage that I would not see what is happening in 2017. Down stream does matter. Flooded land in Missouri does matter.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 27 **Comment Id:** 626702 **Coder Name:** jgutierrez

Comment Text: We believe the Corps' preferred alternative 3 strikes a better balance between the human interests and species recovery. However, our members are concerned about the potential for flooding and impacts to interior drainage as part of a one-time flow test included in this alternative. The Coalition supports eliminating the current bi-modal spring rise from the preferred alternative because no science has been developed to prove its value.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 27 **Comment Id:** 626697 **Coder Name:** jgutierrez

Comment Text: Alternatives 4 and 5 create unacceptable amounts of flooding risk in the spring and fall, increasing downstream flood control constraints and doubling releases from Gavins Point for 35 days.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 17 **Comment Id:** 626407 **Coder Name:** jgutierrez

Comment Text: Historically, when the Missouri River rose it would recede as quickly as it came up, however the Army Corp is proposing that the river raise at least nine (9) feet for more than thirty (30) days. In our opinion, as persons from farming families who have been in the area for multiple generations, this is not replicating historical flood data, rather simply allowing the Army Corp an opportunity to further their own agenda in repopulating birds.

Organization: Mumm Law Firm

Commenter: Ashley N West **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 15 **Comment Id:** 626295 **Coder Name:** jgutierrez

Comment Text: Rises which would put crops at risk do not take into consideration natural weather conditions.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 15 **Comment Id:** 626293 **Coder Name:** jgutierrez

Comment Text: You must take into consideration how you may increase the cost of planting, harvesting, and the cost of utilities (mid-American Energy) costs (SIRE - Southwest Iowa Renewable Energy).

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 13 **Comment Id:** 626233 **Coder Name:** jgutierrez

Comment Text: The second effect of a higher Spring rise of the Missouri River is the risk of flooding. The Hamburg and Pacific Junction locations were forced to move out of their facilities in 2011 at an astounding financial burden.

Organization: AgriVision Equipment Group, Hamburg Store Manager

Commenter: Jon Graves **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 13 **Comment Id:** 626231 **Coder Name:** jgutierrez

Comment Text: First, higher river levels in the Spring will hinder the ability for farmers to plant crops in a timely manner and potentially prevent planting of many acres at all. Reduced yields and acreages will create less profitable farming operations ultimately reducing the needs of local farmers for equipment and services provided by AgriVision Equipment and its employees.

Organization: AgriVision Equipment Group, Hamburg Store Manager

Commenter: Jon Graves **Page:** **Paragraph:**

Kept Private: No

EC1300 Environmental Consequences: Hydropower (Substantive)

Correspondence Id: 15 **Comment Id:** 626293 **Coder Name:** jgutierrez

Comment Text: You must take into consideration how you may increase the cost of planting, harvesting, and the cost of utilities (mid-American Energy) costs (SIRE - Southwest Iowa Renewable Energy).

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645981 **Coder Name:** jgutierrez

Comment Text: 3. Water releases described for many of the management alternatives provided for comment involve flows that will exceed the capacity of hydroelectric operations at each dam in South Dakota, meaning spillway or outlet work releases must occur.

All flow releases involve the downstream transport, or loss, of fish. While effects of flows associated with standard operation of the Missouri River dams for hydropower generation have been experienced for decades, effects of spillway and outlet work flows are not as well understood due to the low frequency of their occurrence. We recommend coordinated sampling efforts with South Dakota Game, Fish and Parks fisheries staff when spillway or outlet works flows are scheduled, to increase knowledge of how these releases affect fisheries resources.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644395 **Coder Name:** jgutierrez

Comment Text: As summarized in the Hydropower Environmental Consequences Analysis Technical Report, Alternative 3 provides the best economic impact result for hydropower generators. Iowa's consumer-owned electric utilities include rural electric cooperatives (REC's) and municipal utilities. These Iowa based utilities, along with approximately 300 other consumer-owned utilities in the Missouri River Basin, also have a critical dependence on the Missouri River. The Western Area Power Administration (WAPA) supplies them with electric power generated by six hydroelectric facilities located on the river. Changes in Missouri River operations can affect Iowa consumer-owned utilities that purchase power from WAPA. When WAPA cannot generate enough hydroelectric power to fulfill its contractually obligated agreements due to low water, WAPA must go to the open market and purchase electricity, often at higher costs, which are passed on directly to the consumer-owned utilities that receive electricity from WAPA.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644269 **Coder Name:** jgutierrez

Comment Text: [Hydropower Environmental Consequences Analysis Technical Report] Section 6.0 - This section reports impacts in lbs. But what are the financial impacts to offset, control or mitigate the environmental consequences of using natural gas compared to hydropower?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644261 **Coder Name:** jgutierrez

Comment Text: [Hydropower Environmental Consequences Analysis Technical Report] Section 5.1, page 34, Table 11 - The results reported for Alternative 6 seems odd/wrong compared to the other alternatives. Also, per previous comments, Alternative 1 may not be a reasonable reference alternative.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643926 **Coder Name:** jgutierrez

Comment Text: Section 3.13.2.5, Page 3-340, 2nd paragraph - Indicates that Alternative 2 during summer months and low summer flow event years, would lead to exacerbated impacts on energy to the region. This makes Alternative 2 an unacceptable Alternative. This alternative also has significant impact on the energy from the hydropower facilities at the peak period. The coupling effect (hydro and thermal) could have catastrophic effects to energy availability and reliability. The final EIS must evaluate whether this could lead to brown outs or worse black outs at a time of most significance to crops and human life.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643783 **Coder Name:** jgutierrez

Comment Text: We also note the impacts to hydropower for some alternatives are significant. NPPD is a purchaser of power from the Western Area Power Administration (WAPA) and is concerned about the impacts of reduced generation and the future cost of the power from WAPA. We urge you to seriously consider comments from WAPA, the Mid-West Electric Consumers Association and other WAPA customers in the basin.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642484 **Coder Name:** jgutierrez

Comment Text: On page 3-22 the channel capacity change due to aggradation of the Garrison Reach is described as the following: "At the time Garrison Dam was constructed, the open water channel capacity at the City of Bismarck, North Dakota, was approximately 90,000 cfs for a stage of 13 feet; however, aggradation decreased the channel capacity to approximately 50,000 cfs for the same stage by 1997 after 42 years of reservoir operation (USACE 2006a). This trend was temporarily decreased in 2011 when high flows scoured out the channel." According to this, channel capacity at the downstream end of the Garrison Reach has decreased about 40 percent. Implementing additional actions that exacerbate the aggradation will affect hydropower production over time. As sediment accumulates in the delta, releases will have to decrease in order to avoid exceeding channel capacity, especially during the winter when river ice cover causes a 5- to 7-foot stage increase.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642392 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.13.2.3, p. 3-336 - 3-337 "Mechanical construction of ESH is not anticipated to impact hydropower under any of the alternatives. Actions that do not affect the flow through the dams or the elevations at the reservoirs are unlikely to have an impact on hydropower." Comment: If ESH construction causes more sediment to accumulate over time in the delta regions of inter-dam reaches, it would affect hydropower production. In the Garrison Reach, this is the case if ESH was constructed in the upper part of the reach and eroded, ending up downstream, or if ESH was constructed directly in the delta region.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641814 **Coder Name:** jgutierrez

Comment Text: While the DEIS provides scant discussion on the impacts to reliability from either the reduced hydroelectric or thermal generation output, there seems to have been no consideration of the cumulative impacts to the reliability of the power grid from the loss of both hydroelectric and thermal generation under the various alternatives. As the DEIS analyses show, lower or altered Missouri River flows can significantly reduce the output or value of hydroelectric generation and at the same time reduce the amount of thermal generation available. What was apparently not considered was the cumulative impact of the loss of both types of generation and the consequent impact on system reliability. The loss of significant amounts of baseload generation at the same time can seriously impact system reliability. It is not clear that sufficient transmission capacity exists to be able to purchase and import power from the market to replace the lost generation or that the market is liquid enough to absorb the necessary replacement power

purchases without significant price increases. It is imperative that the cumulative impact of changes in hydroelectric and thermal generation output on power system reliability be addressed in the final environmental impact statement to assess to what degree grid stability may be at risk under the various alternatives.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641813 **Coder Name:** jgutierrez

Comment Text: Mid-West appreciates the open and transparent way in which the Corps explained the processes for modeling the impacts on hydropower from the various alternatives. While the methodology employed by the Corps to estimate hydropower impacts is not unreasonable, Mid-West is concerned that the estimates of the hydropower impacts are likely understated. There are several reasons for our concern. First, to calculate the value of lost energy future estimates of power prices were derived from the Southwest Power Pool (SPP) market, which the Western Area Power Administration (WAPA) Upper Great Plains Region only joined in October 2015. The long-term projection is then driven by an Energy Information Administration forecast applied to the historical SPP prices. Less than two years of SPP data is an extremely short period of time from which to derive long-term power price estimates. Second, if there were a real and sufficiently large reduction in the hydroelectric output of the Missouri River projects, WAPA could change its contracts with the purchasing utilities to reduce WAPA's delivery obligation by the size of the reduction. The purchasing utilities would ultimately construct new resources rather than continuing to rely on market purchases forever. While market purchases may serve as a good short-term proxy, utilities would have to build new resources rather than rely on market purchases to protect against severe market fluctuations. The Corps's analysis appears to assume resource construction to replace the capacity of the reduced hydroelectric generation, but not for reduced energy output. Therefore, the long-term response to a significant reduction in the hydroelectric output of the Missouri River generating projects should be the construction of a new resource. Finally, while the DEIS provides some discussion of the potential impacts of changes in hydroelectric output on the production of ancillary services, quantitative analysis is necessary to determine the true impact. Ancillary services have become more important aspects of generation as huge amounts of intermittent renewable resources have been added to the system and as a consequence of a growing concern about the reliability of the power grid. While Mid-West believes that the Corps's approach to estimating the economic impact of the management alternatives on hydroelectric output and cost is generally reasonable, that analysis also likely underestimates the actual impact for the reasons stated above.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641810 **Coder Name:** jgutierrez

Comment Text: The Pick-Sloan customers are committed to maintaining the long-term value of have these hydroelectric projects. These customers have agreed to provide over \$1 billion in capital over the next twenty years to the Corps of Engineers to support repair and rehabilitation of the six mainstem Missouri River dams. A significant reduction in the amount of power generated by these projects could result in these capital investments becoming uneconomic.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640632 **Coder Name:** jgutierrez

Comment Text: While the DEIS provides scant discussion on the impacts to reliability from either the reduced hydroelectric or thermal generation output, there seems to have been no consideration of the cumulative impacts to the reliability of the power grid from the loss of both hydroelectric and thermal generation under the various alternatives. As the DEIS analyses show, lower or altered Missouri River flows can significantly reduce the output or value of hydroelectric generation and at the same time reduce the amount of thermal generation available. What was apparently not considered was the cumulative impact of the loss of both types of generation and the consequent impact on system reliability. The loss of significant amounts of baseload generation at the same time can seriously impact system reliability. It is not clear that sufficient transmission capacity exists to be able to purchase and import power from the market to replace the lost generation or that the market is liquid enough to absorb the necessary replacement power purchases without significant price increases. It is imperative that the cumulative impact of changes in hydroelectric and thermal generation output on power system reliability be addressed in the final environmental impact statement to assess to what degree grid stability may be at risk under the various alternatives.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640596 **Coder Name:** jgutierrez

Comment Text: Hydropower Impacts Are Likely Understated: CMEPC appreciates the open and transparent way in which the Corps explained the processes for modeling the impacts on hydropower from the various alternatives. While the methodology employed by the Corps to estimates hydropower impacts is not unreasonable, CMEPC is concerned that the estimates of the hydropower impacts are likely understated. There are several reasons for our concern. First, to calculate the value of lost energy future estimates of power prices were derived from the Southwest Power Pool (SPP) market, which the Western Area Power Administration (WAPA) Upper

Great Plains Region only joined in October 2015. The long-term projection is then driven by an Energy Information Administration forecast applied to the historical SPP prices. Less than two years of SPP data is an extremely short period of time from which to derive long-term power price estimates. Also already announced significant increased wind and solar in the market increases the importance of hydro and will likely increase costs of other alternatives due to the seasonal timing changes of hydro generation into the market. Second, if there were a real and sufficiently large reduction in the hydroelectric output of the Missouri River projects, WAPA could change its contracts with the purchasing utilities to reduce WAPAs delivery obligation by the size of the reduction. The purchasing utilities would ultimately construct new resources rather than continuing to rely on market purchases forever. While market purchases may serve as a good short-term proxy, utilities would have to build new resources rather than rely on market purchases to protect against severe market fluctuations. The Corps analysis appears to assume resource construction to replace the capacity of the reduced hydroelectric generation, but not for reduced energy output. Therefore, the long-term response to a significant reduction in the hydroelectric output of the Missouri River generating projects should be the construction of a new resource. Finally, while the DEIS provides some discussion of the potential impacts of changes in hydroelectric output on the production of ancillary services, quantitative analysis is necessary to determine the true impact. Ancillary services have become more important aspects of generation as huge amounts of intermittent renewable resources have been added to the system and as a consequence of a growing concern about the reliability of the power grid. While CMEPC believes that the Corps approach to estimating the economic impact of the management alternatives on hydroelectric output and cost is generally reasonable, that analysis also likely underestimates the actual impact for the reasons stated above.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640559 **Coder Name:** jgutierrez

Comment Text: CMEPC relies heavily on the cost-based, renewable, non-carbon emitting hydroelectric power generated on the Missouri River and its tributaries for a significant portion of their power supplies. Any diminution in this renewable generation would be both costly to our Montana member cooperative utilities and the largely rural customers served by them. Any loss of this hydro resource would result in a significant increase in the output of carbon dioxide from replacement thermal resources.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640545 **Coder Name:** jgutierrez

Comment Text: The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be further studied

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640544 **Coder Name:** jgutierrez

Comment Text: Due to the areas changing power supply market with increasing variable generation percentages, actual impact on hydropower of the various alternatives is likely understated;

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 100 **Comment Id:** 633699 **Coder Name:** jgutierrez

Comment Text: - The actual impact on hydropower of the various alternatives is likely understated; - The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be studies;

Organization: City of Barnesville Municipal Utility

Commenter: Guy A Swenson **Page:** **Paragraph:**

Kept Private: No

EC1400 Environmental Consequences: Irrigation (Substantive)

Correspondence Id: 186 **Comment Id:** 641529 **Coder Name:** jgutierrez

Comment Text: "For example, Dewey County in South Dakota would experience an increase of 323 days when water surface elevations would fall below minimum operating requirements from 1942 to 2012 under Alternative 6, which resulted in this county being selected for further analysis." NRCS Comment: These 323 days do not have a basis in time, so it is not clear what the effect would be. Is this 323/70 years= 4.6 days per year below the minimum operating requirements? This could be explained in days per year, maximum or minimum days, or percent change in operation.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642678 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.2.5-10., p. 3-368 - 3-380 Comment: The distribution of overall effects on irrigation needs to be discussed in relation to "equity." The tables in current form are sufficient to outline the issue, but the discussion is uneven, mentioning the equity problems in some conclusions, and not in others. A major issue with North Dakota is that in options other than Alternative 3, North Dakota, and particularly Williams County, absorbs most of the relative losses. Alternatives 4 and 6 are particularly concerning, with losses ranging from 5% to 54%, and 7% to 25% in Emmons and Williams Counties, respectively. Where large negative changes are predicted, and particularly where there is a large imbalance of impact, the issue of equity, subsequent loss coverage and distribution, and compensation mechanisms or distribution of financial impact should be discussed in the document and considered in both the choice and the management of the choice of alternatives.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642661 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.2.9, Table 3-150, p. 3-378 & Conclusion p. 3-379 [Irrigators] "experience temporary, relatively small, and adverse impacts under Alternative 6 relative to Alternative 1. Most impacts would occur in years when drought conditions follow a spawning cue release." Comment: This is an inaccurate statement. A 7% to 25% net negative change in total farm income relative to Alternative 1 is hardly "relatively small." There is also an equity problem in that North Dakota, and particularly Williams County, absorbs almost all of the net losses.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642534 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.2.5/3.14.2.7/3.14.2.8/3.14.2.9, p. 3-366 - 3-380 Comment: This comment pertains to the sections that describe the impacts to irrigation due to Alternatives 2, 4, 5, and 6. The conclusion portion for each of those sections contains a statement that says the alternative is "not expected to have significant impacts on irrigation operations." Each of those alternatives negatively affects irrigation in North Dakota more than any other evaluated region. Williams County, the most adversely

affected, shows a decrease in net farm income of 15.3%, 53.9%, 12.6%, and 24.9% for Alternatives 2, 4, 5, and 6, respectively. Those numbers reflect substantial changes in farm income.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642519 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.2.4, p. 3-365, Table 3-137 Comment: The baseline (Alternative 1) case for Williams County (-\$8,8140,000) is strange. The footnote refers to losses under irrigated wheat production, which seems to indicate that the EIS is basing its economic baseline on irrigated wheat. An assumption that producers would consistently use a losing practice doesn't make sense. Is the assumption based on irrigated wheat, and if so, how was the wheat criterion chosen; and was it based on county crop averages? Irrigated acreage and crops grown are reported annually to the Office of the State Engineer on annual use forms (AUFs). The 2012 Irrigation AUFs for Williams County reported 446 Irrigated Acres of Wheat (1.93% of 2012 Irrigated Acres). The 2015 AUFs reported 921 Irrigated Acres of Wheat (4.19% of 2015 Irrigated Acres). There is very little wheat acreage irrigated in Williams County. Of greater concern would be irrigated corn (13,453 acres) or sugar beets (11,800 acres) in 2012. If the \$8.8 million loss was based on irrigated wheat, it is likely that the baseline (Alternative 1) farm income loss is unrealistically low, and if the same assumption is made in assessing projected losses, they may cause a low bias on loss estimates. Please re-examine the assumptions leading to the Alternative 1 figure and evaluate what the impact of those assumptions would have on the impact assessment values.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642508 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.2.1, p. 3-361 "No county in the research area relies exclusively on the Missouri River for irrigation. Counties were included in the impact analysis if a significant percentage of irrigated acres in the county used water from the Missouri River and if the alternatives showed noticeable changes in access to water." Comment: This statement implies that irrigators have other reliable sources of water. The Missouri River comprises over 90% of the surface water supply in North Dakota. Groundwater is sparse in western North Dakota and tributaries can be intermittent, especially during drought periods. And what constitutes a "significant percentage?" If half or even a quarter of the irrigators in Williams, Mercer, and Emmons Counties are negatively impacted - is that acceptable to the USACE? It is not acceptable to North Dakota.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**
Kept Private: No

EC1500 Environmental Consequences: Navigation (Substantive)

Correspondence Id: 27 **Comment Id:** 626696 **Coder Name:** jgutierrez

Comment Text: Low summer flow provisions in alternative 2 will cause great harm to the navigation industry by creating a split season on the Missouri River and adversely affecting navigation flows on the middle Mississippi River.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 205 **Comment Id:** 646281 **Coder Name:** JGUTIERREZ

Comment Text: Low flow releases in the summer may impact the navigation lane, where water and power utilities may have to place barges with pumps out in the river's navigation lanes to reach water.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 228 **Comment Id:** 646278 **Coder Name:** JGUTIERREZ

Comment Text: We cannot overstate how essential the Missouri River is to our nations economy. The CPR calls on the Corps to not adopt any management action that has the potential to cause severe economic harm through the implementation of low summer flow releases.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 168 **Comment Id:** 645913 **Coder Name:** jgutierrez

Comment Text: Alternative 2 would also implement a bi-modal spring release from Gavins Point. In Alternative 2, the first pulse would begin on March 15 and would be as high as 31,000 cfs and the second pulse would start on May 1 and would be as high as

60,000 cfs. Both spring pulses would negatively impact navigation for roughly four weeks. Alternative 5 takes a different approach by mandating a flow release of up to 60,000 cfs out of Gavins Point in the fall [in the middle of harvest season] as often as every four years. If the river is already at high levels, which is often the case in the spring months, any increase in flows could cause negative impacts to navigation, agricultural, land owners, industries, and communities along the river. Releases in the 60,000 cfs range would most likely halt navigation due to high velocities. Towing companies operating on the Missouri River are concerned about releases from Gavins Point in May that exceed 50,000 cfs because they believe this amount of extra water has the potential to stop navigation on the Missouri River and cause elevated navigational risks on the mid-Mississippi River. The month of May is typically a time of high water on both the Missouri and Mississippi rivers without the addition of a spring pulse. If the May release is implemented without taking into consideration the natural flows, it would be a significant problem for navigation and other stakeholders in the entire region, including the farming community. Since the Missouri River often floods in the spring months, why would the Corps release more water and make the flooding worse?

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 645774 **Coder Name:** jgutierrez

Comment Text: WCI reiterates its concern that Alternative 3s one-time flow test would negatively impact commercial navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 645756 **Coder Name:** jgutierrez

Comment Text: Low flow releases in the summer may impact navigation lane, where water and power utilities may have to place barges with pumps out in the River's navigation lanes to reach water.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645638 **Coder Name:** jgutierrez

Comment Text: 10. DEIS modeling needs to incorporate the principle of water-compelled rates for the Missouri and Mississippi Rivers and the independent peer review must include economists that have a firm understanding of the navigation economic model.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645609 **Coder Name:** jgutierrez

Comment Text: The navigation analysis for OSE in the DEIS only considers changes in air quality if commodities moving on the waterway could potentially shift to land because of any of the alternatives. In fact, air quality is the only OSE considered in the DEIS for any of the alternatives. The DEIS makes no mention of increased fatalities or congestion if goods move to truck and/or rail. It also fails to account for revenue diversions from other federal and state budgets to repair roads and bridges along with increased expenditures for concrete and asphalt. The OSE does not account for lost time and productivity due to the increased amount of time spent in traffic due to modal shifts caused by these alternatives. By failing to include these other social effects and costs, the DEIS grossly understates impacts.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645608 **Coder Name:** jgutierrez

Comment Text: Water Compelled Rates There is no mention of water-compelled rates in either Sections 3.15 Navigation-Affected Environments et al., nor is there any analysis of water-compelled rates in Section 3.24 Mississippi River Impacts. Instead, the Corps devotes roughly one-half of one page to this critical concept in the Navigation Environmental Consequences Analysis Technical Report to the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645584 **Coder Name:** jgutierrez

Comment Text: Further, Alternative 2 would also implement a bi-modal spring release from Gavins Point. In Alternative 2, the first pulse would begin on March 15 and would be as high as 31,000 cfs and the second pulse would start on May 1 and would be as high

as 60,000 cfs. Both pulses would negatively impact navigation for roughly four weeks. If the river is already at high levels, which is often the case in the spring months, any increase in flows could cause negative impacts to navigation, farms, industries, and communities along the river. Releases in the 60,000 cfs range would most likely halt navigation due to high velocities. Towing companies operating on the Missouri River are concerned about releases from Gavins Point in May that exceed 50,000 cfs because they believe this amount of extra water has the potential to stop navigation on the Missouri River and cause elevated navigational risks on the middle Mississippi River. The month of May is typically a time of high water on both the Missouri and Mississippi Rivers without the addition of a spring pulse.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645581 **Coder Name:** jgutierrez

Comment Text: Also, Table 3-173 makes the incorrect assumption that Missouri River navigation automatically stops when the navigation season officially ends. In actuality Missouri River shippers do not follow arbitrary season length dates but instead operate as long as adequate flows and weather conditions permit.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645580 **Coder Name:** jgutierrez

Comment Text: Also, Table 3-173 makes the incorrect assumption that Missouri River navigation automatically stops when the navigation season officially ends. In actuality Missouri River shippers do not follow arbitrary season length dates but instead operate as long as adequate flows and weather conditions permit.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645579 **Coder Name:** jgutierrez

Comment Text: Table 3-173 This table shows that under Alternative 5, years in the 82-year period of record that have full or partial releases do not have an impact on navigation benefits. The DEIS justifies this assertion because in this case the releases would be in

the fall when the navigation season is almost complete. Here, the DEIS fails to take into account the fall harvest season on both the Missouri and Mississippi Rivers.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645576 **Coder Name:** jgutierrez

Comment Text: Section 3.15.2.5 Alternative 2 - USFWS 2003 Biological Opinion Projected Actions Under Alternative 2, it is highly likely that the decreasing releases from the Gavins Point Dam in Alternative 2 during the summer months would drop flows below the Construction Reference Plane (CRP) levels and halt navigation. Navigation would once again become unreliable and the navigation community and the users of the commercial navigation system would suffer severe negative economic consequences. In this section, the DEIS states: Although split navigation seasons would adversely affect navigation NED, RED, and OSE under Alternative 2, the impacts would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas. This contradictory and flawed conclusion demonstrates a fundamental misunderstanding of Missouri River navigation by the study team. The navigation industry needs regulatory certainty in the form of consistent reliable flows.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645575 **Coder Name:** jgutierrez

Comment Text: 2. Flow changes in Alternatives 2, 4, 5, and 6 would negatively impact navigation on the Missouri and Mississippi Rivers. These alternatives would also negatively impact agriculture which is a primary customer of the navigation industry. 3. Low summer flow provisions in Alternative 2 will cause irreparable harm to the navigation industry by creating a split navigation season on the Missouri River. Negative impacts would also be felt in the bottleneck reach of the Mississippi River between St. Louis, MO and Cairo, IL. 4. The DEIS independent peer review must include individuals that have a firm and comprehensive understanding of the navigation economic model. 5. The DEIS analysis on Other Social Effects (OSE) of the impacts of various alternatives on navigation is incomplete and inadequate. 6. A major flaw of the DEIS is its failure to take into full consideration the principle of water-compelled rates for the Missouri and Mississippi Rivers.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645557 **Coder Name:** jgutierrez

Comment Text: The DEIS (V3-page 134-3.15.2) Environmental Consequences says "Alternative means of achieving species objectives are evaluated for their effects on navigation." The League believes this statement is backwards. We urge this statement to be changed in the final EIS, especially considering the lack of commercial traffic on the river.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645452 **Coder Name:** jgutierrez

Comment Text: In addition, the CPR remains steadfast in its opposition to low summer flow provisions contained in Alternative 2. If this alternative were to be implemented, the Corps would effectively abandon a primary congressionally authorized purpose of the Missouri River by causing severe harm to the navigation industry - one that's been on the increase in recent years and serves as a vital mode of transportation as our nation grapples with continued deterioration of our roads and bridges.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645295 **Coder Name:** jgutierrez

Comment Text: Page xix, Executive Summary: "The navigation impacts analysis focuses on determining if changes in river and reservoir conditions associated [sic] could result in an impact to service level and season length. The impacts to navigation are evaluated using three of the four accounts (NED, RED, and OSE). Comment: The navigation impacts analysis must take into consideration shifts from waterborne commerce to rail or truck under the Intermodal Surface Transportation Efficiency Act ("ISTEA"). ISTEA requires linked connectivity between modes, productive growth, reduced energy consumption, reduced air pollution, reduced traffic congestion, and competition. A two (2) percent shift of waterborne commerce to truck correlates to a 140,000 ton increase or 5,349 additional truck trailers on the road. (1 barge= 1,500 tons, 1 large semi-truck (45') = 26 tons.) Waterborne commerce is the most energy efficient mode of transportation. Trucks consume 3,483 BTU per ton/mile compared to 403 BTU per ton/mile for waterborne commerce. Transportation Energy Data Book; Edition 12, Oak Ridge National Lab, prepared for the Department of Energy, ORNL-6710, pp.6-13.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645269 **Coder Name:** jgutierrez

Comment Text: It is imperative that the socio-economic impacts of proposed actions are fully understood. There is already a fundamental lack of knowledge regarding the impacts of proposed actions to some other uses. For example, in the most recent review of Human Considerations impacts by the ISETR, one of the members stated the navigation impacts were not fully understood because no one on the panel had a background in transportation economics. This is troubling not only because navigation is one of the two primary authorized purposes of the System, but because three economics experts were not able to understand how the Corps analyzed the impacts to an entire industry. Missouri requests the Corps take steps to address this issue.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645263 **Coder Name:** jgutierrez

Comment Text: Missouri River navigation relies on a reliable navigation channel measuring nine feet deep and 300 feet wide. The channel is provided by a combination of water from major tributaries and the release of water from the mainstem reservoirs. Industry uses the channel all year, but the March to April period is key for fertilizer shipments and the fall and early winter is important for grain export. Industry requires predictability and adequate flow support. Sudden changes in flow support can be economically impactful and even dangerous. Although shipments can be made at lower river levels, industry economics require that river levels be at intermediate service or greater to be profitable. These characteristics are not factored into the Missouri River navigation economic assessments conducted in the DRAFT EIS. In addition, the Corps did not present a summary table of navigation performance (service level and season length) among the alternatives for the 82-year dataset. These oversights need to be corrected in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645262 **Coder Name:** jgutierrez

Comment Text: The navigation analysis is further compromised by the Corps including routine repair, replacement, and rehabilitation costs (R, R, and R) and truck transportation costs. It is inappropriate to include these project costs in the navigation analysis while omitting similar costs for other Corps projects being analyzed. For instance, each of the mainstem dams has annual operation and maintenance costs that were not included in any of the analyses. Applicable operation and maintenance costs for all of the Corps projects need to be attributed appropriately and not solely assigned to navigation.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645261 **Coder Name:** jgutierrez

Comment Text: Stakeholders repeatedly asked the Corps to include water compelled rates in the DRAFT EIS analysis. Despite these requests, no such analysis was performed because it was deemed that "...Missouri River tonnage migrated to Arkansas River" and "...water-compelled railroad rates attributable to Missouri River commercial navigation seemed improbable" (Navigation Environmental Consequences Analysis Technical Report, p. 17). Barge transportation not only provides the most fuel-efficient method of moving tonnage (A barge can move 576 ton-miles per gallon of fuel.), but also is the safest (fewer accidents and spills) and least polluting mode (GAO Report 11-134, 2011). In 1998, while water-compelled benefits were valued at \$55.7 million for commodities moved on Missouri River, the value of Missouri River transportation availability was approximately \$10.4 million per year or \$8.43 per ton of commercial commodities shipped on the river (FAPRI-UMC Report, 2004).

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645260 **Coder Name:** jgutierrez

Comment Text: Even though the Corps mentioned the amount of material moved on the Missouri River (Figure 3-59), there is no estimation or accounting for the value. For instance, the Corps' analysis does not distinguish between high-dollar commercial equipment (e.g., power plant equipment) and a bushel of corn. Between 2004 and 2015, AmerenUE has shipped replacement turbines and manufacturing equipment on the Missouri River which were valued at \$750 million (see John LaRandeau's presentation at St. Louis River Industry Club, February 2015). This information was not reflected in the DRAFT EIS. The turbines were shipped from France, and traveled nearly 1,300 miles on the Mississippi River and Missouri River to reach their destination. The Inland Waterway System is the only mode of transportation that can handle this type of large equipment. The Corps needs to properly account for the value of goods shipped on the Missouri River in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645251 **Coder Name:** jgutierrez

Comment Text: In addition, the State of Missouri is concerned that the Independent Socio-Economic Technical Review (ISETR) Panel, which was established by MRRIC, was not able to provide feedback on the Corps' economic navigation analysis because no one on the three-member panel is a transportation economist. It is imperative that the Corps produce navigation impact analyses that are meaningful and understandable in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645250 **Coder Name:** jgutierrez

Comment Text: Another important benefit of Missouri River navigation is the rate savings in other transportation modes resulting from the existence of commercial navigation as a shipping option. Water compelled rates occur when rail and truck transportation modes lower their rates to compete with barge rates. In other words, water compelled rates translate to savings to both producer and consumer. The Corps elected to not evaluate the benefit of water compelled rates in the DRAFT EIS. The State of Missouri requests that the Corps correct this shortcoming by including such analysis in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645249 **Coder Name:** jgutierrez

Comment Text: It is critically important that the Corps recognize the Missouri River is an integral component of the Inland Waterway System. Beginning a few miles above St. Louis, Missouri and continuing to the confluence of the Ohio River, the bottleneck reach of the Mississippi River is heavily reliant on water from the Missouri River. The Missouri River has historically supplied 40 percent of the flow on average to the bottleneck reach of the Mississippi River. The Port of St. Louis is the third busiest (per tonnage) inland port in the United States. It's important to note that shipments do not arrive, or depart, unless the bottleneck reach has sufficient flow. Additionally, shipments to or from the Illinois River or the Upper Mississippi River, which must also transit the

Middle Mississippi River, are affected by the flows coming out of the Missouri River. Shippers have no choice but to load barges lighter when river stages begin to fall. Even though the Corps produced estimates of how much tonnage would be impacted by each of the alternatives in the DRAFT EIS, the Corps failed to analyze the economic impact of such actions. The State of Missouri requests that the Corps correct this shortcoming in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645189 **Coder Name:** jgutierrez

Comment Text: Under the Flood Control Act of 1944, Congress authorized the Corps to govern the U.S. waterways. Additionally, this act required the Corps to prioritize flood control and navigation as dominant functions of its authority. Though the responsibilities of the Corps have increased over time with additional directives from Congress, namely those to assist in protecting endangered species, the new obligations have not diminished the original priorities. While the courts have noted the difficulty in balancing these varied interests, case law is clear that endangered species do not get to take precedence to the detriment of flood control and navigation. Thus, while it is a painstaking task, it is nonetheless imperative the Corps find a fair balance for these complex issues. AWO understands the difficult nature of this endeavor and is confident the recovery of the pallid sturgeon, least tern and piping plover can be achieved without negatively impacting the efficient movement of commerce on the Missouri and Mississippi rivers.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645180 **Coder Name:** jgutierrez

Comment Text: It is important to note that all the economic models used to assess the impacts of the proposed alternatives on navigation and flood control have yet to be approved Corps Headquarters. MRRIC members have been told that, while these models have yet to be approved by headquarters, getting them approved is just a formality. Why would any respectable organization proceed with a major study examining the economic impacts of a proposed action(s) when the economic models have not been reviewed or given final approval for use? This fact is incomprehensible to most stakeholders. Until the final models have been adequately reviewed and commented on by stakeholders and MRRIC, no alternative should be chosen.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645179 **Coder Name:** jgutierrez

Comment Text: The DEIS analysis on OSE impacts on navigation is also incomplete and inadequate. Once again, this has resulted in the economic costs, human impacts and social consequences of these alternatives to be grossly understated. The navigation analysis for OSE in the DEIS only considers changes in air quality if commodities moving on the waterway potentially shift to land because of any of the alternatives. In fact, air quality is the only OSE considered in the DEIS for any of the alternatives. The DEIS makes no mention of increased fatalities, or congestion if goods move to truck and/or rail. It also fails to account for revenue diversions from federal and state budgets to repair roads and bridges. The OSE does not account for lost time and productivity due to the increased amount of time spent in traffic due to modal shifts. By failing to include these social effects and costs, the DEIS grossly understates impacts. In fact, the evaluation is inaccurate.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645178 **Coder Name:** jgutierrez

Comment Text: AWO strongly recommends that the review team that conducts the comprehensive Independent Peer Review of the DEIS include professionals that have a firm and comprehensive understanding of the navigation economic model.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645177 **Coder Name:** jgutierrez

Comment Text: Table 3-173 shows that for Alternative 5, years with full or partial releases do not have an impact on navigation benefits. The DEIS indicates that this makes sense since the releases would be in the fall when the navigation season is almost complete. This is a false assumption because it does not account for the harvest season and the increased export market on both the Missouri and Mississippi rivers during the fall. This flawed assumption results in inaccurate and understated impacts of Alternative 5 on navigation. The conclusion illustrated in Table 3-173 also falsely assumes that navigation on the Missouri River ceases when the navigation season (flow support) officially ends. This is not the case as navigation continues on the river after the end of the navigation season as long as there is a reliable channel and weather conditions permit. In fact, several barge companies were operating on the Missouri River in February of 2017 due to favorable weather and reliable flows. Once again, this false assumption

results in understated impacts of Alternative 5 on navigation as well as understated total economic benefits of Missouri River navigation.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645176 **Coder Name:** jgutierrez

Comment Text: In several sections, the Corps models include faulty assumptions and omit critical data that cause the output results to be misleading and inaccurate. For example, the modeling does not account for the impacts of navigation on transportation costs and agricultural profitability. Low summer flows and flood events intensified by unreliable releases from Gavins Point can have serious negative impacts on transportation. Since these interconnected economic impacts are not addressed, the overall economic impacts of the management actions for all alternatives are substantially understated.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645175 **Coder Name:** jgutierrez

Comment Text: Another problem with the Corps economic modeling used in the DEIS is that it consistently relies on old, outdated and inaccurate information to calculate the impacts. For example, to estimate the impacts in the NED account for navigation, the variables to estimate changes in transportation saving and repair, replacement and rehabilitation costs (R, R, & R) were based on data from the Master Water Control Manual Missouri River Review and Update Study, Volume 6A-R: Economic Studies Navigation Economics (Revised) (1998). This study is almost twenty years old and does not reflect the recent increase in barge activity on the Missouri River. In addition to relying on this outdated study, the Corps did not consult with members of the towing industry or its customers to obtain feedback on how to calculate transportation savings and R, R, & R costs in its NED analysis. Furthermore, the RED evaluation also appears to be insufficient and lacking in data from the tugboat, towboat and barge industry.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645174 **Coder Name:** jgutierrez

Comment Text: Finally, the use of the 82-year period-of-record is flawed because it includes years when the federal government mandated artificial regulatory actions that greatly diminished the presence of navigation on the Missouri River. This, in turn, results in a significant understatement of the navigation benefits on the Missouri River. As stated previously, the low summer flows on the Missouri River in the early 2000s caused navigation to virtually disappear. Several towing companies went out of business during this time due to the lack of consistent reliable flows on the Missouri River. A few years later, the Corps implemented a large spring rise to serve as a spawning cue for the pallid sturgeon. This second artificial federal action further discouraged navigation on the river due to reliability concerns. In fact, navigation on the Missouri River did not begin to recover until recent years when the Corps provided reliable flows. Yet, despite these artificial government actions that negatively impacted navigation during these years, the DEIS still includes these years in the period-of-record for the modeling. These years should be excluded from the modeling, otherwise the benefits of navigation are substantially understated in the DEIS.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645170 **Coder Name:** jgutierrez

Comment Text: Dr. Bray and Dr. Burton concluded that there is not enough waterway traffic on the on the Missouri River to capture, and therefore, measurable water-compelled railroad rates attributable to the Missouri River commercial navigation seems improbable. This conclusion ignores the fundamental principle of water-compelled rates and does not account for the recent increase and continued growth of navigation on the Missouri River. The failure to include an independent comprehensive analysis of water compelled-rates in the DEIS is inappropriate and unacceptable. By not including this analysis, the Corps has drastically understated both the economic benefits of navigation and the impacts of these alternatives on both Missouri and Mississippi River navigation.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645169 **Coder Name:** jgutierrez

Comment Text: The DEIS failed to perform an independent comprehensive analysis of water-compelled rates on either the Missouri or Mississippi rivers. There is no mention of water-compelled rates in either Sections 3.15 Navigation-Affected Environments et al., nor is there any analysis of water-compelled rates in Section 3.24 Mississippi River Impacts. Instead, the Corps devotes roughly one-half of one page to this critical concept in the Navigation Environmental Consequences Analysis Technical Report to the DEIS.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 168 **Comment Id:** 645161 **Coder Name:** jgutierrez

Comment Text: Alternatives 4 and 5 create problems for navigation by doubling the releases from Gavins Point for a period of 35 days. Alternative 4 would implement a flow release of up to 60,000 cfs out of the Gavins Point Dam on April 1 as often as every four years. Alternative 6 would implement a bimodal pulse (release) in March and May. Based on the Corps modeling, the Gavins Point releases during the March release would be between 39-61,000 cfs. Gavins Point releases during the May release would range from 50-67,000 cfs. These excessive flows would increase safety risks for crews, forcing towing companies to decrease tow sizes, travel only during daylight hours or completely stop. These safety actions would vastly increase costs to the nations transportation system.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 168 **Comment Id:** 645160 **Coder Name:** jgutierrez

Comment Text: Perhaps the most interesting component of the DEIS conclusions on the impacts of Alternative 2 on Missouri River navigation is that these conclusions are contradictory. The passage above from section 3.15.2.5 states that the impacts of Alternative 2 would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible. However, Section 3.15.2.11-Cumulative Impacts-Missouri River Navigation concludes that navigation could experience adverse impacts from low-summer flows. This section of the DEIS states the following: Adverse impacts could result in the reduction of the navigation season length for years with the low summer flow, and the potential reduction in service level provided that could occur in the years with the spawning cue pulse. When combined with other past, present and reasonably foreseeable future actions, the cumulative impacts on navigation associated with Alternative 2 would result in a large reduction in navigation benefits. The majority of the relatively large, long-term adverse impacts would be caused by the low summer flow which would shorten the navigation season and prohibit navigation during the important months of the year. While shippers may be able to plan around the low summer flow period, the reliability of the of the Missouri River would be reduced and shippers would begin to transition to other modes of transportation. Over time as more shippers switch to other modes, the overall navigation benefits on the Missouri River would be largely reduced.: The conclusions in the DEIS on the cumulative impacts of Alternative 2 on Missouri River navigation are severe and not one bit negligible contrary to the earlier conclusions in Section 3.15.2.5 on the impacts of Alternative 2 on Missouri River navigation. Why does the DEIS include contradictory conclusions regarding the impacts of Alternative 2 on Missouri River navigation? Why are these contradictory conclusions not explained in the DEIS? The potential negative impacts of Alternatives 4, 5 and 6 on Missouri River navigation are grave.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645159 **Coder Name:** jgutierrez

Comment Text: It is highly likely that the decreasing releases from the Gavins Point Dam in Alternative 2 during the summer months would drop flows below the Construction Reference Plane levels and halt navigation. Navigation would once again become unreliable and the users of the commercial navigation system would suffer severe negative economic consequences. The DEIS Section 3.15-Navigation concludes the following regarding Alternative 2: Although split navigation seasons would adversely affect navigation NED [National Economic Development], RED [Regional Economic Development], and OSE [Other Social Effects] under Alternative 2, the impacts would not be significant because the NED decreases in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas. This contradictory and flawed conclusion demonstrates a fundamental ignorance of Missouri River navigation and the navigation industry. To thrive all businesses require regulatory certainty, for the towing industry that includes reliable flows.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645158 **Coder Name:** jgutierrez

Comment Text: The DEIS states the following regarding the one-time spawning cue test: The one-time spawning cue test (level 2) release that might be implemented under Alternatives 3,4, and 5 was not included in the hydrological modeling for these alternatives because of the uncertainty of the hydrological conditions that would be present if implemented. Hydrologic modeling for Alternative 6 simulates reoccurring implementation (level 3) of this spawning cue over a wide range of hydrological conditions in the period of record. Therefore, the impacts from the potential implementation of a one-time spawning cue test would be bound by the range of impacts described for individual releases under Alternative 6. If a one-time flow test is eventually implemented in the future, this federal action must undergo comprehensive economic and hydrological modeling to assess its impacts on Congressionally-authorized purposes of the system, especially the primary purposes, navigation and flood control. The modeling for this release over the range of hydrological conditions for Alternative 6 is not sufficient to address future hydrological conditions, weather patterns and the possible impacts of climate change.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645039 **Coder Name:** jgutierrez

Comment Text: As previously mentioned, the "navigable portion of the mainstem of the Missouri River stretches 735 miles, from Sioux City, IA at the northern reach to St. Louis, Missouri, in the south,"¹⁷² or about 31 % of the total length of the river. ¹⁷³ Due to the relatively large portion of the river that is used for navigation, it is reasonable to assume that mechanical habitat construction, such as early life stage pallid sturgeon habitat and ESH, may affect navigation in some form. However, the Corps simultaneously argues that there are no impacts from mechanical habitat construction in any of the 6 alternatives, but that if ESH were to impact navigation, the ESH would be deconstructed. The MRRMP-EIS describes the relationship between early life stage pallid sturgeon habitat and navigation, writing in each alternative's section as follows: Generally, these actions involve physical manipulation of the river bed, bank, and/or channel structures. Despite the potential to affect channel structures, these actions are assessed as not likely to impact navigation because each project will be designed to not impact other authorized purposes including navigation. Prior to any site-specific construction project, monitoring will be conducted to detect any issues such as shoaling in the navigation channel. If issues are detected then adjustments will be made to restore the authorized 9 foot deep by 300-foot wide navigation channel. ¹⁷⁴ As a result, navigation is given priority over ESH construction because the design of the habitat itself is supposed to prevent any impacts to navigation. But the Corps states that if effects to navigation do occur, then the habitat construction would be undone to return to the original use of the channel. This is significant because it means that potentially far less early life stage habitat could be created than each of the alternatives suggest, and that pallid sturgeon goals may not be met. The discussion of mechanical habitat construction in the navigation section also highlights the effects of ESH on the navigation industry. As it did with the early life stage habitat, the Corps claims that ESH will not have an impact on navigation. More specifically, the Corps claims that each alternative's ESH construction "would not occur in the navigable portion of the river so no impacts to navigation would occur."¹⁷⁵ It is unclear how this would be implemented because the USFWS has outlined a goal of 80 acres of ESH per river mile below Gavins Point Dam, all of which is within the navigable portion of the river. ¹⁷⁶ It is unlikely that there would be no ESH construction within that portion of the river given the species goals. But even if the constructed habitat would have some incidental impact on navigation, the Corps should not abandon this management action because it is essential to meet species goals.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645038 **Coder Name:** jgutierrez

Comment Text: Alternative 5: First: "Alternative 5 would have a relatively small adverse impact on navigation benefits compared to Alternative I because it could reduce the annual NED by \$0.006 million, approximately 1 percent of annual NED benefits." ¹⁶⁸ Last:

"Impacts to navigation under Alternative 5 are not anticipated to be significant because the overall impact is expected to be relatively small."169 Alternative 5 is also cast in a negative light by first introducing it as having adverse impacts to the navigation industry, then concluding that those same impacts would not be significant. It reinforces the positive impacts outlined in Alternative 3 even though they are still small. Alternative 6: First: "Modeling indicates a relatively large adverse impact would occur to navigation under Alternative 6 by reducing annual NED by \$0.042 million, approximately six percent of annual NED benefits."170 Last: "Although the spawning cue releases would shorten navigation seasons and adversely affect navigation NED, RED, and OSE under Alternative 6, the impacts would not be significant because the NED decrease in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in non-attainment areas."171 Alternative 6 shows the largest impact on navigation, yet it is still ultimately considered to have no significant impact on navigation. The way that this is communicated effectively puts a negative bias on Alternative 6 because there is a large adverse impact in the first sentence. It is hard to believe that anything with a large impact would not be considered significant. Each of the alternatives begins their concluding paragraph with a sentence that says the alternative is negative for Alternatives 2, 4, 5, and 6 or positive for Alternative 3. Each Alternative's conclusion then ends with a sentence saying that those impacts are not significant. However, it is hard to believe that this conflicting information is accurate because each adverse impact is either slightly adverse, adverse, or largely adverse. In addition, the fact that Alternative 3 is the only alternative with positive impacts shows the bias towards that alternative, furthering demonstrating an unreasonable range of alternatives.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645037 **Coder Name:** jgutierrez

Comment Text: Alternative 3: First: "In comparison to Alternative 1, Alternative 3 would have a slightly beneficial impact on navigation compared to Alternative 1 because it could improve the annual NED by \$0.002 million and increase average annual jobs of 3 and \$33 K in labor income although there would be negligible impacts to regional economic conditions."164 Last: "Overall, Alternative 3 would not have significant impacts to navigation because the analysis indicates a slight relative benefit would occur in comparison to Alternative 1."165 Just as with Alternative 2, the two sentences above convey conflicting meanings. The first sentence gives the impression that Alternative 3 is beneficial for navigation, whereas the last sentence reveals that the impacts of Alternative 3 on navigation are not significant. These messages are conflicting and show a bias favoring Alternative 3. Alternative 4: First: "In comparison to Alternative 1, Alternative 4 would have an adverse impact on navigation benefits by decreasing the annual NED by \$0.045 million, approximately six percent of annual NED benefits."166 Last: "Although the spring releases would shorten navigation seasons and adversely affect navigation NED, RED, and OSE under Alternative 4, the impacts would not be significant because the NED decrease in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality

impacts for nitrogen oxide would not occur in non-attainment areas." 167 These sentences are almost the same as those written for Alternative 2. Thus, they exaggerate the adverse impacts of this alternative. This makes Alternative 3 look like the best choice among the alternatives for the navigation industry.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645036 **Coder Name:** jgutierrez

Comment Text: 3. The navigation analysis is improperly designed to favor the selection of Alternative 3. The MRRMP-EIS shows conflicting results among the alternatives as they pertain to navigation impacts. Each conclusion is summarized in Table 6 but explained in more detail here. The Corps first concludes that "impacts to navigation under Alternative 1 are not anticipated to be significant."161 Therefore, the conclusions within the other alternatives are basically the same as what they would be if they had not been compared to Alternative I. Each alternative after Alternative I has conflicting claims between the first and last sentences of their concluding paragraphs. The first and last sentences of each concluding paragraph are outlined below for each alternative: Alternative 2: First: "In comparison to Alternative 1, Alternative 2 would have an adverse impact to navigation by reducing NED by \$0.028 million annually, approximately four percent of annual NED benefits, due to the low summer flow navigation season."162 Last: "Although split navigation seasons would adversely affect navigation NED, RED, and OSE under Alternative 2, the impacts would not be significant because the NED decrease in magnitude and percentage change is small; RED impacts would be negligible in the regional context; and air quality impacts for nitrogen oxide would not occur in nonattainment areas." 163 These two sentences are confusing and conflicting because the first sentence states that there would be an adverse impact to navigation, but the last sentence states that those impacts are not significant. This inconsistent and confusing language puts a focus on the fact that the small impacts from Alternative 2 are adverse and creates a negative bias in how Alternative 2 is understood even if the impacts are not significant.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644965 **Coder Name:** jgutierrez

Comment Text: Like the discussion of Alternative 4, the discussion of Alternative 5 shows differing results in the navigation and sand and gravel sections. Table 6 shows a 0.5% difference in NED between Alternative 5 and Alternative 1, then considers it a negligible impact for sand and gravel dredging. However, as shown in Table 7, "Alternative 5 would have a relatively small adverse impact on navigation benefits compared to Alternative 1 because it could reduce the annual NED by \$0.006 million, approximately 1

percent of annual NED benefits."159 While these percentage differences are not as significant as some of the other alternatives, they show conflicting results (negligible impact versus a small adverse impact). For the last alternative, Alternative 6, there is also a discrepancy between the two NED values found in each section. The sand and gravel industry section shows a negligible 0.4% difference in the NED between Alternative 6 and Alternative 1, as indicated in Table 6. Table 7 below, summarizing the navigation section, shows that "a relatively large adverse impact would occur to navigation under Alternative 6 by reducing annual NED by \$0.042 million, approximately six percent of annual NED benefits."160 Once again, the two sections reach contradictory conclusions despite the similarity of the activities. Table 8 below compares the percentage difference in NED for each alternative relative to No Action for each industry. [Table 8: Alternative NED Values Compared to No Action for Navigation and Sand and Gravel Dredging]

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644964 **Coder Name:** jgutierrez

Comment Text: Regarding Alternative 3, Table 6 shows that the NED difference for the sand and gravel industry differs from Alternative 1 by 0.1 %. Table 7 below, which outlines the impacts of each alternative on navigation compared to Alternative 1, shows a difference of \$0.002 million in NED from Alternative 1, a difference of 0.28%. While the percentage values for Alternative 3 in Tables 6 and 7 are similar (0.1 % difference on Table 6 compared to 0.28%, on Table 7), the results are presented in conflicting manners. According to the section on sand and gravel dredging, "any NED impacts to the commercial sand and gravel dredging industry under Alternative 3 would be negligible due to the measurable but very small percentage change from Alternative 1."155 However, the navigation section states that "Alternative 3 would have a slightly beneficial impact on navigation compared to Alternative 1,"156 even though the values differ by less than two-tenths of a percent. How can there be a negligible impact on one industry (sand and gravel dredging) but a benefit impact to the other industry (navigation) where the two are extremely similar? [Table 7: Impacts to Navigation Relative to No Action] The same factors are at work in the comparison of Alternatives 4 through 6 in the navigation and sand and gravel sections. The discussion of Alternative 4 in the two sections is like that of Alternative 2. In Table 6, sand and gravel dredging shows a -0.2% "negligible" difference between Alternative 4 and Alternative 1, while in Table 7, navigation shows an "adverse" difference of approximately 6%, "decreasing the annual NED by \$0.045 million. 157 The navigation section further contradicts the sand and gravel section by stating that "relatively large adverse effects to commercial sand dredging from shortened navigation seasons would occur in some years." 158 Again, it is important to note that "commercial sand dredging" differs from commercial navigation, which does not include the sand and gravel industry's barge traffic.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644963 **Coder Name:** jgutierrez

Comment Text: Both the navigation and sand and gravel dredging sections of the MRRMP-EIS include a breakdown of how each alternative would impact the industries relative to the No Action Alternative. The conclusions reached for each of the alternatives in each of the industries are confusing and self-contradictory, rendering the analysis virtually useless. Below, Tables 6 and 7 show the impacts of each alternative on the navigation and sand and gravel dredging industries. Table 6 clearly shows that there are no significant impacts to the sand and gravel dredging industry from any of the alternatives. The only quantifiable difference between the analyses of each of the alternatives can be found in their National Economic Development (NED) values. Each alternative is less than 1 % different from the No Action Alternative, which itself allegedly has negligible impacts on sand and gravel dredging. [Table 6: Impacts to Sand and Gravel Dredging Relative to No Action] However, when the section on sand and gravel dredging impacts is compared to the section on navigation impacts, there are many contradictions. The types of commodities that travel along the Missouri River are broken "into four broad categories . . . commercial sand and gravel, waterway improvement materials, other commercial cargo, and oversized goods."150 Of these four categories, "since 2000, sand and gravel has represented greater than 85 percent of the commodities shipped on the Missouri River."151 However, there is a difference between "commercial sand and gravel" and "other commercial cargo" navigation on the river. The sand and gravel navigation was already considered in its own section, so it should be excluded from the analysis in the navigation section. Since the MRRMP-EIS treats the majority of navigation on the Missouri River as sand and gravel dredging, one would think that the navigation sections of the MRRMP-EIS would reach a conclusion similar to that reached in the sections on sand and gravel dredging - that the impact is negligible. Under the sand and gravel dredging section, a NED value was calculated "based on impacts related to transportation of material" where one of the values was "navigation transportation savings."152 Under the navigation portion, a NED value was also "calculated by subtracting the change in non-routine repair, replacement, and rehabilitation (R, R, & R) costs from the transportation savings."153 By using the same metrics to calculate each of the NED values, both industries should show a substantially similar impact among the alternatives. While the No Action Alternative seems to have similar results for both navigation sand and gravel dredging, the other alternatives have conflicting NED values. Table 6 above shows that the Corps has determined that the NED effects for Alternative 2 when compared to No Action are negligible with only a 0.5% difference. However, the analysis of NED effects found in the navigation section reaches a different conclusion about sand and gravel dredging: Alternative 2 would have an adverse impact to navigation by reducing NED by \$0.028 million annually, approximately four percent of annual NED benefits, due to the low summer flow reducing navigation season. There would be relatively large adverse effects to commercial sand dredging jobs and income in years with low summer flows, but negligible impacts to regional economic conditions. 154 The difference between the two NED analyses on the impacts of Alternative 2 to the two industries is unexplained because the same factors were used to calculate both and a clear majority of materials currently transported on the Missouri River is performed by the sand and gravel industry (typically transporting its products fewer than ten miles each trip).

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644962 **Coder Name:** jgutierrez

Comment Text: 1. The importance of sand and gravel dredging is overstated because it is not an authorized use of the Missouri River. The primary use of dredged sand and gravel is for the "construction industry, including road and highway construction," and "the Missouri Department of Transportation is one of the largest customers of sand from the Missouri River."¹⁴¹ Dredging operations are centered around the sand and gravel companies' on-shore processing plants, typically taking place no more than 7- 10 miles upstream and no more than 3- 9 miles downstream from a plant. ¹⁴² The average production volume of sand and gravel dredged from the Missouri River between the years 2010 and 2015 was 3,763,577 tons. ¹⁴³ Figure 1 below shows that in recent years, sand and gravel barge traffic volume has fallen below the five million ton goal for navigation on the Missouri River, even when combined with commercial navigation. In addition, it shows a large difference between commercial navigation and sand and gravel dredging. This difference shows that actual commercial navigation on the river is negligible in comparison to sand and gravel dredging, and that the navigation statistics reported in the MRRMP-EIS rely mostly on sand and gravel barge traffic: ¹⁴⁴ [Traffic graphic] The sand and gravel dredging industry is regulated through permits, and "every five years the dredgers must reapply for Department of the Army permits."¹⁴⁵ In 2003 and 2004, the Corps "received 10 applications from commercial sand and gravel companies for permits to extract sand and gravel from the [Lower Missouri River]. In August 2007, the USACE Kansas City District authorized four applicants to continue existing dredging operations."¹⁴⁶ Thus the Missouri River dredging industry is relatively small. But despite its size, the industry manages to be quite environmentally destructive: "the reaches of the river most degraded- Kansas City, Jefferson City, and St. Charles- were found to coincide with areas where commercial sand and gravel dredging was the greatest."¹⁴⁷ The dredging industry may even have its own adverse impact on the species because "dredging and associated river bed degradation could be contributing to impacts on habitats of federally listed threatened or endangered species."¹⁴⁸ When discussing the impacts that the ESH construction of Alternative 2 would have on the sand and gravel dredging, the Corps erroneously states "each project will be designed to not impact other authorized purposes including sand and gravel dredging as described in Section 2.5.3.1."¹⁴⁹ But even if the impacts were stated consistently throughout the MRRMP-EIS, sand and gravel dredging is not a congressionally authorized use of the Missouri River and should afford no special protection in the development of alternatives. Therefore, the sand and gravel dredging industry should not be given undue consideration in the MRRMP-EIS. If anything, reducing dredging activity would seem to accrue benefits to species protection.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644961 **Coder Name:** jgutierrez

Comment Text: D. The MRRMP-EIS Overstates Impacts to Navigation and Sand and Gravel Dredging. The Corps "operates the System to serve eight congressionally authorized project purposes of flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife." 138 The Missouri River is also used for sand and gravel dredging, which is not statutorily authorized. Since navigation is one of the System's eight authorized purposes, 139 an analysis of the Alternatives' impacts on navigation is a permissible consideration. However, the Corps overstates those impacts where it analyzes sand and gravel dredging under the topic of navigation as well as under its own category, particularly since the conclusions of the MRRMP-EIS in the section on sand and gravel dredging conflict with the conclusions in the navigation section. Navigation impacts are also overstated due to the low volume of actual commercial navigation on the Missouri River. Figure 1 below, which is provided in the MRRMP-EIS, shows that the commercial barge traffic volume on the Missouri River falls far below the navigation target of five million tons of commercial barge traffic. 140 In addition, the scale and weight of navigation and sand and gravel dredging are misleadingly inconsistent. Furthermore, the Corps overstates impacts to the sand and gravel dredging industry because it is not a congressionally authorized use of the river.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644805 **Coder Name:** jgutierrez

Comment Text: Navigation confidence suffers with every flow release alternative. Alternative 3 provides the least risks to the majority of the authorized purposes, especially navigation.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644771 **Coder Name:** jgutierrez

Comment Text: "Alternative 2 would also implement two bi-modal spring releases from Gavins Point. Both spring pulses would negatively impact navigation for roughly four weeks.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644770 **Coder Name:** jgutierrez

Comment Text: "Alternatives 4 and 5 create problems for navigation by doubling the releases from Gavins Point for a period of 35 days. These excessive flows would increase safety risks for crews, forcing towing companies to decrease tow sizes, travel only during daylight hours or completely stop. These safety actions would vastly increase costs to the nations transportation system.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644769 **Coder Name:** jgutierrez

Comment Text: "It is highly likely that the decreasing releases from the Gavins Point Dam in Alternative 2 during the summer months would drop flows below the Construction Reference Plane levels and halt navigation. Navigation would once again become unreliable and the users of the commercial navigation system would suffer severe negative economic consequences.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644760 **Coder Name:** jgutierrez

Comment Text: "The DEIS analysis on Other Social Effects (OSE) of the various Alternatives impacts on navigation is incomplete and inadequate. Economic costs, human impacts and social consequences of these alternatives are severely understated. The navigation analysis for OSE in the DEIS considers only changes in air quality, ignoring the increased fatalities, or congestion derived if products move via truck and/or rail. It also fails to account for revenue diversions from other federal and state budgets to repair roads and bridges along with increased expenditures for concrete and asphalt. The OSE fails to account for lost time and productivity due to the increased amount of time spent in traffic due to modal shifts caused by these alternatives. By failing to include these other social effects and costs, the DEIS analysis grossly understates impacts.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644759 **Coder Name:** jgutierrez

Comment Text: "The ISETR panel does not have the technical expertise to tackle the impacts and outcomes of the human consideration navigation model and its effects on transportation costs, rail loads, infrastructure impacts, and water-compelled rates. The review team that conducts the comprehensive Independent Peer Review of the Corps DEIS to ensure its validity must include individuals that have a firm and comprehensive understanding of the navigation economic model.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644757 **Coder Name:** jgutierrez

Comment Text: "The conclusion illustrated in Table 3-173 also falsely assumes that navigation on the Missouri River ceases when the navigation season (more accurately defined as flow support) officially ends. This is not the case, as navigation continues on the river after the end of the navigation season, provided a reliable channel exists and weather conditions permit. In fact, several barge companies were operating on the Missouri River in February of 2017 due to favorable weather and reliable flows. Once again, this false assumption results in understated impacts of Alternative 5 on navigation as well as understated total economic benefits of Missouri River navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644756 **Coder Name:** jgutierrez

Comment Text: "Table 3-173 shows that for Alternative 5, years with full or partial releases do not have an impact on navigation benefits since the releases would be in autumn when the navigation season is almost complete. This false assumption does not account for the harvest season and the increased export market in autumn on both the Missouri and Mississippi Rivers. The result is inaccurate and understated impacts of Alternative 5 on navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644755 **Coder Name:** jgutierrez

Comment Text: "In several sections of the DEIS, the Corps models include faulty assumptions and omit critical data that cause the output results to be misleading and inaccurate. For example, the modeling does not account for the impacts of navigation transportation costs and agricultural profitability. Low summer flows and flood events worsened by unreliable releases at Gavins Point can have serious negative impacts on transportation. Since these interconnected economic impacts are not addressed in the DEIS, the overall economic impacts of the management actions for all alternatives are substantially understated.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644754 **Coder Name:** jgutierrez

Comment Text: "Economic modeling used in the DEIS consistently relies on old, outdated and inaccurate information to calculate impacts. One example is a twenty-year-old study used to estimate the impacts in the National Economic Development (NED) account for navigation. The towing industry was not consulted to obtain feedback on how to calculate transportation savings in its NED analysis. Further, the Regional Economic Development (RED) evaluation also appears to be insufficient and lacking in data from the tugboat, towboat and barge industry.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644735 **Coder Name:** jgutierrez

Comment Text: WCI opposes the massive spring and fall releases and bi-modal pulses in Alternatives 2, 3, 4, 5, and 6. The releases in these Alternatives have severe negative impacts on both flood control and commercial navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642687 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.15.2.6, p. 3-404 "Similar H&H profiles for Alternative 3 and Alternative 5 means the tonnage estimated to move off the water is the same for both alternatives, so the OSE results summarized in Table 3-168 are the same for both alternatives." **Comment:** It is not clear how Alternatives 3 and 5 have similar hydrologic and hydraulic (H&H) profiles.

Alternative 3 includes no flow management actions, while Alternative 5 includes a fall ESH-creating pulse from Gavins Point Dam that could last between 35 days (at 60,000 cfs) and 175 days (at 45,000 cfs). This comment also pertains to a similar statement made in Section 3.15.2.8 on page 3-411.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642681 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.15.2.4, p. 3-395 Comment: In this section and following for other alternatives, the benefits associated with the value of commercial sand and gravel is discussed. Sand and gravel dredging has its own section, Section 3.11, so by including it in navigation, is it not being double counted?

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642139 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 195 **Comment Id:** 642103 **Coder Name:** jgutierrez

Comment Text: In addition, a repeated or extended disruption of flow on the Missouri River will force utilities to seek new terminals for western coal. Increase their shipping costs for such coal, reduce power generation on the river, and increase costs for utilities and their rate payers.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 195 **Comment Id:** 642102 **Coder Name:** jgutierrez

Comment Text: The MLDDA is opposed to the low summer flows and spring pulses in the default plan in the 2003 Amended Biological Opinion and the vestiges of this plan in Alternative 2-U.S. Fish and Wildlife Service 2003 Biological Opinion Projected Actions in the MRRMP DEIS. Another plan with low summer flows could serve to once again eliminate barge transportation on the Missouri River. A channel of appropriate depth must be maintained for reliable barge transportation, and such a channel can be permanently damaged by siltation and reduced scouring action due to a prolonged loss of adequate flow. As a result, alternative shipping costs would increase and the net price to farmers would decrease. Farmers would also pay higher prices for agricultural inputs as a result of the loss of water compelled rates (reduced competition) for long haul truck and rail transportation. The loss of barge transportation would serve to escalate transportation costs to a far greater extent than that represented by the increased demand placed on other modes of transportation by the tonnage that would have been carried by barge.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641388 **Coder Name:** jgutierrez

Comment Text: Conversely, summer low flow provisions in Alternative 2 would cause extreme harm to the Missouri River's navigation industry; one that's been on the rise due to increased water supply and reliability. The Missouri River can contribute over 70 percent to the flow of the middle Mississippi River during times of drought. The harmful effects of low summer flow to our nation's economy must be taken into consideration and the Corps should remove this proposed flow option. Navigation is critical to moving harvested crops to market and inputs up river. With increased supplies of corn we must have every transportation option available. Waterways continue to be the most efficient and environmentally friendly mode of moving grain to market. Missouri River management should support those goals.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637632 **Coder Name:** jgutierrez

Comment Text: Conversely, summer low provisions in Alternative 2 would cause extreme harm to the Missouri River's navigation industry; one that's been on the rise due to increased water supply and reliability.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 95 **Comment Id:** 636834 **Coder Name:** jgutierrez

Comment Text: I am not a scientist, Im an Agribusiness manager, so when I start working my way through the 66 pages of the Navigation Environmental Consequences Analysis Technical Report, I was only on page six before I realized that I may be only the second person to have ventured that far in a straight read through. Otherwise, how would you get sentences like this one that is pulled directly from page six. Please note I have made no changes to punctuation or capitalization. While this it cannot list the assumptions used to generate the transportation savings function These transportation savings functions represent the transportation rate saving For additional material discussion on assumptions please review this document. I then glanced to the bottom of the page and note that every single one of the 66 pages of the Navigation Environmental Consequences Analysis Technical Report is titled Irrigation Environmental Consequences Analysis Technical Report.

Organization: AGRIServices of Brunswick

Commenter: Lucy A Fletcher **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633922 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633866 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down

the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633849 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633836 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted particularly with respect to sills. I don't want the Corps to go down the same road of failed shallow water habitat chutes that now need modification. Additionally, there have been no studies to determine if larval pallid sturgeon can survive in such areas. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633823 **Coder Name:** jgutierrez

Comment Text: I'm also concerned about the Corps construction of 12 interception rearing complexes (IRCs) for the pallid sturgeon in six years as called for in the DEIS, in which the impacts to navigation haven't been vetted. I don't want the Corps to go down the same road of failed shallow water habitat chutes. Under adaptive management, the Corps should build one IRC and study its effects before committing to building more.

Organization:

Commenter: Unaffiliated Individual Page: Paragraph:

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631570 **Coder Name:** jgutierrez

Comment Text: We too are concerned with low summer flow provisions in Alternative 2. It would cause harm to our navigation industry, as Tom said, creating a split season on the Missouri River and adversely affecting navigation flows on the middle Mississippi River.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 628004 **Coder Name:** jgutierrez

Comment Text: Low summer flow provisions in alternative 2 will cause irreparable harm to the navigation industry by creating a split navigation season on the Missouri River, virtually killing navigation on the river.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 83 **Comment Id:** 627430 **Coder Name:** jgutierrez

Comment Text: The Missouri River has been a staple in the past and more important than ever in moving large quantities of corn, soybeans, agriculture fertilizer, rock and gravel, sand, cement, fabricated steel, and large industrial equipment and machinery. Military equipment from National Guard facilities throughout the State of Missouri could also be moved by barge. This mode of transportation is by far the most cost effective and efficient method of moving these products long distances. It is imperative the USACE reconsider the impact of the proposed plan and amend it so as to make real economic growth possible by having a minimum navigable draft level of nine feet for at least eight months, preferably nine months of each year. This is very important. Relationships have been developed with both foreign and domestic business alliances. The newly widened Panama Canal offers us business opportunities we have never been able to pursue until now. Customers are wanting to buy products from our region of the country. We must be able to ship these large quantities cost effectively and in a timely manner. Barge transportation is the only viable solution to this new demand.

Organization: Callaway County

Commenter: Gary Jungermann **Page:** **Paragraph:**

Kept Private: No

EC1600 Environmental Consequences: Recreation (Substantive)

Correspondence Id: 76 **Comment Id:** 633560 **Coder Name:** jgutierrez

Comment Text: Fourth, the economic analysis provided comparing the alternatives is deficient. It contains no commercial fishing data. This data would have been used to offset agricultural costs in replacing no crops with an agriculture equivalent. Regrettably, as fishing stocks have declined and crashed since the closing of the BSNP, the six lower states have made commercial catfishing illegal. Commercial fishermen have declined in number and their self-reported catches is smaller each year.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645796 **Coder Name:** jgutierrez

Comment Text: Since the closure of Garrison Dam over 60 years ago, over 570,000 acre-feet of sediment have been deposited in the upper portions of Lake Sakakawea (USACE 2014). Simply dewatering this depositional zone would not undo decades of sedimentation and restore a naturally functioning river. Aside from the questionable benefits to larval pallid sturgeon, significant drawdown of Lake Sakakawea would have devastating consequences to the fishery, recreation and local economies. Sixty years of fisheries research by NDGFD has confirmed that maintaining an adequate water level (absolute minimum of 1825 msl) and having a rising pool during the spring spawning and egg incubation period are critical for maintaining the number one most used fishery in North Dakota - Lake Sakakawea.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645786 **Coder Name:** jgutierrez

Comment Text: 2. South Dakota and Nebraska jointly manage the paddlefish population below Gavins Point Dam. A paddlefish snagging season is conducted during the month of October each year. Restrictions on areas where boats can fish are in place if water is flowing over the dam spillway. Initiating increased flows on October 17th will affect the area of river below the dam open to

paddlefish snaggers, reducing opportunity and potentially paddlefish harvest. 3. High reservoir releases will likely have similar impacts as the spring release on the Lewis and Clark Lake walleye population. By late fall, abundance of young walleye is highest in the downstream section of the lake, and fall releases of 60,000 cfs would likely result in entrainment of a large percentage of these newly hatched walleye. The actual effect of such a release is hard to estimate because a fall pulse of that magnitude is rarely seen in natural systems, and current reservoir management prescribes for much lower releases in the fall. Although the impact of a fall release would likely be lower than of the spring alternative due to increased size of young walleye, both alternatives would result in decreased walleye abundance in Lewis and Clark Lake.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645567 **Coder Name:** jgutierrez

Comment Text: In the lower river as stated in the AMP (AMP 2-page 489), increased channel complexity around ESH and IRC projects are likely to increase habitat values and sportfish production. These could provide substantial economic impacts by increasing recreational opportunities. We ask that more research be done on lower river recreation and its impact. We also ask for more details in the final EIS on what the increase to local and regional economies will be from the recreation industry as a direct result of recovery habitat projects.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645507 **Coder Name:** jgutierrez

Comment Text: The DEIS (V2-page 244) fails to account for the positive effects of increased recreation and outdoor spending in the Other Social Effects section of Alternative 2. Ignoring economic gains that would come from increases in ecosystem function and floodplain connectivity paints an incomplete picture of Alternative 2's overall economic benefits.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645289 **Coder Name:** jgutierrez

Comment Text: The Corps' economic analysis is incomplete because RED analysis was not conducted for Lake Sharpe, inter-reservoir reaches, and lower Missouri River reaches. The Corps cannot make statements on the impacts to RED without including the omitted reaches. NEPA requires the Corps to conduct a more robust analysis in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645288 **Coder Name:** jgutierrez

Comment Text: For Alternatives 2 through 6, the summary of NED data from the tables does not reflect the description. The numbers are off by a factor of 1,000. For example, Table 3-200 states the lower river NED benefits are \$603 million, but the description depicts it as \$600,000. The Corps needs to correct this error in the Final EIS.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645287 **Coder Name:** jgutierrez

Comment Text: The Corps has greatly underestimated recreation on the lower Missouri River. The data used in the DRAFT EIS is from 2005 whereas public participation has dramatically increased since that time. For example, the Hartsburg Pumpkin Festival, Katy Trail Bike Ride, Missouri River 340, and Race to the Dome are just a few of many recreation activities that occur in the lower Missouri River but are not quantified or considered in the analysis. Furthermore, the Corps used the antiquated Unit Day Value approach to evaluate recreation. Unit day value method is an old method used to evaluate recreation. The significant shortcomings of this method are widely understood and well documented in several studies (Ready and Navrud, 2005, Lindsey et al, 2004). Using an approach with such limitations only results in biased data. A contemporary model like hedonic pricing would serve better in estimating recreational impacts. For the Final EIS, the Corps needs to more adequately assess lower basin recreation with a more contemporary economic model.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645284 **Coder Name:** jgutierrez

Comment Text: Another flaw in the Corps' analysis is that Regional Economic Development (RED) impacts were not evaluated in all the river reaches and were deemed negligible, which in turn renders the National Economic Development (NED) valuation incomplete.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645218 **Coder Name:** jgutierrez

Comment Text: Improvement of the recreational potential of the mainstem river. Recreation is an Authorized Use but the Corps limits recreation almost entirely to recreation on the reservoirs. The Corps does little, to nothing, to facilitate recreation on the river downstream of Gavins Point - using the not their responsibility/authorization as justification. This seems to be an absconding of due diligence of their responsibilities as caretakers of the management of the system. Opportunities for fishing, boating, nature seekers, and just about any recreational pursuit are impacted by 1) lack of accessibility to the river from the banks because of the conversion of the river into an unused navigation channel in the NE-IA reach; 2) a significantly dangerous velocity - as a past Director of IA DNR described the river a dangerous ditch! So while many other rivers in this country have recreational opportunities, the Missouri River has not nearly what it could have. The high speed of the current is not conducive to canoeing, kayaking, small motor fishing boats, rafting or swimming. With steep banks and no shallow water, there can be little fishing from the shore, no camping along the shore, nor picnics or shoreline lunches. Even hiking or equestrian trails dont exist. However there are numerous recreational vehicle established camp grounds all along the river. They are situated there because people are drawn to rivers, and this will increase as population increases. Sadly, the Corps did not consider these settlements in their Human Considerations for Recreation.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645150 **Coder Name:** jgutierrez

Comment Text: Recreation Technical Report Comments The unit day value (UDV) method was used to evaluate National Economic Development (NED) impacts of the alternatives on recreation in the Missouri River basin. This method relied on the opinions of the project managers for assigning points that ultimately determine the unit day value for each reservoir/reach. Additionally, under this method, boating is included in the general recreation category which has a lower range of unit day values than the general fishing category. This is not appropriate for the upper 5 reservoirs, since the majority of boaters are engaging in fishing activity. This highly subjective valuation method may be fine for simply comparing impacts of the different alternatives, but not for weighing impacts

between interest groups. We ask that the USAGE utilize the Regional Economic Development (RED) RECON valuation method that is based on expense/revenue data for estimation of economic impact when comparing benefit/loss across multiple interest categories.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645143 **Coder Name:** jgutierrez

Comment Text: Spring Flows to Create Emergent Sandbar Habitat (Alternative 4) If System storage is at 42 million acre feet (MAF) or greater on April 1, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow limits are not exceeded, ESH creating flows would be implemented on April 1 with a release of up to 60, 000 cfs out of Gavins Point Dam, and as often as every 4 years. 1. Sandbar habitat-creating flows have the potential to severely impact the sport fishery of Lewis and Clark Lake. While other Missouri River reservoir fisheries generally respond positively to above average water yield, the small relative size of Lewis and Clark Lake results in a low storage ratio and detrimental impacts caused by high flushing rates. Walleye population abundance in Lewis and Clark Lake is negatively correlated to total water yield through Gavins Point Dam. The most likely cause for this correlation is the flushing of newly-hatched walleye from the lake through Gavins Point Dam during average to above average water yield years. Increased flows in April and May would likely have detrimental impacts to the sportfish population through increased flushing of newly hatched walleye through the dam. 2. A correlation exists between the average annual elevation of Lake Oahe and the amount of angler use and was used in some of the modeling for the Recreation Technical Report. However, major flow events result in degraded fishery quality and angler use a few years after their occurrence, resulting in low angler use even at high reservoir elevations. Major flow events have the ability to flush the majority of pelagic prey (rainbow smelt and lake herring) and Chinook salmon through Oahe Dam. Even if reservoir elevations are sufficient to allow good access to the reservoir after major flow events, the lack of available food resources results in the loss of the larger walleye from the reservoir due to starvation. This occurred after large flow events in 1997 and 2011 and it took Lake Oahe over 5 years to recover each time. The Chinook salmon population in Lake Oahe was severely reduced by the 1997 and 2011 flow events, and as with the walleye fishery, has taken over 5 years to recover from each event. Timing of flow events, with regards to stratification of the water column in Lake Oahe and fish distribution within the water column, is a primary consideration when predicting impacts of high flows on the Lake Oahe recreational fishery. 3. Decreasing elevation of Lake Oahe and Francis Case during prey and game fish spawning periods (April - June) is a concern as stable-to-rising elevations are important to the success of prey fish and sportfish spawning events and egg incubation. With Lake Oahe being the lowest of the big-three storage reservoirs in the system, a spring release to create ESH will certainly remove the possibility of favorable conditions for spawning during the year of the flow implementation. Lake Francis Case is a much smaller reservoir than Oahe and the lowest source of available water for adjustments to releases from Gavins Point Dam. The need for an immediate source of water to support flow-related management actions could affect the elevation of Lake Francis Case during

walleye spawning, thereby reducing the stability and quality of the walleye fishery, which contributes significantly to the recreation industry in South Dakota.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644636 **Coder Name:** jgutierrez

Comment Text: Table 2-31 (Summary of the Alternatives Impacts), by National Elevation Dataset suggested recreation would experience a positive impact from Alternative 2 compared to the No Action Alternative, while Regional Economic Data analysis estimates that Alternative 2 will have a negative impact on recreation compared to the No Action Alternative (Alternative 1). Water depth alone may not be an accurate predictor of habitat availability, recreational use, and subsequent recreational economic impact. Aquatic wildlife pursued by recreational users will occupy habitats when water depth, velocity, and temperature - along with other factors - are aligned for the target species. Water velocity can be both a physical and behavioral barrier to habitat occupancy, while temperature will affect fish activity. More detail on the assumptions and analysis of recreation impacts for the proposed Alternatives would be helpful.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642846 **Coder Name:** jgutierrez

Comment Text: The Missouri River System Fisheries Management Plan identifies specific water management recommendations that are critical for maintaining a sustainable and productive fishery (Fryda et al. 2010). Select recommendations presented below would be at best vastly compromised or more likely never met under a significant Lake Sakakawea drawdown. The NDGFD, under no circumstance, could support such a Level 2 or above action in the MRRMP-AMP. Fishery Recommendations for Lake Sakakawea: 1. An absolute open-water minimum lake elevation of 1825 ft. msl for drought periods and 1832 ft. msl for all other years is recommended. Below these specified elevations, the following detrimental impacts occur to the fishery resource or affect its use: dramatic declines in reservoir productivity, a substantial loss of walleye and smelt spawning substrate (gravel/cobble) and coldwater habitat (for rainbow smelt and Chinook salmon); critically needed water becomes less available to the Garrison Dam National Fish Hatchery for production; and boat access/recreation use becomes limited. 2. Other than years in which severe drought or flood conditions prevail, a maximum lake elevation window of 1838 to 1846 ft. msl is requested in order to maintain flexibility in annual recommendations and to reduce impacts from wave erosion. 3. The spring water level rise must inundate good spawning substrate

(i.e. cobble and/or terrestrial vegetation) by April 20 and continue to rise during spawning-incubation (April-May). A target increase of two to three feet between April 20 and May 20 should occur during a filling cycle. Even during a drawdown cycle or during drought conditions, a rising lake elevation should be attempted during this critical time period. Fryda, D. and S. Gangl. 2016. Angler Use and Sportfishing Catch Survey on Lake Sakakawea, May 1 Through September 30, 2015. ND Game and Fish Dept. f-2R-61, Study 4, Number 1. Fryda, D., F. Ryckman, R. Kinzler and P. Bailey. 2014. Aquatic Investigations of the Missouri Mainstem in North Dakota. ND Game and Fish Dept., Div. Rpt. 90. 105 pp. Fryda, D., F. Ryckman, P. Bailey, R. Kinzler and S. Gangl. 2010. Fisheries Management Plan: Missouri River System (2010-2015) N.D. Game and Fish Department., Internal report. 94pp. Scarnecchia, D.L., L.F. Ryckman, B.J. Schmitz, S. Gangl, W. Wiedenheft, L.L. Leslie. 2008. Management Plan for the Paddlefish Stocks in the Yellowstone River, Upper Missouri River, and Lake Sakakawea USACE. 2014. Garrison Dam-Lake Sakakawea Headwaters Aggradation Evaluation of the Missouri River and Tributaries

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642843 **Coder Name:** jgutierrez

Comment Text: Data collected by NDGFD over the decades have shown conclusively that a rising pool level and the lake elevation are the two strongest environmental variables that correlate with annual production of all young of year fish (Fryda et al. 2014; Fryda et al. 2010,). Lake elevation is also critical for the maintenance of cold water fish habitat in Lake Sakakawea. Low lake elevations in past drought periods have caused reduction/elimination of cold water habitat, caused hypoxia in the hypolimnion, and devastated the chinook salmon and rainbow smelt populations. Additionally, the headwaters region of Lake Sakakawea that would be dewatered is a critical rearing area for juvenile paddlefish. The Yellowstone/Sakakawea stock of paddlefish is one of the most scientifically understood paddlefish populations in North America. Extensive research has shown good inflows combined with high lake levels are crucial for recruitment to this nationally important self-sustaining paddlefish population (Scarnecchia et al. 2008). Lake Sakakawea is typically the most heavily utilized fishery in North Dakota and annually accounts for over 30 percent of all fishing effort in the state. In 2015 alone, anglers expended over one million hours of angling effort on Lake Sakakawea (Fryda and Gangl 2016). Expenditures generated by these anglers are vitally important to the regional economy. Significant drawdown of Lake Sakakawea would have major impacts to these economies due to impacted fish populations and poor to non-existent access caused by low lake elevations.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642709 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.16.2.8, p. 3-453 Comment: The last paragraph on this page states the reservoirs could be up to 5 feet lower than under Alternative 1, impacts would be temporary, and they would typically dissipate within a year. Again, if the lower reservoir levels result in fish dying it will take years to recover. The impacts of a fish kill will not dissipate within a year.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642703 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.16.2.3, p. 3-434 Comment: The USACE should include the agreed upon moratorium of management actions for least tern and piping plovers within the Bismarck-Mandan (RM 1325- RM 1310) stretch, including human restriction measures agreed upon by the North Dakota Interagency ESH Team. This stretch of river supports high volumes of recreation. The attraction of piping plovers and least terns to the area by implementing management actions brings unnecessary human/bird conflicts. These conflicts would do more harm to public perception of tern and plover recovery than the benefits the management actions would bring.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642692 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.16, p. 3-421 - 3-463 Comment: ESH creation, whether it is through mechanical means or flows, will affect boat navigation on the Garrison Reach, which is heavily used during the open-water season for recreation. The latest creel survey by the NDGFD revealed that from April 1 to October 31, 2015 anglers expended over 355,000 hours of fishing effort on the Garrison Reach of the Missouri River.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640213 **Coder Name:** jgutierrez

Comment Text: North Dakota's Game and Fish Department (NDGFD) is fortunate to have long-term data for the various MRS fisheries within the state. Datasets for Sakakawea (60 years) and Oahe (49 years) have given fishery managers a very good understanding of what conditions are critical for sustaining healthy fish populations on these vitally important fisheries. Responsible water management has, and always will be, the most critical factor in maintaining these fisheries. The vast amounts of data collected over the last 60 years of sportfish management have pointed to two basic needs for our fisheries to flourish. First, reservoirs must maintain adequate water levels to provide quality habitat. Second, water levels must rise during the critical spring spawning and egg incubation period (Fryda et al. 2014, Fryda et al. 2010, Scarnecchia et al. 2008). Without these water conditions, the fisheries suffer greatly as they did during the drought of the early 2000s. Any alternatives in the MRRMP-EIS or actions identified in the AMP that increase the frequency of not meeting these basic water conditions are detrimental to the fishery, and are contrary to the management goals and responsibilities of NDGFD's Fisheries Management Division.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

EC1700 Environmental Consequences: Thermal Power (Substantive)

Correspondence Id: 118 **Comment Id:** 633750 **Coder Name:** jgutierrez

Comment Text: Additionally, KCP&L wants to reinforce its concerns regarding Alternative 2 and other alternatives. Alternative 2 currently proposes low summer flows under certain conditions. In the Draft Science and Adaptive Management Plan it outlines a low summer flow of 21,000 cubic feet per second (CFS) from Gavin's Point. Efficiency of power plant operations at KCP&L is threatened at that level of flow due to the shallow depth of water at the cooling water intakes. The plants would not be able to run at peak efficiency and would have to derate. This flow could also impact power production due to river temperature restrictions in plant operating permits. Low summer flow would mean the temperature of the lower Missouri River would more easily reach 90 degrees, limiting KCP&L's ability to produce power during high electrical usage times. Both of these scenarios impacts KCP&L's ability to interact in the Southwest Power Pool market and could mean higher costs of energy for our customers as well as increased maintenance costs.

Organization: KCP&L

Commenter: Paul M Ling **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 646288 **Coder Name:** JGUTIERREZ

Comment Text: 1) We support habitat enhancement studies which may potentially provide spawning and rearing habitat for pallid sturgeon, however the location of such habitats should be located to minimize impact to existing water intakes,

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 27 **Comment Id:** 645769 **Coder Name:** jgutierrez

Comment Text: It has the potential to negatively impact water and sewer treatment plants, as well as power plants, creating problems with intakes and increasing the risk of failure to comply with conditions of discharge permits.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 645764 **Coder Name:** jgutierrez

Comment Text: These low summer flows have the potential to negatively impact water and sewer treatment plants, as well as power plants, creating problems with intakes and increasing the risk of failure to comply with the conditions of discharge permits.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645610 **Coder Name:** jgutierrez

Comment Text: General Analysis: 1. Significant reductions in energy as a result of shutdowns of baseload thermal power plants caused by lower summer flow in Alternative 2 could lead to problems with system reliability. 2. The DEIS analyzes impacts from only a cost perspective, assuming offset energy is available. The Corps has not conducted the analysis needed to determine if this energy would be available from the market or if the transmission facilities could deliver the needed replacement energy. 3. The NED and RED analysis indicate significant financial impacts to thermal power generating facilities below Gavins Point from an energy and capacity perspective and are likely underestimated. 4. The DEIS analysis of impacts to thermal power does not seem to be representative of actions within the various management plan alternatives. This could be because of a small number of years analyzed from a temperature and operational perspective, inappropriate modeling assumptions or both.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645453 **Coder Name:** jgutierrez

Comment Text: The CPR is also very apprehensive of the impact that low summer flows would have on energy generation, water supply intakes and sewer treatment plants. We believe operational costs under a low summer flow regime are severely underestimated and should be reexamined. Further, we request the Corps to identify all potential regulatory burdens in advance of the implementation of any management plan action. In any instance in which the regulatory cost of compliance increases (i.e. modification of intakes), thorough input needs to be gathered from affected industry sectors to ensure that the impact to both utility companies and ratepayers alike remains minimal.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644394 **Coder Name:** jgutierrez

Comment Text: In Iowa, there are four coal fired power plants with a total capacity of approximately 2,800 megawatts located near the Missouri River. Some of these thermal generation units depend on the river for cooling water and ash handling. Without the needed stages and flows, these units do not have sufficient cooling capacity to operate, forcing the owners to generate power from more expensive units or purchase power at wholesale market rates. These plants provide year-round base load energy for Iowa industries, commercial businesses, and residential customers, and are critical to the economic well-being of the state of Iowa.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644393 **Coder Name:** jgutierrez

Comment Text: Under Alternative 3, higher river flows combined with reduced water temperatures will help provide an overall electricity generation increase compared to the No Action Alternative. These effects will provide the best mix of cost effective, reliable supply from both thermal as well as hydroelectric generation for Iowa ratepayers. Additionally, utility stakeholders who were contacted had no issues with the preferred alternative (Alternative 3).

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 644097 **Coder Name:** jgutierrez

Comment Text: Thermal power section does not address the environmental impacts of a gas turbine replacement alternative from an air and water emissions perspective if it is nuclear power being replaced.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644096 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] When comparing the reductions in full-service navigation levels as provided in the Navigation Environmental Consequences Analysis Technical Report (based on the 82 years of hydrology) shortened navigation seasons, the actual impacts to thermal power over the 82 years has the potential to be significant from a dollar impact perspective to the customers and regionally generation perspective.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644094 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] The RED impacts for Alternative 6 are likely without basis and reflective of the thermal power analysis that only considers incremental differences to Alternative 1. Each alternative needs to be evaluated based on its respective financial impacts which is significant and likely underestimated due to the incomplete (15 year analyses) and likely inaccurate analysis (inappropriately using similar hydrology between alternatives - see previous comments).

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644093 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] The fact that there are not significant differences between Alternatives 1 and 3-6 also indicates there is likely errors in the analyses. Also it is hard to imagine that impacts occur from river warming between the alternatives. Please provide a detailed explanation as to how construction of ESH and IRC habitats cause increases in river temperature?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644092 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] The 15 year period of analysis seems to be carried through on both the temperature impact and hydrologic impact analyses, which likely misses significant period of refill and other conditions which could cause and impact. DEIS needs to be supplemented with appropriate 82 year period of analysis for thermal power.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644086 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 4.4, Page 54 - Indicates negligible impacts between alternative 1 and 3. This is really not believable with one having spring pulses and the other not, unless they are modeled incorrectly. As noted before Alternative 1 is inadequate as a reference case for other alternatives.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644078 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.8, Page 49&50 - This section regarding the coupled effects or cumulative effects is woefully inadequate. The combined impacts to hydropower and thermal power shutdown is significant and not thoroughly evaluated in the DEIS. These impacts together could lead to critical conditions in the regional groups for some or many alternatives. The power pools should be further consulted to determine whether these impacts could

result in power shortages in the power pools with potentially significant impact. See also descriptions of significant impacts from Alternative 2 in the 3rd paragraph on page 51. See also last paragraph of Section 4.3 regarding the potential for adverse impacts from coupled impacts with hydropower.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644076 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.7, Page 46, 3rd paragraph, last sentence - Indicates higher river temperatures are a benefit to thermal power, which is usually never the case. When looking at the impacts of Alternative 6 especially when compared to Alternative 1, it appears the impacts are mostly in Alternative 1 which is likely true when operations are the same between the alternatives. However operation Impacts resulting from of Alternative 1 should not be the same as Alternative 6 based on the alternative descriptions. It appears the impacts to thermal power may be miss-modeled? Alternative 1 should not be used as a reference or base case as noted above.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644074 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.4, Page 38, last paragraph of section - Indicates there were no difference is flow releases out of Gavins point dam for alternative 1 and 3. Is this is a misstatement or has the USACOE not modelled alternatives with the same operational parameters, if so, Alternative 3 may have a pallid sturgeon release component.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644070 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.4, Page 35 -What analysis did the USACOE conduct to determine the impacts of SWH and IRC are the same from a temperature perspective? Again comparing the

differences to Alternative 1 is an inappropriate comparison because Alternative 1 does not represent the best available science and has only been minimally implemented. The comparison to Alternative 1 also greatly clouds and confuses the analysis.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644062 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.2, Table 9 - Indicates that the impacts are for a 15 year period, yet previous descriptions indicate that the 82 year period was used for evaluation of operations and flows. This makes understanding the data present almost undeterminable complete descriptions of each impact needs to be provided. Also, if just a 15 year period was used to determine impacts to thermal power many of the release years and resulting refilling impacts were not evaluated thereby potentially significantly underestimating the impacts to thermal power.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644055 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.1, Page 27 - Indicates there beneficial impacts to thermal power from alternatives 3-6. Are these truly benefits or misguided conclusions from a false baseline/reference case or are they because of only a 15 year temperature analysis? The Tables need to ignore comparison to the reference case and just provide the impacts of each alternative. Comparing the impacts to a non-representative reference condition or base case misleads the impacts of the proposed alternatives.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644047 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.1, Table 6, Page 25 - Indicates that Alternative 1 is a change in generation from a no adverse impacts case. This no impacts alternative or case needs to be fully described to understand the impacts of the alternatives and whether Alternative 1 is truly a base case or a reference case as stated in

the DEIS. The impacts of Alternative 1 have not been realized, if anything Alternative 1 should just be another alternative and not used as reference case. These impacts are significant financially to the thermal power plants and largely unacceptable for alternatives that have no proven benefit to the species. Also, the report does not describe how Alternative 3 could have an average annual impact of \$52 million dollars when there is no flow component except for a potential one- time pallid pulse. Additionally by not identifying the source of the impacts (facilities impacted) it is impossible to understand the difference between the alternatives and what the difference represent.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644040 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.1 - Tables 6-7-8 - Needs to provide the results based on impacts due to elevation/flow or temperature (including the number of shutdown days) for each impacted plant. Also the tables showing adverse effects as positive numbers makes the table difficult to understand and analyze.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644036 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 3.1, Page 24 - Indicates the NED analysis includes changes in costs to replace energy, capacity and variable costs but missed potentially significant capital costs to plants based on impact of the flow release alternatives that must be mitigated, thus making the analysis incomplete.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644033 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 2.4.5, page 21, 1st paragraph - Note that capacity values do not include plant decommissioning cost. Plant decommissioning is a cost to doing business and should be included where appropriate.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644029 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 2.4.3, page 18, 3rd paragraph - States that there were no instances when there were impacts to power generation from both river stage and flows and from temperature. How many instances where there from river temperature alone?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644024 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 2.3.2, Page 13 - Is the ERDCs HEC-NSM Excel -based temperature model published and available? Is it a calibrated and verified model?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644021 **Coder Name:** jgutierrez

Comment Text: [Thermal Power Environmental Consequences Analysis Technical Report] Section 2.1, Page 10, bullet 3rd bullet - Report needs to identify where on the river the 90 degree determinations were made, which facilities are impacted, and to what degree. The implications of this may be far greater than the assumptions requiring substantial physical modifications to facilities, which costs have been totally ignored by the DEIS. Ignoring these costs is inappropriate in a NEPA analysis.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644011 **Coder Name:** jgutierrez

Comment Text: Thermal Power Environmental Consequences Analysis Technical Report Section 1.3, page 9, 1st paragraph - Currently the NED evaluation is based on a 15-year of record, however the time period is being expanded from 1975-2012. We support the effort to better estimate potential impacts associated with water temperature; however the impacts already identified for Alternatives are already at an unacceptable level.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643991 **Coder Name:** jgutierrez

Comment Text: Section 3.17.2.6, Page 3-484, 2nd paragraph - Notes slightly lower water temperatures in the lower river from construction of fewer acres of early pallid sturgeon life stage habitats. How much lower? Can the temperature model truly identify such small differences?

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643975 **Coder Name:** jgutierrez

Comment Text: Section 3.17.2.4, Page 3-474 2nd paragraph and Table 3-215 - Addresses (Alternative 1) reduction in power generation due to river temperature which occurred during peak power demand and ties this back finding replacement power from MISO or SPP. Is the USACOE temperature model adequate? The DEIS is wholly inadequate when it comes to evaluating the potential impacts of these types of occurrence. Additionally there is no indication where the impacts are or which facilities are impacted. Shutdown of the power generation in the lower river as stated in DEIS could be catastrophic and even be life threatening. The DEIS analysis of these potential impacts is completely inadequate.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643913 **Coder Name:** jgutierrez

Comment Text: Section 3.2.2.8, Page 3-54, 1st partial paragraph - Points out that Alternative 2 could require additional localized dredging to maintain the navigation channel, which in turn would have the potential to impact other intakes and cost to stakeholders that should be avoided. Are these costs included for the alternative? If not they should be.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643893 **Coder Name:** jgutierrez

Comment Text: Section 2.9.2.4, Page 2-83 - Full release of Spring pulse flows occurred in 10 of 82 years (as modeled with set release parameters), but not during the 12 years evaluated for thermal power therefore resulting in impact estimates for thermal power being more than stated in DEIS.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643869 **Coder Name:** jgutierrez

Comment Text: Although many of the comments above have a reliability component, Montana-Dakota provides some additional thought on concerns with reliability and the USACE's proposed alternatives. If Heskett Station was not able to run due to low water at our intake, this could impact Montana-Dakota's ability to accredit all the Heskett units' output capacity in MISO and possibly impact system reliability in the area. The loss of capacity accreditation at Heskett could require Montana-Dakota to construct a replacement unit (which may need water from the river also) or enter into a contract for replacement capacity or purchased power to make up the generation. Heskett Station generation is also positioned strategically to support Montana-Dakota's customer load in the Bismarck/Mandan area and a loss of Heskett generation could directly impact local system reliability and the need for additional transmission upgrades. Montana-Dakota would incur significant costs to replace the loss of generation and there may not even be an available replacement, or it may take multiple years to construct a new resource. Permitting new generation would take a significant amount of time, and but for the USACE low flows, that generation may not have been warranted. As described earlier, if Heskett was receiving flows that were low enough to create shutdown conditions, then other electric generation facilities upstream (and downstream of Garrison Dam) may also be at risk of a shutdown, resulting in no generation from multiple facilities at the same time. If this type of event would coincide with a period of high demand, the impact to the grid system could result in significant regional transmission impacts. Further study of the likelihood of this occurrence in consideration of the USACE's implementation of an alternative should be completed to ensure this scenario does not occur. These generating units along the Missouri River are modeled

to be available to run by the regional transmission organizations. Detailed studies are required to determine the impacts to the transmission system if these generating units along the Missouri River are not available to run during a portion of the year and the impacts on system reliability.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643862 **Coder Name:** jgutierrez

Comment Text: Montana-Dakota understands that daily average flows can be the culmination of large discharge swings (1.5 to 3 feet as noted in the report) within a 24 hour period caused by the hydroelectric generation fluctuating to follow electric loads. Due to the swings within a 24 hour period, Montana-Dakota believes it appropriate for the USACE to consider the hourly minimum flows and not an average across a day when evaluating impacts to downstream water users. These swings within a 24 hour period can be observed by river gauges. Montana-Dakota suggests the USACE review the hourly flows, or possibly watch how the river recedes after a load change is made, to determine how conservative they should be. As noted below, it appears this swing is taken into account when the USACE is considering bird nesting, but the agency should also consider the swing when determining impacts on other water uses and users to more accurately reflect increased facility shutdown occurrences.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643861 **Coder Name:** jgutierrez

Comment Text: Further support for keeping the minimum flows at least above 10,000 cfs (to avoid shutdown at Heskett Station) is in Section 2.3.1.5.3 Minimum Releases of the Mainstem Missouri River reservoir Simulation report that states: ". . . Minimum daily releases at Fort Peck, Garrison, Fort Randall, and Gavins Point are established as those necessary to supply water quality control and downstream water intake requirements, which generally also furnish more than an adequate quantity of water for irrigation withdrawals below the reservoirs. At Garrison a minimum average daily release of 9,000 cfs has been established as a guide to provide for downstream intakes. Access problems have been experienced at municipal, industrial, powerplant, and irrigation intakes along the length of the river due to channel degradation, inadequate intake screens, sandbar formation, winter ice formation, or relatively high elevation of the intakes. Temporary increases above the open- water minimum release rates may be made to the extent reasonably possible to allow intake owners to take remedial action." These USACE statements show the history of established flow levels considered for operation impacts and support that the EIS model predicted impacts have a relatively high degree of uncertainty.

Montana-Dakota recommends the USACE apply a more conservative approach when incorporating minimum daily releases and impacts at intakes. Additional discussion is provided in the following comment.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643858 **Coder Name:** jgutierrez

Comment Text: Disagreement with Use of 2012 Geometry and Model Predictive Accuracy Based on Heskett Observations

Montana-Dakota would like to emphasize that we do not agree with the use of the Management Plan and EIS using the 2012 channel geometry model to evaluate the impacts of the alternatives if the model has not been proven to be accurate at low flows (those under 15,000 cfs) at Heskett's intake since it appears the only model comparison was done with 2012 observations. The concern extends to USACE's assumptions of the impacts projected from low releases using this modeling. It appears that the USACE model associated with this project uses historical flows and the 2012 river geometry survey to predict the impact to the Heskett intake and whether the station would be able to withdraw from the river (based on the intake elevations and modeled results). It appears that the model does not take into account channel changes since the survey was conducted, as well as Oahe Lake effects within the river reach near Heskett and channel siltation. In our experience, the channel changes yearly as winter ice freezes over the river and re-directs flows differently each year underneath the ice until ice breakup occurs. We are also concerned that actual elevations at Heskett's intake were not confirmed at the time of the 2012 survey. Due to the changes that occur yearly in the stretch between Bismarck and Garrison Dam, we feel the 2012 survey is not accurately representing the flow impacts near Heskett. Montana-Dakota requests that the USACE confirm whether the model corresponds to flow and elevations outside of the 2012 survey timeframe and make model adjustments accordingly to demonstrate accurate predictions. Additionally, we recommend the USACE consider evaluating this for all affected water users. Montana-Dakota recommends the USACE also review the model accuracy to consider the consequences of multiple stations along the Missouri River being affected by low releases. The effect of the loss of generation from multiple facilities in a single period is much more significant than the loss of generation from one facility. Loss of generation from multiple regional or local generation resources may have the potential for a larger impact to transmission grid reliability. This subject requires more than the limited amount of discussion found on page 3-475 of the MRRMP-EIS. Further, Montana-Dakota believes that a reliability impact from implementing the alternatives is beyond what is considered as a loss of revenue if multiple generation resources would be offline, and we recommend USACE include reliability consideration in the impact analysis of the alternatives.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643846 **Coder Name:** jgutierrez

Comment Text: Montana-Dakota does not agree with the USACE's assumption that renewable electric generation resources would be able to replace the lost capacity of thermal fossil-fired electric generation resource if an Alternative results in curtailment or shutdown of the resource. Under each of the alternatives, the USACE uses a similar argument that renewable generation offsets the generation from shutdown or curtailment of fossil-fired electric generation. This is not quite accurate. The electric load balancing services from dispatchable fossil-fired electric generating units provide a reliable, low-cost and stable transmission grid that intermittent renewable electric generation resources are not able to provide. Renewable electric generation resources such as hydropower and wind-powered generation resources should not be represented as equals when considering offsets and costs since these resources must be backed up by dispatchable electric generation resources. The USACE's support must also consider transmission grid upgrades when representing the "Other Social Effects" associated with the alternatives. More value should be applied to dispatchable electric generation resources where the USACE considers benefits from emissions reductions and uses the social cost of carbon when crafting financial statements in the draft. Also, please consider that the president has required Review of Estimates of the Social Cost of Carbon in Executive Order "Promoting Energy Independence and Economic Growth" released on March 28, 2017 and is expected to change.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643839 **Coder Name:** jgutierrez

Comment Text: Montana-Dakota's main concerns are that Heskett would encounter significant operational impacts, including limitations in providing fire protection safety for the facility, and shutdowns if there was not sufficient river flow provided by the Alternatives and could not obtain water for station needs at the station's river intake. There is a possibility for more severe impacts resulting from implementation of USACE proposed Alternatives 2, 4 and 5 due to lower river flows anticipated near Heskett with these alternatives. Although there is also a potential that Alternative 3 could result in some operational impacts, it is projected to be less than the other proposals. Montana-Dakota views Alternative 3 as the least disruptive alternative considering lower projected impacts for Heskett. Montana-Dakota has concerns with the USACE assumptions under all alternatives and recommends the USACE conduct further evaluation according to our comment details.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643782 **Coder Name:** jgutierrez

Comment Text: NPPD is concerned with the analysis of impacts to thermal power contained in the DEIS. The NED and RED analysis indicate significant financial impacts to thermal power generating facilities below Gavins Point Dam from an energy and capacity perspective. We also believe they are likely underestimated. Additionally, the results presented in the DEIS do not seem to be representative of the operational variations of the management actions described for the alternatives. This may be due to the limited years analyzed from a temperature and operational perspective, inappropriate modelling assumptions or both. We would recommend that in the Final Environmental Impact Statement the USACOE provide the impacts based on the type of impacts for the specific thermal power facilities.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641814 **Coder Name:** jgutierrez

Comment Text: While the DEIS provides scant discussion on the impacts to reliability from either the reduced hydroelectric or thermal generation output, there seems to have been no consideration of the cumulative impacts to the reliability of the power grid from the loss of both hydroelectric and thermal generation under the various alternatives. As the DEIS analyses show, lower or altered Missouri River flows can significantly reduce the output or value of hydroelectric generation and at the same time reduce the amount of thermal generation available. What was apparently not considered was the cumulative impact of the loss of both types of generation and the consequent impact on system reliability. The loss of significant amounts of baseload generation at the same time can seriously impact system reliability. It is not clear that sufficient transmission capacity exists to be able to purchase and import power from the market to replace the lost generation or that the market is liquid enough to absorb the necessary replacement power purchases without significant price increases. It is imperative that the cumulative impact of changes in hydroelectric and thermal generation output on power system reliability be addressed in the final environmental impact statement to assess to what degree grid stability may be at risk under the various alternatives.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 164 **Comment Id:** 641365 **Coder Name:** jgutierrez

Comment Text: In addition to the costs of decreased generation capacity due to low summer flows, the report also assumed there would be a small increase in maintenance costs for cleaning debris and sediment from Missouri River intakes due to increased

aggradation from proposed seasonal flow pulses in Alternatives 1, 2, 4, 5, and 6. This assumption does not recognize the limitations of maintenance activities set forth in the Special Conditions of the Department of the Army Nationwide Permit No. 3b found in the February 21, 2012 Federal Register (77 FR 10184). These Special Conditions for MidAmerican facilities include the restriction that no work shall occur below the ordinary high watermark from March 1 to June 30 to avoid impacts to Pallid Sturgeon (USACE Permit No: 2013-00165-WEH). MidAmerican schedules intake structure maintenance outside this protective period to ensure that sediment aggradation during the protective period does not require a derate or complete shutdown of the intake structure and operating unit. The assumptions concerning increased aggradation from proposed seasonal flow pulses should be revised to account for potential derate or shutdown impacts should significant aggradation occur during the pallid sturgeon protective period identified in the special conditions to nationwide permit 3.

Organization: MidAmerican Energy Company

Commenter: Jenny McIvor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 164 **Comment Id:** 641329 **Coder Name:** jgutierrez

Comment Text: MidAmerican does not support adoption of Alternative 2 due to higher electricity costs related to lower river flows and incalculable additional costs from restricted intake maintenance, which have a disproportionate impact on MidAmerican customers. Alternative 2 represents the USFWS interpretation of the management actions that would be implemented as part of the 2003 Amended Biological Opinion (BiOp) Reasonable and Prudent Alternative (USFWS, 2003). Alternative 2 includes additional iterative actions and expected actions that the USFWS anticipates would ultimately be implemented through adaptive management. Alternative 2, however, does not incorporate the substantial amount of new knowledge about the pallid sturgeon that has been acquired between the 2000 BiOp, the 2003 Amended BiOp and the report issued by the ISAP in 2011.

Organization: MidAmerican Energy Company

Commenter: Jenny McIvor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641000 **Coder Name:** jgutierrez

Comment Text: We oppose actions to create low summer flows such as those proposed in Alternative 2. Such low flow conditions have the greatest potential to impact our ability to generate power and occur during a seasonal period of peak demand. Our experience with historic droughts is directly relevant and reinforces our concerns regarding the challenges we would need to overcome to maintain operations with inadequate low flow conditions, potentially during periods of peak consumer demand for electricity.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 640997 **Coder Name:** jgutierrez

Comment Text: We have concerns regarding the cost to the public of the Preferred Alternatives Mechanical Construction Only approach. While strategic flow releases hold promise for creating critical habitat, the costs in any given year are uncertain and unpredictable. Without extremely cautious planning, once seasonally stored volumes are released, there is no assurance that downstream flows can be maintained to avoid critically low elevations at power generating and public water intakes later in the year.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640632 **Coder Name:** jgutierrez

Comment Text: While the DEIS provides scant discussion on the impacts to reliability from either the reduced hydroelectric or thermal generation output, there seems to have been no consideration of the cumulative impacts to the reliability of the power grid from the loss of both hydroelectric and thermal generation under the various alternatives. As the DEIS analyses show, lower or altered Missouri River flows can significantly reduce the output or value of hydroelectric generation and at the same time reduce the amount of thermal generation available. What was apparently not considered was the cumulative impact of the loss of both types of generation and the consequent impact on system reliability. The loss of significant amounts of baseload generation at the same time can seriously impact system reliability. It is not clear that sufficient transmission capacity exists to be able to purchase and import power from the market to replace the lost generation or that the market is liquid enough to absorb the necessary replacement power purchases without significant price increases. It is imperative that the cumulative impact of changes in hydroelectric and thermal generation output on power system reliability be addressed in the final environmental impact statement to assess to what degree grid stability may be at risk under the various alternatives.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640545 **Coder Name:** jgutierrez

Comment Text: The cumulative impact on reliability of reduced hydropower and thermal generation resulting from the various alternatives needs to be further studied

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

EC1800 Environmental Consequences: Wastewater Facilities (Substantive)

Correspondence Id: 239 **Comment Id:** 642757 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.19.2.1, p. 3-528 "The scope of analysis included facilities in Iowa, Nebraska, Kansas, and Missouri. Facilities in North Dakota and South Dakota were eliminated from further analysis because state water quality regulators indicated that low-flow conditions in the Missouri River do not drive effluent limits for facilities in these states." **Comment:** Current low-flow conditions in the Missouri River will not impede the ability for permitted facilities to discharge to the river. However, reductions to the flow regime due to adaptive management or the building of new facilities may affect the ability to discharge wastewater to the Missouri River in the future.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 27 **Comment Id:** 645769 **Coder Name:** jgutierrez

Comment Text: It has the potential to negatively impact water and sewer treatment plants, as well as power plants, creating problems with intakes and increasing the risk of failure to comply with conditions of discharge permits.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 645764 **Coder Name:** jgutierrez

Comment Text: These low summer flows have the potential to negatively impact water and sewer treatment plants, as well as power plants, creating problems with intakes and increasing the risk of failure to comply with the conditions of discharge permits.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645616 **Coder Name:** jgutierrez

Comment Text: Section 3.19 Wastewater Facilities General Analysis: 1. We are concerned with the DEIS findings that five wastewater treatment plants (two in Iowa, three in Missouri) could be affected by low flow conditions specified in Alternative 2. Section 3.19.2.5 states: Impacts of the habitat construction management actions on wastewater facility outfalls could range from negligible to large, long-term and adverse on wastewater facilities compared to Alternative 1, depending on the proximity of the constructed habitat site to wastewater facilities 2. The DEIS wrongly assumes that wastewater authorities will be able to make improvements as needed to account for management changes such as low flow. This assumption cannot be reliably made because it depends on too many variables, such as funding, changing requirements, local logistics and permitting.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645453 **Coder Name:** jgutierrez

Comment Text: The CPR is also very apprehensive of the impact that low summer flows would have on energy generation, water supply intakes and sewer treatment plants. We believe operational costs under a low summer flow regime are severely underestimated and should be reexamined. Further, we request the Corps to identify all potential regulatory burdens in advance of the implementation of any management plan action. In any instance in which the regulatory cost of compliance increases (i.e. modification of intakes), thorough input needs to be gathered from affected industry sectors to ensure that the impact to both utility companies and ratepayers alike remains minimal.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644456 **Coder Name:** jgutierrez

Comment Text: KCMO operates six (6) wastewater treatment plants under National Pollution Discharge Elimination System NPDES permits, three (3) of which discharge to the Missouri River under NPDES permits. These permits are based in part on flows denoted 7Q10 and 3DQ10. Each one has different limits based on the flows and other factors. In the DEIS the COE surveyed the

states, EPA and the affected plants as to their permit basis and method of calculation (i.e. Q, low flow, carcinogenic, and acute v chronic). They concluded impacts were low to none under all alternatives with the caveat that under alternative 2, three (3) plants in Missouri could be affected by low flow. They concluded through dialog with plant personnel, that planned upgrades would negate negative impacts on the treatment plant. But if those improvements were not made, treatment plant NPDES discharge standards would most likely be impacted under Alternative 2. Although not directly identified in the DEIS, staff does believe that the Blue River WWTP would be negatively impacted by the above alternative. The DEIS states that Alternative 3 would have negligible impacts.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

EC1900 Environmental Consequences: Tribal Interests (Other) (Substantive)

Correspondence Id: 94 **Comment Id:** 633679 **Coder Name:** jgutierrez

Comment Text: As a tribal member of Standing Rock my family has been personally and economically impacted by the development on the Missouri River since the dams were first built. The water rights of the Tribe are being detrimentally impacted by the DEIS. As a member of the tribe I am opposed to mechanical construction in the Oahe reservoir. I am also opposed to the type of development which would impact the water quality or quantity. The water rights and water supply issues directly impact me as a tribal member. The plants, including medicinal and those which are important to the spiritual and cultural lifeways of my people are at high risk due to the development and resulting pollution along the length of the river.

Organization: Standing Rock Sioux Tribe

Commenter: Diana Spotted Horse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645478 **Coder Name:** jgutierrez

Comment Text: The scope of issues discussed in the Draft EIS is too narrow. It excludes important concerns of Tribes with the Corps' current Missouri River operations, the impacts to plant species used by Tribes and the need for mitigation of impacts. Important alternatives relating to avoidance of jeopardy, such as a dam removal alternative, have not been considered by the Corps. The need to modernize water management with reforms to the Master Manual is totally ignored. In light of the significant omissions of factors relevant to habitat recovery, the reliance on tiering is misplaced.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645473 **Coder Name:** jgutierrez

Comment Text: The computer models used by the Corps to estimate impacts to Tribes are supposedly included as "Tribal interests," and as an aspect of "human 'considerations.'" The manner in which these impacts were supposedly quantified is not explained in the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645469 **Coder Name:** jgutierrez

Comment Text: The Corps alludes to the impacts on the Tribes on page 3-545 of the Draft EIS, as part of "other social impacts" of the no action alternative. The Corps states "Alternative 1 is not anticipated to have significant impacts on subsistence hunting, fishing and gathering, or traditional Tribal practices and educational opportunities." This alternative reflects the status quo, in which the Corps of Engineers operates the dams pursuant to the current Master Manual, with limited mechanical habitat restoration projects and periodic spring rise. As stated above, the operation of the dams have a significant adverse effect on the Tribes. Consequently, Alternative 1, which is no action, adversely affects the Tribes. The findings on page 3-545 of the Draft EIS are invalid.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645458 **Coder Name:** jgutierrez

Comment Text: The Draft EIS includes an "Other social effects" analysis, and the Corps argues that this includes an evaluation of impacts on Tribal subsistence activities. (Draft EIS, chapter 3 .20). However, the document contains no baseline data on important Tribal species. The Corps merely theorizes about the extent of woody habitat under various alternatives, and makes unsubstantiated generalizations about the abundance of important Tribal species. "While a variety of physical conditions are required for recruitment and establishment of cottonwoods, the presence of habitat could be beneficial to the abundance of species important for traditional cultural practices, including cottonwoods." (Draft EIS, p. 3-545). That does not support a finding of no impacts. It certainly does not constitute an "analysis of identifiable impacts" as required by CEQ.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 232 **Comment Id:** 645457 **Coder Name:** jgutierrez

Comment Text: The adverse impacts to plant species relied upon by our Tribes for healing, medicinal and ceremonial purposes is especially problematic, and should be fully analyzed and disclosed in the Draft EIS. The diminished abundance of our important plants is caused by the dam-building and operation by the Corps and Bureau of Reclamation under the Pick-Sloan program. As stated above, the study contains information on special-status of the states, but omits any information on impacts to Tribal medicinal plants. Our concerns with the loss of our medicinal plants is ignored by the Corps of Engineers, even though Corps projects cause harm to these riparian plant species.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**
Kept Private: No

EC200 Environmental Consequences: Piping Plover (Substantive)

Correspondence Id: 52 **Comment Id:** 631124 **Coder Name:** jgutierrez

Comment Text: And the truth of the matter is that even if it wasn't bad science, you lose 20 percent of the birds through attrition every year. And if you don't have nesting for three years, you've lost 60 percent of the birds, and 60 percent of zero is still zero, so where do you build from if they're not coming in from other places?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645521 **Coder Name:** jgutierrez

Comment Text: Alternative 5 - The League has concerns with Alternative 5. This alternative is contrary to the natural historic hydrograph of the river. Alternative 5 would have large flow releases in the fall instead of the spring, as in the natural hydrograph. We believe any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds far south of the Missouri River. We also have concerns with this alternative's potential impacts on pallid sturgeon and other native fish species, with such a large release at an unnatural time of year for the Missouri River.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645400 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.4.2.8, p. 3-102 "Tern and plover population dynamics following high flows in 1997 and 2011 indicate that sufficiently high flows produce population increases in subsequent years. The spring emergent sandbar habitat-creating reservoir release modeled as part of Alternative 4 would have longterm, relatively large beneficial impacts from the creation of new sandbars that could occur following flows." Comment: First, this statement contradicts the conclusion of Section 3.2.2.4, which said that Alternative 4 would not have significant impacts on geomorphology. The statement says that the release would have long-term, relatively large beneficial impacts from the creation of new sandbars. Second, the long-term benefit of the ESH-creating release would only last until the sediment supply was exhausted, or for the inter-dam reaches, until all of the sediment was flushed into the reservoir deltas. Third, the ESH-creating release would have an adverse effect by increasing the flood risk of birds nesting on sandbars. When discussing the effect of the spawning cue releases for Alternative 2 (Section 3.4.2.6, page 3-101) and Alternative 6 (Section 3.4.10, page 3-104), this risk of flooding nesting birds is recognized. It should also be recognized for Alternative 4. These comments also apply to the fall ESH-creating release (Alternative 5), which is discussed in Section 3.4.2.9 (page 3-103), with the exception of the comment on flooding nesting birds. The fall release as described would occur after nesting season.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644900 **Coder Name:** jgutierrez

Comment Text: TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study. TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643921 **Coder Name:** jgutierrez

Comment Text: Section 3.4.2.5, Page 3-100 - No significant, adverse impacts are anticipated under Alternative 1; however, it appears Alternative 1 would not meet the 95% chance of persistence over 50 years. Since the last dam on the Missouri system reached full capacity in 1967 (see page 3-14), which happens to be 57 years, and the plovers have maintained a population for the entire period should cause a re-evaluation of the modelling done for the DEIS to that determined that Alternative 1 (i.e. current management plus 107 acres of ESH created habitat) does not have a 95% chance of population persistence for the next 50 years. Again the plain facts do not support the modelling results. Since the first constructed island was completed in 2004 and the flood of 2011 washed out all constructed islands it is difficult for a reader to follow just how the construction of ESH would have changed the number of birds today or why it is necessary into the future.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643908 **Coder Name:** jgutierrez

Comment Text: Section 3.2.2.4, Page 3-45, Conclusions - Points out the impacts of the each alternative to channel geomorphology. This section also determines that localized aggradation in the lower river from low summer flows could require dredging would occur under Alternative 2. As such this is an additional cost that needs to be included for Alternative 2 and is another reason Alternative 2 should not be implemented. This section also identifies that, temporary, and long-term impacts to the geomorphology would occur from spawning cue releases in Alternative 3. As this could affect availability of materials for piping plover habitat, it is another reason not to implement the spawning cue releases.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643807 **Coder Name:** jgutierrez

Comment Text: Section 1.5.2, Page 1-24, Sub-Objective 2 - Concerning a 95% modeled probability that at least 50 birds will persist for 50 years (Northern and Southern Regions). Piping plover populations continue to exist on the river with fairly stable or increasing numbers (see 2015 Annual Report) despite the construction of dams on the Missouri River in the 1950s and little or no nesting in on the Missouri River or associated reservoirs in years like 1997 and 2011. Therefore modeling the Missouri as two separate populations that have little or no interaction and holding emigration and immigration as steady and equal in the models obviously does not take into account the reality of the bigger metapopulation influence and has some limitations. How those limitations affect the persistence

probability needs to be explained. Likewise if acres of ESH are to be used as a surrogate there should be a simple graph or table that demonstrates the historical relationship of plover populations to acres of ESH in the past to justify the proposed methodology.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643806 **Coder Name:** jgutierrez

Comment Text: Section 1.3.2, Page 1-19&20, - Nesting habitat on or along the Missouri River is limiting plovers (see 11-13-15 USFWS PAL letter) based on modeling. However there needs to be recognition of the limitations, assumptions, and caveats associated with that modeling, including but not limited to: model of ESH deposition and erosion is new and based on a limited time frame, plover population models are parameterized using current condition with a limited time of 2005-2014 for riverine habitat. Model results are strongly affected by assumptions of fledgling productivity on reservoirs, does not consider metapopulations and differs from models used by the piping plover Recovery Team (See Modeling to Support the Development of Habitat Targets for piping plovers on the Missouri River May 2015).

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642694 **Coder Name:** jgutierrez

Comment Text: TNC recommends adding a section to the MRRMP-EIS and AMP on possible impacts related to piping plover science and MRRMP-EIS management actions pending results of the metapopulation study. TNC supports the modeled quantitative relationship between emergent sand bar habitat acres as the primary means of supporting the piping plover objectives identified in the plan for the northern and southern rivers region.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641605 **Coder Name:** jgutierrez

Comment Text: Interior least terns lay eggs on unvegetated sandbars. Periodic flooding of the river creates the sandbar habitat needed by the terns. Restoring sandbars along the Iowa section of the Missouri River will help restore the populations of these birds.

Like the interior least terns, piping plovers lay eggs on sparsely vegetated sandbars. Restoring sandbars will help restore the populations of these birds.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 80 **Comment Id:** 640100 **Coder Name:** jgutierrez

Comment Text: In the case of the Piping Plover, since channelization, instances of breeding on the Missouri River itself, other than in the Gavins Point reach, have been rare to non-existent. Following major flood events such as 1997 and 2011, plovers have utilized naturally-formed ESH, but only for relatively short periods until such habitats became unsuitable, usually because of natural inundation from varying river levels, reduction in fledging success due to overcrowding, natural re-vegetation, and/or increasing access to predators (Anteau 2017). Attempts to create artificial ESH have had mixed success and have not contributed in any significant way even to the limited population of Piping Plovers using the Gavins Point site; there was no change in number of fledged Piping Plovers there from summer 2000 through summer 2009 (Figure 3, Duberstein 2011).

Organization: Responsible River Management

Commenter: Ross Silcock **Page:** **Paragraph:**

Kept Private: No

EC2200 Environmental Consequences: Ecosystem Services (Substantive)

Correspondence Id: 23 **Comment Id:** 626661 **Coder Name:** jgutierrez

Comment Text: Also the Corps does not consider the environmental services that would be provided by additional habitat acres over the years. Those services include flood risk reduction and recreation.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 77 **Comment Id:** 645763 **Coder Name:** jgutierrez

Comment Text: Also the Corps does not consider the crucial environmental services that would be provided by additional habitat acres over the years. Those services include flood risk reduction and recreation opportunities that contribute to the local economy.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645570 **Coder Name:** jgutierrez

Comment Text: In the final EIS, we encourage the Corps to further evaluate Ecosystem Services (V3 Page 318). These environmental services contribute to people in ways that need to be considered and tabulated for their economic impact. Natural landscapes that also benefit fish and wildlife along the Missouri River provide aesthetic enjoyment, educational opportunities, and a quality of life component that is difficult to quantify. In the final EIS, we ask that the Corps find a way to evaluate these values. We agree that the Missouri River and its terrestrial lands are a "dynamic aquatic ecosystem" unlike anything else in America.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 179 **Comment Id:** 645232 **Coder Name:** jgutierrez

Comment Text: Throughout this entire DEIS process, through the many MRRIC meetings and discussions, Ecosystem Services were barely touched upon. It should have received a much greater analysis and prominence. Such things as in agriculture - when farmers complain if a willing seller sells the neighboring piece of ground to the Corps; county assessors and the farmers complain that acres were taken out of production and the county loses property taxes - these things are always pointed out. However, nothing is said about the reduction in flood risk by the new acres devoted to Recovery, or the savings in flood insurance or FEMA costs. Personally, I can add other factors which contribute to Ecosystem Services by these new acres out of production: infiltration of rain, greater diversity of plant species, increase in invertebrate diversity, prairie bird nesting, hunting opportunities, buffer crop or buildings from river rises, water quality enhancement, etc. The Corps needs to elaborate on quality of life in ecosystem services. Habitat producing land near metropolitan areas contributes to relaxation, stress reduction, and thus contributes to the health of a population. It provides interaction with nature which has deep roots in the human psyche. Such lands provide fellowship with others while hiking, boating, camping, fishing, and hunting clubs. Some individuals may feel a religious interaction with nature and their Creator. And not to mention the cultural and religious connections to the river by the Tribes, again, something not especially emphasized throughout these proceedings. It is asked that the Corps rewrite this section and do it in an acceptable manner. And although it states in the Executive Summary, pg.xxiii, that ecosystem services are discussed in other sections, I question the validity of that statement.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 179 **Comment Id:** 645231 **Coder Name:** jgutierrez

Comment Text: The Corps has limited the category of ecosystem services for analysis to climate regulation and carbon sequestration (and other cultural resources and non-use values - what are these???) - which confused me when this was first done months ago and still confounds me as to why this was done? While these are two important areas of concern, why were ecosystem services put into climate regulation and carbon sequestration because in my view, these do not serve as surrogates for the river, and dont really connect with river issues at all!! And, assuming that these did fit well, the Corps did not do any quantification of them. This is honestly one of the poorest written sections.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645230 **Coder Name:** jgutierrez

Comment Text: Of greater importance is: 1) Ecosystem services is rated the same for all alternatives! 2) there are different units used in the chart - again confusing for the public. It is suggested that perhaps the chart can be broken down into smaller sections; darker hash marks vs. lighter dots/lines be used rather than colors; and lastly, how in heavens name can ecosystem services be virtually unaffected???

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644960 **Coder Name:** jgutierrez

Comment Text: The MRRMP-EIS also does not make clear what is or is not included within the category of ecosystem services. The Executive Summary states that "notable ecosystem services" include: "natural resource goods ... water supply, water quality, waste assimilation and nutrient regulation ... , flood attenuation, recreation, and other cultural services." 134 However, most of those services also constitute their own categories which themselves are quantified. Impacts to cultural resources and recreation, for example, have significant quantitative variation among the alternatives, and that variation is also reflected in the color scheme in the chart of the Executive Summary.135 Since the full range of ecosystem benefits are not summarized within their own impact category, this separation obfuscates the MRRMP-EIS's analysis of ecosystem services. The Corps attempts to correct this confusion by limiting the category of ecosystem services to "climate regulation and carbon sequestration, other cultural resources, and non-use values,"136 yet nowhere quantifies those impacts for comparison of the alternatives. The closest the MRRMPEIS comes to giving meaning to

ecosystem services is Table 3-261 which lists "Environmental Consequences for Ecosystem Services," but even there, the alternatives are vaguely and qualitatively compared. 137 The Corps should correct these inconsistencies by giving values to ecosystem services as its own category and presenting them to the public in a quantified and comparative form. From this, the MRRMP-EIS can draw meaningful comparisons among the alternatives as to how they promote self-sustaining environmental services for the benefit of the public.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644933 **Coder Name:** jgutierrez

Comment Text: Also the Corps fails to give adequate clean water services to those acquired acres, or any impacts on groundwater recharge. Carbon storage in habitat acreage could be calculated, both for species benefits (bioenergetics modeling) and to assess NED & RED values in established carbon trading markets.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644932 **Coder Name:** jgutierrez

Comment Text: In any case, it is inconceivable and unbelievable that all Alternatives have the same 1 ecosystem services benefit as represented in the table, page xxvii of the Executive Summary. Uncounted carbon storage, alone, would show Alternative 2 to be superior in this regard.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644931 **Coder Name:** jgutierrez

Comment Text: Ecosystem Services The Corps fails to give adequate consideration of ecosystem services and that failure impacts their evaluation of alternatives. One example occurs in the Land Use and Ownership Environmental Consequences Analysis, Technical report pages 5-8. The Corps evaluates the impact of agriculture acres for federal acquisition. The Corps notes the loss of agriculture output if some acres are taken out of crop production and points to the loss of taxes to the county, or land in the local levee

association. But no consideration is given to the likely reduction in flood risk to those same neighboring acres when, due to those acquired acres, levees are set back, wetlands created, a channel widened and or floodplain connection is formed.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

EC2300 Environmental Consequences: Mississippi River Impacts (Substantive)

Correspondence Id: 27 **Comment Id:** 626696 **Coder Name:** jgutierrez

Comment Text: Low summer flow provisions in alternative 2 will cause great harm to the navigation industry by creating a split season on the Missouri River and adversely affecting navigation flows on the middle Mississippi River.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 646284 **Coder Name:** JGUTIERREZ

Comment Text: Further, the Missouri River can contribute up to 60 percent to the flow of the middle Mississippi River during times of drought. The harmful effects of low summer flow to our nation's economy must be taken into account and the Corps should remove this flow option from consideration.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 646277 **Coder Name:** JGUTIERREZ

Comment Text: Further, the negative impact to the middle Mississippi River must be taken into account. As we saw in the drought of 2012, the Missouri River had a peak contribution of 72 percent of the flow to the middle Mississippi.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 33 **Comment Id:** 645765 **Coder Name:** jgutierrez

Comment Text: In addition to this, low summer flows in alternative 2 will have severe negative impacts on navigation on the Mississippi River from St. Louis all the way downstream to Cairo, Illinois. During severe drought on the - - during severe drought years, over 80% of the water flowing past the St. Louis Arch comes from the Mississippi - - from the Missouri River. These flows are necessary to keep this commercial superhighway open.

Organization: Mid-continent Office for the American Waterways

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645637 **Coder Name:** jgutierrez

Comment Text: 9. Regarding navigation, the Corps needs to better study the linkage between the Missouri and Mississippi Rivers in terms of flow support and flooding impacts. The Missouri River can greatly affect the middle Mississippi and its contributions, positive or negative, should be clearly delineated in the DEIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645623 **Coder Name:** jgutierrez

Comment Text: While the DEIS claims that these impacts on the middle Mississippi River will be small to negligible, the Corps own data concludes that the lower summer flows in Alternative 2 would result in a lower stage of approximately two feet in July and August . Such reduction in stage on the middle Mississippi in the busy summer months is not a small to negligible impact, especially during times of drought. A two-foot reduction would have severe consequences for shippers and consumers. The DEIS further concludes that the massive spring and fall releases in Alternatives 2, 4, 5, and 6 would increase the stage and flow on the middle Mississippi by one to three feet. Once again, these increases are not small or negligible, especially when they occur during peak flood season. Even the minimum low flow of 25,000 cfs for several weeks would have significant effects on navigation on the Mississippi River below St. Louis. These impacts would come in the form of reduced draft and tow sizes. Should the navigation industry have to reduce draft out of St. Louis to the Gulf because of insufficient flows, the cost to the nation would be, at a minimum, in the millions. In periods of high water on the Mississippi River, increasing the amount of water flowing in from the Missouri River and raising the stage by two to three feet would have serious impacts to the shippers, farmers, consumers, and communities along the river.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645622 **Coder Name:** jgutierrez

Comment Text: The DEIS subsection Impact from Management Actions Common to All Alternatives states: It is anticipated that there will be no impacts to biological resources in the middle Mississippi River from the management actions common to all alternatives. The listed activities would occur on the Missouri river and would not impact the stage or flow on the middle Mississippi River. We cannot understand how the DEIS can draw this conclusion when it states in two different subsections of Section 3.24 - Mississippi River Impacts that the Missouri River contributes almost half of the flow to the middle Mississippi river. These conclusions in the DEIS are illogical. Section 3.24 further states that the impacts of Alternatives 2, 4, 5 and 6 on stage and flow in the middle Mississippi River would be small or negligible. This section also concludes that the impacts to flood risk management in the middle Mississippi River are not anticipated to be significant under Alternatives 3 through 6. Finally, this section claims that the impacts to navigation in the middle Mississippi River would not be significant under Alternatives 2 through 6. We strongly disagree with these conclusions in Section 3.24. We believe that the impacts to stage, flood control and navigation on the middle Mississippi River are significantly understated due to the flaws in the hydrological and economic models.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645621 **Coder Name:** jgutierrez

Comment Text: The methodology used for the analysis of the impacts on the hydrology in the middle Mississippi River from the alternatives is similar to the methodology used for analyzing the impacts for the Missouri River. Regarding the methodology used for the analysis of Mississippi River impacts, the DEIS states the following: Specifically, the analysis of the flow alterations under the six alternatives was largely based on the HEC-ResSim and the HEC-RAS Modeling for the 82-year period of record. The DEIS concludes that, despite the massive spring and fall releases from the Gavins Point Dam in Alternatives 2, 4, 5, and 6, there would be no significant impacts to middle Mississippi river navigation from any of these alternatives. The DEIS also concludes that there would be no significant impact to middle Mississippi river navigation from the significantly lower summer flows contained in Alternative 2. These conclusions are hard to justify given the fact that the DEIS also states that the Missouri River contributes almost half the flow in the middle Mississippi River. The DEIS also claims that the spring and fall flow releases in Alternatives 2, 4, 5, and 6 would be partially to largely attenuated by the time they reach Hermann, Missouri, but does not provide any detailed analysis as to why this would be the case. Does the Corps just expect the large amount of extra water released from Gavins Point to stay in the Missouri River and not flow downstream into the Mississippi River?

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 228 **Comment Id:** 645620 **Coder Name:** jgutierrez

Comment Text: In terms of the impacts of the alternatives on Mississippi River navigation, the DEIS evaluation does not use any of the four accounts: Environmental Quality Methodology (EC), NED, RED, or OSE. Instead, the Corps measures the impacts of the alternatives on Mississippi River navigation by analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the HEC-RAS Model for the entire period-of-record for each alternative. Therefore, the Corps has been using the four accounts (EC, NED, RED, OSE) throughout the DEIS, and then utilizes a completely different methodology to measure the alternatives impacts on Mississippi River navigation. Once again, the DEIS fails to explain the reason for this abrupt change in methods. The failure to perform a comprehensive RED analysis to measure the alternatives impacts on Mississippi River navigation is inexcusable and unacceptable. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the local and regional economic conditions (jobs, income, revenues). Finally, the failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the Mississippi River's major contribution to the nation's economy. By failing to conduct a NED, RED, OSE, and EQ analysis in its modeling, the DEIS is significantly understating the economic, environmental, and social impacts of the alternatives on Mississippi River navigation.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 228 **Comment Id:** 645619 **Coder Name:** jgutierrez

Comment Text: In terms of the impacts of the alternatives on Mississippi River navigation, the DEIS evaluation does not use any of the four accounts: Environmental Quality Methodology (EC), NED, RED, or OSE. Instead, the Corps measures the impacts of the alternatives on Mississippi River navigation by analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the HEC-RAS Model for the entire period-of-record for each alternative. Therefore, the Corps has been using the four accounts (EC, NED, RED, OSE) throughout the DEIS, and then utilizes a completely different methodology to measure the alternatives impacts on Mississippi River navigation. Once again, the DEIS fails to explain the reason for this abrupt change in methods. The failure to perform a comprehensive RED analysis to measure the alternatives impacts on Mississippi River navigation is inexcusable and unacceptable. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the local and regional economic conditions (jobs, income, revenues). Finally, the failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the

Mississippi Rivers major contribution to the nations economy. By failing to conduct and NED, RED, OSE, and EQ analysis in its modeling, the DEIS is significantly understating the economic, environmental, and social impacts of the alternatives on Mississippi River navigation.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645617 **Coder Name:** jgutierrez

Comment Text: 3.24 Mississippi River Impacts General Analysis: 1. Due to the critical impacts that Missouri River flows have on the Mississippi River, any future flow change could negatively impact commerce and the nations economy. 2. Pallid sturgeon are using the middle Mississippi and DEIS alternatives should consider the middle Mississippi and the Missouri Rivers as one and be evaluated as such. 3. We are concerned that the geographic scope of the DEIS does not include the middle Mississippi River from St. Louis, MO to Cairo, IL. The failure to include the middle Mississippi River in DEIS geographic scope raises questions about the Corps ability to accurately analyze the impacts of the alternatives on the Mississippi River. 4. The economic modeling and analysis of the DEIS alternatives on Mississippi River flood risk management and navigation is flawed and missing key data. 5. We believe the hydrological impacts of the proposed alternatives on Mississippi River navigation and stage levels are significantly understated.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645265 **Coder Name:** jgutierrez

Comment Text: In the DRAFT EIS, Mississippi River navigation impacts are completely ignored. Instead, the Corps rudimentarily examined "Riverine Infrastructure and Hydrologic Processes" and changes in river stage only during certain years. The Corps concluded impacts to stage would be small or negligible. We believe this an egregious oversight given the importance of inland waterways to the nation and we request the Corps correct it in the Final EIS. Please note the Upper Mississippi River corridor generates more than \$345 billion annually supporting over 1 million jobs (Economic Profile, Upper Mississippi River) and that increasing the number and level of navigation restrictions can have extremely significant economic consequences.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645264 **Coder Name:** jgutierrez

Comment Text: Many of the Corps' alternatives proposed in the DRAFT EIS would adversely impact and reduce flow support to the Mississippi River. These impacts largely result from the significant volumes of water expended early in the year causing Missouri River flow support reductions in the fall. Due to annual runoff patterns, fall and winter is also frequently a period of lower river stages on the middle Mississippi River. Our analysis indicates that Alternatives 2, 4, and 6 increase the number of days at low-water action levels during October, November, and December. Under these alternatives, the number of days of normal loading is reduced in these months and navigation restrictions shift to lower (i.e., more restrictive) action level categories with greater impacts. These impacts are substantial enough to not be muted even when evaluating annual impacts.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645258 **Coder Name:** jgutierrez

Comment Text: The proposed operational changes contained in the alternatives for the Missouri River also have impacts to flood risk management on the Mississippi River. The Missouri River contributes, on average, 40 percent of the flow to the Mississippi River at St. Louis. As recently as 2015, significant high water events have occurred on the Mississippi River when new records for both Cape Girardeau and Thebes gages were established. Increasing flow from Gavins Point Dam while the Mississippi River is experiencing flooding could present a significant threat to public safety. Once water is released from the Gavins Point Dam, it travels over 800 miles down the Missouri River before it reaches the Mississippi River. This process typically takes approximately ten days and the water cannot be recalled once released. This creates a serious potential for the environmental flow releases on the Missouri River to coincide with regional flooding on the middle Mississippi River and increase flood risk for communities along the middle Mississippi River.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645183 **Coder Name:** jgutierrez

Comment Text: Section 3.24 further states that the impacts of Alternatives 2, 4, 5 and 6 on stage and flow in the middle Mississippi River would be small or negligible. This section also concludes that the impacts to flood risk management in the middle Mississippi River are not anticipated to be significant under Alternatives 3 through 6. Finally, this section claims that the impacts to navigation in

the middle Mississippi River would not be significant under Alternatives 2 through 6. AWO strongly disagrees with these conclusions in Section 3.24. We believe that the impacts to stage, flood control and navigation on the middle Mississippi River are significantly understated due to the flaws in the hydrological and economic models. However, while the DEIS claims that these impacts on the middle Mississippi River will be small to negligible, the Corps data concludes that the lower summer flows in Alternative 2 would result in a lower stage of approximately two feet in July and August. This two-foot reduction in stage on the middle Mississippi in the busy summer months is not a small to negligible impact, especially during times of drought. This two-foot reduction would have severe impacts on shipping costs. The DEIS further concludes that the massive spring and fall releases in Alternatives 2, 4, 5, and 6 would increase the stage and flow on the middle Mississippi by one to three feet. Once again, these increases are not small or negligible, especially when they occur during peak flood season. Even the minimum low flow of 25,000 cfs for several weeks would have significant effects on navigation on the Mississippi River. These impacts would come in the form of reduced draft and tow sizes. Reduced draft or tow size out of St. Louis to the Gulf because of insufficient flows would cost to the nation, at a minimum, millions. In periods of high water on the Mississippi River, increasing the amount of water flowing in from the Missouri River and raising the stage by two to three feet would have grave impacts to the shippers, farmers, consumers, and communities along the river.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645182 **Coder Name:** jgutierrez

Comment Text: Does the Corps just expect the large amount of extra water released from Gavins Point to stay in the Missouri River and not flow downstream into the Mississippi River? This question seems to be answered later under the Subsection Impact from Management Actions Common to All Alternatives where it states the following: It is anticipated that there will be no impacts to biological resources in the middle Mississippi River from the management actions common to all alternatives. The listed activities would occur on the Missouri River and would not impact the stage or flow on the middle Mississippi River. Once again, it is hard to understand how the DEIS can draw this conclusion when it states in two different subsections of Section 3.24-Mississippi River Impacts that the Missouri River contributes almost half of the flow to the middle Mississippi River. The conclusions are illogical.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645181 **Coder Name:** jgutierrez

Comment Text: The hydrological impacts of the proposed alternatives on Mississippi River navigation and stage levels are also significantly understated. The methodology used for the analysis of the impacts on the hydrology in the middle Mississippi River is similar to the methodology used for analyzing the impacts for the Missouri River. Regarding the methodology used for the analysis on the Mississippi River, the DEIS states the following: Specifically, the analysis of the flow alterations under the six alternatives was largely based on the HEC-Reservoir Simulation (ResSim) and HEC-RAS Modeling for the 82-year period-of-record. The DEIS concludes that, despite the massive spring and fall releases from the Gavins Point Dam in Alternatives 2, 4, 5, and 6, there would be no significant impacts to middle Mississippi River navigation from any of these alternatives. Likewise, the DEIS concludes that there would be no significant impact to middle Mississippi River navigation from the significantly lower summer flows contained in Alternative 2. These conclusions are hard to justify given the fact that the DEIS also states that the Missouri River contributes almost half the flow in the middle Mississippi River. The DEIS also claims that the spring and fall flow releases in Alternatives 2, 4, 5, and 6 would be partially to largely attenuated by the time they reach Hermann, Missouri. However, the DEIS does not provide any detailed analysis as to why this would be the case.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645170 **Coder Name:** jgutierrez

Comment Text: Dr. Bray and Dr. Burton concluded that there is not enough waterway traffic on the on the Missouri River to capture, and therefore, measurable water-compelled railroad rates attributable to the Missouri River commercial navigation seems improbable. This conclusion ignores the fundamental principle of water-compelled rates and does not account for the recent increase and continued growth of navigation on the Missouri River. The failure to include an independent comprehensive analysis of water compelled-rates in the DEIS is inappropriate and unacceptable. By not including this analysis, the Corps has drastically understated both the economic benefits of navigation and the impacts of these alternatives on both Missouri and Mississippi River navigation.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645169 **Coder Name:** jgutierrez

Comment Text: The DEIS failed to perform an independent comprehensive analysis of water-compelled rates on either the Missouri or Mississippi rivers. There is no mention of water-compelled rates in either Sections 3.15 Navigation-Affected Environments et al.,

nor is there any analysis of water-compelled rates in Section 3.24 Mississippi River Impacts. Instead, the Corps devotes roughly one-half of one page to this critical concept in the Navigation Environmental Consequences Analysis Technical Report to the DEIS.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645168 **Coder Name:** jgutierrez

Comment Text: Finally, the failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the Mississippi Rivers major contribution to the national economy. By failing to conduct and NED, RED, OSE, and EQ analysis in its modeling, the DEIS significantly understates the economic, environmental and social impacts of the alternatives on Mississippi River navigation.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645167 **Coder Name:** jgutierrez

Comment Text: In terms of the impacts of the alternatives on Mississippi River navigation, the DEIS evaluation does not use any of the four accounts: Environmental Quality Methodology (EC), NED, RED, or OSE. Instead, the Corps measures the impacts of the alternatives on Mississippi River navigation by analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the Hydrologic Engineering Center-River Analysis System (HEC-RAS) Model for the entire period-of-record for each alternative. So, the Corps used four accounts (EC, NED, RED, OSE) throughout the DEIS, and then utilizes a completely different methodology to measure the alternatives impacts on Mississippi River navigation. The DEIS fails to explain the reason for this abrupt change. The failure to perform a comprehensive RED analysis to measure the alternatives impacts on Mississippi River navigation is inexcusable and unacceptable. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the aforementioned local and regional economic conditions.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645166 **Coder Name:** jgutierrez

Comment Text: The DEIS indicates that the impacts to flood risk management in Section 3.24 were evaluated using two of the four economic account models: NED and OSE. By only using these two accounts to evaluate the impacts to flood risk management, the DEIS has omitted key data points resulting in a major understatement of the costs and impacts to Mississippi River flood control interests. The failure to perform a comprehensive RED analysis to measure the impacts to flood risk management on the Mississippi River is very concerning. In addition to this, the DEIS does not indicate the reason an RED impact analysis was not performed. A comprehensive RED analysis for the Mississippi River, if done properly, would illustrate the negative impacts of these alternatives on local and regional economic conditions, such as employment, income, sales, sales tax revenue, flood damages, and other potential costs.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645165 **Coder Name:** jgutierrez

Comment Text: The Corps informed MRRIC that it did not model the economic, hydrological or environmental impacts of the alternatives to Mississippi River navigation in its human considerations analysis on navigation. Instead, the Corps stated that the impacts of the alternatives on Mississippi River navigation would be addressed in the DEIS. The failure to address the impacts of the alternatives on Mississippi River navigation in the human consideration report calls into question the Corps ability to perform a comprehensive and accurate assessment of the impacts of the alternatives on Mississippi River navigation. This fact is confirmed by the numerous omissions of key data and false assumptions in the DEIS section on Mississippi River Impacts.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644787 **Coder Name:** jgutierrez

Comment Text: 9. We appreciate that this DEIS acknowledges the existence of the Middle Mississippi and that it is, in fact, integrated with the Missouri River. However, the impacts relating to the Middle Mississippi are direct and not cumulative. The relationship of the Middle Mississippi and the Missouri River pallid is not sufficiently developed. Flow and lack thereof affect the performance of the Middle Mississippi and have significant social and economic consequences to the users of the Mississippi River. The failure to directly examine the impact of alternatives to the Middle Mississippi in a direct fashion, and to ignore science indicating the pallid's potential gain, requires greater examination of the Middle Mississippi, which should be included in this document.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644774 **Coder Name:** jgutierrez

Comment Text: "Economic, hydrological or environmental impacts of the Alternatives to Mississippi River navigation is not accurately factored in the human considerations analysis on navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644773 **Coder Name:** jgutierrez

Comment Text: "The DEIS assessment of the proposed Alternatives impacts on the Mississippi River is flawed, insufficient and inaccurate. The geographic scope of this DEIS does not include the Middle Mississippi River from St. Louis, Missouri downstream to Cairo, Illinois. The failure to include the middle Mississippi River in the geographic scope of the DEIS hinders any ability to analyze the impacts of the proposed Alternatives on the Mississippi River in a thorough and accurate manner.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644768 **Coder Name:** jgutierrez

Comment Text: "Failure to perform a comprehensive NED analysis on the impacts to the Mississippi River is also inexcusable and unacceptable given the Mississippi Rivers major contribution to the national economy. By failing to conduct and NED, RED, OSE, and EQ analysis in its modeling, the DEIS significantly understates the economic, environmental and social impacts of the alternatives on Mississippi River navigation.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644767 **Coder Name:** jgutierrez

Comment Text: "The impacts the Alternatives will have on Mississippi River navigation is gathered via inconsistent methodology than that used throughout the rest of DEIS. Environmental Quality Methodology (EC), NED, RED, or OSE are ignored in favor of analyzing commodity movement data from the Waterborne Commerce Statistics Center daily stage level data for the St. Louis gauge from the HEC-RAS Model for the entire period-of-record for each alternative. A comprehensive RED analysis for navigation would illustrate the negative impacts of the alternatives on the aforementioned local and regional economic conditions.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644766 **Coder Name:** jgutierrez

Comment Text: "Economic Modeling and Analysis of the Impacts of Alternatives on Mississippi River Flood Risk Management and Navigation in DEIS are flawed and missing key data.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 196 **Comment Id:** 644145 **Coder Name:** jgutierrez

Comment Text: The purpose of today's written testimony is to express opposition to the proposed changes/alternatives to the management of the Missouri River Basin. The implementation of the proposed changes/alternatives, based on the draft environmental impact statement, cause a significant impact to the Middle Mississippi River system located north of Cairo, IL for both flood control and navigation. The potential effect to the water surface elevation of the Mississippi River near Cape Girardeau Missouri, with the proposed changes/alternatives, produce a river stage increase in excess of 3 ft. Any change/alternative producing an induced increase to the water surface elevation on the middle and lower Mississippi River is unacceptable. Not only will the proposed alternatives potentially negatively impact the people and property protected by the MR&T system, but it will also affect those who farm in and along flood ways of the Mississippi River Watershed. In LRDD's District alone approximately 6,500 acres of farmland in the area known as the "East Basin" would be impacted by water surface elevation increases.

Organization: The Little River Drainage District

Commenter: Dustin Boatwright **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 95 **Comment Id:** 636843 **Coder Name:** jgutierrez

Comment Text: We would also request that when considering National Economic Development and impact that we remind ourselves that the waters from the Missouri River do not and have never stopped at the arch in St. Louis, nor do the tonnage coming off of our system, and that while a per ton mile is evaluated, those same tons go all the way to the gulf almost without exception. The water supplied by our system effects the nation as a whole impacting the Mississippi River and while that doesnt fit into the formula of the eight authorized purposes of the Missouri River, it is real and common sense should not have blinders.

Organization: AGRIServices of Brunswick

Commenter: Lucy A Fletcher **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631570 **Coder Name:** jgutierrez

Comment Text: We too are concerned with low summer flow provisions in Alternative 2. It would cause harm to our navigation industry, as Tom said, creating a split season on the Missouri River and adversely affecting navigation flows on the middle Mississippi River.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 34 **Comment Id:** 628342 **Coder Name:** jgutierrez

Comment Text: We appreciate that this DEIS acknowledges the existence of the middle Mississippi and that it is, in fact, integrated with the Missouri River. However, the impacts relating to middle Miss are direct and not cumulative. For all practical purposes, the relationship with the middle Miss and Missouri River, pallid is limited. Flow and lack thereof affect the performance of the middle Miss and have significant social and economic consequences to the users of the Missouri River. The failure to directly examine impacts alternatives to the middle Miss in a direct fashion and to ignore science indicates the Pallid's potential gain would required greater examination.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 29 **Comment Id:** 626742 **Coder Name:** jgutierrez

Comment Text: Reductions in navigation flow support have cascading impacts not only to uses on the Missouri River, but also on the Mississippi River, which is 40% of the flow to the middle Mississippi during normal conditions, and peaked at more than 70% during the 2012 drought.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

EC2400 Environmental Consequences: Other Socioeconomic Impacts (Substantive)

Correspondence Id: 13 **Comment Id:** 626258 **Coder Name:** jgutierrez

Comment Text: The ability of farmers in the Missouri River valley to produce crops at a profitable level are paramount to the economies of all of the communities along the Missouri River. AgriVision Equipment would ask that when considering how to manage the Missouri River that economic impacts to farmers and communities and even the possibility of loss of human lives along the river be taken into serious account.

Organization: AgriVision Equipment Group, Hamburg Store Manager

Commenter: Jon Graves **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645506 **Coder Name:** jgutierrez

Comment Text: The DEIS says a 300% increase in federal funding would be needed for Alternative 2. This was based on a 74M annual budget for the Recovery Program. The DEIS estimated up to a 338M per year cost for Alternative 2 for ESH construction and land acquisition. We want to see more analysis on the additional year-round jobs and other economic activity that would be created in the recreation industry and how ecosystem benefits of the increased habitat created under Alternative 2 would offset these stated increased estimated costs in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644751 **Coder Name:** jgutierrez

Comment Text: "One of the major deficiencies in the economic modeling in the DEIS is it relies too heavily on averages, despite the availability of more detailed information previously documented. The economic impacts of the proposed Alternatives on human considerations in the DEIS are measured over an 82-year period-of-record. This timeframe and hydrological period-of-record cannot properly represent the true impacts of the proposed Alternatives on various stakeholders, as it skews the effects of major high water and low water events, such as the great floods of 1993 and 2011, as well as the severe droughts of 1988, 1989 and 2012. Under this 82-year period-of-record, the negative impacts of these Alternatives are significantly understated in the DEIS. This is particularly the case regarding the severe negative impacts to the resiliency of the navigation industry from the drought of the late 1980s.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

EC2500 Environmental Consequences: Climate Change (Substantive)

Correspondence Id: 239 **Comment Id:** 642741 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18.2.11, p. 3-522 Comment: Climate change discussion is clearly required, but long-term predictions are purely speculative.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645442 **Coder Name:** jgutierrez

Comment Text: In the Draft EIS, the Corps mistakenly assumes that the environmental impacts of all alternatives will be equal in light of climate change. It states on page 3-227 - Extremes in climate will likely also magnify periods of wet or dry weather, resulting in longer, more severe droughts, and larger more extensive flooding. Likely impacts to cultural resources would follow from increases to variability of reservoir water surface elevations ... However, it is assumed that the conclusions described would be similar under each alternative. The degree of water elevation fluctuation determines the magnitude of impact to cultural resources at the main stem reservoirs. Each alternative will cause different levels of fluctuation. As acknowledged by the Corps, climate change will intensify both catastrophic rain events and droughts. Consequently, the water level fluctuations will increase exponentially, not arithmetically. The assumption that the impacts of climate change are equal under all alternatives is erroneous.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645198 **Coder Name:** jgutierrez

Comment Text: Finally, because climate damages are uncertain and likely will not be distributed equally across the country, the Corps should use an increased SCC. The SCC figure used in the USACE analysis here does not reflect current understandings of the degree to which climate damages are uncertain and uses base-case projections that mask the impact of a number of potentially catastrophic outcomes. Given people's general aversion to extreme losses, future Corps' management studies and environmental impact statements should increase the SCC to reflect the uncertainty of climate impacts and the potential for catastrophic damage scenarios. No matter what possible climate change damages ultimately come to pass, costs associated with climate change impacts will likely be unevenly distributed. Current calculations model the SCC by aggregating and averaging damages. In reality, however, it is likely that the damages of climate change will be experienced in different modes and to very different degrees by different populations in different regions; for example, damages will likely be far greater in coastal areas subject to sea level rise and flooding, like Miami, than inland areas with very cold winters like Minneapolis. Because there is declining marginal utility to consumption, when a few individuals suffer significant damages and others experience smaller costs, the overall cost to social welfare is greater than if all individuals suffered an averaged level of harm. As a result, in future analyses, the Corps should adopt a higher social cost of carbon to account for the concentrated harms of climate change.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645197 **Coder Name:** jgutierrez

Comment Text: The USACE should continue to monetize the social costs of carbon by accounting for the global harms caused by climate change. Including global effects of climate change in the SCC makes it more likely that other countries will accurately account for climate change risks in their own decision making and strengthens the United States ability to persuade other countries to reduce their own GHG emissions. Because climate change is fundamentally a global phenomenon, reductions of GHG emissions in other countries will benefit U.S. citizens. Specifically, the United States will benefit if China, India, the European Union, and other major emitters reduce their emissions. Using a global SCC will increase the probability that other countries will take decisive action to reduce their own GHG emissions. Therefore, using global damages in calculating the SCC will have the important benefit of increasing the likelihood of greater emissions reductions abroad. The Paris Climate Agreement, in which nearly 200 countries agreed to take action on carbon emissions, demonstrates this benefit. This effect is perhaps even more evident in the bilateral announcement of U.S. and Chinese commitments with respect to GHG emissions reductions, which was announced in advance of the Paris Climate Agreement and involved U.S. leadership producing the first Chinese commitment to halt and ultimately reverse growth in its GHG

emissions. We have already witnessed how U.S. commitments to account for and address climate impacts can produce international reductions in projected GHG emissions. Just like domestic GHG emissions reductions, those international reductions will produce real domestic benefits in terms of mitigating climate damages that will be experienced by U.S. citizens and residents on U.S. soil.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645196 **Coder Name:** jgutierrez

Comment Text: In future management plans and impact analyses, the USACE should also use higher underlying estimates for the damages from climate change. When the USACE estimated the SCC for this management plan, it relied on the best data available to it at the time. But the models the USACE relied on were based on studies that are approximately two decades old, and more accurate information is now available. In fact, since 2009, scientists have released roughly 150 reputable studies that indicate that climate change will cause even more significant damages than initially anticipated. Indeed, evidence of faster-than expected retreat of the West Antarctic ice sheet, newer findings related to human health, and concerns about heat, food prices, and violence all point toward increasing estimates of future climate change damages. The USACE did not incorporate this improved and available scientific, technical and economic information into its current calculation; moving forward, it should.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645195 **Coder Name:** jgutierrez

Comment Text: Because climate change poses substantial and substantially uncertain risks, agencies should use a lower discount rate to hedge against potentially significant future damages. A low discount rate is appropriate in light of the possibilities that continued carbon emissions will cause temperatures to increase rapidly, sea levels to rise quickly, physical “tipping points” to occur suddenly, or dramatic human responses to these changes that include mass migration and international conflict. The case for using a low discount rate to determine the SCC is, in many respects, similar to the case for investing in gold, or for purchasing life, fire, and other insurance policies that protect against major disruptive events. Furthermore, this rationale is endorsed in Circular A-4, in its explication, discussed above, of how a lower discount rate is appropriate in analyzing more uncertain or intergenerational potential costs and benefits of a regulatory action.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645194 **Coder Name:** jgutierrez

Comment Text: In future analyses, USACE would be justified in using lower discount rates and higher estimates of the SCC. Above, we explained that when the USACE completed this management plan, it complied with Circular A-4 because it chose a discount rate based on the best available data to it. To continue to incorporate the best available information in environmental impact reviews, USACE should use an even higher SCC, for four central reasons: * First, the discount rate should match the risk characteristics of climate change, meaning that it should be in the neighborhood of the risk less rate or possibly even lower; * Second, the monetized costs of carbon emissions should reflect the most up-to-date science, which suggests that the damages from climate change are worse than previously anticipated; * Third, the USACE should continue to include the global costs of climate change because implementing a global analysis leads other countries to reduce emissions, which benefits United States citizens and residents; and * Fourth, the uncertain and heterogeneous nature of future climate damages supports using a higher SCC value than that produced through current calculations.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645193 **Coder Name:** jgutierrez

Comment Text: Lastly, it is worth noting that Circular A-4 recommends that agencies use lower discount rates-between one and three percent-when an administrative action will have significant intergenerational effects. (Again, these suggested discount rates come from a higher interest rate environment so current values are likely lower than this one to three percent range.) According to OMB, uncertainty about the appropriate value of the discount rate for regulatory actions with intergenerational effects over a longer time horizon supports using rates different and lower than three or seven percent. Circular A-4 concludes that, to set a discount rate that treat[s] all generations equally and avoids devaluing the welfare of future generations relative to the current generation, an appropriate discount rate for actions with such uncertain, long-term costs and benefits is from 1 to 3 percent per annum. Because any agency decision related to climate change necessarily impacts future generations in uncertain, long-term ways, it was appropriate for the USACE to use a lower discount rate in this case, and it should use an even lower discount rates in future analyses.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645192 **Coder Name:** jgutierrez

Comment Text: Circular A-4 recommends conducting analysis with discount rates of seven percent and three percent. The higher discount rate was an approximation of the return to equities or private capital in 2003 and the lower discount rate was an approximation to the risk free interest rate then. As we explain below, the nature of the returns to carbon mitigation investments favor the use of the lower discount rate, possibly even one lower than the risk free rate. Further, the discount rate analyses set forth in Circular A-4 supports using a discount rate even lower than risk free rate to assess the present value of intergenerational costs such as those generated by climate change. It is important to note, however, that Circular A-4 is now dated with respect to its characterization of interest rates in that capital has become uniformly and significantly less expensive since 2003. Thus under the rationale of Circular A-4, the baseline discount rates should be lower. In fact, the government now estimates that long-term government bonds will generate a real rate of return of approximately 0.7 percent.⁴⁰ And, current OMB guidance documents reflect the fact that the risk-free discount rate has fallen toward zero. The result is that the Circular A-4 guidance would appear to recommend using a risk free discount rate of less than one percent. Future USACE management plans and environmental impact statements should too.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 171 **Comment Id:** 645191 **Coder Name:** jgutierrez

Comment Text: It should be noted that, in its SCC analysis, the USACE used a value of \$38 per metric ton of CO₂, denominated in 2007 dollars, and applied a discount rate of three percent. This likely understated the value of the SCC. As an initial matter, the USACE should value the cost of CO₂ in accordance with the current dollar value, i.e. 2016 or 2017 dollars, not 2007 dollars, as the rest of its calculations are based on current dollars. The USACE needs to be consistent in which dollars it uses, or it risk understating costs. Further, the central value [of \$38 per metric ton] is the average of SCC across models at the 3 percent discount rate. As elaborated below in Part III, using a proper discount rate is [o]ne of the most important factors influencing [the SCC] estimates, because [a] large portion of climate damages are expected to occur many decades into the future and the present value of those damages . . . is highly dependent on the discount rate.

Organization: Abrams Clinic University of Chicago Law School

Commenter: Mark N Templeton **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 243 **Comment Id:** 645116 **Coder Name:** jgutierrez

Comment Text: Monetization provides much-needed context for otherwise abstract consequences of climate change. If the NEPA review for an agency action merely quantifies greenhouse gas emissions by metric ton, or only qualitatively discusses the general effects of global climate change, decision-makers and the public will tend to overly discount that individual action's potential contribution. Without context, it is difficult for many decision-makers and the public to assess the magnitude and climate consequences of, for example, an additional million tons of carbon dioxide. Monetization, on the other hand, allows decision-makers and the public to weigh all costs and benefits of an action and to compare alternatives using the common metric of money. Monetizing climate costs, therefore, better informs the public and helps "brings those effects to bear on [the agency's] decisions."

Organization: Environmental Defense Fund

Commenter: Susanne Brooks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 244 **Comment Id:** 645114 **Coder Name:** jgutierrez

Comment Text: 9. The Corps Should Monetize Methane as well as Carbon and Adjust for Yearly Increases The Corps' use of an estimate of the social cost of carbon in its draft EIS is commendable. However, currently the Corps does not appear to be using the social cost of methane or the social cost of nitrous oxide. Additionally, the Corps seems to be using only a single estimate of the social cost of carbon, without considering how that estimate will grow over time or giving weight to higher estimates that better capture uncertainty, catastrophe, and risk aversion. For example, Alternative 2 identified in the EIS would increase carbon dioxide emissions by over 121 million pounds annually (about 55,000 metric tons), as well as several thousands of pounds more in methane and nitrous oxide emissions; by comparison, Alternative 3 (the option preferred by the Corps) would decrease carbon dioxide emissions by 8 million pounds annually (about 3600 metric tons). The Corps applied an estimate of the Social Cost of Carbon to partially monetize these effects, choosing the central estimate for present-year emissions at a 3% discount rate, or about \$38 per metric ton of carbon dioxide. Applying this metric to the Plan Alternatives' greenhouse gas effects, the Corps calculates that Alternative 2 would lead to climate costs totally over \$2 million annually, while its preferred Alternative 3 would save about \$138,000 in climate benefits annually.

Organization: Environmental Defense Fund

Commenter: Susanne Brooks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 244 **Comment Id:** 645113 **Coder Name:** jgutierrez

Comment Text: Move Beyond a Single Estimate, to Account for Growing Damages over Time and Uncertainty The same calculations discussed above further suggest that these climate effects would occur on an annual basis. However, the Corps has

chosen only a single estimate of the social cost of greenhouse gases: based on the calculations, the Corps has chosen an estimate appropriate for roughly present-year emissions. The social cost of greenhouse gases in fact increases every year. Because carbon dioxide accumulates in the atmosphere over time and climate damages escalate as temperature rises, a ton of carbon dioxide emitted next year is marginally more damaging than one emitted today, and so the social cost estimates rise over time. Even if it not feasible for the Corps to calculate the entire future stream of greenhouse gas effects over the years, discounted back to net present value, the Corps should acknowledge that it is only monetizing greenhouse gases for a single year, and that increased emissions would be more costly and reductions would be more beneficial in future years. Finally, the Corps should acknowledge that there is a range of social cost of greenhouse gas estimates, including a 95th-percentile value that captures uncertainty, risk aversion, and the potential of catastrophic outcomes.

Organization: Environmental Defense Fund

Commenter: Susanne Brooks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644878 **Coder Name:** jgutierrez

Comment Text: Nevertheless, even small changes in climate variables, if detected and included in models, can cause large differences in outcomes for experimental model runs such as the models included in this DEIS. Hydrogeomorphic, particle tracing, Monte Carlo simulations with tens of thousands of simulation runs are an example; as are time-series risk calculations for the potential of regional extirpation for terns or plovers at 5% probability over 50 years.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

EC2600 Environmental Consequences: Other Impacts (Substantive)

Correspondence Id: 153 **Comment Id:** 637690 **Coder Name:** jgutierrez

Comment Text: The LCNRD oversees operation of the Cedar-Knox Rural Water Project (CKRWP) which has an intake in Lewis and Clark Lake above Gavin's Point Dam. The CKRWP treats water from the lake and serves 4 communities and 870 rural hook-ups in Cedar and Knox Counties of Northeast Nebraska. It is of our utmost concern that flow rates and lake levels be maintained in a way that will not impact the CKRWP intake's ability to provide what ultimately becomes the drinking water for up to 3,400 consumers

Organization: Lewis & Clark Natural Resources District

Commenter: Annette Sudbeck **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 220 **Comment Id:** 642151 **Coder Name:** jgutierrez

Comment Text: The public is aware that although the Act does not provide a private cause of action to enforce its requirements, "the governor of an affected state, where a state policy or program exists to protect farmland, may bring an action in the Federal district court where a Federal program is proposed to enforce the requirements of section 1541 of the Act, 7 U.S.C. 4202, and regulations issued pursuant to that section." 7 C.F.R. Â§658.3(d). Please consider alternatives to lessen adverse effects on farmland preservation.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 153 **Comment Id:** 637691 **Coder Name:** jgutierrez

Comment Text: The LCNRD supports efforts to maintain a healthy environment for endangered species, however; we wish to emphasize the need to maintain a healthy water source for the human populations that rely on the Missouri River and its reservoirs for drinking water.

Organization: Lewis & Clark Natural Resources District

Commenter: Annette Sudbeck **Page:** **Paragraph:**

Kept Private: No

EC2700 Environmental Consequences: General Methodology for Establishing Impacts/Effects (Substantive)

Correspondence Id: 46 **Comment Id:** 628575 **Coder Name:** jgutierrez

Comment Text: The State of Missouri supports the preferred alternative identified by the Corps in the draft EIS, with the exception of the potential one-time flow event. This one-time flow event was neither modeled nor was - - were the impacts assessed in the draft EIS because of the uncertainty of the hydrologic conditions present.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 646378 **Coder Name:** JGUTIERREZ

Comment Text: Second, the chart employs different metrics for different impacts, complicating how the impacts are weighed within and among the alternatives. Below the two lines addressing species objectives, the chart exhaustively lists monetized impacts to human considerations. However, impacts to environmental factors are treated on a different scale using numerical indicators ranging from - 2 to 2. For example, the chart shows that Alternative 2 is the only alternative which would increase program expenditures, but it is also the only alternative with a positive Regional Economic Development (RED) value. Additionally, no other alternative besides Alternative 2 would offer "+2" to both "Fish and Wildlife" and "Other Special Status Species." How these different factors are weighed against each other is a mystery which the MRRMP-EIS never explains. Third, there are no summations of monetary or non-monetary values that would allow the alternatives to be compared in the aggregate. For example, the only characteristic of the chart which clearly distinguishes the preferred Alternative 3 from the others is the chart's color scheme. Alternative 3 has more green boxes and fewer red boxes than the other alternatives, but this does little to harmonize the convoluted metrics of the chart. The Executive Summary is supposed to enable the public to understand the project without reading the entire MRRMP-EIS, but the inconsistencies between the Executive Summary's graph and the purpose and need statement show how it fails to do so.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 34 **Comment Id:** 645751 **Coder Name:** jgutierrez

Comment Text: It almost appears that the DEIS and other evaluations purposefully neglect the issue of material in the system and the dramatic reduction of material movement throughout.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645555 **Coder Name:** jgutierrez

Comment Text: Section 3.12.3.5 - Alternative 3 - Mechanical Construction Only We agree that the basic impacts of Alternative 3 are reduced, relative to the No Action alternative at the outset of the management actions. In general, Alternative 3 results in the least negative impacts. However, because it still contains a provision for adjusting flow regimen, and because of the broad negative impacts of higher flows, and the possibility that annual pulses can still be adopted under the adaptive management process, Alternative 3 can still be very damaging to stakeholders. But it strikes a better balance between promising species recovery actions and negative consequences. If it eliminated the potential for spring pulses it would be the only acceptable alternative. All economic conclusions and modeling on Alternative 3 are inaccurate and incomplete due to the failure to provide robust and accurate modeling

and impact data on interior drainage. This alternative is unacceptable because no one knows what the impacts to NED, RED and OSE will be since the DEIS stipulates that economic analysis of the floodplain could not be completed. Translation of the impacts to the four sample sites to the rest of the floodplain was not even attempted and extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology and drainage varies between sites. However, given that no alternatives exist outside the six offered, we believe this alternative is the least unacceptable of the six alternatives.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645524 **Coder Name:** jgutierrez

Comment Text: Alternative 6 - This alternative attempts to mimic a spring spawning cue for pallid sturgeon with a large flow release every three years. The League questions how many large spring flows occurred on the river on three year intervals over the eighty-two year Period of Record. The League is also concerned with the impacts to the other authorized purposes if this alternative is selected. Reservoirs could be drawn down up to 7 feet under this measure (V3-page 202), causing severe impacts to fish and wildlife, recreation, hydropower, water supply, and other purposes.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645488 **Coder Name:** jgutierrez

Comment Text: 4. Overall economic impacts are substantially understated and modeling limitations are not delineated. We believe much of the understatement of economic impacts is due to the truncated nature of the modeling. Inadequate and incomplete resources were allocated for the modeling process and time constraints further truncated the process. The synergistic effects mentioned in point three above clearly show the effects analysis to be understated. The modeling limits itself to the loss of production on lands predicted to be acquired and does not include transportation, infrastructure, energy, water supply and the effects of economic multipliers from those impacts. These omissions and the limitations of modeling should be clearly delineated in the DEIS. The same level of resources, measurement and analysis should be applied to economic impacts that are applied to species impacts.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645243 **Coder Name:** jgutierrez

Comment Text: Our qualified support of the Preferred Alternative does not extend to the proposed one-time flow test, which would have the same reservoir release criteria as Alternative 6. Therefore, our comments regarding Alternative 6 also apply to the Preferred Alternative. Additionally, we are unable to provide comments on the impacts of the one-time flow event because the Corps did not model or assess the impacts associated with it in the Draft EIS. In fact, page xi of the Executive Summary states that the Corps did not do so "because of uncertainty of the hydrologic conditions present." The State of Missouri asserts that the Corps cannot implement an action on which the agency has not adequately assessed impacts.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645239 **Coder Name:** jgutierrez

Comment Text: Pg. 14, lines 4-5 - Refers to the alternatives as being derived from EA findings and further screened based on effects to human considerations would be desirable that a brief accounting of the quantification of this screening be presented here in the Executive Summary.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645229 **Coder Name:** jgutierrez

Comment Text: In the DEIS Executive Summary, the table labeled Environmental Consequences of the Actions Compared to No Action is a rather amazingly confusing chart. For those members of the public who printed this in B&W without realizing the need for color (on only a couple of pages), it is especially useless.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 644959 **Coder Name:** jgutierrez

Comment Text: The Corps even admits that Alternative 2, the most beneficial alternative in terms of species protection, was produced based on old data: Alternative 2 was designed to address listed species concerns and, while not necessarily completely aligned with the latest scientific priorities (it was designed more than 15 years ago and before the large-scale effects analysis was undertaken for this plan), it is sufficiently effective for endangered species to be a viable alternative in the MRRMP.¹²² Nowhere in the MRRMP-EIS is use of this outdated information justified. The Corps does not, for example, state that reinitiation of Section 7 consultation would be prohibitively costly, time-consuming, or would not provide better information.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644940 **Coder Name:** jgutierrez

Comment Text: The MRRMP-EIS provides "fundamental" and "sub objectives" for each species, but summarizing them as part of the purpose and need statement itself would properly narrow the project's goals and the means of accomplishing them. As a result, ESA goals would be clarified and prioritized over human consideration impacts. The Corps could then use a chart to compare the relative effectiveness of each alternative in accomplishing those goals. For example, the chart could display how Alternative 2 "exceeds" the goals for the piping plover and interior least tern, along with how each alternative is projected to affect pallid sturgeon recruitment. The chart could truncate human consideration impacts into a single intelligible value for each alternative, and allow the body of the alternatives analysis to explain in more detail how each alternative affects those economic interests.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 166 **Comment Id:** 644882 **Coder Name:** jgutierrez

Comment Text: Time-series analysis is appropriate for a programmatic DEIS anticipating future effects over 5, 15 and 50 year spans of operation. Instead, we seem to have a fixed reference point in time represented by the Missouri River baseline assessment (USACE 2013).

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644880 **Coder Name:** jgutierrez

Comment Text: If the newer technologies and datasets could be incorporated into existing operational analysis, then many of the highly negative, human considerations costs (2011 flood, 2012 drought, projected as exemplary of future events) could be avoided. Moreover, operational decisions by rules aimed at reducing endangered species "take" for the birds above and below the reservoirs could be improved. Bimodal flood pulse experiments and frequency probability could be increased if such events were planned for times when no one experienced flooding as a result.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644754 **Coder Name:** jgutierrez

Comment Text: "Economic modeling used in the DEIS consistently relies on old, outdated and inaccurate information to calculate impacts. One example is a twenty-year-old study used to estimate the impacts in the National Economic Development (NED) account for navigation. The towing industry was not consulted to obtain feedback on how to calculate transportation savings in its NED analysis. Further, the Regional Economic Development (RED) evaluation also appears to be insufficient and lacking in data from the tugboat, towboat and barge industry.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644749 **Coder Name:** jgutierrez

Comment Text: WCI echoes AWOs comments from its letter dated April 24, 2017, particularly concerning the following items: "While WCI supports some measures found in Alternative 3, the one-time flow test has not been modeled and as such, it must go through a full NEPA review process before it is initiated.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644422 **Coder Name:** jgutierrez

Comment Text: I believe that the human considerations and flood values were misunderstood with Graham's charting. He's a great person, but I don't believe he ever connected to the values or was misled with information for the comparisons and percentages of affects for flooding in the whole range of the Missouri River Basin.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643970 **Coder Name:** jgutierrez

Comment Text: "EO" (Environmental Objections) The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative. EPA intends to work with the lead agency to reduce these impacts.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643969 **Coder Name:** jgutierrez

Comment Text: "EC" (Environmental Concerns) The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643895 **Coder Name:** jgutierrez

Comment Text: Note also that these alternative descriptions, eg. Alternative 5 indicate the reservoir operations are similar to Alternative 1 plus the fall release. See also alternative description in Hydropower Report that indicates Alternative 5 is based on Alternative 1 plus a release in the fall. So does Alternative 5 results include the spring pallid sturgeon spawning releases (or not) plus the ESH releases? This is not clear and impacts analysis could be greatly impacted and/or misrepresented based on the actual Alternative modeling provisions.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643456 **Coder Name:** jgutierrez

Comment Text: Of the alternatives presented in this Draft EIS, the members of this Association feel that alternative 3 has the least impact to the 8 Authorized Purposes which includes impacts to water supply and water quality

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642805 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.28, p. 3-642 "The use of water resources associated with flow actions under the alternatives would not represent an irreversible or irretrievable commitment of resources because water resources would be restored during the winter months as part of the annual precipitation cycle." Comment: This statement assumes that there will be sufficient runoff into the Missouri River reservoirs every spring to replenish the volume of water that was released the previous year. One of the reasons why the mainstem Missouri River dams were constructed is because runoff can vary drastically from year to year. There have been two extended droughts since the dam system has been in operation. That statement is valid when looking at the water cycle from a large-scale point of view, but it should never be assumed that water used will be restored the following year in the Missouri River Basin.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 161 **Comment Id:** 641125 **Coder Name:** jgutierrez

Comment Text: While Alternative 3 seems to suggest an opportunity for a balance between agricultural, navigation, economic and power generation needs, and those of species recovery, the Corps hydrologic and economic modeling must first be completed to make a final determination. This alternative deserves more study.

Organization: Iowa Farm Bureau Federation

Commenter: Rick Robinson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641050 **Coder Name:** jgutierrez

Comment Text: We appreciate the scope and quality of the Corps modelling work to estimate flows and resulting elevations at thermal power and other intakes and believe this methodology has provided a valid predictive tool. However, we fully recognize that the river and its channel is a very dynamic system, constantly changing with the subsurface topography potentially subject to substantial shifts over a period of just a few years. Thus, the possible use of the one-time spawning test under Alternative 3, must be carefully re-evaluated, using updated topography and modelling, as would be expected under the AMP. It would clearly be inappropriate to assume impacts up to nine years from finalization of the EIS, based on the assessment contained in this draft, with its use of 2012 channel geometry. Comprehensive reviews, updates, and re-evaluations conducted on a more frequent periodic basis are essential.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640731 **Coder Name:** jgutierrez

Comment Text: While Alternative 3 (Corps Preferred Alternative) is less objectionable than Alternatives 2, 4, 5 and 6 it still includes the possibility of flow modifications in the future. This is especially disappointing as neither economic nor hydrologic modeling has been completed for the entire floodplain.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640185 **Coder Name:** jgutierrez

Comment Text: The MRRMP-EIS is also dependent on numerous models. Depending on the rigor of models, their output can give the appearance of objectivity and specificity where it does not necessarily exist. It is unclear from the document whether (and at what level) the various models have been subjected to scientific review, verification and refinement. The models have not been made available for review, nor were state experts who have local knowledge and experience the USACE lacks consulted regarding the models.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 131 **Comment Id:** 640167 **Coder Name:** jgutierrez

Comment Text: It is wholly proper to consider human impacts and seek to minimize them, but priority must at some points give way to species recovery. It is the long push of human considerations that have led us to the point we are, while it is also our appreciation of the importance of the whole of our own place that inspires us to require restraint and restoration. Thus in the broadest sense, the authorized purpose of æfish and wildlife is our own recognition of a human consideration and the ESA is our guide to keep us from losing track of that value.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 131 **Comment Id:** 640113 **Coder Name:** jgutierrez

Comment Text: The Corps five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 122 **Comment Id:** 638311 **Coder Name:** jgutierrez

Comment Text: "Failure to recognize and address riverbed degradation - Throughout the DEIS, including section 3.18.2.4, the Corps has stated the fact that riverbed degradation is affecting the operation of intakes on the river. It appears the Corps is making these statements in the DEIS as a passive, disinterested bystander. The Missouri River is one of the most engineered and regulated rivers in the world. The Corps is in control of the Missouri River system. The Corps has the ability and responsibility to correct the riverbed degradation that has occurred on the Missouri River and its tributaries over the past 25 years. Section 3.18.2.4 under the NED analysis states that, The project team did not attempt to evaluate the cost of intake modification that may occur due to bed degradation or prolonged drought conditions. This information is readily available since the Corps Kansas City District has been working on a

Missouri Riverbed Degradation Study for more than a decade. The Missouri River Management Plan purports to be a long-term, holistic solution to problems on the Missouri River, but it fails to address bed degradation, which is one of the most critical problems facing the Corps. Rather than passively observing the problems with riverbed degradation, the Corps should take immediate, active steps to solve the problem.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 135 **Comment Id:** 637267 **Coder Name:** jgutierrez

Comment Text: While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization: Responsible River Management

Commenter: Leo Ettleman **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 101 **Comment Id:** 636859 **Coder Name:** jgutierrez

Comment Text: While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 635152 **Coder Name:** jgutierrez

Comment Text: The State the Missouri supports the Preferred Alternative identified in the Corps - - identified by the Corps in the Draft EIS, with the exception of the potential one-time flow event. This one-time flow event was neither modeled nor were the impacts assessed in the Draft EIS, and I quote again, because of uncertainty of the hydrologic conditions present, unquote.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633864 **Coder Name:** jgutierrez

Comment Text: The modification to the DEIS is premature. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I and THE TAXPAYERS deserve better from the Corps!

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633840 **Coder Name:** jgutierrez

Comment Text: The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633833 **Coder Name:** jgutierrez

Comment Text: The Corps hasn't completed their work on the DEIS. Because modeling has only been completed for four representative levee sites, I cannot be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance for my clients and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. My clients deserve better from the Corps.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633810 **Coder Name:** jgutierrez

Comment Text: The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydrologic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

EC2800 Environmental Consequences: Cumulative Impacts (Substantive)

Correspondence Id: 34 **Comment Id:** 628337 **Coder Name:** jgutierrez

Comment Text: While we have no objections - - while we have objections to the use of certain sediment-related models on the micro level, we recognize that the reduction in sediment as a result of the five mainstem dams and the equilibrium that now exists with regards to the Bank Stabilization and Navigation Project requires a true sediment analysis to be created. At the macro level, this analysis should determine the lack of material in the system, the failure to recognize sediment as an important component for the preservation of the pallid sturgeon continues to be a fundamental error in the alternatives.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 646375 **Coder Name:** JGUTIERREZ

Comment Text: It also does not account for what activities may be implemented in the future relative to bed degradation which may be influencing model results. This is a complete disconnect with reality because riverbed degradation already requires winter flows much higher than those theoretical Master Manual flows. Current, actual water releases should be used for this baseline analysis. For instance, it requires approximately 10,000 cfs of additional water releases at Gavins Point today to maintain the same stage/elevation

at Kansas City than the release that was required when the Master Manual was drafted. Those lower flows were targets mentioned in the Master Manual, but do not reflect current reality. This approach undermines the accuracy and credibility of the DEIS as it fails to recognize simple reality and skews the modeled result in a way that makes it completely inaccurate and unreliable.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 646276 **Coder Name:** JGUTIERREZ

Comment Text: Finally, WaterOne urges the Corps to recognize the problem with riverbed degradation and address this issue as part of the long-term management plan for the Missouri River.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645911 **Coder Name:** jgutierrez

Comment Text: Section 3.15.2.11-Cumulative Impacts This section concludes that navigation could experience adverse impacts from low-summer flows and states the following: Adverse impacts could result in the reduction of the navigation season length for years with the low summer flow, and the potential reduction in service level provided that could occur in the years with the spawning cue pulse. When combined with other past, present and reasonably foreseeable future actions, the cumulative impacts on navigation associated with Alternative 2 would result in a large reduction in navigation benefits. The majority of the relatively large, long-term adverse impacts would be caused by the low summer flow which would shorten the navigation season and prohibit navigation during the important months of the year. While shippers may be able to plan around the low summer flow period, the reliability of the of the Missouri River would be reduced and shippers would begin to transition to other modes of transportation. Over time as more shippers switch to other modes, the overall navigation benefits on the Missouri River would be largely reduced.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645873 **Coder Name:** JGUTIERREZ

Comment Text: The DEIS should include caveats that direct readers and decision makers to consider the cumulative impact on all economic activity, as the activities are inherently interconnected. Unfortunately, the cumulative impacts portions of the DEIS fail to paint a cumulative picture. The DEIS should be amended to bring focus to all impacts through extensive economic modeling and analysis and the inclusion of valid studies of interior drainage impacts.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 645862 **Coder Name:** jgutierrez

Comment Text: Consideration needs to also include the degradation that is ongoing for portions of the Missouri River. As the river beds degrade to lower elevations, additional water must be released to provide service levels to our intakes.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645511 **Coder Name:** jgutierrez

Comment Text: 3.10.2.9 - Cumulative Impacts This section is troubling from several perspectives. For the first time in the entire land use section, there is recognition that many factors beyond land acquisition impact economic and social effects. But that mention is done only in the context of attempting to downplay the potential impacts of the alternatives. The DEIS is attempting to imply that concerns around impacts from management actions are trivial because Impacts to agricultural production can result from USACE activities and programs as well as many other policies, programs and economic influences. Thats like saying the fish and the birds could become extinct due to natural causes just like the dinosaurs so dont worry about them. The obvious bias toward characterizing the impacts as barely worth mentioning is troubling. The only action that was studied is land acquisition, and at best, that was an abbreviated study. But after a cursory review of land acquisition, and without yet knowing what the eventual management actions will entail because of the Adaptive Management approach, the DEIS concludes impacts are negligible. Further, it adds the observation that bad things can happen as the result of causes other than management actions. The cavalier and arrogant disregard the DEIS displays toward valid concerns and objections has no place in decisions that will impact the livelihood and safety of many generations to come. It is wrong-minded and in profound conflict with what the Federal government purports to call a collaborative and fact based approach. The DEIS representation of land use impacts is inaccurate, incomplete and unworthy of the hard work and sincere effort that stakeholders have put forth to recover the species.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645461 **Coder Name:** jgutierrez

Comment Text: Finally, Appendix E fails to consider the potential impacts of the Corps' Notice of Proposed Rulemaking, Use of US. Army Corps of Engineers Reservoir Projects for Domestic, Municipal & Industrial Water Supply (81 Fed. Reg. 91556, December 16, 2016). The proposed rule could result in water fees and affect Tribal economies, and consequently it should be included in the cumulative impacts analysis.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645404 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.7, p. 3-181 Comment: With the increasing presence of Zebra Mussels in the Missouri River, facilities with freshwater intakes may use chlorine as a form of control/treatment to prevent system damage. This could result in wastewater discharges with higher chlorine content, which could increase chlorine interaction with trihalomethanes from mobilized organic matter. Therefore, it is important to recognize there are emerging risks to recovering the pallid sturgeon associated with Zebra Mussels and other ANS. The risks include modification to substrate, changes in ecological trophic status, and additions of pollutants and poisons into the system to combat ANS.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645347 **Coder Name:** jgutierrez

Comment Text: While a focus on water quantity is important, understanding the impacts of water quality is critical as well. Significant oil and gas development has occurred along North Dakota's portion of the Lower Yellowstone River and Missouri River, from the Confluence to Lake Sakakawea (known as the Williston Reach). More than 20 oil wells and numerous pipelines line the active floodplain, and are occasionally submerged during periods of high river flow or high lake levels. In 2013, approximately one million gallons of oil and saltwater spilled onto the landscape from more than 450 uncontained leaks. Protection from spills is rather limited, with most attention focusing on the impacts to people rather than wildlife. If a domestic or agricultural water user within 0.5

mile of oil or gas activity or one mile of a well site has "disrupted or diminished" water quantity or quality, the owner is entitled to recover the loss from the oil and gas company.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645345 **Coder Name:** jgutierrez

Comment Text: The EIS does not adequately address potential cumulative impacts from groundwater use, oil and gas production and grazing (Table 3-1). In the EIS, the Corps makes the assumption that actions taken on the land and use of groundwater are not relevant to the recovery of the pallid sturgeon. The science does not support this assertion. Additionally, the cumulative impacts analysis finds that depletions, snag removal, floodplain grazing and pasturing, oil and gas and groundwater withdrawals do affect fish and wildlife habitat, other special status species and water quality. Given this conflict between the effects of land use and groundwater on fish and wildlife habitat, but exclusion from impacts to pallid sturgeon, the Corps should consider: -Assessing the potential impacts of spills from the oil and gas industry on pallid sturgeon survival. -Provide evidence that pallid sturgeon survival is not impacted by surface water-groundwater interactions and thus are not affected by groundwater use. -Provide evidence that pallid sturgeon and their primary prey are not impacted by snag removal. -Provide justification for why pallid sturgeon would be impacted by floodplain development but not animal grazing in the floodplain.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645344 **Coder Name:** jgutierrez

Comment Text: 7) The Corps should re-examine the cumulative impacts of watershed use on the pallid Sturgeon Navigation is given a disproportionately high weighting. The Corps maintains reservoir releases to support navigation south of Sioux City, Iowa to maintain a navigation channel measuring nine feet deep and 300 feet wide. At one time the Missouri River supported regional or national transportation of commercial products, but since 2000, sand and gravel has represented greater than 85 percent of the commodities shipped on the Missouri River, which only travels as much as 10 miles. For example, sand and gravel dredging supports primarily home construction and state transportation department and is the primary reason for these short navigation trips. As shown in Figure 3-58 of the EIS (below), navigation for commercial purposes declined drastically from the 1980s to today. The Corps should consider this change in their reservoir allocations and whether the change in use is reflected in the authorizing purposes. Navigation now only serves local interests, and the proportion of use for navigation could be better used for decision-making.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645277 **Coder Name:** jgutierrez

Comment Text: The DRAFT EIS also fails to evaluate other reasonably foreseeable actions, such as: Depletions: The Missouri River already is substantially depleted. The Corps needs to determine impacts of the alternatives under a suite or range of future anticipated depletions. Red River Valley Water Supply Project: The State of North Dakota is studying and designing a large diversion between the Missouri River and the Red River.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645276 **Coder Name:** jgutierrez

Comment Text: Northwest Area Water Supply (NAWS) Project: The Bureau of Reclamation is proposing and constructing an out-of-basin diversion, the NAWS project, which would deliver water from the Missouri River to the Hudson Bay drainage basin.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645274 **Coder Name:** jgutierrez

Comment Text: Water Supply Allocation: The Corps is proposing to establish a new M&I water supply allocation within the already challenged Carryover Pool.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645272 **Coder Name:** jgutierrez

Comment Text: Surplus Water Allocation (approximately 727,097 acre-feet of storage). The Corps released a series of surplus water reports to provide surplus water to municipal and industrial (M&I) users on a temporary basis (less than 10 years) from the Missouri River mainstem reservoirs. The goal of these reports is to provide a temporary M&I water supply allocation of 727,097 acre-feet of storage to provide an estimated yield of 282,917 acre-feet, where no former water supply allocation existed. The majority of these reports remain in draft. The DRAFT EIS does not evaluate this future allocation.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645149 **Coder Name:** jgutierrez

Comment Text: Fish Stocking and System Alteration South Dakota requests the following statement in Section 3.3.2.11 be removed from the MRRMP and EIS as it is unsubstantiated. Past fishery stocking and management has caused a reduction in the abundance of native fishes from competition and inadequate amounts of biological resources available to support both populations; changes to the food web; and the introduction of pathogens. Citations for scientific journal articles and USAGE documents in Section 3.3.2.11 of the MRRMP and EIS support statements regarding how past USAGE actions, including construction of the Missouri River mainstem reservoir system and the BSNP, resulted in significant adverse impacts to pallid sturgeon. These include creation of physical barriers to migration, interference with the larval drift process, preventing access to formerly used habitats, and changes in water quality. Additional references are cited to support statements that the decrease in sediment load has been associated with decreases in turbidity that might directly affect native fish fauna. They also indicate that channelization and bank stabilization on the Lower River have altered habitat complexity and diminished floodplain connectivity. Both of these factors are likely to have substantive effects on productivity and species distributions throughout the river. However, there is no support for the statement that fishery stocking and management has caused a reduction in native fishes. Prior to system alteration by the creation of the mainstem reservoir system and the BSNP, native predatory fish species existed and many of those species, like channel and flathead catfish, continue to exist and thrive in the highly modified Missouri River ecosystems resulting from USAGE actions. The majority of the predators currently in riverine sections of the Missouri River are native species. It is in these riverine sections that native species, which formerly composed the prey base for pallid sturgeon, would be most likely to occur. The reason that the native prey fish component of the river is lacking is the complete alteration of the natural river ecosystem, not stocking predatory fish species in reservoirs where native prey fish production is unlikely to occur.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644881 **Coder Name:** jgutierrez

Comment Text: Agriculture, for a time during the active Conservation Reserve Program, actually increased the size of wetland acreage, but replaced the active and dynamic primary production (from an ecosystems perspective) of short grass prairie lands with monotonic row crops. On some reaches of the river, this conversion of grassland to cropland represented about a five fold shift in acreage, with magnified declines in ecosystem values for endangered and other species. Changes to the CRP, or to Flood Insurance Rate Maps can yield large changes, over time, to land use classification. And these changes appear not to be calculated for effects on floodplain connectivity or fish and wildlife habitat classes. or we have misread and misunderstood the text. All of these land use changes are studiable as GIS rasters and shapefiles, available to the public for download and transparent. Within the DEIS, we find no graphic descriptions for any of these changes, nor for the fish and wildlife habitat categories. The EPA- ICLUS v2 raster files project land use changes in a time-series to 2100. On the other hand, HEC-Ras modeled output was not used to create similarly comparative graphic products.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644876 **Coder Name:** jgutierrez

Comment Text: We learned, during Phase 1 risk explorations that future aggradation / degradation realities were responsible for the majority of negative effects to the thermal power water cooling inlets in the Labadie power station example. Those impacts were considered for a fifty year duration, and essentially showed that- - if nothing is done to slow the river down, or to correct the degradation that is occurring due to the self-scouring channel, then incising will continue and many water intake ports would need to be redesigned and/or relocated. These effects were not significantly contributed to by Alternatives 2 through 6, but must be considered as a central feature of the comparison Alternative 1.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644826 **Coder Name:** jgutierrez

Comment Text: The recovery program since 1992 has consumed in excess of \$825,000,000 or an average of \$33,000,000 per year. Assuming a constant trend over the next 15 years of the DEIS timeframe, an additional \$495,000,000 will be consumed. The impact of this effort must be addressed, at a minimum under cumulative effects to appropriately meet the NEPA requirement regarding "impact to the human environment."

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643517 **Coder Name:** jgutierrez

Comment Text: The Missouri River bed degradation study is nearly complete and it documents critical degradation from Kansas City to Leavenworth and through St. Joe with severe degradation above Leavenworth. Preliminary findings indicate serious impacts to shallow water habitat and crucial infrastructure, both issues need to be addressed. This issue cannot be separated from overall management of the system.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642884 **Coder Name:** jgutierrez

Comment Text: The Nebraska Game and Parks Commission believes that habitat is the most critical component impacting Pallid Sturgeon on the Missouri River. We firmly believe that the loss of 100,200 acres of aquatic and 67,800 acres of terrestrial habitat acres in the channel below Sioux City has had the greatest impact on Pallid Sturgeon and other native fish species on the channelized Missouri River. This does not count the 354,000 acres of habitat lost in the adjacent meander belt of the river.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642834 **Coder Name:** jgutierrez

Comment Text: Consideration needs to also include the degradation that is ongoing for portions of the Missouri River. As the river beds degrade to lower elevations, additional water must be released to provide service levels as our intake.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642123 **Coder Name:** jgutierrez

Comment Text: Consideration needs to also include the degradation that is ongoing for portions of the Missouri River, especially in the reach just below the confluence with the Big Sioux River. As the river beds degrade to lower elevations, additional water must be released to provide adequate water for our well pumps.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641592 **Coder Name:** jgutierrez

Comment Text: As a result of channelizing the Missouri River, thirty-one miles of river have been removed between Sioux City and Omaha. Wing dikes, riprap, and levees have forced the water into the channel where it flows as fast as 12 miles per hour. All of this has significantly deteriorated fish habitat in the Missouri River along the Iowa border.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641581 **Coder Name:** jgutierrez

Comment Text: The upstream damming of the Missouri River, flood control actions, and channelization of the river for barge movement has had long-term negative effects on all three of these species.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640161 **Coder Name:** jgutierrez

Comment Text: Alternative 4 contains a fall release designed for ESH which is possibly the most effective flow option so targeted. Other concerns are low water levels which might be by design or as an after effect in drought years. The Corps mentions the adverse impact of low flows, or flow variations and their potential disruption to intake pipes. But a greater threat to water levels and intake pipes is the ongoing degradation of the river bottom due to the self-scouring channel, reservoirs and BSNP configuration. The significant impact of this process was clearly demonstrated at a MRRIC meeting. The Corps mentions this in passing in the DEIS but does not include it as a backdrop condition when considering alternative impacts. It is not included in comparison charts, so it may

seem to the public that the alternatives represent a significant impact, when in fact, the ongoing background degradation is the force that will actually impact any use. This does not help the public make a meaningful comparison.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640159 **Coder Name:** jgutierrez

Comment Text: Research has shown that flood events, such as 2011, can create quality ESH in amounts that benefit successful piping plover nesting success that is superior to mechanically created habitat. Depending on such events is obviously not a strategy. And depending only on mechanically created habitat, largely the option for Alternative 3, leaves the species vulnerable to funding vagaries and creates a zoo like aura. And as the Corps points out the mechanical part of mechanically created habitat can be messy, noisy and disruptive. Has the Corps measured the cumulative, repetitive effects of these impacts?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638298 **Coder Name:** jgutierrez

Comment Text: In 2004, WaterOne began organizing a group of concerned stakeholders who worked with the Mid-America Regional Council to initiate a cost-share study of the riverbed degradation on the Missouri River in the Kansas City area. See <http://www.nwk.usace.army.mil/Missions/Civil-Works/Civil-Works-Programs-And-Projects/Missouri-River-Bed-Degradation/> and <http://www.marc.org/Environment/Water-Resources/Missouri-Riverbed-Degradation/About>. A final report on this study is due to be released in the next few weeks. The Corps and cooperating stakeholders have invested millions of dollars and countless hours on this issue. A significant amount of information and data was developed in this study, including the economic impacts that riverbed degradation has caused and will cause in the future. This information should be incorporated into the DEIS.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 73 **Comment Id:** 635364 **Coder Name:** jgutierrez

Comment Text: Further, the BSNP continues to cause harm to the ecosystems upon which these species depend. The creation of a self-scouring canal has promoted the degradation of the river bottom and caused diminishing waters to recede from previously connected backwater channels. While the previous mitigation plan for this continued destruction of the ecosystem is studied under Alternative 2, it is entirely absent from Alternatives 3 through 6, including the Corps' preferred Alternative 3.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 73 **Comment Id:** 635359 **Coder Name:** jgutierrez

Comment Text: Second, the scope of the DEIS appears to avoid the proximate causes of decline for these endangered species, continued operations, and maintenance through the bank stabilization and navigation program, and the reservoir dams that block pallid sturgeon mitigation to private downstream river settlement.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

EC300 Environmental Consequences: Least Tern (Substantive)

Correspondence Id: 190 **Comment Id:** 641587 **Coder Name:** jgutierrez

Comment Text: The upstream damming of the Missouri River, flood control actions, and channelization of the river for barge movement has had long-term negative effects on all three of these species. The Iowa Chapter believes that those tensions and changes will provide an opportunity to return sections of the river bordering Iowa into more natural habitat. That includes creating pools and sandbars in the river and restoring floodplains. Those efforts will provide habitat for the pallid sturgeon, piping plover, and interior least tern.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645521 **Coder Name:** jgutierrez

Comment Text: Alternative 5 - The League has concerns with Alternative 5. This alternative is contrary to the natural historic hydrograph of the river. Alternative 5 would have large flow releases in the fall instead of the spring, as in the natural hydrograph. We

believe any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds far south of the Missouri River. We also have concerns with this alternative's potential impacts on pallid sturgeon and other native fish species, with such a large release at an unnatural time of year for the Missouri River.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645400 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.4.2.8, p. 3-102 "Tern and plover population dynamics following high flows in 1997 and 2011 indicate that sufficiently high flows produce population increases in subsequent years. The spring emergent sandbar habitat-creating reservoir release modeled as part of Alternative 4 would have longterm, relatively large beneficial impacts from the creation of new sandbars that could occur following flows." Comment: First, this statement contradicts the conclusion of Section 3.2.2.4, which said that Alternative 4 would not have significant impacts on geomorphology. The statement says that the release would have long-term, relatively large beneficial impacts from the creation of new sandbars. Second, the long-term benefit of the ESH-creating release would only last until the sediment supply was exhausted, or for the inter-dam reaches, until all of the sediment was flushed into the reservoir deltas. Third, the ESH-creating release would have an adverse effect by increasing the flood risk of birds nesting on sandbars. When discussing the effect of the spawning cue releases for Alternative 2 (Section 3.4.2.6, page 3-101) and Alternative 6 (Section 3.4.10, page 3-104), this risk of flooding nesting birds is recognized. It should also be recognized for Alternative 4. These comments also apply to the fall ESH-creating release (Alternative 5), which is discussed in Section 3.4.2.9 (page 3-103), with the exception of the comment on flooding nesting birds. The fall release as described would occur after nesting season.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643921 **Coder Name:** jgutierrez

Comment Text: Section 3.4.2.5, Page 3-100 - No significant, adverse impacts are anticipated under Alternative 1; however, it appears Alternative 1 would not meet the 95% chance of persistence over 50 years. Since the last dam on the Missouri system reached full capacity in 1967 (see page 3-14), which happens to be 57 years, and the plovers have maintained a population for the entire period should cause a re-evaluation of the modelling done for the DEIS to that determined that Alternative 1 (i.e. current management plus 107 acres of ESH created habitat) does not have a 95% chance of population persistence for the next 50 years. Again the plain

facts do not support the modelling results. Since the first constructed island was completed in 2004 and the flood of 2011 washed out all constructed islands it is difficult for a reader to follow just how the construction of ESH would have changed the number of birds today or why it is necessary into the future.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643807 **Coder Name:** jgutierrez

Comment Text: Section 1.5.2, Page 1-24, Sub-Objective 2 - Concerning a 95% modeled probability that at least 50 birds will persist for 50 years (Northern and Southern Regions). Piping plover populations continue to exist on the river with fairly stable or increasing numbers (see 2015 Annual Report) despite the construction of dams on the Missouri River in the 1950s and little or no nesting in on the Missouri River or associated reservoirs in years like 1997 and 2011. Therefore modeling the Missouri as two separate populations that have little or no interaction and holding emigration and immigration as steady and equal in the models obviously does not take into account the reality of the bigger metapopulation influence and has some limitations. How those limitations affect the persistence probability needs to be explained. Likewise if acres of ESH are to be used as a surrogate there should be a simple graph or table that demonstrates the historical relationship of plover populations to acres of ESH in the past to justify the proposed methodology.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641605 **Coder Name:** jgutierrez

Comment Text: Interior least terns lay eggs on unvegetated sandbars. Periodic flooding of the river creates the sandbar habitat needed by the terns. Restoring sandbars along the Iowa section of the Missouri River will help restore the populations of these birds. Like the interior least terns, piping plovers lay eggs on sparsely vegetated sandbars. Restoring sandbars will help restore the populations of these birds.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

EC3000 Environmental Consequences: General (Non-Substantive)

Correspondence Id: 15 **Comment Id:** 626303 **Coder Name:** jgutierrez

Comment Text: Navigation should be considered.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645983 **Coder Name:** jgutierrez

Comment Text: 5. Large draws on storage, that coincide with or inadvertently precede lower reservoir levels due to drought, will adversely affect boating facilities and the ability of recreational boaters to access the reservoirs. The result is a reduction in recreation based economic activity, a loss of local tax revenue and a significant cost to managing agencies in trying to maintain boating access.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645912 **Coder Name:** jgutierrez

Comment Text: It should also be noted that only five economic models on human considerations were presented to the ISETR for review and evaluation. The ISETR is still waiting on eight other sets of economic models on human considerations. When pressed by MRRIC members for the impacts and outcomes of the human consideration navigation model, the ISETR panel admitted that they do not have the expertise to understand how this model affects transportation costs, rail loads, infrastructure impacts, and water-compelled rates. The expert panel admitted that the navigation model was too technical for them to understand. In response to a question as to whether the ISETR was comfortable with the analysis of water-compelled rates in the navigation model, the leader of the ISETR said, We dont know what these terms mean-water-compelled rates, transportation savings-these terms are very confusing to us. We are not transportation economists. The leader of the ISETR panel stated in November 2016, We are going to have to punt on the navigation model. This answer was in response to a question of whether the ISETR was confident in the Corps navigation model regarding the impacts of the alternatives on Mississippi River navigation. The ISETR stated that that the Technical Report on navigation accompanying the DEIS will be much easier to understand. Despite professional concerns, the ISETR recommended that the Corps proceed with these models for use in the DEIS.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645846 **Coder Name:** JGUTIERREZ

Comment Text: This conjures up images of vast areas devoid of habitat and wildlife vulnerable to the pillaging of private owners. This is not a minor point of contention. It is indicative of a pervasive attitude that things constructed by man and beneficial to man are harmful to all things natural and good. The lands are unprotected! By promoting this mindset and inflaming attitudes, the DEIS actively damages the cooperation and collaboration between stakeholders. Privately owned lands are anything but unprotected. In addition to substantial private and unreported efforts by private landowners for which national statistics are unavailable, the NRCS offers small incentives for a wide range of conservation activities on private lands that are tracked. The Conservation Reserve Program (CRP), the Conservation Stewardship Program (CSP), the Agriculture Conservation Easement Program (ACEP), the Regional Conservation Partnership Program (RCPP) and the Watershed Rehabilitation Program (WRP) are just a few of the NRCS sponsored efforts to improve conservation, habitat, water quality and provide a host of other environmental benefits. The CSP program alone has enrolled over 70 million acres, much of it in the Missouri River Basin. Landowner stewardship interest has been so high, in fact, that Congress had to set a limit on the number of acres that could be enrolled in both CSP and CRP.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645844 **Coder Name:** JGUTIERREZ

Comment Text: 3.10.2.4 - Alternative 1 - No Action The economic modeling does not account for the impacts of management actions on other critical factors like transportation, traffic congestion, energy costs, water supply costs, etc. Individual economic entities do not exist in a vacuum. Its entirely possible that a seemingly inconsequential impact could be the difference between profit and loss and therefore survival or failure. It can mean the difference of whether a farmer can purchase new equipment, a fertilizer dealer can offer competitive input prices or whether a power company must raise rates. While difficult to model accurately, the failure to even consider those impacts brings the whole of the economic analysis into question. As stated earlier, management actions like changing flow regimens can substantially impact balance sheets and production.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645843 **Coder Name:** JGUTIERREZ

Comment Text: The substantial revision of Missouri River Master Water Control Manual is needed.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645772 **Coder Name:** jgutierrez

Comment Text: 3. Address current constraints on flows that may benefit pallid sturgeon and interior least terns and piping plovers, while reducing impacts to basin stakeholders.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645564 **Coder Name:** jgutierrez

Comment Text: Several of the proposed alternatives could have major impacts on Lakes Sakakawea and Oahe. Under these alternatives, the level of the reservoirs could fall an additional 5-7 feet. The lakes may not refill for years depending on precipitation and runoff. We feel this could potentially cripple the recreation industry, as access to boat ramps could be restricted and forage and game fish spawning would suffer (V3-pages 197 & 202). The AMP (AMP 2-page 210-211-Table 19) refers to steady to declining reservoir levels during the bird nesting season. While this could be beneficial to some species, this action would have detrimental impacts to forage and game fish recruitment on the reservoirs and drastic impacts on the recreation industry. We urge the Corps to always carefully consider the impacts to recreation when implementing recovery actions.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645543 **Coder Name:** jgutierrez

Comment Text: Again, the DEIS only mentions land acquired and taken out of production instead of addressing the far more damaging impacts of management actions. But this time the DEIS adds an interesting twist. First it points out that every acre that is acquired to create fish habitat will be taken off the rolls of productive land that could be flooded, thus eliminating it from flood risk. Somehow it has become logical to think that putting land underwater permanently eliminates the risk of flooding on that land. We hope this convoluted thinking is not expanded to the idea of taking all lands out of production so that no agricultural damage can be attributed to flooding. The analysis does not mention the negative impacts to interior drainage from Alternative 1 and again

obfuscates the real damages to land use predictability, crop losses due to delayed or prevented planting or the negative impacts of spring and fall flow rises or summer low flows. The analysis is wholly incomplete and has little or no value because of the exclusion of interior drainage analysis.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645492 **Coder Name:** jgutierrez

Comment Text: To provide accurate predictions from a relative standpoint, the modeling must be complete. In fact, we asked early on in the MRRIC process that the proper resources be deployed so that comprehensive econometric modeling could be utilized. Those resources were not allocated and the truncated version that was used is almost worse than not doing any modeling at all because of the inaccurate perceptions and conclusions it creates. For example, when we pressed for modeling of navigation outcomes and impacts, the expert panel concluded they simply didnt have the expertise to even begin to model how navigation affects transportation costs, rail loads, infrastructure impacts, public safety, etc. Yet the DEIS infers the economic study is adequate and very specific predictions about sales, jobs and tax revenues are presented. The modeling is woefully inadequate and the economic analysis is so limited in scope its not possible to say if its even directionally accurate. In the process of creating a model with appropriate scope and expertise, we would have had the opportunity to investigate and better understand the degree to which certain management actions will impact the basin and land use in general. Additionally, there would be at least some level of accuracy to the relative impacts of the alternatives. But the modeling is so severely truncated we dont know what the relative impacts will be, nor has the process identified all of the issues that need to be considered. That said, it is equally illogical to consider the current review and comment period as definitive in its ability to identify economic and social impacts of management actions.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645491 **Coder Name:** jgutierrez

Comment Text: 5. Empirical results imply scientific analysis and the ability to predict specific outcomes. This is misleading. All models, even those that attempt to encompass the maximum points of cause and effect, are subject to data and assumption errors and they require continual recalibration. For example, in the DEIS Land Use and Ownership Technical Report, inclusion of modeling data is presented as empirical fact. The report cites: the change in employment relative to alternative 1 for all acquired lands in crop production is 18.3 additional jobs. This infers economic modeling creates precise science. Not 17 jobs, not 19 jobs, but 18.3 jobs. The

economic impacts of management actions in the basin are not nearly as predictable as the DEIS tries to convince us they are. It is concerning that the DEIS contains no mention of the confidence level the public should put in economic modeling, nor does it specify the hurried, truncated and resource limited efforts of modeling of the six alternatives. This omission of serious and detailed caveats indicates that the process is tainted by substantial ineptitude or is deliberately fashioned to obfuscate the magnitude of the economic impacts of the six alternatives. The DEIS does not specify a robust process for ongoing analysis of economic impacts of adaptive management actions. Moreover, a culture that assumes scientific validity of economic predictions can lead those managing the adaptive process to take actions that cause substantial negative results because the economic science indicates the economic hardships they create will be negligible. Or, they may fail to take actions crucial to the species recovery if the models incorrectly predict the economic consequences are too severe.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645401 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.4.2.12, p. 3-104 Comment: The first paragraph of this section describes how the dams have modified river flows to the detriment of the piping plover and least tern by limiting sediment supply and maintaining higher flows during the summer, which increases the potential to inundate nests. It is agreed that the dams shut off the sediment supply to the river and affect the sustainability of sandbar habitat. This conclusion, however, completely disregards the dams' influence on the historical hydrograph that is a benefit to the birds. The dams have greatly reduced the once-normal floods that occurred due to plains and mountain snowpack runoff. Piping plovers arrive on the Missouri River around mid-April every year, hatching occurs within late May to early July, and they begin to leave the breeding grounds as early as mid-July. The plains snowpack normally melts around March and April and mountain snowpack typically melts between May and July. Before the dams, runoff from these two snowmelt events caused an increase in flow on the Missouri River during the same critical breeding time period for the piping plover. The effects analysis by Buenau (2015) shows that the existence of the dams, with no operations, resulted in a lower extinction probability for the piping plover than no dams at all. Buenau, K.E., 2015, Modeling to Support the Development of Habitat Targets for Piping Plovers on the Missouri River.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645346 **Coder Name:** jgutierrez

Comment Text: Tributaries along the Missouri River are prone to loss of water with drought and groundwater withdrawals. These changes in hydrology could impact flows in the upper Missouri River. Streams surrounding Lake Sakakawea and in the Powder River Basin are draining, and may go dry as Groundwater declines. Additionally, the region south of Lake Sakakawea is an important groundwater recharge zone. Groundwater is similarly limited with the nearest aquifer, Fox Hill, currently losing 1-2 feet per year. Though much is known about the aquifer itself, the impacts of groundwater withdrawals on rivers, streams, and wetlands remain poorly understood.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645256 **Coder Name:** jgutierrez

Comment Text: To highlight the unreliability of the models used to forecast rainfall events, the National Oceanic and Atmospheric Administration (NOAA) Weather Prediction Center routinely verifies the accuracy of Quantitative Precipitation Forecasts (QPF) the agency produces and uses for National Weather Service river forecasting operations. Verifications comparing forecast precipitation to observed precipitation have shown accuracy to be as low as 10 % in predicting the amount of precipitation that will occur, as well as where it will occur. Forecasted precipitation may not be close to the observed total, and may not occur where it was forecasted. Therefore, the accuracy of forecasted runoff within the drainage area of any specific reach of the river is uncertain at best.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645163 **Coder Name:** jgutierrez

Comment Text: Finally, a fall release of 60,000 cfs out of Gavins Point during the middle of the busy navigation harvest season-when farmers and other stakeholders are attempting to transport their commodities-also jeopardizes navigation on the river as flooding in the fall has increased and weather patterns have become more unpredictable.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644797 **Coder Name:** jgutierrez

Comment Text: Alternatives 2, 4, 5, and 6 all include significant flow release modifications dramatically different from Alternative 1 (the no action alternative). Alternative 3, the preferred alternative, includes a flow pulse, if necessary nine years out. Alternatives 2, 4, 5, and 6 will affect navigation and the ability to float watercraft at various parts of the flow supported navigation season. The alternatives create split navigation seasons, reduced full service navigation, risks of future water volume support in subsequent years, and light haul scenarios.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644776 **Coder Name:** jgutierrez

Comment Text: WCI is confident the recovery of the pallid sturgeon, least tern and piping plover can be achieved without negatively impacting the efficient movement of commerce on both the Missouri and Mississippi rivers.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644772 **Coder Name:** jgutierrez

Comment Text: "If the river is already at its usual high spring levels, any increase in flows could cause negative impacts to navigation, agricultural, land owners, industries, and communities along the river. Releases in the 60,000 cfs range would most likely halt navigation due to high velocities. Additional releases in the spring cause elevated navigational risks on both the Missouri and Mississippi Rivers. The month of May is typically a time of natural high water on both rivers without the addition of a spring pulse.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644696 **Coder Name:** jgutierrez

Comment Text: Interrupting water supply for even one day would have catastrophic impacts on people who live and work in the Missouri River basin. Interruptions of water supply can be troublesome to residential customers but can have catastrophic impacts to health care facilities and major economic impacts to education, businesses and industry. A 2017 report by the Value of Water

Campaign entitled The Economic Benefits of Investing in Water Infrastructure documents that water service disruptions put \$43.5 billion in daily economic activity at risk.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644654 **Coder Name:** jgutierrez

Comment Text: The Missouri River is a significant resource for the citizens of Missouri. Recreation impacts on the Missouri River enrich the Missouri economy and quality of life.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644498 **Coder Name:** jgutierrez

Comment Text: The Port Authority of St. Joseph has been making steady investments in their facilities, with shipping of grain and other commodities increasing. It is of utmost importance that a viable navigation environment be preserved and enhanced to secure the sustained viability of the water- shipping mode in addition to road and rail services. Navigation is a primary authorized purpose on the Missouri River, and whatever option is selected needs to keep that paramount.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644467 **Coder Name:** jgutierrez

Comment Text: We feel confident that KC Port Authority which operates the KCMO barge terminal will thoroughly comment on effects to navigation. From Water Services perspective, any flow modifications that threaten barge navigation could have an effect on our operational costs. KC Water Services currently ships 40,000 tons of chemicals to it plants. Many of these chemicals enjoy water compelled rates established years ago loss of navigation could jeopardize these rates.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644392 **Coder Name:** jgutierrez

Comment Text: Alternatives 2, 4, and 6 are projected to have a negative impact on navigation, particularly Alternative 2, which includes low summer flows that would limit barge traffic on the river and shorten the navigation season overall, as documented in section 3.2 of the Technical Report. Support cannot be given to Alternative 2, Alternative 4, or Alternative 6 due to the potential negative impacts on navigation and flood risk, as well as the fact that these would require a complicated and lengthy process to update the Missouri River Mainstem Reservoir System Master Water Control Manual.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643972 **Coder Name:** jgutierrez

Comment Text: "Category I" (Adequate) EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 227 **Comment Id:** 642722 **Coder Name:** jgutierrez

Comment Text: There must be a better safer way to satisfy Fish & Wildlife needs for the plover, tern, sturgeon without damaging peoples properties and livelihoods. We depend on the income from our farmlands for our ability to live and pay our expenses in our retirement years.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641809 **Coder Name:** jgutierrez

Comment Text: This hydroelectric power is also tremendously valuable as part of the energy that fuels the economy of the Upper Great Plains. As is shown in the table of Environmental Consequences of the Action Alternatives Compared to No Action on page

xxvii of the Executive Summary of the DEIS, hydroelectric generation on the mainstem Missouri River provides almost \$526,000,000 in National Economic Development benefits per year under the No Action alternative.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641808 **Coder Name:** jgutierrez

Comment Text: The preference utility members of Mid-West rely on the cost-based, renewable, non-carbon emitting hydroelectric power generated on the Missouri River and its tributaries for a significant portion of their power supplies. Any diminution in this renewable generation would be both costly to the preference utilities and the largely rural customers served by it, and result in a significant increase in the output of carbon dioxide from replacement thermal resources.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 641805 **Coder Name:** jgutierrez

Comment Text: - The actual impact on hydropower of the various alternatives is likely understated;

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 213 **Comment Id:** 641734 **Coder Name:** jgutierrez

Comment Text: Southwest Water Authority recognizes the importance of responsible river management for the environment and species, however; it is also important the USACE also recognizes the importance of the economic and recreational interests of the Missouri River. Economically, quality water for business and industry is essential. Southwest North Dakota has experienced exponential growth in the energy industry sector in the last few years, and the industry is expected to continue to grow. This Missouri River water is contributing to our region having one of the best economies in the United States. It is imperative the impacts to municipal water supply for our region and other Missouri River water commerce be considered with the highest regard.

Organization: Southwest Water Authority

Commenter: Mary Massad **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641011 **Coder Name:** jgutierrez

Comment Text: At the same time, the Corps must do so in a responsible manner without costly and burdensome impacts on the communities and economies throughout the Missouri River corridor.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 640991 **Coder Name:** jgutierrez

Comment Text: Maintenance of adequate downstream flows are critical to Ameren, to avoid impacts on our Energy Centers. As noted in the EIS, impacts can result from flows that cause river elevations that restrict or prevent intake operations, and can challenge compliance with thermal water quality standards. Releases from Gavins Point Dam essential to Ameren also benefit many other authorized uses in the lower river.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 246 **Comment Id:** 640482 **Coder Name:** jgutierrez

Comment Text: Low summer flow would kill the navigation industry on the river. Navigation as a as a reliable transportation source as another option for shipping harvested crops headed to the global market.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 109 **Comment Id:** 636907 **Coder Name:** jgutierrez

Comment Text: Endangered Species Act rules and regulations which address listed threatened or endangered species must consider the concerns and livelihoods of private landowners, agricultural operators, sound science and common sense species management.

Organization: Kansas Farm Bureau

Commenter: Kent Askren **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 90 **Comment Id:** 636823 **Coder Name:** jgutierrez

Comment Text: We are paying higher taxes and the corps can buy up ground along the river, tax exempt. Two years ago our taxes in Burt county took a 30 percent increase. This year it went up another 10 percent. Commodity prices are low. Now you want to flood us again?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 79 **Comment Id:** 636787 **Coder Name:** jgutierrez

Comment Text: We are opposed to any changes in the management of the Missouri River that would increase the chances of flooding or negatively affect the level of ground water and decrease or stop interior drainage.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 635074 **Coder Name:** jgutierrez

Comment Text: Furthermore, the proposed flow events use water from the carryover storage pool which is the pool we rely on during times of water shortage. The navigation flow support releases from the System benefit many uses on the lower river, such as water supply, energy production, recreation, and fish and wildlife. In Missouri, over 3 million people rely on the Missouri River or its alluvium as its water source. Reductions in navigation flow support have cascading impacts, not only to uses on the Missouri River, but also on the Mississippi River which is 40 percent of the flow to the middle Mississippi during normal conditions and peaked at more than 70 percent during the 2012 drought.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633835 **Coder Name:** jgutierrez

Comment Text: Other reasons for no low summer flows is inadequate water levels for water out takes for municipal potable water and thermal power water supplies. Of particular importance is sufficient flows to not jeopardize temperature requirements of cooling tower discharges into the river.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633800 **Coder Name:** jgutierrez

Comment Text: As a Missouri River bottomland farmer, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps would substantially increase the risk of flooding.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 126 **Comment Id:** 633769 **Coder Name:** jgutierrez

Comment Text: The resulting flood would do little to help the fish in the river but it would destroy farmland, levees, roads, bridges, and flood the homes and fields of people who have worked the land for more than a century. The people who work the land might also lose their land and be out of business, which is what happened to the people in Holt County, Missouri in 2011.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 102 **Comment Id:** 633716 **Coder Name:** jgutierrez

Comment Text: I support the cost based, renewable hydroelectric power generated at the Corps of Engineers dams on the mainstream Missouri River. Hydropower is an essential part of our power supply and helps to not only fuel our economy but that of the upper Great Plains as well. The significant loss of baseload generation could seriously impact the economy of the region as well as lend to higher carbon producing and less reliable forms of replacement energy.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633685 **Coder Name:** jgutierrez

Comment Text: Conversely, summer low provisions in Alternative 2 would cause extreme harm to the Missouri River's navigation industry; one that's been on the rise due to increased water supply and reliability. Further, the Missouri River can contribute up to 60 percent to the flow of the middle Mississippi River during times of drought, another key river for our agricultural navigation and exports. The harmful effects of low summer flow to our nation's economy must be taken into account and the Corps should remove this flow option from consideration. With net farm income on a steep decline, our ability to export goods via river navigation channels is as important as anytime in our history and we would oppose any plans that could harm flow for navigation.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 67 **Comment Id:** 632168 **Coder Name:** jgutierrez

Comment Text: So what happens in a prolonged flooding event? Interior drainage becomes a major problem, which leads to my next point. When drainage pipes are closed, water within our levee system is unable to leave, which means the longer it goes on, the worse it gets. That's not only bad for agriculture, but it's also bad for the environment. This means possible leaching of chemicals and fertilizer into our river system. And I think everyone here would agree that clean water is our goal.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 67 **Comment Id:** 632165 **Coder Name:** jgutierrez

Comment Text: Alternatives 2, 4, 5 and 6 could very well end up having a very disastrous effect on the Missouri River basin agriculture if implemented. There are some people here saying our levees are not feasible. But let me remind you, they protect a lot of infrastructure, including interstates, two-lane roads, bridges, railroads and pipelines, just to name a few. If Alternatives 2, 4, 5 and 6 were to be implemented, what if it starts to rain a significant amount of water after the water has been released? It can't be stopped. So what are some of the potential impacts? A major flood or a prolonged flooding event? Some of the flows I see mean possibly three to five feet of water in Washington, Missouri where I farm. An engineering friend in Cape Girardeau estimates 1.5 to 3 feet of extra water on the Mississippi.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 70 **Comment Id:** 631220 **Coder Name:** jgutierrez

Comment Text: When building the shallow water habitats or the IRCs, mechanical constructions involves taking the soil from the banks and putting it into the river. This soil is high in nutrients. The study in Volume 2 of the pamphlets or the booklets it says that a study's been done that says adding more phosphorus and more soil to the Gulf of Mexico will not increase hypoxia. Well, the goal isn't to increase hypoxia. It's to decrease it. And the more soil we put into the river, the less likely it is that we're going to decrease hypoxia. The goals have been to reduce phosphorus and nitrogen going to the Gulf by 45 percent. And when these projects are putting in enormous amounts of phosphorus, that can't be accomplished.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 47 **Comment Id:** 628657 **Coder Name:** jgutierrez

Comment Text: Each and every alternative leads to destruction of the Missouri River as we know it. The flow events will continue to create floods along the river. The destruction of the banks by the Corps of Engineers has added to the degradation of the river channel, making it more prone to flooding. This degradation also affects the water table in the region and along with flow events will render thousands of acres of prime land useless. Homes, infrastructure, taxes, jobs, and revenue that this country so badly needs will be lost.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 36 **Comment Id:** 628351 **Coder Name:** jgutierrez

Comment Text: On 2, 4, 5 and 6, these will affect these levees. This will affect what I've talked about, what I mentioned from your executive summary, and it will affect them in a negative way. Once these releases or pulses come from Gavins Point, they can't be taken back. You're putting the livelihoods of many people, infrastructure, and what I mentioned in this executive summary that you printed, you put that in a negative perspective and put us in jeopardy.

Organization: Missouri Levee and Drainage District Association.

Commenter: Lanny Franks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 19 **Comment Id:** 626497 **Coder Name:** jgutierrez

Comment Text: Altering the flow will have negative effects on drainage and infrastructure near and far from the river. This is clearly evident from the 2011 flood where the effects are still a problem from a fiscal and hardship issues. Several drainage and levy districts are concerned about the tax levy's that were added to property taxes on the repairs to levy's and drainage districts might happen again. Also, everyone is worried about structural integrity of levy's since the 2011 event. Many of the fish, birds, habitat and infrastructure that you were trying to save were devastated. We feel the management of the river for flood control and drainage should be upmost importance.

Organization: West Pottawattamie County Farm Bureau

Commenter: Mike Schropp **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 18 **Comment Id:** 626482 **Coder Name:** jgutierrez

Comment Text: Several years ago we had a high fall rise, and it probably cost me \$100,000+ lost revenue and machinery repairs. I have supported the Corp but this is getting completely out of hand. We could have another 2011. I do hope you will consider this!

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 18 **Comment Id:** 626468 **Coder Name:** jgutierrez

Comment Text: My answer to the possibility to the Spring rise and fall rise, is we don't know if it is going to do any good for the fish and wildlife. The only thing that we know is if it's going to cost the tax payers up and down the river a lot of money. Because they can't get crops planted or harvested.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

EC400 Environmental Consequences: Fish and Wildlife Habitat (Substantive)

Correspondence Id: 14 **Comment Id:** 626266 **Coder Name:** jgutierrez

Comment Text: The Alternative 2 should also consider other species that are approaching endangerment because of MO River management as well as non-native species that are invading the MO River ecosystem like the Asian carp.

Organization: Sierra Club - Nebraska Chapter

Commenter: Clyde L Anderson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646302 **Coder Name:** JGUTIERREZ

Comment Text: The USA CE, in concert with the State, must develop guidance on how mitigation in the connected Missouri River Yellowstone River ecosystem will avoid jeopardy to Pallid Sturgeon as well as mitigate for impacts to other native fish and wildlife species. This should be included in the alternative analysis of the MRRMP-EIS prior to its finalization. Mitigation efforts could easily be established as part of the SAMP and their inclusion could be justified as Level 3 and Level 4 studies in answering Big Question 2 (Flow Naturalization and Productivity), Big Question 3 (Temperature Manipulations at Fort Peck), and Big Question 5 (Passage, Drift and Recruitment). Doing so would provide consistency with the goal of the Missouri River Recovery Program to create a sustainable ecosystem supporting thriving populations of native species while addressing major impacts of current and past river uses.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645982 **Coder Name:** jgutierrez

Comment Text: 4. Due to channel degradation and hydroelectric peaking at Fort Randall Dam, the river downstream of the dam experiences large elevation fluctuations that can dewater aquatic habitats. This can result in impacts to primary and secondary production and ultimately the aquatic food web. If hydroelectric peaking is continued during flow pulse events, the dewatering effect could be exasperated. We recommend the Corp attempt to keep releases from Fort Randall Dam steady during any managed pulse to minimize the dewatering of aquatic habitats in the Fort Randall reach.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 645830 **Coder Name:** jgutierrez

Comment Text: The focus on pallid sturgeon responses to management actions will offer little ability to describe other benefits or detriments to other important species issues, for instance, inadvertently providing invasive carp habitat.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 645797 **Coder Name:** jgutierrez

Comment Text: The impacts of Asian Carp on the Pallid Sturgeon and other native species should receive a high priority.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645796 **Coder Name:** jgutierrez

Comment Text: Since the closure of Garrison Dam over 60 years ago, over 570,000 acre-feet of sediment have been deposited in the upper portions of Lake Sakakawea (USACE 2014). Simply dewatering this depositional zone would not undo decades of sedimentation and restore a naturally functioning river. Aside from the questionable benefits to larval pallid sturgeon, significant drawdown of Lake Sakakawea would have devastating consequences to the fishery, recreation and local economies. Sixty years of fisheries research by NDGFD has confirmed that maintaining an adequate water level (absolute minimum of 1825 msl) and having a rising pool during the spring spawning and egg incubation period are critical for maintaining the number one most used fishery in North Dakota - Lake Sakakawea.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645794 **Coder Name:** jgutierrez

Comment Text: Restoring flows to a more natural hydrograph and thermal regime certainly would benefit not only the pallid sturgeon but also many other native species and important sportfish in the river and upper regions of Lake Sakakawea. This proposed action has potential to improve the overall fish community.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645786 **Coder Name:** jgutierrez

Comment Text: 2. South Dakota and Nebraska jointly manage the paddlefish population below Gavins Point Dam. A paddlefish snagging season is conducted during the month of October each year. Restrictions on areas where boats can fish are in place if water is flowing over the dam spillway. Initiating increased flows on October 17th will affect the area of river below the dam open to paddlefish snaggers, reducing opportunity and potentially paddlefish harvest. 3. High reservoir releases will likely have similar impacts as the spring release on the Lewis and Clark Lake walleye population. By late fall, abundance of young walleye is highest in the downstream section of the lake, and fall releases of 60,000 cfs would likely result in entrainment of a large percentage of these newly hatched walleye. The actual effect of such a release is hard to estimate because a fall pulse of that magnitude is rarely seen in natural systems, and current reservoir management prescribes for much lower releases in the fall. Although the impact of a fall release would likely be lower than of the spring alternative due to increased size of young walleye, both alternatives would result in decreased walleye abundance in Lewis and Clark Lake.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645753 **Coder Name:** jgutierrez

Comment Text: Exacerbating our concerns is the recent establishment of a reproducing zebra mussel population in Lewis and Clark Lake and the Missouri River below Gavins Point Dam. Low summer flows may increase the likelihood of zebra mussel juveniles settling out of the water column and attaching to water intake systems.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645571 **Coder Name:** jgutierrez

Comment Text: The League strongly encourages the Corps to take steps in any alternative selected for the recovery plan that prevent the spread of invasive species. Invasive species adversely impact native populations of fish and wildlife and their habitat. Asian carp and zebra mussels in the lower river and their disruption of the food chain, impacting the pallid and its prey species, are particularly alarming.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645547 **Coder Name:** jgutierrez

Comment Text: Another water quality concern is vegetation removal on ESH. The DEIS (V2-page 121) states that herbicides could enter the substrate when vegetation is removed during vegetation management operations. Even if approved herbicides are used, we fear potential impacts to birds, mammals, and invertebrates could occur. We are also concerned that the potential impacts from aerial spraying and herbicide drift to fish and wildlife (V2-p197). The League would like to see much more research on the possible impacts of agricultural pesticides to determine if any of these chemicals are influencing recruitment of pallids or their prey species in the lower river. The levels may not exceed water quality criteria, but may be too high for the pallid sturgeon or their forage species (V2-page 194).

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645521 **Coder Name:** jgutierrez

Comment Text: Alternative 5 - The League has concerns with Alternative 5. This alternative is contrary to the natural historic hydrograph of the river. Alternative 5 would have large flow releases in the fall instead of the spring, as in the natural hydrograph. We believe any habitat created through fall releases would suffer serious losses to wind and ice erosion over the winter. This would create short lived habitat that would be largely unused while least terns and piping plovers are on their wintering grounds far south of the Missouri River. We also have concerns with this alternative's potential impacts on pallid sturgeon and other native fish species, with such a large release at an unnatural time of year for the Missouri River.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645385 **Coder Name:** jgutierrez

Comment Text: Data from NDGFD shows that reservoir fishery health is also dependent on water levels. Correlation analyses of the total catch rate of young-of-the-year (YOY) fish (all Sakakawea) and environmental variables show significant positive correlations

between catch rates of YOY fish and spring rise, total rise, and the change in maximum water levels from the previous year (Table 3). These data indicate the importance of water level management to the overall reproduction of fish in Lake Sakakawea. [Table 3. Results of correlation analysis for the catch rate of YOY fish in frame and hill nets combined and environmental variables, Lake Sakakawea, 1972-2013] The importance of timely water level manipulation for fish and wildlife resource management cannot be over-emphasized, nor can the destructive capacity of untimely manipulation be underestimated. Information gained from more than forty years of Missouri River surveys and investigations can now be used to outline the methods and highlight the importance of a system approach to water level management as a tool to enhance fishery resources. Every attempt should be made to develop workable water level scenarios which will promote those objectives on a more frequent basis.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645339 **Coder Name:** jgutierrez

Comment Text: Additionally, the EIS states the importance of sediment in the health of native fish species in the river. Riverine fish species in the Missouri River are adapted to warm, turbid waters. Any adjustments to Fort Peck should also include considerations for life cycle needs and turbidity. The EIS notes that sediment, turbidity, and phosphorus concentrations downstream from Fort Peck Dam are much lower than upstream concentrations. The natural level of turbidity does not recover until the Upper Missouri River meets with the Yellowstone River.⁵⁰

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645147 **Coder Name:** jgutierrez

Comment Text: Bimodal Spring Pulse for Pallid Sturgeon Recruitment (Alternatives 2 and 6) A March pulse would occur once navigation releases were met at downstream target locations. The peak Gavins Point release would be two times the navigation release on the pulse initiation day, with potential releases for the March spawning cue being between 39,000 and 61,000 cfs. A second pulse would occur during May when water temperatures reach 16- -18 °C. The peak Gavins Point release would be two times the base release on the pulse initiation day. Releases during the May spawning cue would range from 50, 000-67, 000 cfs 1. Effects on the Lewis and Clark walleye population by the bimodal spring pulse will be similar to the effects stated for alternative 4. While the March pulse will likely have little effect on the walleye population, the May pulse component will result in increased entrainment of newly

hatched walleye. As stated earlier, walleye abundance in Lewis and Clark Lake is negatively correlated to water yield, and releases of 50,000-67,000 cfs in May would likely flush most of the newly-hatched walleye through Gavins Point Dam.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645143 **Coder Name:** jgutierrez

Comment Text: Spring Flows to Create Emergent Sandbar Habitat (Alternative 4) If System storage is at 42 million acre feet (MAF) or greater on April 1, natural flows creating 250 acres of ESH have not occurred in the previous four years, and downstream flow limits are not exceeded, ESH creating flows would be implemented on April 1 with a release of up to 60,000 cfs out of Gavins Point Dam, and as often as every 4 years. 1. Sandbar habitat-creating flows have the potential to severely impact the sport fishery of Lewis and Clark Lake. While other Missouri River reservoir fisheries generally respond positively to above average water yield, the small relative size of Lewis and Clark Lake results in a low storage ratio and detrimental impacts caused by high flushing rates. Walleye population abundance in Lewis and Clark Lake is negatively correlated to total water yield through Gavins Point Dam. The most likely cause for this correlation is the flushing of newly-hatched walleye from the lake through Gavins Point Dam during average to above average water yield years. Increased flows in April and May would likely have detrimental impacts to the sportfish population through increased flushing of newly hatched walleye through the dam. 2. A correlation exists between the average annual elevation of Lake Oahe and the amount of angler use and was used in some of the modeling for the Recreation Technical Report. However, major flow events result in degraded fishery quality and angler use a few years after their occurrence, resulting in low angler use even at high reservoir elevations. Major flow events have the ability to flush the majority of pelagic prey (rainbow smelt and lake herring) and Chinook salmon through Oahe Dam. Even if reservoir elevations are sufficient to allow good access to the reservoir after major flow events, the lack of available food resources results in the loss of the larger walleye from the reservoir due to starvation. This occurred after large flow events in 1997 and 2011 and it took Lake Oahe over 5 years to recover each time. The Chinook salmon population in Lake Oahe was severely reduced by the 1997 and 2011 flow events, and as with the walleye fishery, has taken over 5 years to recover from each event. Timing of flow events, with regards to stratification of the water column in Lake Oahe and fish distribution within the water column, is a primary consideration when predicting impacts of high flows on the Lake Oahe recreational fishery. 3. Decreasing elevation of Lake Oahe and Francis Case during prey and game fish spawning periods (April - June) is a concern as stable-to-rising elevations are important to the success of prey fish and sportfish spawning events and egg incubation. With Lake Oahe being the lowest of the big-three storage reservoirs in the system, a spring release to create ESH will certainly remove the possibility of favorable conditions for spawning during the year of the flow implementation. Lake Francis Case is a much smaller reservoir than Oahe and the lowest source of available water for adjustments to releases from Gavins Point Dam. The need for an immediate source of water to support flow-related management actions could affect the elevation of Lake Francis Case during

walleye spawning, thereby reducing the stability and quality of the walleye fishery, which contributes significantly to the recreation industry in South Dakota.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645129 **Coder Name:** jgutierrez

Comment Text: South Dakota cannot support flow modifications of a magnitude that affect fisheries resources or recreational use in Missouri River reservoirs and river reaches in South Dakota or negatively impact riverside landowners and surface water users. Flow modifications should not be considered as viable management options until efforts to recover pallid sturgeon, using physical habitat creation, have been implemented, evaluated, and deemed insufficient to result in species recovery.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644883 **Coder Name:** jgutierrez

Comment Text: It is not at all clear, from the description of analysis in the MRRMP&EIS Fish and Wildlife Environmental Consequences Analysis Technical Report, that the computer modeling can detect basic differences of land cover and land use by spatial location; or that the models generated have had any ground truth validity performed. If the HEC-Ras system utilized cannot distinguish urban impervious surfaces from wetlands or agricultural croplands, but only assesses inundation based on flow and depth, then it is not possible to disambiguate or assess the ecosystem values (either as human or other species consideration) assigned by a 20% chance of inundation referenced in the 2003 BiOp.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643953 **Coder Name:** jgutierrez

Comment Text: Insufficient consideration is given to the effect of vegetation management actions on outstandingly remarkable values within the administrative boundaries of the MNR. Vegetation management to maintain sandbar habitat is mentioned, but the impacts to native plant communities such as cottonwood stands and non-listed, non-special status species should be addressed.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642846 **Coder Name:** jgutierrez

Comment Text: The Missouri River System Fisheries Management Plan identifies specific water management recommendations that are critical for maintaining a sustainable and productive fishery (Fryda et al. 2010). Select recommendations presented below would be at best vastly compromised or more likely never met under a significant Lake Sakakawea drawdown. The NDGFD, under no circumstance, could support such a Level 2 or above action in the MRRMP-AMP. Fishery Recommendations for Lake Sakakawea: 1. An absolute open-water minimum lake elevation of 1825 ft. msl for drought periods and 1832 ft. msl for all other years is recommended. Below these specified elevations, the following detrimental impacts occur to the fishery resource or affect its use: dramatic declines in reservoir productivity, a substantial loss of walleye and smelt spawning substrate (gravel/cobble) and coldwater habitat (for rainbow smelt and Chinook salmon); critically needed water becomes less available to the Garrison Dam National Fish Hatchery for production; and boat access/recreation use becomes limited. 2. Other than years in which severe drought or flood conditions prevail, a maximum lake elevation window of 1838 to 1846 ft. msl is requested in order to maintain flexibility in annual recommendations and to reduce impacts from wave erosion. 3. The spring water level rise must inundate good spawning substrate (i.e. cobble and/or terrestrial vegetation) by April 20 and continue to rise during spawning-incubation (April-May). A target increase of two to three feet between April 20 and May 20 should occur during a filling cycle. Even during a drawdown cycle or during drought conditions, a rising lake elevation should be attempted during this critical time period. Fryda, D. and S. Gangl. 2016. Angler Use and Sportfishing Catch Survey on Lake Sakakawea, May 1 Through September 30, 2015. ND Game and Fish Dept. f-2R-61, Study 4, Number 1. Fryda, D., F. Ryckman, R. Kinzler and P. Bailey. 2014. Aquatic Investigations of the Missouri Mainstem in North Dakota. ND Game and Fish Dept., Div. Rpt. 90. 105 pp. Fryda, D., F. Ryckman, P. Bailey, R. Kinzler and S. Gangl. 2010. Fisheries Management Plan: Missouri River System (2010-2015) N.D. Game and Fish Department., Internal report. 94pp. Scarnecchia, D.L., L.F. Ryckman, B.J. Schmitz, S. Gangl, W. Wiedenheft, L.L. Leslie. 2008. Management Plan for the Paddlefish Stocks in the Yellowstone River, Upper Missouri River, and Lake Sakakawea USACE. 2014. Garrison Dam-Lake Sakakawea Headwaters Aggradation Evaluation of the Missouri River and Tributaries

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642843 **Coder Name:** jgutierrez

Comment Text: Data collected by NDGFD over the decades have shown conclusively that a rising pool level and the lake elevation are the two strongest environmental variables that correlate with annual production of all young of year fish (Fryda et al. 2014; Fryda et al. 2010,). Lake elevation is also critical for the maintenance of cold water fish habitat in Lake Sakakawea. Low lake elevations in past drought periods have caused reduction/elimination of cold water habitat, caused hypoxia in the hypolimnion, and devastated the chinook salmon and rainbow smelt populations. Additionally, the headwaters region of Lake Sakakawea that would be dewatered is a critical rearing area for juvenile paddlefish. The Yellowstone/Sakakawea stock of paddlefish is one of the most scientifically understood paddlefish populations in North America. Extensive research has shown good inflows combined with high lake levels are crucial for recruitment to this nationally important self-sustaining paddlefish population (Scarnecchia et al. 2008). Lake Sakakawea is typically the most heavily utilized fishery in North Dakota and annually accounts for over 30 percent of all fishing effort in the state. In 2015 alone, anglers expended over one million hours of angling effort on Lake Sakakawea (Fryda and Gangl 2016). Expenditures generated by these anglers are vitally important to the regional economy. Significant drawdown of Lake Sakakawea would have major impacts to these economies due to impacted fish populations and poor to non-existent access caused by low lake elevations.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642709 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.16.2.8, p. 3-453 **Comment:** The last paragraph on this page states the reservoirs could be up to 5 feet lower than under Alternative 1, impacts would be temporary, and they would typically dissipate within a year. Again, if the lower reservoir levels result in fish dying it will take years to recover. The impacts of a fish kill will not dissipate within a year.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642707 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.16.2.5, p. 3-441 "As drier conditions are alleviated with typical rainfall and snowpack, System storage would be replenished, and annual average changes in RED benefits would become small to negligible when compared to those under Alternative 1." **Comment:** While this will be true in some cases, it does not consider those cases where the lower water levels would result in fish kills. If either the forage fish or game fish populations are significantly reduced as a result of low water levels, it takes years for the population to recover. As stated under our comments for Section 3.1.1 (p. 3-4), the importance of timely

water level manipulation for fish and wildlife resource management cannot be overemphasized, nor can the destructive capacity of untimely manipulation be underestimated.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641670 **Coder Name:** jgutierrez

Comment Text: The impacts of Asian Carp on the Pallid Sturgeon and other native species should receive a high priority.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641596 **Coder Name:** jgutierrez

Comment Text: In their article "Effects of historic flooding on fishes and aquatic habitats in a Missouri River delta", Andrew Carlson, et. al. confirm the value of flood pulses in increasing fish populations.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641594 **Coder Name:** jgutierrez

Comment Text: An examination of the 2011 months-long flooding of the Missouri River along Iowa's border is instructive. The flooding scoured holes, created backwaters and areas with reduced stream flow. All of this improved fish habitat, increasing survival of eggs and young fish, providing habitat for the juveniles, and allowing the fish to reach maturity. The next year, fishing enthusiasts reported catching larger and more fish than in prior years. The Iowa Department of Natural Resources conducted fish surveys in 2012. They reported increased numbers of paddlefish, channel catfish, northern pike, and shovel-nose sturgeon.³

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 87 **Comment Id:** 636793 **Coder Name:** jgutierrez

Comment Text: First, in 2005 the Missouri River Recovery Program was initiated changing the management of the Missouri River. Second, the devastation of the flood in 2011. Since 2011, I no longer see fox and wild turkey in the Missouri River basin in Fremont County, IA. Deer populations in Fremont County, IA river basin were devastated by disease resulting from the 2011 flood. In a flawed attempt to save 3 species along and in the Missouri River, the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service have endangered the whole ecosystem of the river and the people who live and work near it.

Organization: Benton-Washington Levee District

Commenter: Michael R Woltemath **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 76 **Comment Id:** 633560 **Coder Name:** jgutierrez

Comment Text: Fourth, the economic analysis provided comparing the alternatives is deficient. It contains no commercial fishing data. This data would have been used to offset agricultural costs in replacing no crops with an agriculture equivalent. Regrettably, as fishing stocks have declined and crashed since the closing of the BSNP, the six lower states have made commercial catfishing illegal. Commercial fishermen have declined in number and their self-reported catches is smaller each year.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 50 **Comment Id:** 628620 **Coder Name:** jgutierrez

Comment Text: Alternatives No. 4 and 5 probably don't get very much attention, but all the duck hunters and waterfowl hunters in the room or in the public should pay attention to these two because these provide a rise, either in the spring or in the fall, which increases the backwaters, increases roosting and feeding areas for migrating birds, eagles, waterfowl of all kinds, helps to bring in hunting, which is a huge revenue for towns and communities along the river.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

EC500 Environmental Consequences: Other Special Status Species (Substantive)

Correspondence Id: 14 **Comment Id:** 626266 **Coder Name:** jgutierrez

Comment Text: The Alternative 2 should also consider other species that are approaching endangerment because of MO River management as well as non-native species that are invading the MO River ecosystem like the Asian carp.

Organization: Sierra Club - Nebraska Chapter

Commenter: Clyde L Anderson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 31 **Comment Id:** 626962 **Coder Name:** jgutierrez

Comment Text: The jeopardy to the three federally listed species is clearly the driver for this Draft EIS, but given the amount of time and money invested in this recovery and management plan, the Sierra Club is concerned that the impacts of the various alternatives on other species have not been considered. It is not an ecosystem-based management plan and does not include evaluation of state-listed species here in Kansas and other states, or species that are currently considered candidates for state and/or federal listing.

Organization: Sierra Club - Kansas Chapter

Commenter: Elaine Giessel **Page:** **Paragraph:**

Kept Private: No

EC600 Environmental Consequences: Water Quality (Substantive)

Correspondence Id: 40 **Comment Id:** 628465 **Coder Name:** jgutierrez

Comment Text: Operational low flows in alternative 2 will negatively impact water quality parameters, which will require additional treatment techniques to be utilized by water suppliers to meet regulatory requirements. The costs for increased treatment and potential health risks were not addressed in the Human Considerations Technical Report- Water supply, and should be included in the report.

Organization: WaterOne

Commenter: Michelle Wirth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 646280 **Coder Name:** JGUTIERREZ

Comment Text: The proposed low flows in the summer, would impact water quality with high delivered water temperatures and potential for algae blooms with warmer river temperatures to increase incubation or growth of any organic organism in the water. Additional chemicals will have to be used to combat these organic organisms in higher concentrations.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 219 **Comment Id:** 645778 **Coder Name:** jgutierrez

Comment Text: Operations outside of the Master Manual have high probably of impacting water quality, a parameter not currently accounted for in the Water Supply Technical Report. Of particular concern is any flow regime(s) with the potential to create conditions optimal for cyanobacterial (blue-green algal) growth. With historical Missouri River operations falling within the defined constraints of the current Master Manual, little to no river water quality data exists for intentional and consistent operations outside of those defined constraints. Referring to Water Quality Technical Report, limited observed temperature data was available causing inaccuracies in modeled temperature changes for the alternatives and a loss of confidence in the data generated. What is known (and experienced with other source waters in Kansas) is that periods of reduced low flows result in slower and warmer waters conducive to blue-green algal growth. Nutrient loading on the Missouri River is more concentrated in Missouri RAC Planning Area and nutrient loading should be given more consideration in the EIS. Blue-green algae is harmful to aquatic life, can be costly for communities, impacting not only recreation, but public health and safety and is difficult to treat. These low flow impacts and the associated costs must be included in the EIS.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 233 **Comment Id:** 645760 **Coder Name:** jgutierrez

Comment Text: The proposed low flows in the summer would certainly have a negative impact on water quality with high delivered water temperatures and potential for toxic algal blooms with warmer river temperatures to increase growth of any organic organism in the water. If these conditions were present, we would have to deploy additional chemical treatment to combat these organic organisms in higher concentrations.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 216 **Comment Id:** 645755 **Coder Name:** jgutierrez

Comment Text: The proposed low flows in the summer, would impact water quality with high delivered water temperatures and potential for algae blooms with warmer river temperatures to increase incubation or growth of any organic organism in the water. Additional chemicals will have to be used to combat these organic organisms in higher concentrations.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645484 **Coder Name:** jgutierrez

Comment Text: 3.7 Water Quality General Analysis: 1. The DEIS fails to evaluate water quality problems associated with low summer flow as contained in Alternative 2. Impacts and costs to water operators must be included. Specific Comments: 3.7 Water Quality, Alternative 2 Low summer flows within Alternative 2 would be harmful to water quality, especially in regard to cyanobacterial or blue-green algal growth. Because Missouri River water suppliers historically operate within the current Master Manual constraints, there is little water quality data that exists for operations outside of those constraints. We know that periods of low flows equate to slower and warmer waters conducive to the potential for the formation of cyanotoxins, which can be difficult to treat. Although no firm maximum contaminant level has been established by EPA, they agency has issued health advisories on this matter. At a minimum, treatment costs would increase under low flow conditions because of additional chemicals needed to treat the water.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644709 **Coder Name:** jgutierrez

Comment Text: We must take issue with statements in 3.7.1.3 concerning other pollutants. This paragraph addresses substances as pesticides. It states at Rulo, the pesticides&atrazine were present but not at levels that exceeded water quality criteria. Some utilities routinely treat for atrazine removal to meet the potable water contaminate level of a maximum of 3 ppb. Of further consideration is the use of average temperatures for the lower River. Utilities routinely experience high water temperatures during low flow periods coinciding with warm summer season. These high temperatures along with low turbidity normally associated with low summer flows create the condition for the potential formation of cyanotoxins. Although no firm maximum contaminant level has been established by EPA, Health Advisories have been issued by EPA. In accordance with EPA, Health Advisories, Missouri is one of the states, reviewing or developing an approach to address cyanotoxins in water, with others in various stages of development. (JAWWA Vol. 109 p. 42.) Anecdotally, some utilities have experienced Algae like blooms characteristic of cyanotoxin formation during previous

low flow summer periods. At that time, no attempt was made to analyze for toxins as methods are just being developed and no EPA requirements were in place. This is no longer the situation. We are concerned that any Alternative with low summer flows may create river conditions requiring, at the least, extensive treatment.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 644409 **Coder Name:** jgutierrez

Comment Text: In spite of concurrence that Alternative 3 represents the best presented option, the State is concerned that in the process of constructing many of the Shallow Water Habitat practices, sediment is routinely removed from parts of the river and adjacent banks only to be placed back in the main channel of the river where it is flushed downstream. This practice is counterproductive to the goals of both the Iowa Nutrient Reduction Strategy and the Mississippi River/Gulf of Mexico Hypoxia Task Force, which call for significant reductions in the transport of nitrogen and phosphorus to the Gulf from our state. We believe that state and federal agencies should be held to the same standards as our agricultural and urban constituents with respect to reducing nutrient transport by way of our rivers and streams, and that the practice of placing nutrient-laden sediment into the river channel will only add to the challenge of improving water quality in Iowa and downstream. To that end, we request that any mechanical habitat construction be undertaken in a manner that avoids, to the greatest extent possible, deposition of sediment back into the Missouri River.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643493 **Coder Name:** jgutierrez

Comment Text: In 2012, US Army Corps of Engineers utilized water from the Kansas Reservoirs to protect nesting Least Terns and Piping Plovers on the Missouri River by calling for supplemental navigation support releases. There is significant investment in storage in the Kansas Reservoirs, (Milford, Perry, and Tuttle Creek) to meet the public's needs and the eight authorized purposes especially during drought conditions. Water from these Kansas Reservoirs should not be used to support the alternatives presented in the Missouri River Draft EIS that would impact Public Water Supply. Water Supply and Water Quality should be considered the highest priorities of the authorized purposes with substantial impacts to human considerations in the EIS.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643417 **Coder Name:** jgutierrez

Comment Text: All the alternates are not supportive of the need for water supply to draw water from the River and may impact water quality. Water quality issues can come from algae blooms, higher delivered water temperatures, and increased chemical usage.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642119 **Coder Name:** jgutierrez

Comment Text: All the alternates are not supportive of the need for water supply to draw water from the Missouri River and may impact water quality. Water quality issues can come from algae blooms, higher delivered water temperatures, increased chemical usage and increased pumping costs. Costs that would need to be passed onto our users.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640273 **Coder Name:** jgutierrez

Comment Text: While previous elutriate work has identified elements of concern, NDDOH believes that the releases can be managed by pre-construction sampling to identify sites with acceptable levels of pollutants and the development of a series of sediment management practices that would reduce any water quality violation to an acceptable volume and distance as a percentage of the river system.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640272 **Coder Name:** jgutierrez

Comment Text: Mechanical habitat construction has the potential to liberate pollutants into the Missouri River that exceed the state's acute and chronic water quality standards criteria. This potential for release has been demonstrated in historical sediment analysis in

the Missouri River and Lake Sakakawea. The MRRMP-EIS does not identify any of the potential pollutants, or provide a solution to address them, as required by NEPA.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640268 **Coder Name:** jgutierrez

Comment Text: Ancillary concerns include possible impairment(s) to water intakes and outfall structures on Lake Sakakawea, and on the Fort Peck and Garrison reaches of the Missouri River. In brief, North Dakota's Department of Health (NDDOH) cannot support any alternative until a plan is developed that addresses likely pollutant discharges into the Missouri River from mechanical habitat construction.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640264 **Coder Name:** jgutierrez

Comment Text: Any alternative implemented must not violate the Standards of Quality for Waters of the State (water quality standards), North Dakota Century Code (NDCC) Chapters 33-16-02.1, 61-28-04, and 23-33-05. A primary concern is the protection of existing beneficial uses and all aquatic life by ensuring that any direct or indirect action does not cause the release of trace elements or any other pollutant in acute or chronic concentrations into the state's rivers or streams and that any alterations in flow does not reduce the volume of cold water habitat in Lake Sakakawea below five hundred thousand acre-feet, cause a temperature rise of greater than 15Â° Celsius, or a dissolved oxygen concentration of less than 5 mg L-1.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640143 **Coder Name:** jgutierrez

Comment Text: The Corps fails to give adequate consideration of ecosystem services and that failure impacts their evaluation of alternatives. One example occurs in the Land Use and Ownership Environmental Consequences Analysis, Technical report pages 5-8. The Corps evaluates the impact of agriculture acres for federal acquisition. The Corps notes the loss of agriculture output if some

acres are taken out of crop production and points to the loss of taxes to the county, or land in the local levee association. But no consideration is given to the likely reduction in flood risk to those same neighboring acres when, due to those acquired acres, levees are set back, wetlands created, a channel widened and or floodplain connection is formed. Also the Corps fails to give adequate clean water services to those acquired acres, or any impacts on groundwater recharge.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638507 **Coder Name:** jgutierrez

Comment Text: Failure to evaluate the water quality problems with any summer low flow - Although the Corps is not recommending Alternative 2, the low summer flows associated with this alternative would be very harmful to Water Supply. Of particular concern is any flow with the potential to create conditions optimal for cyanobacterial (blue-green algal) growth. With historical Missouri River operations falling within the defined constraints of the current Master Manual, there is little to no river water quality data for operations outside of those defined constraints. In the Water Quality Technical Report, limited observed temperature data was available, which caused inaccuracies in modeled temperature changes for all alternatives and a loss of confidence in the data generated. At the very least, treatment costs would increase because of additional chemicals needed to treat the water. It is known (and experienced with other source waters in Kansas) that periods of reduced low flows result in slower and warmer waters conducive to blue-green algal growth. Blue-green algae is difficult to treat. It can be costly for communities, affecting not only recreation, but also public health and safety. These low flow impacts and the associated costs must be included in the EIS. The Corps should include some consideration of this possibility in the Adaptive Management Plan. WaterOne has provided examples of sampling protocol on this issue during review of the AM plan.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 70 **Comment Id:** 631226 **Coder Name:** jgutierrez

Comment Text: Another thing about this soil on these banks is they contain antibiotic resistant microbes, and that hasn't been taken a look at. And that going into the river and the water systems that we have in Missouri taking water out of it is something that should be a concern.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

EC700 Environmental Consequences: Water Supply (Substantive)

Correspondence Id: 38 **Comment Id:** 628360 **Coder Name:** jgutierrez

Comment Text: WaterOne spent \$2.4 million on permanent low water pumps for less than half of its intake capacity in 2003. The capital costs would be much greater than this today and the economic analysis should assume that those types of costs will have to be considered instead of renting pumps. The costs are severely understated. It is very likely that situations would occur that will leave some communities without water supply for days. The report makes no estimated cost to those communities when they have no water supply. The cost impact to Cleveland in 2003 when a regional power outage left 1.5 million people in the city without water for two days was in the hundreds of millions of dollars when you consider the factories and businesses that were shut down. An outage would mean a loss in fire protection, the inability to cook, bathe or even flush toilets. A shutdown of critical facilities like hospitals and an increase in the risk of disease outbreaks without a water supply, a water supply outage becomes a state and federal disaster.

Organization: WaterOne

Commenter: Greg Totzke **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 646376 **Coder Name:** JGUTIERREZ

Comment Text: Additionally, it does not appear that the DEIS has identified the current, actual operating and shut-down elevations for the Missouri River Water Supply intakes. Some of the data used in the models appears to be inaccurate and/or incomplete. The Corps should undertake a more systematic process to collect and verify that data.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645752 **Coder Name:** jgutierrez

Comment Text: 1. Low summer flows have the potential to adversely impact the operation of water supply intakes for municipal, irrigation, and recreation uses in the riverine reach below Gavins Point Dam.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 645750 **Coder Name:** jgutierrez

Comment Text: The Heskett intake utilizes continuous operation and may not allow for the low end of a daily swing that is masked in a daily average flow value. In this case, the model would not identify the shorter period of time as a possible shutdown event.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645636 **Coder Name:** jgutierrez

Comment Text: 8. Regulatory costs to water supply operators is wholly inadequate. The Corps needs to conduct a much more serious examination on the economic impacts to the basin of even one day of interruption to residential and industrial water users.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645615 **Coder Name:** jgutierrez

Comment Text: Section 3.18.2.6 - Alternative 3 This alternative appears to have the least impact on water supply operators as it applies the latest science toward species recovery. Even though this is the best alternative available, it would result in 22 intakes experiencing and average of 14 days below shut down elevations. There is not a single water utility that has enough storage or access to alternative sources to be able to operate for 14 days without a water supply.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645614 **Coder Name:** jgutierrez

Comment Text: Section 3.18.2.6 - Alternative 3 This alternative appears to have the least impact on water supply operators as it applies the latest science toward species recovery. Even though this is the best alternative available, it would result in 22 intakes experiencing and average of 14 days below shut down elevations. There is not a single water utility that has enough storage or access to alternative sources to be able to operate for 14 days without a water supply.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 228 **Comment Id:** 645612 **Coder Name:** jgutierrez

Comment Text: Section 3.18.2.4 - Alternative 1- No Action Here, the DEIS states: The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1. The DEIS constitutes the first public report documenting that Missouri River basin communities could be in danger of losing their water supply. The Corps must address this catastrophic scenario for those that rely on the Missouri River as their water source. Further, the DEIS states: the impacts modeled do not account for the ability of water management to adapt to changing conditions on the system to serve authorized purposes, such as water supply. It also does not account for what activities may be implemented in the future relative to bed degradation which may be influencing model results. Another very alarming statement found on the same page is: The project team did not attempt to evaluate the cost of intake modification that may occur due to bed degradation or prolonged drought conditions. The NED analysis states: focused on actions that water supply operators can adapt by using different-sized portable submersible pumps. Water supply operations are a mission-critical, non-stop business and it would be unacceptable and irresponsible to wait until water levels are at critical levels and then hurriedly go out and rent pumps. The DEIS wrongly assumes there would be an adequate supply of pumps in the size and quantity needed to operate the 55 intakes on the river. Further, the DEIS makes the incorrect assumption that temporary pumps can easily be connected to Missouri River intakes, which they cannot. This is a head in the sand approach which must be corrected. The NED analysis details another incorrect assumption in the DEIS, stating that 55 water suppliers could acquire portable pumps for a cost of \$376,000 per year, which is very low and based upon inaccurate facts. Bed degradation already requires winter flows much higher than Master Manual flows. For example, about 10,000 cfs in additional releases are now required from Gavins Point to maintain the stage elevation at Kansas City than when the Master Manual was drafted. The DEIS fails to recognize this reality which skews the modeling results, making them inaccurate.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 228 **Comment Id:** 645611 **Coder Name:** jgutierrez

Comment Text: Section 3.18 Water Supply General Analysis: 1. Interruption of water supply for even one day would be disastrous for people who live and work in the Missouri River Basin. The Corps should quantify the impact of communities being without a water supply for a day and include such risk assessment in each of the DEIS alternatives and it must continue to place the congressionally authorized purpose of water supply among its highest priorities. 2. Public water suppliers rely on fixed intake

structures to divert water from the Missouri River and its major tributaries. These intakes rely on the channel created and maintained by the Bank Stabilization and Navigation Project (BSNP). Most public water suppliers have limited or no access to alternative water sources. 3. Water supply intakes were designed and constructed with the Corps advice, consent and approval. It is either extremely expensive or impossible to adjust these intakes to accommodate major changes in river levels. As management plan alternatives are considered, the Corps must make sure these intakes are capable of continuous operation. 4. The DEIS fails to recognize and address Missouri River bed degradation, which is impacting water supply intakes. The Corps has the key responsibility to correct this problem, which has taken place over the last 25 years. Regulatory cost of compliance must be detailed in the DEIS. 5. The DEIS is inadequate in identifying the current, actual operating and shut-down elevations for Missouri River water supply intakes. Some of the data used in the models appears to be inaccurate or incomplete. The Corps should undertake a systematic process to collect and verify data. 6. The DEIS wrongly assumes that water access problems can be solved by rental of supplemental pumps on a temporary, reactive basis.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645453 **Coder Name:** jgutierrez

Comment Text: The CPR is also very apprehensive of the impact that low summer flows would have on energy generation, water supply intakes and sewer treatment plants. We believe operational costs under a low summer flow regime are severely underestimated and should be reexamined. Further, we request the Corps to identify all potential regulatory burdens in advance of the implementation of any management plan action. In any instance in which the regulatory cost of compliance increases (i.e. modification of intakes), thorough input needs to be gathered from affected industry sectors to ensure that the impact to both utility companies and ratepayers alike remains minimal.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645148 **Coder Name:** jgutierrez

Comment Text: Impacts Common to all ESH Creating and Spring Bi-modal Pulse Flows Alternatives 2, 4, 5, and 6 include management actions that involve large releases of water from the system. Some impacts to South Dakota stakeholders are common to all these actions. 1. Under these alternatives the large releases associated with the bi-modal spring pulses would require a large draw on storage from the mainstem reservoirs. If the timing of these releases coincides with lower reservoir levels due to drought, the

intakes for public drinking water and irrigation systems can be adversely affected due to falling reservoir levels. This could drastically increase pumping costs and potentially expose water system intakes. 2. Public drinking water systems can also face increasing turbidity as well as taste and odor problems associated with degraded water quality resulting from low reservoir levels. This not only increases the cost of treatment and, ultimately, the cost to the consumer, but also threatens the ability to comply with the Safe Drinking Water Act.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644707 **Coder Name:** jgutierrez

Comment Text: In addition, there are concerns with the method the Corps used to model the impacts of the alternatives on Water Supply. Flow requirements, which are much higher than the minimums mentioned in Master Manual due to riverbed degradation, especially in the Kansas City, Leavenworth and St. Joseph areas, should be considered. This was identified several times in the DEIS, including page 3-504 of the DEIS, wherein it states, the No Action Alternative does not reflect actual past or future conditions. Worst case scenarios of the Period of Record were used and hypothetical Master Manual minimum flows to create a baseline. Because of bed degradation, the minimum flows mentioned in the Master Manual could not and would not support the Water Supply Intakes on this stretch of the River. As a result, the Corps has assumed that the 33 of the 55 water intakes would experience 57 days below operating thresholds and 21 intakes would experience 14 days below shutdown elevations. This assumption is not reasonable to correctly estimate the impacts and costs. The Corps should reevaluate its approach and model realistic flow requirements to keep water supply intakes in operations at all times. Additionally, the Corps analysis of rental pumping submersible pump costs and sizes are unrealistic for a major utility intake.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 156 **Comment Id:** 644703 **Coder Name:** jgutierrez

Comment Text: Alternative 2 poses the most concerns for intake operations. Included in this regime is a summer low flow., iv. Beginning on or about June 15, 2006 but no later than July 1, 2006 the Corps shall begin reducing flows to provide a minimum 30-day summer low flow release of no greater than 25 Kcfs. Op. cit. 2003 BiOp. If tributary input is low, stages at many intakes will also be low thus reducing pumping capacity when consumer demand may be the highest. As alternative 2 contemplates these low summer

flows, there has been no effort made to evaluate the impacts and cost associated with those low summer flows on the Water Supply intakes. Although this is not the preferred alternative; we feel it is important to document these impacts for the record.

Organization: Missouri and Associated Rivers Coalition (MOARC)

Commenter: Tom K Poer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644452 **Coder Name:** jgutierrez

Comment Text: Additionally, staff is concerned with the methodology used by the Corp in modelling the impacts of alternatives on the City Water Supply. It is staff's view that minimum flow requirements mentioned in the Master Manual did not properly model the impact of alternatives on the water supply intake due to riverbed degradation. Flow requirements for Kansas City, Leavenworth, and the St. Joseph area are much higher than those discussed in the Master Manual and should be revisited. This flaw in the model was admitted several times in the DEIS, including page 3-504 of the DEIS, where it was noted " ... the No Action Alternative does not reflect actual past or future conditions ... " The Master Manual uses worse case scenarios of the Period of Record and then used hypothetical Master Manual minimum flows to create a baseline. Because of bed degradation, the minimum flows mentioned in the Master Manual could not and would not support the Water Supply Intakes on this stretch of the River. As a result, the Corps has assumed that 33 of the 55 water intakes would experience 57 days below operating thresholds and 21 intakes would experience 14 days below shutdown elevations. This assumption is totally unacceptable. The Corps should reevaluate its approach and model realistic flow requirements to keep Water Supply Intakes in operations at all times. Additionally: the COE analysis of rental pumping submersible pump costs and sizes are unrealistic for a major utility intake as KCMO operates with a capacity of 400 MGD and average production of 100 MGD increasing to over 200 MGD during high temperature dry periods.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644451 **Coder Name:** jgutierrez

Comment Text: No effort has been made to evaluate the impacts and cost associated with Alternative 2 on the summer time use of the Water Supply intakes. Although Alternative #2 is not a preferred alternative, staff believes it is important to document the potential impacts noted above on the record.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644449 **Coder Name:** jgutierrez

Comment Text: Alternative 2 poses the most concerns for our intake operation. Included in this regime is a summer low flow.,." iv. Beginning on or about June 15, 2006 but no later than July 1, 2006 the Corps shall begin reducing flows to provide a minimum 30 day minimum summer low flow release of 25kcfs. Once the low flow period has been achieved, the Corps may increase flows the minimum amount necessary to achieve project purposes by September 1, 2006." Op cit. 2003 BiOP. If tributary input is low this policy could result in the reduction of pumping capacity below customer demand.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644447 **Coder Name:** jgutierrez

Comment Text: In analyzing flow regime effects, Alternatives 4, 5, and 6 appear to offer the least impacts on water intake operation during the release periods. In the event the reservoir does not receive adequate late winter influent rates; staff is concerned the above alternatives could lead to problems where low reservoir discharge rates might result in inadequate water surface level flow to the raw water intake structure.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644446 **Coder Name:** jgutierrez

Comment Text: An intake of larger capacity was constructed adjacent to the 1925 facility in 1955. This intake provides a larger capacity of 400 MGD with engineering design based on anticipated flows from the Missouri River based on the Pick-Sloan dam/reservoir construction which was soon to be completed and its anticipated operation as outlined at the time. Over 3 million dollars of intake modifications have been made to accommodate flow releases from Gavins Point dam due to changes in the Master Manual operation guidelines and reduced flow due to drought conservation measures. The access to water at lower flows has been exacerbated by 15 feet of channel degradation in the reach near our intake structure over the last 15 years. This degradation has resulted in a regionally supported study by the COE which must be taken into consideration when evaluating flow effects on water intakes in the Kansas City reach.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 107 **Comment Id:** 643893 **Coder Name:** jgutierrez

Comment Text: Section 2.9.2.4, Page 2-83 - Full release of Spring pulse flows occurred in 10 of 82 years (as modeled with set release parameters), but not during the 12 years evaluated for thermal power therefore resulting in impact estimates for thermal power being more than stated in DEIS.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643490 **Coder Name:** jgutierrez

Comment Text: The cost to those communities without water supply has not been included in the report. The cost impact to Cleveland in 2003 when a regional power outage left 1.5 million persons in the city without water for 2 days was hundreds of millions when economic impacts in the region were considered. A: water supply outage means a loss in fire protection, inability to cook, bathe, flush toilets and a shutdown of critical facilities like hospitals with an increase in the risk of disease outbreaks. A water supply outage becomes a state and federal disaster. The model needs to be modified using a realistic flow condition where water supply intakes remain in service. The cost impacts to water supply need to be accurately reflected in the report and the EIS.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643486 **Coder Name:** jgutierrez

Comment Text: Refer to Human Considerations Technical Report- Water Supply, Section 3.1 Paragraph 2, "The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1." These results will leave some communities without water supply for days. The report is also inconsistent in assessing risk assuming the worst case for flows, but best case for water utility to respond. Not all low water conditions can be solved by submersible pumps. The costs for the pumps are not accurate, asset life was shown as 10 years which is

too long for this type of service under these conditions, it was also not apparent that a reduced wire to water efficiency was taken into account when calculating electrical costs and the cost in the report should be modified to reflect these considerations.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643422 **Coder Name:** jgutierrez

Comment Text: From the Technical Report, the Association would like to know where the Corps obtained its data on location and low water shut-off elevation of our River Intake pumps. The information on the size of pumps and costs necessary to draw water from the river are under estimated. Locating pumps larger than 7,000 gpm to rent will be a difficult task, especially if half of the members in this Association are looking for these large pumps to rent. It is doubtful that a utility would be able to receive these auxiliary pumps in time to prevent a water outage. If a water outage would occur, the State regulatory agency will most certainly require a Boil Order to be issued. Has the Corps looked at the power requirements to operate these auxiliary pumps and if there will generators available to supply power? The information presented on the cost of renting pumps seems too grossly under estimate the impact if water supplies are not able to pull water from the River. Again, the water utilities in this Association serve over 5 million customers daily and support billions of dollars of industrial commerce and services which depend on our ability to pump water from the Missouri River.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643419 **Coder Name:** jgutierrez

Comment Text: The water utilities from this Association will be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternatives 4, 5, and 6. If rainfall or snowfall did not meet annual expectations, as was experienced in early 2000, the AOP would decrease winter releases to prevent dropping into the Carryover Multiple Use Pool to the 2007 level experienced in the entire Missouri River Basin. Intake structures would be at risk from being unable to draw water from the River during potential low releases in the winter.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643418 **Coder Name:** jgutierrez

Comment Text: Alternate #2 could potentially place water intakes out of service longer depending on the needed water levels in the reservoirs to meet the Master Manual Annual Operating Plan (AOP).

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 643416 **Coder Name:** jgutierrez

Comment Text: In both Reports, The Corps states there will be times where some intakes will not be able draw water from the Missouri River. This would be a catastrophe to any water utility who must provide water to its customers. The inability to pump water from the River would mean no fire protection, Hospitals, nursing homes, and dialysis facilities would not be able to provide service. Water is essential for public health and without it we would be no better than a third world country without basic sanitary conditions. Loss of water supply from the River, would result in billions of dollars in lost revenue due to businesses shutting down for safety and public health reasons in large metropolitan areas. If water interruption is expected to average 14.7 days, as stated in both reports, both the public and businesses would lose confidence in a utility to provide basic service and may relocate. The community would stagnate or the population would decline due to unreliable basic services. The reported NED and RED impacts, are grossly under estimated if a water utility is unable to provide water for 14.7 days, let alone one day.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642832 **Coder Name:** jgutierrez

Comment Text: From the Technical Report, we have serious concerns that the information you have presented may not be the most accurate on location and low water shut-off elevation of our river intake. Also, the information on the size of pumps and costs necessary to draw water from the river are underestimated as we have previously discussed this subject with a contractor. Locating pumps larger than 7,000 gpm to rent will be a difficult task, especially if many electric and water utilities along the Missouri River are having similar issues and looking for these large pumps to rent. It is doubtful that a utility would be able to receive these auxiliary pumps in time to prevent a water outage. If a water outage would occur, the Missouri Department of Natural Resources (MDNR) will most certainly require a Boil Order Notice to be issued.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642821 **Coder Name:** jgutierrez

Comment Text: We will also be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternative Nos. 4, 5, and 6. If rainfall or snowfall did not meet annual expectations, as was experienced in early 2000, the AOP would decrease winter releases to prevent dropping into the Carryover Multiple Use Pool to the 2007 level experienced in the entire Missouri River Basin. Intake structures would be at risk or being unable to draw water from the River during potential low releases in the winter.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642806 **Coder Name:** jgutierrez

Comment Text: In reviewing the proposed alternatives, Alternative #2 could potentially interrupt water intake usage for a substantial timeframe depending on the needed water levels in the reservoirs to meet the Missouri River Mainstem System Annual Operating Plan (AOP).

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642802 **Coder Name:** jgutierrez

Comment Text: The USACE has the obligation to meet all the Eight (8) Authorized Purposes, Water Supply being one of these Authorized Purposes. The Draft MRRMP-EIS affects not only the Missouri River but also the Mississippi River as approximately 60% of the flow of the Mississippi River comes directly from the Missouri River. Since our Utility has water intakes on both rivers, any change to flows directly impacts our ability to produce drinking water to our customers. We have serious concerns regarding flows and water quality about each of the six (6) alternatives proposed in the Draft MRRMP-EIS, and the data present in the December 2016 Water Supply Environmental Consequences Analysis Technical Report. In both documents, the USACE states there will be times where some intakes will not be able draw water from the Missouri River. If this were to occur at our Missouri and Mississippi River intakes, there would be a catastrophic effect for our Utility and jeopardize public health and safety to our customers. If water interruption is expected to average 14.7 days, as stated in both reports, residential and commercial customers would lose confidence in our Utility's ability to provide reliable, basic services which would likely result in relocation to a city with more reliable

water services. The reported national and regional economic development impacts are grossly underestimated if a water utility is unable to provide water for one day, let alone 14.7 days.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642737 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18.2.5, p. 3-510 "Water supply access in the upper river, including Tribal intakes, would experience smaller impacts under Alternative 2 than in the lower river." Comment: When comparing total costs this is the case, however, Table 3-233 (page 3-510) shows that the percent difference from Alternative 1 is greater for the upper river than the lower river - about 60% greater.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642727 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18.2.5, p. 3-509 "In addition, 22 of the 55 intakes would experience on average 14.4 days when water surface elevations are below shut-down elevations under Alternative 2. While on average, these impacts would be small in nature, there would be some years when access to water supply, especially in the lower river, would experience larger impacts." Comment: Having water surface elevations below shut-down elevations is never a small impact, regardless of how large or small the population is that relies on that intake. Characterizing that effect as small in nature makes it sound trivial. During real-time operations, the USACE releases water above and beyond what is required by the Master Manual to keep intakes on the riverine sections of the Missouri River operable. For example, during the 2012- 2013 winter, releases were scheduled to be 12,000 cfs from Gavins Point, as specified in the Master Manual. Due to bed degradation and low tributary flows, actual releases were held at 14,000 cfs. The volume of water released from the upstream reservoirs collectively due to the increased flow was approximately 400,000 to 500,000 acre-feet. The EIS should acknowledge the actual operations of the Missouri River System by the USACE and quantify the impacts of the alternatives based on that operation.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642723 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18.2.4, p. 3-507 Comment: The first paragraph under the "National Economic Development" section describes the methodology for determining impacts to water supply intakes. While it is understood that the methodology was chosen to simplify the evaluation, it underestimates and oversimplifies the effect to water supply intakes on reservoirs.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642713 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.18, p. 3-500 - 3-524 Comment: This comment is a general comment in regards to the lack of Regional Economic Development (RED) analysis for the water supply evaluation. Because there was no RED analysis to determine the local effect on water supply, the whole evaluation is skewed in favor of the lower basin. It is understood that the population is higher in the lower basin, making total costs higher. However, this means that the costs are also spread out over a larger population. For smaller populations, like many of the communities in the upper basin, the cost for modifying an intake is spread out over less people. A RED analysis, or some kind of local analysis, would potentially paint a different picture when it comes to water supply impacts.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642121 **Coder Name:** jgutierrez

Comment Text: Sioux City will be at risk from low flows during the winter months if high releases are necessary to meet the goals of Alternatives 4, 5, and 6. If rainfall or snowfall did not meet annual expectations, as was experienced in early 2000, the AOP would decrease winter releases to prevent dropping into the Carryover Multiple Use Pool to the 2007 level experienced in the entire Missouri River Basin. Intake structures for the industries in our area would be at risk or be unable to draw water from the river during potential low releases in the winter.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642120 **Coder Name:** jgutierrez

Comment Text: Alternate #2 could potentially place water intakes out of service longer depending on the needed water levels in the reservoirs to meet the Master Manual Annual Operating Plan (AOP).

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642118 **Coder Name:** jgutierrez

Comment Text: In both reports, the Corps states there will be times where some intakes will not be able draw water from the Missouri River. This would be a catastrophe to any water utility who must provide water to it's customers. While Sioux City does not have a direct intake on the Missouri, we have long stressed to the Corp, that our water supply is dramatically impacted by changes in river elevation. Sioux City not only provides water to our community but also augments the water supply of South Sioux City, Nebraska and Dakota Dunes, South Dakota. Sioux City's water supply impacts over 125,000 people. This water is used for drinking water purposes, fire protection, Industry supply and irrigation .The inability to pump water from the Missouri River would mean no fire protection, hospitals, nursing homes, and dialysis facilities would not be able to provide service. If water interruption is expected to average 14. 7 days, as stated in both reports, both the general public and businesses would lose confidence in a utility to provide basic service and could potentially choose to relocate to an area of the country that can constantly provide water service. Our community could potentially become stagnate or the population would decline due to unreliable basic services. The reported NED and RED impacts are grossly under estimated if a water utility is unable to provide water for 14.7 days, let alone one day.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 195 **Comment Id:** 642105 **Coder Name:** jgutierrez

Comment Text: In addition, municipalities rely on the Missouri River for their drinking water including St. Louis; Kansas City, Kansas and Kansas City, Missouri; Johnson County, Kansas; St. Joseph and Jefferson City. Reduced river flows increase silt content in the water and processing costs. Low flows also may require further modification of each municipality's intake structures as evidenced by construction that St. Joseph and Kansas City were required to undertake because of low flows in the winter of 1989.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 186 **Comment Id:** 641537 **Coder Name:** jgutierrez

Comment Text: Page 8 - the second to last paragraph, states: "The modeling results show that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1. These impacts are occurring in both the upper and lower river and along riverine areas, as well as reservoirs though the reasons for these effects vary by location." NRCS Comment: The 57.1 days referenced here is not clear. Is this over the period of record, per year, or in dry years? This average number of days is also referenced on pages 14, 20, 22, 27, and 32.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640268 **Coder Name:** jgutierrez

Comment Text: Ancillary concerns include possible impairment(s) to water intakes and outfall structures on Lake Sakakawea, and on the Fort Peck and Garrison reaches of the Missouri River. In brief, North Dakota's Department of Health (NDDOH) cannot support any alternative until a plan is developed that addresses likely pollutant discharges into the Missouri River from mechanical habitat construction.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638514 **Coder Name:** jgutierrez

Comment Text: Water Supply is essential to every person. It is imperative that the Corp honor its mission to protect the Water Supply of the Missouri River as its foremost priority. The Corps should reexamine any modeling and eliminate any proposed operations that would cause Water Supply intakes to be without water for any period of time, even a single day - such is the importance to the economic vitality, health, and safety of the communities relying on the river and the Corps considerate and prudent management.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638494 **Coder Name:** jgutierrez

Comment Text: Even Alternative 3, which appears to be the best alternative available, states that it would result in 22 intakes experiencing an average of 14 days below shut-down elevations (Section 3.18.2.6). No water utility would have enough storage or alternative sources to sustain itself for 14 days without a water supply. The Corps should therefore quantify the impact of communities being without a water supply for even a single day and include the cost of that risk in each alternative. Consumers would not be able to drink, bathe, cook, clean, or flush toilets. Schools and day care centers would have to close. Hospitals, nursing homes and health care facilities would be highly impacted. Fire protection would be lost, so office building and businesses would have to close. State and Federal government operations - including the Corps of Engineers - would be impacted.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638484 **Coder Name:** jgutierrez

Comment Text: Failure to recognize the impact to communities if water supply is interrupted - Based upon the false assumption that all problems with Water Supply intakes could be solved with portable submersible pumps, the DEIS concluded that there are no instances with individual intakes where access is completely eliminated. Therefore, the DEIS concluded that the impacts under the Other Social Effects (OSE) would be negligible. This does not make any sense. It is equivalent to a head in the sand approach for dealing with inevitable water shortages.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638476 **Coder Name:** jgutierrez

Comment Text: Failure to define the duration and frequency of the events - Referring to Human Considerations Technical Report - Water Supply, Section 3.1 Paragraph 2 which describes using the period of record along with the minimum flow per the master manual as the flow condition. This worst case model scenario does not include how often the scenario occurs. For example, does it

occur every year or once every 25 years? The shutdown frequency was not defined and therefore the costs associated with the shutdowns was not calculated or estimated. The EIS needs to quantify how many times the events will occur and during what period they occur. The frequency of the occurrences and associated costs should be included in the final report for each alternative.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638468 **Coder Name:** jgutierrez

Comment Text: Failure to estimate costs of the alternatives accurately - The Corps has assumed that 55 Water Suppliers could equip themselves with portable submersible pumps at a cost of \$376,000 per year, see page 3-508. This estimate is extremely low and does not seem to be based on reliable facts. The cost of complying with every alternative in the DEIS is much higher than estimated. For instance, WaterOne spent approximately \$2.4 million in 2004 to purchase and install auxiliary pumps to cover just 50% of the pumping capacity for its Missouri River Intake. Even if one assumes that pump rental is a viable option, daily pump rental would be impossible. For every year that a low flow event might occur, the utility would have to rent the pumps for the entire season or perhaps the entire year. In addition to the pumps, the water supplier would need to secure additional equipment such as barges to support the pumps. Alternative 2, with low summer flows, would have the worst impact requiring both summer and winter rental costs. Every alternative except Alternative 3, would consume storage, which would increase the likelihood that the pumps would need to be rented for multiple years. These costs are not accurately reflected in the EIS.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638457 **Coder Name:** jgutierrez

Comment Text: Failure to quantify impacts to water supply operations - The DEIS assumes that if there are problems with access to water on the Missouri River that Water Supply intake operators can rent supplemental pumps on a temporary and reactive basis. Section 3.18.2.4 states that the NED analysis, focused on actions that water supply operators can adapt by using different-sized portable submersible pumps. To be blunt, this assumption is simply absurd. Operation of a Water Supply is a 24/7 mission critical business. The public is relying on Water Suppliers to provide them with water on a continuous and reliable basis. The calculations of costs for these portable submersible pumps were based upon a daily rental rate, see page 3-508. It would simply be unacceptable, as the DEIS implies, for Water Suppliers to wait until water levels drop to critical levels and then run out to rent some pumps. First, it assumes that there would be an adequate supply of pumps in the size and quantity needed to operate the 55 intakes on the Missouri

River, which is not true. Next, it assumes that one could easily connect the pumps to Missouri River intakes, which is not accurate. Intake operations on the Missouri River are very challenging with varying flows, debris and ice, which make attaching anything to an intake difficult at best, more often dangerous. The DEIS also assumes that all problems could be solved with pumps, which they cannot. It is common for the river channel to migrate away from intakes at periods of low flow, which would make it impossible to reach the water with a pump attached to an intake. Likewise, intakes on the reservoir areas may have to extend pipelines for miles to reach the water.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638300 **Coder Name:** jgutierrez

Comment Text: WaterOne supports Alternative 3 of the DEIS. This alternative appears to have the least impact to stakeholders - including Water Supply - and has the best potential to recover the protected species. It is not a perfect alternative and we have concerns about the pulse that may occur in year nine. We encourage the Corps to complete additional analysis and modeling before that time.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638299 **Coder Name:** jgutierrez

Comment Text: The Corps is well aware that there have been isolated problems with Water Supply on the Missouri River over the past 25 years. The DEIS is the first public report documenting that communities throughout the Missouri River Basin may be in jeopardy of losing their water supply. Page 3-506 states that, Modeling shows that 33 of the 55 intakes would experience on average 57.1 days when water surface elevations would fall below operating thresholds. In addition, 21 of the 55 intakes would experience on average 14.7 days when water surface elevations are below shut-down elevations under Alternative 1. This is an alarming statement and should serve as a wake-up call to the Corps that something must be done immediately to address what would be a catastrophic scenario for the residents and businesses who rely on the Missouri River daily.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 40 **Comment Id:** 628465 **Coder Name:** jgutierrez

Comment Text: Operational low flows in alternative 2 will negatively impact water quality parameters, which will require additional treatment techniques to be utilized by water suppliers to meet regulatory requirements. The costs for increased treatment and potential health risks were not addressed in the Human Considerations Technical Report- Water supply, and should be included in the report.

Organization: WaterOne

Commenter: Michelle Wirth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 37 **Comment Id:** 628462 **Coder Name:** jgutierrez

Comment Text: Finally, alternative 2 contemplates a low summer flow. There was absolutely no effort made to evaluate the impacts and cost associated with those low summer flows on water supply intakes. Although this is not the preferred alternative, it is important to document those impacts for the record.

Organization: WaterOne

Commenter: Mike Armstrong **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 37 **Comment Id:** 628461 **Coder Name:** jgutierrez

Comment Text: One area of the DEIS that we do have significant concern about is the method the Corps has used to model the impacts of the alternatives on water supply. The economists have used very theoretical and unrealistic assumptions. They have not considered real-world requirements, which are much higher than the minimums mentioned in the Master Manual, due to riverbed degradation, especially in the Kansas City, Leavenworth and St. Joe areas. This flaw was admitted several times in the DEIS, including 3-504 of the DEIS. I'll quote here that "...No Action Alternative does not reflect actual past or future conditions..." The economists use worst case scenarios of the Period of Record and then use hypothetical Master Manual minimum flows to create a baseline. This does not reflect reality. Because of riverbed degradation, the minimum flows mentioned in the Master Manual could not and would not support the water supply intakes in this stretch of the river. As a result, the Corps has assumed that 33 of the 55 water intakes would experience 57 days below operating thresholds, and 21 intakes would experience 14 days below shutdown elevations. These assumptions are totally unacceptable. The Corps should evaluate this approach and model realistic flow requirements to keep water supply intakes in operation at all times.

Organization: WaterOne

Commenter: Mike Armstrong **Page:** **Paragraph:**
Kept Private: No

EC900 Environmental Consequences: Cultural Resources (Substantive)

Correspondence Id: 239 **Comment Id:** 645407 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.9, p. 3-209 - 3-228 Comment: Alternatives that involve increasing flows have the potential to irrevocably harm significant cultural resources (i.e., archaeological sites) at the point of origin or in downstream settings. Increased flows that result in corresponding higher water surface elevations saturate cutbanks and promote conditions for long-term or permanent soil instability that often warrant extensive solutions to correct them. Double Ditch Village State Historic Site, a National Register of Historic Places listed property administered by the State Historical Society of North Dakota, is a current example of an archaeological site that experienced said effects as the result of cutbank saturation from increased flows in 2011. In Lake Sakakawea there is at least one case where ESA habitat corresponded with a significant archaeological site that became exposed during low-pool elevations. Proposed archaeological investigations of that site were rescheduled as a result of nesting concerns. Fluctuating pool elevations dropping to low levels may offer limited or rare windows of opportunity for investigations to cultural resources. If other suitable habitats occur in off-channel settings then the potential conflict between competing management goals (biological vs. cultural) almost certainly would be drastically lessened or negated. Vegetation maintenance and mechanical construction ESH has the least potential to impact cultural resources in the overall scenarios as proposed.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 206 **Comment Id:** 645984 **Coder Name:** jgutierrez

Comment Text: From review of the table in the Executive Summary of the MRRMP and EIS summarizing environmental consequences of the alternatives compared to the no action alternative, it is evident that any management action involving flows will negatively impact cultural resources protection. This is especially concerning for Lake Oahe, where there are 1,047 sites, of which 175 are below the normal pool elevation of the reservoir. In addition to flow issues, creation of mechanical sandbar habitat has the potential to affect cultural resources. To address cultural resource issues, we encourage the early involvement of the State Historic Preservation Office (SHPO) and Historic Preservation Offices (THPOs) of the various Native American Tribes within South Dakota in the site selection process for created sandbar locations

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645472 **Coder Name:** jgutierrez

Comment Text: Native American human remains and cultural objects on federal land (and state Title VI) lands within the boundaries adjudicated by the Indian Claims Commission as the aboriginal land of the Sioux Nation, which includes the Missouri River corridor and the Draft EIS study area, are presumptively owned by the Tribes of the Great Plains Water Alliance, with a right of repatriation. This right is recognized in section 3 of the Native American Graves Protection and Repatriation Act (NAAGPRA), 25 U.S.C. Â§3002(a)(2)(C)(I). These resources include human remains and cultural objects of the Rosebud Sioux Tribe at the abandoned Spotted Tail Agency site, and of the Oglala Sioux Tribe at the Whetstone Agency along the Missouri River. The Corps acknowledged on page 8 of the Cultural Resources Environmental Consequences Analysis Technical Report that "there are many unknown cultural resource sites existing on the landscape." The Corps admitted on page 3-168 of the Final EIS Missouri River Master Water Control Manual Review and Update that its actions cause erosion and deterioration of Native American human remains and cultural objects. These are admissions of impacts. Nevertheless, the Corps concludes in the Draft EIS that the Tribes are not impacted by current Pick-Sloan operations, and the Recovery Management Plan.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645444 **Coder Name:** jgutierrez

Comment Text: In sum, the Corps has failed to comply with the required process under NHP A section 106. The findings in the Draft EIS are based on false or incomplete assumptions used in the determination of impacts to cultural resources. The Draft EIS is fatally flawed for lack of compliance with the National Historic Preservation Act and its implementing regulations.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645443 **Coder Name:** jgutierrez

Comment Text: The fluctuations in reservoir elevations contemplated in chapter 3.18 of the Draft EIS will likely be more dramatic than the modeling suggests, resulting in greater impact to cultural resources. If the Corps' overall analysis has any merit, this will especially impact cultural resources at Oahe Reservoir. Nevertheless, the long-term forecast of diminished in-flows to the Missouri

main stem, and long-term drought in the central plains caused by climate change, will cause greater adverse impact to cultural sites than forecast by the Corps in the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645442 **Coder Name:** jgutierrez

Comment Text: In the Draft EIS, the Corps mistakenly assumes that the environmental impacts of all alternatives will be equal in light of climate change. It states on page 3-227 - Extremes in climate will likely also magnify periods of wet or dry weather, resulting in longer, more severe droughts, and larger more extensive flooding. Likely impacts to cultural resources would follow from increases to variability of reservoir water surface elevations ... However, it is assumed that the conclusions described would be similar under each alternative. The degree of water elevation fluctuation determines the magnitude of impact to cultural resources at the main stem reservoirs. Each alternative will cause different levels of fluctuation. As acknowledged by the Corps, climate change will intensify both catastrophic rain events and droughts. Consequently, the water level fluctuations will increase exponentially, not arithmetically. The assumption that the impacts of climate change are equal under all alternatives is erroneous.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645441 **Coder Name:** jgutierrez

Comment Text: Moreover, the computer simulations used to calculate impacts to cultural resources are based on inaccurate assumptions. According to the Corps, "The analysis assumes that the HEC-RAS and RESSim models reasonably estimate river flows and reservoir levels over the 82-year period of record." (Cultural Resources Environmental Consequences Technical Report, p. 8). The use of the entire 82-year period of record to determine impacts on cultural resources ignores the effects of reservoir construction, and will result in underestimating the actual impacts of water level fluctuations at the reservoirs today. In addition, the assumption fails to consider evidence of diminished stream flows in the tributaries to the Missouri River, and predictive modeling for long-term drought in the central plains. According to Cook et al, "(u)ltimately, the consistency of our results suggests an exceptionally high risk of a multi-decadal megadrought occurring over the Central Plains and Southwest regions ... " (Cook et al, JOURNAL OF AMERICAN Assoc. OF ADVANCEMENT OF SCI. (2015)).

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645436 **Coder Name:** jgutierrez

Comment Text: The Draft EIS suggests there will be significant impacts on Native American cultural resources, especially at Oahe Reservoir. Cultural Resources Environmental Consequences Technical Report, pp. 19-20. Consequently, the Corps is obligated to fully consult with the THPOs. As intoned by the Advisory Council- Section 101(d)(6)(B) of the act requires the agency official to consult with any Indian tribe or Native Hawaiian organization that attaches religious or cultural significance to historic properties that may be affected by the undertaking. The requirement applies regardless of the location of the property. 36 CFR Â§800.2(c)(2)(ii).

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645435 **Coder Name:** jgutierrez

Comment Text: Significantly, the calculation of impacts to cultural resources from the alternatives in the Draft EIS is erroneous. The number of sites inputted into the model are based on outdated cultural resources surveys. The surveys are incomplete. Table 3-24 on page 3-209 of the Draft EIS is not accurate and does not establish a basis for the proper identification of impacts to cultural resources.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645408 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.9.3, p. 3-215 Comment: What is the reason for the order of the lakes in Table 3-27? It would be more logical to list them from upstream to downstream.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

ED1000 Editorial (Substantive)

Correspondence Id: 4 **Comment Id:** 625189 **Coder Name:** jgutierrez

Comment Text: In the Table 3-211 on Page 3-465, the four power plants located from river mile 532.6 to 645.9 should be moved up so they are listed under the "Gavins Point Dam to Rulo" heading for river reach.

Organization: NeDNR

Commenter: Shuhai Zheng **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645605 **Coder Name:** jgutierrez

Comment Text: AMP 2 Page 222 - see Section Error! Reference source not 12 found.). - What will be included here?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645604 **Coder Name:** jgutierrez

Comment Text: AMP 2 Page 120 - Technical Team members will likely not be co-located, so they should be given 13 opportunities to meet as needed to execute their responsibilities. Is this a typo? Do you mean should be given?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645603 **Coder Name:** jgutierrez

Comment Text: AMP 2 Page 77 - bereduced - Typo - space needed

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645602 **Coder Name:** jgutierrez

Comment Text: AMP 2 Page 67 of 597 - The decision process generally involves using new information from monitoring and research, modeling of habitat and population response, and management conditions. What does this mean?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645601 **Coder Name:** jgutierrez
Comment Text: AMP 1 Page 537 of 538- Appendix L. Reserved - Reserved for what? More details needed in final EIS.
Organization: The Izaak Walton League of America
Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645600 **Coder Name:** jgutierrez
Comment Text: AMP 1 Page 531 of 538 - Debriefing of unsuccessful contractors and protest procedures - TBD. What will this section include? We ask for more detail on this in the final EIS.
Organization: The Izaak Walton League of America
Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645599 **Coder Name:** jgutierrez
Comment Text: AMP 1 Page 447 - Scaling: The scaling of this variable is specific to each reach, and is shown in Error! 22 Reference source not found. What does this mean? What's is to be added?
Organization: The Izaak Walton League of America
Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645597 **Coder Name:** jgutierrez
Comment Text: Volume 3 Page 259 - Water supply access s in the lower river - is this a typo?
Organization: The Izaak Walton League of America
Commenter: Paul Lepisto **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 242 **Comment Id:** 645596 **Coder Name:** jgutierrez

Comment Text: Volume 3 Page 166 - mentions "Oahe Lake" - we suggest a change to Lake Oahe.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645593 **Coder Name:** jgutierrez

Comment Text: Volume 2- page 214 Figure 3-50. Missouri River Floodplain - the city of Pierre is no in the correct location

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645592 **Coder Name:** jgutierrez

Comment Text: Volume 2 Page 77 - As stated in Chapter 2.0, USACE determined that more than twice as much floodplain connectivity is currently provided on the System. We ask more than twice as much what? This needs a reference location and/or more detail for reader to be able to go back and find the information.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645406 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.7.1.2, p. 3-183 "Approximately 100 miles downstream from Garrison Dam the temperature is still low." Comment: From the context it appears "Garrison Dam" should be "Fort Peck Dam".

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645393 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.2.2.4, p. 3-44 Comment: Fort Peck Lake is referred to as "(Port Peck Lake)"

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645386 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.1.1, p. 3-4 "Depletions consist of water use by irrigation, municipal, evaporation, etc."

Comment: This should be changed to "Depletions are estimates of water use by irrigation, municipal, evaporation, etc."

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645381 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.9.2.4, p. 2-83 "After the higher release period is completed, the upper three reservoirs have less water than they otherwise would have, and they must recover. During this phase, releases are lower than they otherwise would have been, allowing more water to accumulate in the reservoirs." Comment: It is not clear if the phrase "releases are lower than they otherwise would have been" means that the reservoirs are refilling according to the current Master Manual. If the USACE is operating outside the Master Manual when refilling the reservoirs after the ESH-creating release then that change in operations needs to be described in the EIS. This comment also pertains to Alternative 5 (Section 2.9.2.5, p. 2-86) and Alternative 6 (Section 2.9.2.6, p. 2-88), where similar statements are made.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645375 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.8.1.1, p. 2-49 Comment: The first paragraph references Section 2.5.1.5. It should be Section 2.5.1.2.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644414 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.4, page 83 - Recommend changing the name of this effort as Technical Support. This differentiates the individuals and their work efforts and membership to be different that the Bird, Fish and HC teams.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 644388 **Coder Name:** jgutierrez

Comment Text: [Adaptive Management Plan (Version 6)] Section 2.3.3.1, page 79, line 10 - Recommend removal of on the ground as it is old terminology and is misrepresentative in the rest of the sentence.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643963 **Coder Name:** jgutierrez

Comment Text: Page 104, Section 2.3.8.2, Lines 21-32 - There is a reference to NPS "assisting the agencies in planning sandbar habitat construction activities in the MNRR." To provide clarity and consistency, please add the following: "in the MNRR reaches below Fort Randall and Gavins Point Dams. Each action in these areas must also comply with WSRA Section 7 determinations." WSRA Section 7 determinations will be informed by the Final NPS ESH Management Plan.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 643269 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 8.0, p. 8-10 Comment: The definition for "Upper Missouri River" is as follows: "Mainstem of the Missouri River between Fort Peck Dam and the headwaters of Lake Sakakawea, and the Yellowstone River for an unspecified distance upstream of the confluence with the Missouri River." This definition is confusing. Between this definition and the one for "Lower Missouri River" (p. 8-5), the Missouri River between the headwaters of Lake Sakakawea and Gavins Point Dam is not accounted for, which is the area primarily reserved for bird management actions. This definition seems to pertain only to fish

management actions in the upper basin and should be modified to include the bird management region. Elevation Plots of Upper Three Reservoirs for Each Alternative During Historic Drought Periods Charts: [Fort Peck- Water Surface Elevation Comparison January 1931 - January 1944] [Fort Peck- Water Surface Elevation Comparison January 1954 - January 1966] [Fort Peck- Water Surface Elevation Comparison January 1987 - January 1994] [Fort Peck- Water Surface Elevation Comparison January 2001 - January 2011] [Garrison- Water Surface Elevation Comparison January 1931 - January 1944] [Garrison- Water Surface Elevation Comparison January 1954 - January 1966] [Garrison- Water Surface Elevation Comparison January 1987 - January 1994] [Garrison- Water Surface Elevation Comparison January 2001 - January 2011] [Oahe- Water Surface Elevation Comparison January 1931 - January 1944] [Oahe- Water Surface Elevation Comparison January 1954 - January 1966] [Oahe- Water Surface Elevation Comparison January 1987 - January 1994] [Oahe- Water Surface Elevation Comparison January 2001 - January 2011]

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 643258 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 8.0, p. 8-9 Comment: The definition for "stage" lists the Action Stage, Minor Flood Stage, and Moderate Flood Stage for the Missouri River at Bismarck. It is assumed that this is included in the definition as an example of the concept of stage. While this may only serve as an example, the description for Moderate Flood Stage in the definition is inaccurate. The National Weather Service's Advanced Hydrologic Prediction Service provides the following description for flood impacts at a stage of 16 feet (Moderate Flood Stage) on the Missouri River at Bismarck: Before 16 feet, older homes in the Fox Island area may experience flooding. Homes built to this level are at less risk but may have water surrounding them. Access to Fox Island is difficult because of water on Riverwood Drive. No significant threat to the incorporated cities of Bismarck and Mandan. Available online: <http://water.weather.gov/ahps2/hydrograph.php?wfo=bis&gage=biwn8>

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 642487 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.14.1, p. 3-357 Comment: The second sentence of the second paragraph on this page references "State Water Commission records." It should be "North Dakota Office of the State Engineer records."

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 186 **Comment Id:** 641532 **Coder Name:** jgutierrez

Comment Text: On Page 9, Section 3.1, it is stated that: "Only one county, Thurston, Nebraska, was selected on the basis of a single criterion. Seven counties, primarily in South Dakota, were identified on the basis of all four criteria." NRCS Comment: Table 2 shows that there is a second county, Williams, North Dakota, that also has only one criterion. It is not clear which is correct, the paragraph or the table.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

HEC100 HEC-ResSim Modeling Report: General Comments (Substantive)

Correspondence Id: 167 **Comment Id:** 643848 **Coder Name:** jgutierrez

Comment Text: The USACE includes the following statement at the end of paragraph four on page 3-464 of this section. "...power plant representatives have updated or confirmed the intake elevations during outreach with plants in 2015." Montana-Dakota provided updates to the USACE on intake elevations for Heskett. However, through discussions with the USACE as the EIS was being drafted, we do not believe the updated elevations were physically confirmed with the model inputs. Montana-Dakota recommends USACE confirm the low flow elevations the model is projecting are accurate when compared with the elevations provided by facility owners for low flow event impacts.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643866 **Coder Name:** jgutierrez

Comment Text: 2.3.1.5.4 of the Mainstem Missouri River Reservoir Simulation Report states: ". . . At all projects except Gavins Point, hourly release rates may vary widely as necessary to meet fluctuating power loads. Changes in release rates at Gavins Point are subject to limitations to restrict stage fluctuations downstream. Minimum hourly release restrictions are applicable at Fort Peck and Garrison due to downstream intakes. A uniform peaking release pattern has been established during the summer months at Garrison and Fort Randall for endangered birds nesting along the river below the projects, and may be reinstated at Fort Peck if nesting patterns deem it necessary." Montana-Dakota recommends the USACE provide further review of hourly flows, incorporate discussion on

these potentially impacting low flows and consider the impacts in the evaluations of the alternatives. This review should be considered in addition to the model's attempt at taking the swings into consideration.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643858 **Coder Name:** jgutierrez

Comment Text: Disagreement with Use of 2012 Geometry and Model Predictive Accuracy Based on Heskett Observations

Montana-Dakota would like to emphasize that we do not agree with the use of the Management Plan and EIS using the 2012 channel geometry model to evaluate the impacts of the alternatives if the model has not been proven to be accurate at low flows (those under 15,000 cfs) at Heskett's intake since it appears the only model comparison was done with 2012 observations. The concern extends to USACE's assumptions of the impacts projected from low releases using this modeling. It appears that the USACE model associated with this project uses historical flows and the 2012 river geometry survey to predict the impact to the Heskett intake and whether the station would be able to withdraw from the river (based on the intake elevations and modeled results). It appears that the model does not take into account channel changes since the survey was conducted, as well as Oahe Lake effects within the river reach near Heskett and channel siltation. In our experience, the channel changes yearly as winter ice freezes over the river and re-directs flows differently each year underneath the ice until ice breakup occurs. We are also concerned that actual elevations at Heskett's intake were not confirmed at the time of the 2012 survey. Due to the changes that occur yearly in the stretch between Bismarck and Garrison Dam, we feel the 2012 survey is not accurately representing the flow impacts near Heskett. Montana-Dakota requests that the USACE confirm whether the model corresponds to flow and elevations outside of the 2012 survey timeframe and make model adjustments accordingly to demonstrate accurate predictions. Additionally, we recommend the USACE consider evaluating this for all affected water users. Montana-Dakota recommends the USACE also review the model accuracy to consider the consequences of multiple stations along the Missouri River being affected by low releases. The effect of the loss of generation from multiple facilities in a single period is much more significant than the loss of generation from one facility. Loss of generation from multiple regional or local generation resources may have the potential for a larger impact to transmission grid reliability. This subject requires more than the limited amount of discussion found on page 3-475 of the MRRMP-EIS. Further, Montana-Dakota believes that a reliability impact from implementing the alternatives is beyond what is considered as a loss of revenue if multiple generation resources would be offline, and we recommend USACE include reliability consideration in the impact analysis of the alternatives.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

HH1000 Hydrology and Hydraulics Modeling (Substantive)

Correspondence Id: 98 **Comment Id:** 633687 **Coder Name:** jgutierrez

Comment Text: In examining each of the DEIS alternatives, a concern common to each is the lack of hydrologic and economic modeling. We cannot even begin to understand the impacts to flood control and interior drainage because the DEIS only completed modeling for four levee sites in the entire floodplain. This is a severe flaw and we call on the Corps to complete hydrologic modeling and peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is implemented. Based upon the possible pallid sturgeon spawning cue release implementation in years 9-10 under the Preferred Alternative, we believe the Corps has adequate time to fully develop this essential modeling so our members can have a much clearer picture of how management plan actions may affect them.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645630 **Coder Name:** jgutierrez

Comment Text: 2. Hydrologic and economic modeling must be completed before any flow management plan is implemented. The Preferred Alternative allows adequate time to complete a full analysis of the impacts to stakeholders.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645558 **Coder Name:** jgutierrez

Comment Text: Section 3.12.3.6 - Alternative 4 - Spring ESH Creating Release Table 3-77 Impacts from Modeled Flow Releases under Alternative 4 Compared to No Action We believe the flow model may need calibration. The flow constraints during the pulse are 126,000 CFS at Kansas City. This flow level results in flooding immediately downstream from Kansas City and substantially increases flood risks during the time frame required for the pulse to clear the mouth of the river.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645523 **Coder Name:** jgutierrez

Comment Text: 2. The DEIS is incomplete without the hydrologic modeling for impacts to interior drainage. Interior drainage impacts are downplayed and not even mentioned through much of the economic analysis. It is such an afterthought, that the agencies have not updated the software to make it compatible with today's computer operating system. Therefore, analysis of the floodplain was not performed. Instead of updating the software so that credible analysis could be performed for the entire floodplain, four representative sites were selected and a cursory impact study was performed. Again, we point to the following statement made in the DEIS: Extrapolation from the four sites to other levee areas was not feasible since the hydraulics, hydrology, and drainage varies between sites. Translation of damage duration relationships between sites was not attempted and would require additional evaluation to provide a reasonable methodology and verify results. This methodology is entirely unacceptable. 3. The lack of modeling for interior drainage impacts is a severe flaw in the DEIS and is, frankly, inexplicable. The most pervasive impact-imposed interior drainage was not thought to be enough of a priority to create modeling and verify impacts. Interior drainage has a more frequent, and depending on the duration and severity of flooding, can have a greater economic impact than flooding. Therefore, the DEIS stated economic impacts are a fraction of total economic impacts because the flow management actions on interior drainage are missing from the analysis. This omission is entirely unacceptable and it makes the DEIS incomplete and renders any claim of accurately predicted impacts of all 6 alternatives invalid.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645467 **Coder Name:** jgutierrez

Comment Text: Upon our review of the DEIS, a top-tier concern is the lack of hydrologic and economic modeling throughout the document that minimizes the potential for negative impacts that could be caused by implementation of any of the alternatives. For example, one of the most egregious errors in this document is the incomplete nature of the Corps analysis of impacts to interior drainage by only sampling four levee sites in the entire lower Missouri River basin. Through this limited approach, we cannot have any degree of confidence in the impacts of the DEIS alternatives. The CPR cannot fully comment on the impacts until such modeling is completed. We are troubled by the lack of hydrologic modeling of the impacts to stakeholders if a one-time spawning cue release were to be implemented. The DEIS states: The one-time spawning cue test (Level 2) release that may be implemented under Alternatives 3, 4, and 5 was not included in hydrologic modeling for these alternatives because of the uncertainty of the hydrologic conditions that would be present if implemented. The CPR wants to be abundantly clear in our position - hydrologic modeling and peer reviewed comprehensive economic impact studies must be completed before any flow management action is implemented. Under Alternative 3's possible implementation of a one-time spawning cue release 9-10 years in the future, we feel strongly that adequate time exists to complete a full analysis of the impacts to stakeholders. If complete hydrologic and economic modeling for the

entire floodplain is not finished before implementation, the CPR will take action to prevent adverse impacts from being forced upon stakeholders.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645331 **Coder Name:** jgutierrez

Comment Text: 3) Flow modeling for the alternatives is incomplete and not accurate The No Action Alternative is not accurate and does not serve as an appropriate baseline: The basis for all of the Alternatives in the EIS rests on the comparison to the No Action Alternative, or the existing conditions in the Missouri River system. As utilized in the EIS, the No Action alternative is a simulation of how the system is currently operated, including current MRRP actions, "but does not and cannot take into account the numerous minor adjustments to basic rules that the Corps actually makes to reasonably address critical short-term situations (e.g., increase releases for water supply, reducing releases for ice jams, etc.)." Therefore, modeling results of the No Action alternative do not reflect actual past or future conditions but serve as a reasonable basis or "baseline" for comparing the impacts of the action alternatives on resources. This approach sets false expectations for future management scenarios and inflates the value of the baseline alternative to the pallid sturgeon. To serve as an accurate representation of the No Action alternative, the Corps should consider modeling the alternative based on actual historic conditions and operations of the reservoirs. Doing so will encompass the actual variability in flows and allow for a more realistic implementation, set of alternatives, and adaptive management plan. Modeling Spawning Cue Release for Pallid Sturgeon: For the purposes of modeling the No Action alternative, the Corps assumed implementation of the plenary spring pulse as described in the Master Manual would occur. This action would include a March and May spring pulse from Gavins Point Dam. However, the EIS states that a one-time spawning cue was not incorporated in hydrologic models. The Corps stated in the EIS that they are unable to model this discrete release. Because the Corps will need to understand the impacts of releases, even short ones, on the operations and downstream water availability, this calls to question the ability to implement this component of the alternative. If the Corps is unable to model this release based on their existing modeling software, they should either explore other resources for modeling or develop a set of decision-criteria so that the public can have confidence in the implementation of this flow release.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645173 **Coder Name:** jgutierrez

Comment Text: Another example of the problems with the over reliance on averages and the use of the 82-year period-of-record in the models are the years 2011 and 2012. In 2011, the Missouri River experienced one of the worst flood events in its history, and this event was followed by a severe drought in 2012. Both the flood of 2011 and the severe drought of 2012 caused massive damages to the navigation and agriculture communities, with impacts still seen. There was nothing average about 2011 and 2012, but the use of the 82-year period-of record minimizes the massive damages.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645172 **Coder Name:** jgutierrez

Comment Text: One of the major deficiencies in the economic modeling is it relies too heavily on averages when more detailed information is available and already documented. The ISETR panel stated that the documentation for these models is in need of improvement. The economic impacts of the proposed alternatives on human considerations are measured over an 82-year period-of-record. Likewise, measurements of impacts to resources were based on an 82-year hydrologic period-of-record. The 82-year period-of-record does not properly represent the true impacts of the proposed alternatives on the various stakeholders because it skews the effects of major high- and low-water events, such as the great floods of 1993 and 2011, as well as the severe droughts of 1988, 1989 and 2012. Under this 82-year period-of-record, the negative impacts of these alternatives are significantly understated. This is particularly the case regarding the navigation industry, which was almost decimated by the drought of the late 1980s.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645138 **Coder Name:** jgutierrez

Comment Text: As indicated in Table 3-2 of the MRRMP and EIS, a hydraulic model for the river reach from Oahe Dam to Lake Sharpe is not available. We recommend that a hydraulic model for this inter-reservoir reach in the Pierre and Ft. Pierre area be created so that channel capacity information can be included when assessing potential impacts of various flows to stakeholders.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644785 **Coder Name:** jgutierrez

Comment Text: 7. The use of the HEC-RAS model on a micro level for decisions is flawed. The Dredgers continue to object to the HEC-RAS model being used for regulatory purposes relating to permits and decision making regarding bed degradation. Its use for regulatory determinations is objectionable. This position has been continually presented in MRRIC and in other Corps-related venues. The Corps repeatedly agreed in those MRRIC sessions to note that this data should not be used for regulatory purposes. The note is absent from the document and therefor skews the decision-making prospects. The agreed to note on modeling should be added.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644753 **Coder Name:** jgutierrez

Comment Text: "Utilizing the 82-year period-of-record is flawed because it includes years where the federal government mandated artificial regulatory actions that greatly diminished the presence of navigation on the Missouri River. This, in turn, results in the DEIS significantly understating the benefits of navigation on the Missouri River. As stated previously, the low summer flows on the Missouri River in the early 2000s caused navigation to virtually disappear. Several towing companies went out of business during this time due to the lack of consistent reliable flows on the Missouri River. A few years later, the Corps implemented a large spring rise under the auspices of a spawning cue for the pallid sturgeon. This second artificial federal government mandate further discouraged navigation on the river due to flow reliability concerns. In fact, navigation on the Missouri River did not begin to recover until recent years when the Corps stopped these flow mandates. Yet, despite these artificial government mandates that negatively impacted navigation during these years, the DEIS still includes these years in the period-of record for the modeling. These years should be excluded from the modeling, otherwise the benefits of navigation are substantially understated in the DEIS.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644752 **Coder Name:** jgutierrez

Comment Text: "Another example of the problems with the over-reliance on averages and the use of the 82-year period-of-record in the models are the years 2011 and 2012. In 2011, the Missouri River experienced one of the worst flood events in its history, and this event was followed by a severe drought in 2012. Both the flood of 2011 and the severe drought of 2012 caused massive damages to the navigation and agriculture communities, with impacts still being felt. The impacts of these extraordinary years are minimized utilizing the 82-year period-of-record.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644750 **Coder Name:** jgutierrez

Comment Text: "The DEIS itself has numerous flaws in the economic and hydrological models utilized to measure the impacts of the various Alternatives on stakeholders. Throughout the DEIS, the data derived from these models is either insufficient or inaccurate. The overall economic impacts of the proposed alternatives are significantly understated and the limitations of the modeling are not recognized or defined.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643876 **Coder Name:** jgutierrez

Comment Text: Montana-Dakota recommends that the USACE consider and, if needed, alter the draft MRRMP-EIS to address each of the concerns above, especially regarding confirming modeling low flow elevations with actuals and evaluating additional impacts considering potential model inaccuracies. There could be greater impacts than initially projected by USACE which could increase the costs in the MRRMP-EIS and possibly compromise transmission grid reliability. We also recommend that the revisions be available for review and comment.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643859 **Coder Name:** jgutierrez

Comment Text: Heskett Minimum Flow Compared to Model Flow Prediction Montana-Dakota is unsure whether the USACE's model projection of cfs river flow at Heskett's intake represents the flow level at which the unit would expect to encounter a shutdown. Based on previous discussions with the USACE's consultant, Montana-Dakota was informed that the model indicated Heskett would not shut down until a river flow of 5,000 cfs. We told the USACE's consultant that the 5,000 cfs low flow was inaccurate. We are unaware if any adjustments were made to the model. Based on recent observations, it is Montana-Dakota's belief that flows as low as 10,000 cfs would create a shutdown condition. In the past, flows as low as 12,000 cfs have created a shutdown

condition. Montana-Dakota would appreciate the USACE taking a close evaluation of the model in Heskett's reach and review actual elevation measurements to ensure the model is accurately predicting low flows for facilities. If shutdown events occur with higher flows than currently described by the model, the impacts should be reflected in the alternatives.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642137 **Coder Name:** jgutierrez

Comment Text: The Corps hasn't completed their homework in the DEIS. Because modeling has only been completed for four representative levee sites, I can't be confident in the risks of any of the alternatives. While I believe Alternative 3 provides a better balance between my farming operation and species recovery, I cannot support any flow modification in Alternative 3 or any of the other alternatives from going forward until economic and hydro logic modeling is completed for the entire floodplain. I have too much capital at risk each and every year to simply not know what the impacts to my operation will be. I deserve better from the Corps.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641390 **Coder Name:** jgutierrez

Comment Text: In examining each of the alternatives, a concern common to each is the lack of hydrologic and economic modeling. We cannot even begin to understand the impacts to flood control and interior drainage because the DEIS only completed modeling for four levee sites in the entire floodplain. This is a flaw that cannot be overlooked and we urge the Corps to complete hydrologic modeling and peer reviewed comprehensive economic impact studies for the entire floodplain before any flow management action is implemented. Once this modeling is complete, it is then important that the models should only be considered one tool in the decision-making tool box. Though thorough modeling is an important part of the process, the outcome of a model should not exclusively determine a decision. It should only be used as part of the equation.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640943 **Coder Name:** jgutierrez

Comment Text: Hydrologic and economic modeling must be done before any flow management plan is implemented.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638390 **Coder Name:** jgutierrez

Comment Text: Failure to recognize the reality of current operations - The DEIS analysis of the baseline in Alternative 1 discussed in several sections, including section 3.18.2.4, is based upon a very theoretical operation of the river that does not recognize the real world flows required by the Water Management Center to keep intakes in operations. The Corps only modeled the 82-year period of record using very theoretical operations that the Master Manual might allow. Page 3-507 of the DEIS states, &the impacts modeled do not account for the ability of water management to adapt to changing conditions on the system to serve authorized purposes, such as water supply.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

HTR100 Hydropower Technical Report: General Comments (Substantive)

Correspondence Id: 107 **Comment Id:** 644257 **Coder Name:** jgutierrez

Comment Text: Hydropower Environmental Consequences Analysis Technical Report Section 1.1, Pages 1&2 - Description of Alternatives indicate Alternatives 1, 4 and 5 uses the same operational base. This is not correct base on the alternative descriptions as Alternatives 3-6 do not include the spring sturgeon pulse. These likely results in an error in the descriptions or modeling of alternative s 3-6.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

MT1000 Miscellaneous Topics: General Comments (Non-Substantive)

Correspondence Id: 6 **Comment Id:** 626166 **Coder Name:** jgutierrez

Comment Text: Why don't you try having the public meeting on a day that people will come. Nice try having it on Valentines day! How stupid do you think people are?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 646388 **Coder Name:** JGUTIERREZ

Comment Text: Benthic macroinvertebrates should be chemically monitored as bioaccumulating amplifiers of heavy metals and other pollutants.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 217 **Comment Id:** 645993 **Coder Name:** jgutierrez

Comment Text: Species recovery should be done only under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as the Missouri River's primary congressionally authorized purpose.

Organization: Holt County Levee District No. 7

Commenter: David Banks **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 645845 **Coder Name:** jgutierrez

Comment Text: The USFWS should be encouraged to consider the impacts to pallid sturgeon and their habitat in the Yellowstone River by Yellowtail Dam in the next iteration of the pallid sturgeon recovery plan.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645839 **Coder Name:** jgutierrez

Comment Text: The Fort Peck reach supports 29 of Montana's 56 native species, including the pallid sturgeon and six Species of Special Concern, including the shortnose gar, sicklefin and sturgeon chub, sauger, blue sucker, and paddlefish. To support spawning, warm water flows of 20,000 to 30,000 cfs with water temperatures of 64° F were meant to be sent over the spillway between the middle of May and the end of June to stimulate spawning response. However, these releases have not occurred because the drought has so severely limited water levels in the Fort Peck Reservoir. From 2001-2009, the U.S. FWS and USGS monitored water temperature above and below the dam and in the Yellowstone to determine optimal conditions for the pallid sturgeon. These studies found that water temperature upstream of Fort Peck was nearly 12° warmer upstream than downstream (67° vs. 54° F) and maximum temperatures were 19° warmer above Fort Peck (79° vs. 60° F). Temperature impacts spread as much as 180 miles downstream, nearly the entire reach before the Yellowstone confluence. Without releases from the dam, temperatures reached target values twice in 2005 and 2007, driven by warm water from the Milk River and the Yellowstone River. When the Milk River contributed to warm water flows in the Missouri River, a significant shift in sturgeon populations occurred, increasing from less than 5% to 30% of the population above Lake Sakakawea. In addition to spawning and migration cues, higher temperatures contribute to faster growth rates.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645811 **Coder Name:** jgutierrez

Comment Text: It's OK that the predictions are not precise, or at this stage, accurate. We do not know how to cure cancer, or if the universe is finite, or what the weather will be five days from now or how to save the pallid sturgeon. Nor do we know that Alternative 2 will increase labor income \$57,000 in the Kansas City Reach to a reduction of \$29,000 in the Gavins Point Dam to Rulo, Kansas City Reach, and Hermann Reach relative to the no action alternative. We appreciate the effort to establish a baseline and make comparisons, but were wary of the impact the inference of precise economic measurement may have on decision making.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 645806 **Coder Name:** jgutierrez

Comment Text: Additionally, WCI has concerns with the described Adaptive Management (AM) plan.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 645793 **Coder Name:** jgutierrez

Comment Text: While that is our hope, the current DEIS gives the indication that scientific rigor and validity will be deferred to, primarily, budget constraints and budgetary efficiencies. That concerns us greatly.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645582 **Coder Name:** jgutierrez

Comment Text: Flood risk reduction has to be an important consideration of the recovery effort. Aspects of the recovery program might include top width widening, wetland restorations, and levee setbacks, all of which can all aid in lowering flood risk. There are 500 nonfederal levees between Sioux City and the mouth near St Louis. The DEIS states most of them are not adequate to withstand major flooding. We encourage the Corps to remove pinch points along the river to decrease the flood stage.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645569 **Coder Name:** jgutierrez

Comment Text: The League asks what will happen if another species is added to the Endangered Species List. A petition has been submitted to the U.S. Fish and Wildlife Service (FWS) requesting listing for the sturgeon chub and sicklefin chub, two fish species native to the Missouri River. The final EIS should address what actions will be required if additional species are listed and if the species listed in Table K will be integrated into the Corps' future plans.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645566 **Coder Name:** jgutierrez

Comment Text: The AMP (AMP 2-page 455) states that "some priorities for water use are mutually contradictory, the need to find a reasonable balance among HC interests has therefore always been central to the operation of the System." The League has concerns that the priorities are highly out of balance now. We feel navigation is heavily favored, even though there is little or no use of the river

for commercial traffic outside of a 10 mile segment near Kansas City. At times, the reservoirs appear to be managed only for benefit of a few in the lower basin. Continued drawdowns, coupled with extended drought conditions leave boat ramps unusable. For example, in 2006, full service flows were provided for navigation even with little or no commercial navigation traffic. The reservoirs then hit record low levels in 2007. This demonstrates that a more balance approach is needed.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645562 **Coder Name:** jgutierrez

Comment Text: The League believes recovery can and needs to happen on the lower river. The AMP (AMP 2-page 419) indicates that pallids spawned successfully in 2014 around Sioux City, above the Platte River. This is encouraging. We wonder how much more spawning we would see in that area if navigation was de-authorized in the upper end of what is now a rarely used navigation channel, so that recovery and restoration efforts could flourish. We ask for this to be considered in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645448 **Coder Name:** jgutierrez

Comment Text: Many Tribes remain impacted by Pick-Sloan authorized projects on tributaries to the Missouri River. The Committee on Indian Affairs reported Pick-Sloan's impacts on the Oglala Sioux Tribe, as follows - The Angostura Unit is located about twenty miles upstream from the Pine Ridge Reservation. Notwithstanding the economic benefits provided by the Angostura Unit to the people of southwestern South Dakota, the operation of the unit provides no economic benefit to the Oglala Sioux Tribe, which experiences extremely high rates of unemployment and poverty. Additionally, the operation of the Angostura Unit has had an adverse impact on water quality and fish and wildlife resources within the Oglala Sioux Tribe's reservation. (S. Rep. 110-506 (2009), p. 2). The Pick-Sloan program has resulted in diminished abundance of cottonwoods in the riparian environments of the Great Plains Water Alliance Tribes. Nearly one-half million acres of on-Reservation bottomlands were destroyed along the Missouri main stem. The capture of sediment at tributary projects such as Angostura, Whitney Dam and Belle Fouche has altered the depths of river channels and impacted groundwater levels needed for cottonwood regeneration. Riparian species such as cottonwood and willow have important ceremonial uses for the Lakota and Dakota, but are less abundant due to Pick-Sloan. These impacts matter, and should be fully disclosed in the Draft EIS. The construction and operation of the Missouri River main stem dams by the Corps of Engineers has

an extremely significant and on-going impact on the water supplies, economies, culturally-significant and medicinal plants, fish and wildlife and historic properties of the Tribes of the Great Plains Water Alliance.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645273 **Coder Name:** jgutierrez

Comment Text: WRRDA Section 1046(c): This federal legislation prohibited the Corps from charging for Surplus Water from Missouri River reservoirs. This change in cost structure from a very low expense to an outright prohibition will disincentivize water supply conservation and could actually incentivize new contracts.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645227 **Coder Name:** jgutierrez

Comment Text: The State of Missouri needs to fund levee setbacks and green infrastructure to handle higher flows - The failure years ago of drainage districts in Missouri to adequately address flooding has restricted the Corps management actions for the Lower River. Habitat-forming flows and species habitat releases could be done adequately if there wasnt this problem. All these years the Corps had to contend with the restrictions of these reaches rather than putting into place actions which would have benefitted the pallid sturgeon.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645222 **Coder Name:** jgutierrez

Comment Text: Recovery and restoration of the river habitats to re-establish commercial fisheries - If river habitat is improved, catfish, drum and other large river fish commercial fishing could be re-established. For many years, fishermen all along in large and small river towns earned a living through commercial fishing on the Missouri River. This was an economic benefit to river communities. However in the past decade, all traditional commercial fishing has ceased because of lack of fish. All points to

diminished habitat, invasive species, clarity of water which has reduced the non-sight feeding species which used to dominate the river species, pollutants, and etc.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645221 **Coder Name:** jgutierrez

Comment Text: Removal of commercial navigation north of St. Joseph, MO - The Corps refuses to recognize that the use of the river for barge traffic in the IA-NE reach is almost non-existent. There isnt a business model anywhere which would continue to expend materials and money in large quantities for an economic plan in which so little return is achieved. Adjustments to the Master Manual should be made. The huge cost to maintain the navigation channel for so little cargo in this reach is never mentioned in this DEIS. It is a myth that barges must be maintained for agriculture. While there is some grain hauled via barges in this reach of the river, trains haul a considerable amount and can take it faster to market terminals. There are unit trains in the western Great Plains which carry grain across the Rockies straight to west coast terminals. The old argument that barge traffic has a smaller environmental footprint than rail or truck sounds nice, but really doesnt excuse the resultant more heavy impact to the rivers habitat as a consequence of maintaining the navigation channel. The cost to the rivers environmental condition to maintain the navigation channel for so few barges is omitted from any of these discussions and is an unfair favoritism to a small fraction of society. It is the destructiveness of maintaining one use at the expense of another.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645142 **Coder Name:** jgutierrez

Comment Text: South Dakota supports the use of the ProACT structured decision-making process to identify major human considerations and effects of various management actions on specific stakeholder groups. The ProACT process, and its use of proxy metrics, was helpful in illustrating trends in management action impacts on stakeholder groups. However, the amount of information initially considered in the ProACT exercise and the need to synthesize that information to something manageable certainly resulted in some potential, specific impacts to stakeholder groups and authorized purposes being lost in the analysis. Therefore, we have included the following information that highlights how specific management actions included in the alternatives presented for consideration have impacts for the State of South Dakota and our stakeholders, which are not adequately identified in the draft EIS.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645141 **Coder Name:** jgutierrez

Comment Text: Outside of concerns for the listed species, the Missouri River reservoir system was created by the Corps of Engineers, and it should be their responsibility to maintain the system and mitigate any negative impacts of its creation. Flood control, navigation, and other benefits of the mainstem reservoir system come at the cost of increased sedimentation, flow constraints, and the likelihood of flooding in the riverine section from Ft. Randall Dam to Lewis and Clark. These issues need to be addressed. If the flow constraint from Ft. Randall Dam to Lewis and Clark is not remedied, it will effectively negate using flow as a management tool or result in flooding of South Dakota residents. Waiting 9-to-10 years to see if increased flows are needed for species recovery and to begin working on increasing the channel capacity from Ft. Randall Dam to Lewis and Clark Lake is not acceptable. This delays addressing the sediment issue that already exists and which needs to be remedied.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 206 **Comment Id:** 645140 **Coder Name:** jgutierrez

Comment Text: As stated in Section 1.1.5 of the MRRMP and EIS, congress authorized the Missouri River Bank Stabilization and Navigation Project (BSNP) Fish and Wildlife Mitigation Project in the 1986 Water Resources Development Act (WRDA), Section 610 (A). WRDA 1999 Section 334 expanded the total number of acres to be mitigated to 166,750. To date, only about 66,000 acres have been developed. While habitat development and land management on Missouri River Recovery Program lands is a management action listed under all alternatives, emphasis on acquisition and management of lands, to satisfy the mitigation responsibilities associated with the BSNP and to aid in species recovery, should be increased. Strategic acquisition of additional acres, from willing sellers, or establishment of easements to create habitat, should be pursued to reduce flow constraints and to serve as suitable locations for pallid sturgeon spawning habitat and IRCs.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645041 **Coder Name:** jgutierrez

Comment Text: The Coalitions urge the Corps to reinitiate Section 7 consultation and produce an EIS that properly focuses on species goals.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644929 **Coder Name:** jgutierrez

Comment Text: The Corps admits many unknowns in the life cycle of the pallid sturgeon. The recent phenomenon of skinny fish is one of those yet unexplained parts. Is part of the channelized Missouri river a food desert for the sturgeon? Is competition with native or invasive species a factor? Is lack of sediment reducing sturgeons ability to catch prey? Is there another water quality issue? We may eventually learn details of these problematic dynamics, but we can be sure part of their resolution will be to recreate a more natural Missouri River.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 245 **Comment Id:** 644906 **Coder Name:** jgutierrez

Comment Text: At many times I've been critical of the 2000 and 2003 Missouri River Biological Opinions (BiOps), the MRRP and its past actions to reduce jeopardy to the listed species. In my opinion the DEIS and DSAMP represent a monumental step forward towards performance based management planning for the Missouri River and the U.S. Army Corps of Engineers (Corps) responsibility to comply with the Endangered Species Act while . Specifically the DEIS and SAMP thoroughly address each of the seven actions the ISAP and MRRIC recommended to the Corps and U.S. Fish and Wildlife Service (FWS) in August 2012. Most importantly, the SAMP provides a much improved road map to designing, implementing and evaluating consequences of future management actions and identifies mechanisms of accountability for implementing a science based program to reduce jeopardy to the three listed species while addressing relevant human considerations (HCs). Such a robust adaptive management process has heretofore been lacking in MRRP documents and actions. Whichever alternative the Corps selects, the challenge will be to effectively implement it under an anticipated restrictive future fiscal environment. The MRRMP's success at achieving objectives for the three listed species depends on effective implementation of the SAMP to reduce uncertainties through the Integrated Science Program (ISP) . Consequently, most of my concerns relate to the allocation of resources to implement management actions and the perceived ability of the ISP to conduct effective research, monitoring and evaluation so that adaptive management can be operationally implemented to

reduce jeopardy. Fundamentally, the authenticity of proposed management actions in the DEIS can transparently substantiated by the resources allocated to accomplish them.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644902 **Coder Name:** jgutierrez

Comment Text: Accompanying this MRRMP-EIS, TNC recommends USACE request MRRIC revise their May 2013 recommendation (also considering the MRRIC August 2014 response) on "Options for Easements". TNC believes a revised recommendation making clear and focusing the easement recommendation to only MRRP policy and not national USACE policy would aid further consideration by USACE and help any acquisition activities in the future by enabling landowners to retain fee title ownership of their lands while at the same time participating in restoration activities along the Missouri River.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 6 **Comment Id:** 626183 **Coder Name:** jgutierrez

Comment Text: One thing that might help these animals you care about so much is cleaning up the Desoto refuge from all the debris that floated in during the flood.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 15 **Comment Id:** 626307 **Coder Name:** jgutierrez

Comment Text: This site was very difficult to find. I am not familiar with UNO - signage was bad.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 15 **Comment Id:** 626311 **Coder Name:** jgutierrez

Comment Text: Please consider the people who live and make a living along the river.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 31 **Comment Id:** 626828 **Coder Name:** jgutierrez

Comment Text: If artificial improvements like dams, the armoring of banks and levees are the main cause of loss of habitat, then the preferred alternative should address the root cause of the problem, which may mean removing some of this structural implementation.

Organization: Sierra Club - Kansas Chapter

Commenter: Elaine Giessel **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 44 **Comment Id:** 627020 **Coder Name:** jgutierrez

Comment Text: We feel the unlawful taking of our ground violates the fifth amendment.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 2 **Comment Id:** 627472 **Coder Name:** JGUTIERREZ

Comment Text: The river should be managed for these priorities: #1 Flood Control #2 Consumption; domestic use and irrigation #3 Navigation

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 3 **Comment Id:** 627483 **Coder Name:** JGUTIERREZ

Comment Text: The river should be managed for: #1 Flood Control #2 Consumption; domestic use and irrigation #3 Recreation #4 Navigation Managing for endangered species should not supersede the other uses and commitments made when the dams were built.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 9 **Comment Id:** 627488 **Coder Name:** jgutierrez

Comment Text: You/we need more time than April 24th.

Organization: OLN Tribe

Commenter: Maria Pueirst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 74 **Comment Id:** 627543 **Coder Name:** JGUTIERREZ

Comment Text: The Bank Stabilization and Navigation Project created a reliable system to provide for navigation and a year-round water supply and, if operated properly, can provide adequate flood control. However, over the last 15 to 20 years, we have spent nearly three-quarters of a billion dollars on the Missouri River Recovery Plan, which compromises the integrity of many of the intended uses of this system for the supposed benefit of a fish and two birds. It is still not known if these experiments have brought about the intended results. It is time that the needs of humans take precedence over these species. Before we spend any more money that we don't have, we need to reexamine our priorities.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 28 **Comment Id:** 627558 **Coder Name:** JGUTIERREZ

Comment Text: We're not asking to give up any bird or fish, but common sense has to be a part of the equation. The Endangered Species Act must be updated. Consideration of human impacts must come first and no one should be held hostage by the views of personnel within the US Fish & Wildlife Service, Environmental Protection Agency or any other arm of the government.

Organization: Missouri Farm Bureau State Board of Directors

Commenter: Vern Hart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 35 **Comment Id:** 628451 **Coder Name:** jgutierrez

Comment Text: Finally, the 8th Circuit Court of Appeals in their 2005 decision clearly stated, quote, if due to extreme conditions the Corps is faced in the future with the unhappy choice of abandoning flood control and navigation on the one hand, and recreation, Fish & Wildlife on the other, that priorities established in the Flood Control Act would forbid the abandonment of flood control or navigation. In the same document, the Court reiterated its earlier opinion that the Flood Control Act has been interpreted to hold flood control and navigation dominate and recreation and Fish & Wildlife secondary. The Northwestern Division would do well to follow the advice of the federal court. The Corps of Engineers has a moral obligation, a duty and a mission outlined by Congress to provide flood control for the citizens of our country. The Northwestern Division should not turn its back on Congress and should find a way to protect these species while following through with their flood control mission. This is a charge of Congress and it's the desire of the people. However, this is not what the Draft Environmental Impact Statement sets out to do. There must be a better way, and the Division should continue to work to find it without implementing the alternatives in the Draft Environment Impact Statement.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 40 **Comment Id:** 628468 **Coder Name:** jgutierrez

Comment Text: The Corps must protect water supply to ensure public health and safety.

Organization: WaterOne

Commenter: Michelle Wirth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 43 **Comment Id:** 628524 **Coder Name:** JGUTIERREZ

Comment Text: I would like to caveat this, I'm not blaming anybody for the situation that we have here. Some of it goes back several colonels and several generals. It all started with the endangered species act, which gives the Fish and Wildlife Service unfettered authority. The Corps has to do what the Fish and Wildlife Service tells them.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 53 **Comment Id:** 630850 **Coder Name:** jgutierrez

Comment Text: Work with the people in the basin, as he said over here. Come ask us. You know, we know the river. You guys are all experts. I guess you guys all know it better than we do. Give us a chance to work and get something done.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 53 **Comment Id:** 630851 **Coder Name:** jgutierrez

Comment Text: But stop the landgrab that's going on up and down the river because that's basically all it is, in my opinion, is just landgrab. 166,000 acres they want.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 53 **Comment Id:** 631033 **Coder Name:** jgutierrez

Comment Text: But everybody across the state of Nebraska, across the entire state of Iowa, Missouri, Kansas, everyone should be updated for what's happening and should be aware of what's happening because of the taxes, the infrastructure, everything that's going to happen.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 60 **Comment Id:** 631140 **Coder Name:** jgutierrez

Comment Text: It's time that the Corps start listening to the landowners and not just accepting what Federal Fish and Wildlife and the different environmental agencies can just plunk down in front of them. The Corps needs to get out and meet with the people who own the land and work the land use the land to the best of their abilities.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 60 **Comment Id:** 631146 **Coder Name:** jgutierrez

Comment Text: They need to get out there and meet with us and stand on the bank of that river and see what it's doing.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 70 **Comment Id:** 631231 **Coder Name:** jgutierrez

Comment Text: Lastly, for people to think that taking away the levees is a wonderful thing to do for this world, you've got to keep in mind that behind those levees we have farm ground. And when you look at 100,000 acres of farm ground, we're able to produce enough kilocalories to feed 1 million people for one year. There's a lot more at stake than just some fish and two birds, and that's got to be considered.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 72 **Comment Id:** 631233 **Coder Name:** jgutierrez

Comment Text: I think that flood plain connectivity is so important. This river is not there to serve the interests of the barge industry and the levee districts. This river is there to serve all of us, to work for all of us, and for the animals and fish in it and around it. And a natural river is a healthy river.

Organization: Great Rivers Habitat Alliance

Commenter: David Stokes **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 632170 **Coder Name:** JGUTIERREZ

Comment Text: Our message has been consistent. First, flood control and navigation are the primary purposes of the Missouri River System and, as such, the Corps must implement Recovery Program actions without preemption of fully accomplishing those critical and existing lawful uses of the system.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 66 **Comment Id:** 633529 **Coder Name:** jgutierrez

Comment Text: The Endangered Species Act must be updated. Consideration of human impacts must come first, and no one should be held hostage by the views of personnel within the U.S. Fish and Wildlife Service, Environmental Protection Agency, or any other arm of government.

Organization: Missouri Farm Bureau

Commenter: Adam Jones **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 68 **Comment Id:** 633530 **Coder Name:** jgutierrez

Comment Text: Actually, the Missouri River is not really being used for transportation and it should no longer be a congressionally approved use or authorized purpose.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 68 **Comment Id:** 633535 **Coder Name:** jgutierrez

Comment Text: To accomplish any reduction in flood risks and improve the shrinking population of the endangered sturgeon, only the Corps can do this. Landowners must also keep an open mind to understand potential benefits. Private marinas, hunting, birding and fishing clubs are some of the cost effective alternatives, and wind up of losing just a little bit of corn and beans from the sand damaged soil.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 76 **Comment Id:** 633536 **Coder Name:** jgutierrez

Comment Text: Third, in 2010, the Sierra Club, national Water Sentinels, Missouri Coalition for the Environment, Great Rivers Environmental Law petitioned Fish and Wildlife Service for pallid sturgeon critical habitat designation on the Missouri River. This request was deferred by FWS based on a lack of resources and insufficient conservation priority number. I believe at this time it is

time for the Fish and Wildlife Service and the Corps to reconsider and to designate a critical habitat and to incorporate it into the adaptive management plan.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 76 **Comment Id:** 633589 **Coder Name:** jgutierrez

Comment Text: For instance, as the ecosystem continues to decline, additional species will be petitioned for ESA listing. The sturgeon chub and the sicklefin chub are endemic to the Missouri River and have been recently repetitioned for listing, the alligator snapping turtle, others are species of concern. Where in this DEIS is provision made for the addition of newly listed species to the consideration under adaptive management? I do not find it and it should be there.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 86 **Comment Id:** 633636 **Coder Name:** jgutierrez

Comment Text: It has come to our attention that the U.S. Army Corps of Engineers, in cooperation with the U.S. Fish and Wildlife Service have developed the Missouri River Recovery Management Plan and Environmental Impact Statement ("the Plan"). It is imperative the United States Corps of Engineers reconsider the impact of the proposed plan and amend it so as to make real economic growth possible by having a minimum navigable draft level of the Missouri River in the vicinity of Callaway and Cole Counties of nine feet for at least eight months, preferably nine months, of each year. This is very important. It is our understanding this plan would change the water levels and flows of the Missouri River. The Missouri River has been a staple in the past and more important than ever in moving large quantities of corn, soybeans, agriculture fertilizer, rock and gravel, sand, cement, fabricated steel, and large industrial equipment and machinery. Military equipment from National Guard facilities throughout the State of Missouri could also be moved by barge. This mode of transportation is by far the most cost effective and efficient method of moving these products long distances. Relationships have been developed with both foreign and domestic business alliances. The newly widened Panama Canal offers us business opportunities we have never been able to pursue until now. Customers are wanting to buy products from our region of the country. We must be able to ship these large quantities of products and materials cost effectively and in a timely manner. Barge transportation is the only viable solution to this new demand. Highly regarded captains, tugs, and barge providers are already in place to ensure these very sizeable business transactions are completed on time and with the highest degree of professionalism. The Corps indicated in a recent meeting in Kansas City, they were ready and willing to assist in any way to make this a reality. Your

commitment to making increased economic growth of barge transportation the Missouri River a priority is very encouraging. The below signed entities are in agreement in our request that the Corps of Engineers continue to consider the importance of the Missouri River as a transportation opportunity by ensuring the United States Corps of Engineers reconsider the impact of the proposed Plan and amend it by having a minimum navigable draft level of the Missouri River in the vicinity of Callaway and Cole Counties of nine feet for at least eight months, and preferably nine months, of each year.

Organization: City of Jefferson

Commenter: Carrie Tergin **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 152 **Comment Id:** 633939 **Coder Name:** jgutierrez

Comment Text: I believe there are multiple beneficiaries from continued development of the river system. The resource of the river is obviously benefited, but also the economic impact on the surrounding communities. The urbanization of our country will cause smaller towns to get smaller and the natural resources around these communities are often their only hope.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 152 **Comment Id:** 633941 **Coder Name:** jgutierrez

Comment Text: Continued access through land acquisition and easements is very important.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 75 **Comment Id:** 635475 **Coder Name:** JGUTIERREZ

Comment Text: The last part that I wanted to say was that this is far greater than two birds and a fish. This has to do with ecosystems, maintaining their integrity and maintaining the fact that they support us.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 90 **Comment Id:** 636797 **Coder Name:** jgutierrez

Comment Text: In 2009, the corps bought 190 acres from the Papio Missouri River NRD that adjoins our farm ground to the south called Little Sioux Bend. In August of 2015 a double looped pallid sturgeon chute was constructed. We watched the process and all the sand was dredged out into the river. We now have a higher water table which is up and down the river where these chutes were constructed. Along with this process the rock dike was notched and there is a great deal of bank erosion going on. This notching has been done by the corps up and down the river. The aerial view tells the whole story. Our farm ground is very close to this area. The corps need to come back ASAP to fill in the dike with rock. We lost 30 acres to the north of this area to the 2011 flood. This 30 acres is covered with 15 feet of sand, covered with trees, and weeds. This piece of ground will never be farmed again. We are still having to pay taxes on this wasteland. The corps can purchase ground and it is tax exempt. This is so wrong!

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 99 **Comment Id:** 636852 **Coder Name:** jgutierrez

Comment Text: This is a test message for your webform. We apologize for any inconvenience.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 109 **Comment Id:** 636903 **Coder Name:** jgutierrez

Comment Text: Tributary reservoirs in Kansas are utilized to provide public water supply, power generation, industrial use and recreation for much of the population in Kansas. Tributary releases should not compromise these critical instate uses of water.

Organization: Kansas Farm Bureau

Commenter: Kent Askren **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 109 **Comment Id:** 636906 **Coder Name:** jgutierrez

Comment Text: Main-stem operational modifications should place primary emphasis on protecting agricultural land use, flood control and power generation when making operational decisions.

Organization: Kansas Farm Bureau

Commenter: Kent Askren **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638294 **Coder Name:** jgutierrez

Comment Text: WaterOne supports the responsible management of the Missouri River resources and the maintenance of the eight congressionally authorized purposes of the river. Congress mandated the Corps to protect the lives and safety of the residents of the Missouri River Basin, and primary in that mandate is the responsibility to safeguard the Water Supply for stakeholders like WaterOne. Interrupting water supply for even one day would have catastrophic impacts on people who live and work in the Missouri River basin. The 425,000 residents served by WaterOne rely on the Missouri River for their daily water needs for domestic and sanitary use as well as for fire protection. WaterOne serves 13,000 commercial accounts (businesses). While these commercial customers account for around 10 percent of our 145,000 customer accounts, they represent 30% of WaterOnes total demands. These commercial accounts also represent the economic engine of the State of Kansas. Interruptions of water supply can be troublesome to residential customers but can have catastrophic impacts to health care facilities and major economic impacts to education, businesses and industry. A 2017 report by the Value of Water Campaign entitled The Economic Benefits of Investing in Water Infrastructure documents that water service disruptions put \$43.5 billion in daily economic activity at risk. It is imperative that the Corp honor its mission to protect the Water Supply of the Missouri River as its foremost priority.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 80 **Comment Id:** 640104 **Coder Name:** jgutierrez

Comment Text: It is a travesty that millions of dollars have been spent on mechanically-constructed but ephemeral ESH, based on flawed BiOps from USFWS in 2000 and 2003. These BiOps were written essentially without any scientific data, but nevertheless USACE charged ahead with ESH and chute construction. Both have both turned out to be ineffective in contributing to the long-term populations of the three listed species, especially in the case of the Piping Plover and Least Ter (Figure 3-29, Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS), Volume 2; Figure 3, Duberstein 2011), and undetectably so in the case of the Pallid Sturgeon.

Organization: Responsible River Management

Commenter: Ross Silcock **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640138 **Coder Name:** jgutierrez

Comment Text: At times the Corps has acknowledged and embraced the importance of acquired acres used to enhance a variety of riverine habitat and floodplain connectivity. For example in Final Environmental Impact Statement for the Missouri River Fish and Wildlife Mitigation Project, 2003 the Corps recognizes the importance of restoring riverine habitat and floodplain connectivity are missing elements in the Missouri river food chain. In that document the Corps recognizes those missing elements as having an impact on the dozens of riverine species in decline.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640495 **Coder Name:** jgutierrez

Comment Text: We support aspects of the proposed Adaptive Management Plan that allow for any needed modification of recovery actions.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640682 **Coder Name:** jgutierrez

Comment Text: While the proposed AMP is a rational approach to this uncertainty, there is one area where it needs to be strengthened. Theories purporting to aid in species recovery inevitably gain a constituency. These constituents passionately argue for the veracity of their theory and the need for research funding to test the theory. When faced with evidence contradicting their theory, these advocates then argue for slight adjustments to the theory followed by a request for additional research to support the newly-revised theory. The result can be a never-ending cycle of adjustment and additional research for a theory that should have been discarded but for the constituency supporting it.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640698 **Coder Name:** jgutierrez

Comment Text: Further, mitigation efforts seem to be solely focused on listed species while the USACE's responsibility within the Mitigation Project was to be dedicated to all native species. Not only could mitigation efforts be used for habitat rehabilitation for fish and wildlife, but would provide benefits considering flood risk management and nutrient reductions entering the Missouri River (Sparks 1995). With multiple flood events occurring on the Missouri River in recent years, obtaining mitigation lands in the floodplain will provide benefits to landowners and tax payers by reducing the extensive damage and costs caused by these recurring flood events. Having mitigation acres within the floodplain will also increase the hydraulic capacity, thus reducing the magnitude of floods, and reducing the amount of nutrients that run off the landscape and into our river systems; all while benefiting fish and wildlife at the same time (Sparks 1995).

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 159 **Comment Id:** 641014 **Coder Name:** jgutierrez

Comment Text: We believe the Adaptive Management process provides a sound and scientifically defensible mechanism to adjust the recovery methods in response to actual data on both the status of the species and the efficacy of the strategies being implemented. The integration of the proposed Adaptive Management Plan (AMP) with MRRIC, as provided in the Governance Structure assures that the Corps decisions will reflect both stakeholder input and independent expertise.

Organization: Ameren Services

Commenter: Steven C Whitworth **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 162 **Comment Id:** 641150 **Coder Name:** jgutierrez

Comment Text: 2) Designating critical habitat for the pallid sturgeon. Hoping for the best is not adequate. The legal mechanism of designated critical habitat has proven its effectiveness with other species, and given the numerous threats to the sturgeon population in the Missouri River Basin, critical habitat designation is necessary for the sturgeon.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 163 **Comment Id:** 641289 **Coder Name:** jgutierrez

Comment Text: Audubon Missouri thanks the Corps for its commitment in all of the plan's alternatives to scientific research, monitoring, and iterative management actions through the adaptive management process, which we believe is the only viable approach. Clearly, the budget needs to be adequate to support the required research and monitoring as well as the land acquisition, construction, and management required for hydrologic and ecosystem restoration and endangered species recovery.

Organization: Audubon Missouri

Commenter: Anita C Randolph **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 164 **Comment Id:** 641345 **Coder Name:** jgutierrez

Comment Text: The ISAP, established by the Missouri River Recovery Implementation Committee (MRRIC) to develop scientifically sound adaptive management actions, issued a report in 2011 that recommended development of an overarching adaptive management plan that would implement a combination of flow management actions and mechanical habitat construction, which are the primary proposed actions in all alternatives. ISAPs recommended AM Plan recognizes the urgency of action for the pallid sturgeon, as the number of natural born mating specimens is dwindling, and allows for anticipated implementation actions, but these actions are based on the effects analysis, which incorporates new knowledge learned about the species since the BiOp was last amended in 2003. For example, as highlighted in ISAPs 2011 report, the spring pulse spawning cue management action as implemented in Alternative 1 by the 2000 BiOp was not effective in achieving pallid sturgeon objectives. The proposed AM Plan would take this result into account and tailor adaptive management responses for the pallid sturgeon.

Organization: MidAmerican Energy Company

Commenter: Jenny McIvor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 178 **Comment Id:** 641423 **Coder Name:** jgutierrez

Comment Text: Our Missouri state park system has more than a dozen parks and historic sites located along the Missouri River, from Big Lake in northwest Missouri to Confluence Point at the mouth, many of which may benefit significantly from efforts in cooperation with the Corps to restore habitat for native fish and wildlife populations and establish more natural-and more historic-hydrologic and ecosystem function along the river.

Organization: Missouri Parks Association

Commenter: Steve L Nagle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 181 **Comment Id:** 641466 **Coder Name:** jgutierrez

Comment Text: The management of the Missouri River and the subsequent environmental requirements for such management must include the Missouri River, its connectivity and lack of connectivity to its floodplain, its major tributaries, as well as the modified human environments of cities, towns and agricultural enterprises within this floodplain. Moreover, if the Corps is to produce a viable living EIS that will stand the scrutiny of the USFWS Biological Opinion and work within the constructs of the Master Manual, the Corps must block out the noise and distractions of: 1) potential lack of future federal funds; 2) the current litigation over the 2011 flood; 3) and the unfounded notion perpetuated by some of the States within the Missouri River Basin that purport the Corps does not possess jurisdictional authority to regulate flows for all authorized purposes equally.

Organization: Nebraska Chapter Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 186 **Comment Id:** 641524 **Coder Name:** jgutierrez

Comment Text: Under federal conservation programs authorized by the Farm Bill, NRCS has worked with private landowners to restore wetland habitats and protect floodplains in areas immediately adjacent to the Missouri River in the area covered by the subject recovery plan. Various types of easements have been put in place, many of them perpetual, to meet specific congressionally authorized program purposes. Locations of properties with these conservation easements can be found at the following web page: <http://conservationeasement.us/> and/or by contacting the appropriate NRCS State Office.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641554 **Coder Name:** jgutierrez

Comment Text: It seems that the Corps and Fish & Wildlife Service are always looking into ways to improve the quality of life for the endangered species. When can they look at ways to improve flood control and navigation? How can the agencies maximize the benefits of the dams, hydropower, flood control and navigation channel?

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641583 **Coder Name:** jgutierrez

Comment Text: Tensions over water use may increase significantly as the upper reaches of the Missouri River watershed become dryer with climate change and as the Ogallala Aquifer is depleted. That leads to a question as to whether the Missouri River bordering Iowa should continue as a commercially navigable river that supports barge traffic.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641623 **Coder Name:** jgutierrez

Comment Text: 2. The estimated costs of the six alternatives indicate that actions included in the alternatives are likely unattainable. It is therefore important to prioritize actions and select the most efficient and economical results.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641628 **Coder Name:** jgutierrez

Comment Text: 3. The adaptive management plan process utilizing the best available science is highly desirable.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 194 **Comment Id:** 641706 **Coder Name:** jgutierrez

Comment Text: 2. The estimated costs of the six alternatives should be realistic, obtainable, utilize the best science available, and have a planned funding source. Actions should be prioritized to achieve the maximum positive results.

Organization: South Sioux City, Nebraska

Commenter: Lance Hedquist **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641720 **Coder Name:** jgutierrez

Comment Text: 2. The estimated costs of the six alternatives indicate that actions included in the alternatives are likely unattainable. It is therefore important to prioritize actions and select the most efficient and economical results.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 212 **Comment Id:** 641721 **Coder Name:** jgutierrez

Comment Text: 3. The adaptive management plan process utilizing the best available science is highly desirable.

Organization: SIMPCO

Commenter: Michelle M Bostinelos **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 642099 **Coder Name:** jgutierrez

Comment Text: The Adaptive Management Process (AMP) proposed in the DEIS is a reasonable component of the recovery plan, especially for the pallid sturgeon, largely because so little scientific data is currently available. For example, recent research (Anthony Civiello, USACE, The Influence of Shallow-Water Habitat on Age-0 Shovelnose Sturgeon Diet and Condition) calls into question the efficacy of constructing interception and rearing complexes (IRC's). However, IRC construction is a significant component of the recovery plan for the pallid sturgeon contained in the DEIS. The AMP will help to reconcile new or conflicting data about different theories for recovery of the pallid.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 172 **Comment Id:** 642100 **Coder Name:** jgutierrez

Comment Text: While the proposed AMP is a rational approach to this uncertainty, there is one area where it needs to be strengthened. Theories purporting to aid in species recovery inevitably gain a constituency. These constituents passionately argue for the veracity of their theory and the need for research funding to test the theory. When faced with evidence contradicting their theory, these advocates then argue for slight adjustments to the theory followed by a request for additional research to support the newly-

revised theory. The result can be a never-ending cycle of adjustment and additional research for a theory that should have been discarded but for the constituency supporting it.

Organization: Mid-West Electric Consumers Association

Commenter: William K Drummond **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642126 **Coder Name:** jgutierrez

Comment Text: We also feel that the costs associated with these proposed six alternatives, is likely unfundable and thus the process becomes a mute issue.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642700 **Coder Name:** jgutierrez

Comment Text: Accompanying this MRRMP-EIS, TNC recommends USACE request MRRIC revise their May 2013 recommendation (also considering the MRRIC August 2014 response) on Options for Easements. TNC believes a revised recommendation making clear and focusing the easement recommendation to only MRRP policy and not national USACE policy would aid further consideration by USACE and help any acquisition activities in the future by enabling landowners to retain fee title ownership of their lands while at the same time participating in restoration activities along the Missouri River.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643176 **Coder Name:** jgutierrez

Comment Text: Montana has a significant interest in the MRRMP-EIS because it impacts our ability to achieve our mission statements and meet our statutory and policy mandates. Under statute, the State is mandated to promote wise use of its water resources for the fullest benefit of its citizens and with the least degradation of the aquatic ecosystems Â§85-2-101(3), MCA. Furthermore, it is FWP's authority to manage all of Montana's fish species, including those designated as endangered, and it is the State's policy that those species and their waters be protected and preserved Â§87-5-103(2)(b), MCA; Â§87-1-201 (9)(a)(ii), MCA; Â§87-5-501, MCA.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643307 **Coder Name:** jgutierrez

Comment Text: Historically, it has been the role of the state fish and wildlife agencies to assist in putting projects on the ground. The USA CE and USFWS will continue to plan site-specific projects with State input and will continue to coordinate with the appropriate state agency on any and all legal requirements for comment, collaboration, certification, permitting, etc. One statutorily protected consultation role of note is the Fish and Wildlife Coordination Act (FWCA). Under the FWCA, USA CE is required to coordinate with the state fish and wildlife agencies and the USFWS for site specific projects. USA CE will continue to execute the FWCA in accordance with the National MOU between the USFWS and the USACE. As described in the National MOU the USFWS will coordinate with state fish and wildlife agencies and provide consolidated comments to the USA CE via a planning aid letter as required by the FWCA.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643942 **Coder Name:** jgutierrez

Comment Text: The collection and analysis of monitoring and research data are essential to the adaptive management decision process. A process has been initiated by the Effects Analysis team, led by the U.S. Geological Survey, to design the monitoring needs for pallid sturgeon in anticipation of MRRP implementation.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644370 **Coder Name:** jgutierrez

Comment Text: You're talking about more water flow from the river, this is good but I also think with okoloma, texas California and nevada adding in the mighty Mo and columbia rivers adding pipes we could help stop floods, protect the natural wildlife protect farms, and cities by just simply piping extra waters to Texas aquifers or california's reservoirs. There is no reason in our nation anyplace should go without water.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644372 **Coder Name:** jgutierrez

Comment Text: California should have a bigger reserve for water during flooding times. over the past 7-10 years they could have used it. Texas served a deep drought. I think with proper water management we could smooth out the pecks and valleys in water supply then we ever have.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644374 **Coder Name:** jgutierrez

Comment Text: The Kaw, MO and mississippi rivers should never have a flood stage.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644377 **Coder Name:** jgutierrez

Comment Text: And I also think we could add a hydroelectric dam or power plant on the MO river Like edison's first power generator station by the falls in buffalo NY.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644380 **Coder Name:** jgutierrez

Comment Text: Mo should also think about reservoir area off the river's including the Mo and MI rivers. Kansas should consider more reservoir areas. we just got out of a deep drought. I lost a few trees because they did not get water and Kansas City's bills for water deter me from providing drinking water to plants.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644381 **Coder Name:** jgutierrez

Comment Text: If I could use natural water to provide plants the water they need when its dry out I would. But I also should no be billed for sewage when using water on lawns and for plants and trees. The EPA hit KCMO and ST Louis with steep fines for runoff and overflow of sewage into the MO and Mississippi rivers why isn't part of the money used to correct the problems, besides fixing the rivers? The river won't truly be fixed until all of these things are repaired. And overflows stop happening.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644384 **Coder Name:** jgutierrez

Comment Text: This is beside flooding farm land's ad costin crops. But I also like having an abundance of wildlife on the river. So If we had a system to pump water from the river to say areas that suffer drought, or make a catch basin for water during peek times.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 203 **Comment Id:** 644385 **Coder Name:** jgutierrez

Comment Text: Texas, oklahoma, Kansas, and some of our other surrounding states stuff a lot of unnecessary drought, Piping water out to holding areas where its needed during Spring floods would stop the floods ad supply water for when its use is needed. This would only be done when the river reaches a critical stage, it would also take a lot of heat off the Mississippi river valley. Because during our last Flood the Mississippi suffered a lot more flooding then the MO river did. at that same time we were watching Lakes in Texas dry up from drought and Texas suffer a water shortage.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644413 **Coder Name:** jgutierrez

Comment Text: You cannot have "book" educated people direct a successful environmental program, without local peoples input, who have lived with the environment and animals, fish, crops, recreation, navigation, water intakes, water waste treatment plants, floods, droughts, levees, and interests beside and in the Missouri River all their lives and generations before them . They have been intertwined with workings of indifference to the River, and have manage to made it conforming to each other in several successful ways, they have valuable information to share how it will blend and work together.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644416 **Coder Name:** jgutierrez

Comment Text: Example: if we, as members of MRRIC, U.S. Fish and Wildlife, U.S. Army Corps of Engineers, and the special advisors employed to help DO NOT equally use all interests and advice, this Restoration Project will fail, which none of us want. We cannot destroy businesses the river supports for monetary value, which in turn gives the dollars to support the restoration project and enhances our environment.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644418 **Coder Name:** jgutierrez

Comment Text: All interests will, can, and do fit together for the benefit of this project, because what has been asked of us to regenerate for habitat , once was, but destroyed by poor decisions and mismanagement. The reason I so firmly believe this, is God made it possible for myself, family, friends, and those who lived beside the Missouri River and were on it from 1970's-1990's, personally witnessed and enjoyed a "Missouri River Gone By". The "Missouri River Gone By" was the " Missouri River Dreamed of Now" . This river that I speak of, was a slower moving, with dikes that slowed the water and held sandbars for birds and places to pull a boat upon and picnic with family, families fished, swim, tubed and even water-skied, and floated on tubes, there was not near the flooding and the damage that came from such an event, navigation was routine and the dredging companies kept the main channel deeper on the river also. This river that I tell you about is truly what is being ask of the US Fish and Wildlife to recreate, but they can't without going back and putting back dikes that slowed the waters and help create the sandbars, and keep the sediment from being put into the channel, and doing practices that contribute to the river not being able to carry the amount of water it did then. (I believe that some chutes would contribute to the enhancement of the river and habitat, but the practice or experiment that was done at the start in

cutting dikes everywhere, notching banks and destabilizing banks, and making levees vulnerable and in floods since then left large damage to the levees and weaken to this day. Flooding comes at lessor flood stages now than they did and more damage. Instead of this mentally of "a kid in a sand pile with a crowbar" and if the bank notching and cutting of the dikes had been organized in portions of the river and not everywhere, until visible results could be accounted for and adjustments made for the betterment of restoration projects we would not have inadequate progress and rebuilding to be done.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644424 **Coder Name:** jgutierrez

Comment Text: I believe that any flooding on purpose or not controlled, damages ALL interest, including habitat, The lost to habitat is larger than the gain from flooding.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 204 **Comment Id:** 644454 **Coder Name:** jgutierrez

Comment Text: Water Supply's main goal is to provide customers with a continuous supply of high quality drinking water meeting all of the requirements of the Safe Drinking Water Act (SDWA). Performing this task depends on the quality of the source water. The DEIS addresses this issue in Vol 2; 3.7.1-3.7.2.9.

Organization: Kansas City Water Services

Commenter: Terry Leeds **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644642 **Coder Name:** jgutierrez

Comment Text: According to Table A.3.1 (Summary of Features Comprising the MRRP-EIS Alternatives Carried Forward for Detailed Consideration), Alternatives 1 and 2 do not include Level 1 (research without changes to the system) or Level 2 (In-river testing, with local implementation) studies. Adaptive Management with monitoring was described as the fourth action to be taken in the 2000/2003 Biological Opinion. Thus, if implemented, Alternatives 1 and 2 appear to have some component of adaptive

management. The EIS describes adaptive management under Alternatives 1 and 2 would continue as implemented since 2009, and for aquatic species would include shallow water habitat creation (page ix).

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644655 **Coder Name:** jgutierrez

Comment Text: Science-based planning can promote agriculture, ensure sustainable economic development, and enhance fish and wildlife benefits. The AM Plan and EIS together should continue to balance all the eight authorized purposes of the Missouri River to maximize benefits for Missourians and the nation. Currently these documents focus on USACE responsibility under the ESA, although the proposed federal actions would impact wildlife managed by state fish and wildlife agencies.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644734 **Coder Name:** jgutierrez

Comment Text: Many of WCIs members farm or operate businesses along the Missouri River basin. Some of our members in the commercial navigation community have recently returned to operating on the Missouri River. All of our members are concerned with management of the Missouri River, a testament to its important role in the national system of Americas commercially navigable waterways.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644736 **Coder Name:** jgutierrez

Comment Text: The more recent ISAP Evaluation of MRRMP v3 AM Plan and Pallid Level 3 Action, released in November 2015, states that the flow needs of the pallid sturgeon are imprecisely known at all life stages, therefore considerations of flow manipulations to benefit pallid sturgeon are now based on imprecise knowledge. This document further confirms that the Spawning Cue Flows action presents a hypothesis without compelling technical support.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 176 **Comment Id:** 644740 **Coder Name:** jgutierrez

Comment Text: The world saw the impacts from Missouri River flows during the drought of 2012-2013. Once Missouri River navigation flows were decreased after December 1, 2012, the reliability of Mississippi River flows was severely threatened. Due to the critical impacts that Missouri River management flows have on the Mississippi River, any future flow changes would negatively impact the commerce on the nations marine superhighway and the nations economy.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 176 **Comment Id:** 644748 **Coder Name:** jgutierrez

Comment Text: WCI has been an alternate representative for agriculture stakeholders on the Missouri River Recovery Implementation Committee (MRRIC) since its inception in autumn 2008. Authorized by Congress in Section 5018 of the 2007 Water Resources Development Act, MRRIC is comprised of nearly 70 representatives of tribes, stakeholder groups, states, and federal agencies. The Committee is charged with providing guidance to federal agencies on the existing Missouri River recovery plan, including priorities for recovery work and implementing changes based on the results of adaptive management, and developing recommendations that recognize the social, economic and cultural interests of stakeholders, mitigate the impacts on those interests and advance the multiple uses of the river.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 222 **Comment Id:** 644812 **Coder Name:** jgutierrez

Comment Text: Millions of dollars have been invested in unsuccessful shallow water habitat, experiments that have yet to bear fruit. Lessons learned indicate a slow methodical effort is in the financial interest of the country. For this reason, we strongly continue to support the current and proposed efforts for hatchery population support while true in field strategies are initiated in a responsible manner.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 166 **Comment Id:** 644837 **Coder Name:** jgutierrez

Comment Text: Toward this end, the Sierra Club Missouri River Grassroots Network calls upon the Fish & Wildlife Service, the Corps and the scientific community actively working these endangered species problems to consider- - within this DEIS, and within an Adaptive Management context- - that the pallid sturgeon's full extant range is critical habitat for it's continued survival and persistence. Such a designation would give pallid sturgeon additional protections prohibiting the destruction of its habitat, without consultation and permitting. This call is for renewed attention and resources in response to a petition submitted to the US Fish & Wildlife Service by the Missouri Coalition for the Environment, the Sierra Club National Water Sentinels Clean Water Campaign, and Great Rivers Environmental Law Center in 2010. In 2010, the Sierra Club (National Water Sentinels), the Missouri Coalition for the Environment and Great Rivers Environmental Law petitioned FWS for Pallid Sturgeon Critical Habitat designation on the Missouri River. The request was deferred by FWS based on a lack of resources and insufficient conservation priority. It is time for the Fish & Wildlife Service to reconsider and to designate Critical Habitat and the Corps should incorporate critical habitat into the Adaptive Management Plan. At present, critical habitat is described and considered only for the Terns and Plovers in Appendix section G.3

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 166 **Comment Id:** 644874 **Coder Name:** jgutierrez

Comment Text: In general, examination of extreme drought management (over a period of multiple drought years) is not well discussed in the DEIS; neither are the implications of upstream diversions as an interagency result, upon the existing POR hydrograph or operations and management. If multiple, foreseeable and planned diversions (Garrison Diversion, and/or two of the eight BoR "Secure Water" plans for diverting Mo River water to the Colorado River, and/or some other diversion), were to eventuate in 10-30% reductions in Run of River flows, that eventuality is unstudied in this DEIS. The plans are there, why not study them?

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 229 **Comment Id:** 644894 **Coder Name:** jgutierrez

Comment Text: TNC strongly supports the process and involvement that could be termed non-standard for USACE in EIS efforts. TNC believes the high stakeholder involvement through MRRIC and use of an Effects Analysis (EA) as the best available science and the basis of the Adaptive Management Plan (AMP) coupled with the Independent Science Advisory Panel's (ISAP) and Independent Social Economic Technical Review Panel's (ISETR) independent review of the science applied is a model of what a federal decision making process at this scale should include. TNC encourages USACE to apply this model to its other large scale water resource planning efforts nationwide. TNC is very supportive of the contents and structure of the AMP and agrees with the tiered approach to some management actions given some of the current uncertainty surrounding their effectiveness. This draft MRRMP-EIS marks a significant advancement in USACE Missouri River Recovery Program and U.S. Fish and Wildlife Service endangered species planning for the Missouri River. However, TNC does have an overarching concern and some more specific concerns with the draft MRRMP-EIS.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

ON1000 Other NEPA Issues: General Comments (Substantive)

Correspondence Id: 23 **Comment Id:** 626669 **Coder Name:** jgutierrez

Comment Text: 3. The Corps should create a reasonable range of alternatives as required by law.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 646302 **Coder Name:** JGUTIERREZ

Comment Text: The USA CE, in concert with the State, must develop guidance on how mitigation in the connected Missouri River Yellowstone River ecosystem will avoid jeopardy to Pallid Sturgeon as well as mitigate for impacts to other native fish and wildlife species. This should be included in the alternative analysis of the MRRMP-EIS prior to its finalization. Mitigation efforts could easily be established as part of the SAMP and their inclusion could be justified as Level 3 and Level 4 studies in answering Big Question 2 (Flow Naturalization and Productivity), Big Question 3 (Temperature Manipulations at Fort Peck), and Big Question 5 (Passage, Drift and Recruitment). Doing so would provide consistency with the goal of the Missouri River Recovery Program to create a sustainable ecosystem supporting thriving populations of native species while addressing major impacts of current and past river uses.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 27 **Comment Id:** 645910 **Coder Name:** jgutierrez

Comment Text: For the same reasons, any adaptive management actions could cause concern. Whenever new actions are proposed or existing actions are modified, including those outside the Record of Decision, they must be subject to thorough review, including public comment and EIS impact assessments and be in compliance with the Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645801 **Coder Name:** jgutierrez

Comment Text: We urge the Corps in the final EIS to consider major droughts for post-event investigations.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645640 **Coder Name:** jgutierrez

Comment Text: 12. The DEIS should specify a robust process for ongoing analysis of economic impacts of adaptive management plan actions to be able to inform the process and decisions regarding changes to management plan actions, while ensuring compliance with the Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645628 **Coder Name:** jgutierrez

Comment Text: The DEIS admits "a supplemental NEPA process may be necessary prior to the end of the 15-year period." Yet, it then fails to clarify the kind of action which would trigger this requirement, such as going beyond the dictates of the Master Manual. Instead, the DEIS permits the Corps to take actions that have not been fully vetted or even proposed, without a supplemental EIS and

input from stakeholders. Though scientific monitoring requires a flexible approach, the present AM plan goes well beyond reasonable flexibility and that it fails to adhere to legislative requirements clearly established under NEPA and reaffirmed by the courts. Under the guise of scientifically necessary, the DEIS is suggesting the Corps have unfettered ability to go beyond reasonable limitations of the ROD or Master Manual without the accountability of a supplemental EIS.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645626 **Coder Name:** jgutierrez

Comment Text: The lack of oversight for administrative decisions in the AM Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional EPA requirements.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645625 **Coder Name:** jgutierrez

Comment Text: Section 4.0 Adaptive Management Plan General Analysis: 1. By definition and design, adaptive management (AM) means the management actions are not yet identified. We can only speculate on the direction of impacts because we only know the direction of management actions. It is impossible to provide the appropriate quality and scope of comments on management actions when not even the Corps or the FWS knows what actions they will take. AM plan decisions made outside of the ROD and Master Manual must go through full NEPA review and a separate EIS and must include independent peer review of the science and be coupled with full public review and comment before finalized. 2. The Corps should communicate what actions they believe to be implementable under AM. If stakeholders are to participate in a meaningful way, no decisions should be made in a vacuum or come as a surprise. 3. The Corps should commit to the use of two independent panels in AM plan independent review. We believe socio-economic impact review and analysis to be a key part of AM and it should continue to be utilized. As weve pointed out, the DEIS modeling and assessment of human impacts is woefully inadequate, highlighting the important need for review by both panels.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645606 **Coder Name:** jgutierrez

Comment Text: AMP 2 6.3 Data and Information Management - 550 - 6.3.4.1.6 -schedule - All of the tasks and dates are before 4/17. What can the public comment on in this section since the dates have already passed at the time the comment period on the MRRMP-DEIS has ended?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645598 **Coder Name:** jgutierrez

Comment Text: Adaptive Management Plan 1-Page 105 - [Note: Remaining text under development.] - When will this (A 6.8.9.10.12.14) be available and will it be open to public comment?

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645490 **Coder Name:** jgutierrez

Comment Text: We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns we don't feel the proposed alternatives go far enough to restore the river and its aquatic and terrestrial habitat. We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645468 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) plan included in the DEIS, the CPR is circumspect of decisions made outside of the Record of Decision (ROD) and we believe those must only be made after full NEPA analysis and independent peer review as well as separate EIS that contains complete hydrologic and economic modeling. Additionally, we have the same questions and concerns about AM plan actions that may go beyond the limitations of the current Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 239 **Comment Id:** 645363 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.4.3, p. 2-12 The third paragraph of the section briefly describes the model that was used to simulate erosion and deposition of ESH. The paragraph references a report written by Fischenich et al. (2014) that has additional information regarding how changes in ESH was modeled. The "References" section cites this report as the following: Fischenich, J.C., R. McComas, D. Meier, J. Tripe, D. Pridal, P. Boyd, S. Gibson, J. Hickey, T. Econopouly, and L. Strong. 2014. Habitat Analyses for the Missouri River Effects Analysis - Geomorphic Team Integrative Report. Comment: The Effects Analysis reports are the basis for the AMP and the alternatives evaluated in the EIS. The Fischenich et al. report is a crucial document underpinning the geomorphic analysis. This report was not made available to the public along with the other Effects Analysis reports that were released with the MRRMP-EIS. It was only disclosed (in an incomplete version) after February 16, which was halfway through the 120-day comment period. This compromised our ability to conduct a full and rigorous review of the material. Not releasing this report at the beginning of the comment period is the opposite of being open and transparent, and is at odds with the spirit and requirements of NEPA and the Administrative Procedures Act that the agency provide a meaningful opportunity for review and comment on the technical bases being relied upon by the agency. Additional comments are included in the section of this document dedicated to this report.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 179 **Comment Id:** 645238 **Coder Name:** jgutierrez

Comment Text: Pg. 11, Figure 4 - What is the weight given to the filtering by the HC? How much negative impact causes a management action to be eliminated? How is the negative impact quantified? How large a part does the socioeconomic have in evaluating the actions - what % among the other criteria? Nothing is said in Figure 4 of the level of filtering that occurs. Human Considerations was barely mentioned in the Executive Summary, yet considerable weight was given to them in the alternative analyses. I request that this is clearly laid out for the public to know if any particular Human Consideration/interest group received greater weight than others.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 168 **Comment Id:** 645187 **Coder Name:** jgutierrez

Comment Text: Upon closer examination of the case law, it is clear the courts have a history of reiterating the need to initiate the NEPA process for substantial changes. In *Operation of the Mo River Sys. Litig., Mo. v. U.S. Army Corps of Engrs*, the Eighth Circuit clarified substantial changes are those that are not qualitatively within the spectrum of alternatives that were discussed in a prior EIS. The DEIS is presently a perfect example of permitting substantial changes without fully satisfying NEPA requirements. A mere mention of an alternative is clearly insufficient to satisfy the requirements of NEPA as reaffirmed in the courts.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645186 **Coder Name:** jgutierrez

Comment Text: The DEIS admits "a supplemental NEPA process may be necessary prior to the end of the 15-year period." Yet, it then fails to clarify the kind of action which would trigger this requirement, such as going beyond the dictates of the Master Manual. Instead, the DEIS permits the Corps to take actions that have not been fully vetted or even proposed, without a supplemental EIS and input from stakeholders. Though scientific monitoring requires a flexible approach, AWO is concerned the present plan goes well beyond reasonable flexibility and that it fails to adhere to legislative requirements clearly established under NEPA and reaffirmed by the courts. Under the guise of scientific necessity, the DEIS proposes that the Corps have unfettered ability to go beyond limitations of the ROD or Master Manual without the accountability of a supplemental EIS.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645184 **Coder Name:** jgutierrez

Comment Text: The lack of oversight for administrative decisions in the Adaptive Management (AM) Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional NEPA requirements. AWO understands the Corps stated concerns that balancing the preservation of endangered species with the needs of navigation and flood control is no small task. However, the difficulty of the task does not justify the boundless flexibility the DEIS affords the AM plan for implementing alternative strategies without additional oversight. The Corps does not have organic or independent authority to proceed on flow changes without Congressional authorization and utilization of the NEPA process.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 168 **Comment Id:** 645126 **Coder Name:** jgutierrez

Comment Text: Under current law, any alternative including 2,4,5, and 6 that would change the Master Manual for the recovery of the species cannot be considered without a separate NEPA process.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 223 **Comment Id:** 644942 **Coder Name:** jgutierrez

Comment Text: A. The Substantial Differences Between Alternative 2 and Alternatives 3 Through 6 Demonstrate the Unreasonableness of the Range of Alternatives. The MRRMP-EIS does not present an adequate range of viable alternatives, rendering the statement inadequate. While each of the six alternatives share management actions to benefit the three species, the substantial differences between Alternative 2 and Alternatives 3 through 6, particularly with respect to habitat construction and the use of AM, demonstrate that the range of alternatives is unreasonable. In addition, Alternatives 3 through 6 are so similar that the only meaningful differences between the alternatives appear in the differences between Alternative 2 and Alternative 3. The MRRMP-EIS therefore violates NEPA by failing to evaluate a reasonable range of alternatives and by leaving unexamined viable and reasonable alternatives that could more effectively utilize a combination of available management actions.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**
Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644935 **Coder Name:** jgutierrez

Comment Text: The Executive Summary of the MRRMP-EIS provides the following statement: The purpose of this MRRMP-EIS is to develop a suite of actions that meets ESA responsibilities for the piping plover, the interior least tern, and the pallid sturgeon. Authorities used to meet this purpose may include existing USACE authorities related to Missouri River System operations for listed species and acquisition and development of land needed for creation of habitat for listed species provided by Section 601(a) of WRDA 1986, as modified by Section 334(a) of WRDA 1999, and further modified by Section 3176 Of WRDA 2007 although alternatives formulation was not limited to these authorities. 15 It is unclear whether this statement is intended to be the requisite brief

framing of the Corp's goals because the Corps provides multiple formulations of the project's goals in different sections of the MRRMP-EIS.¹⁶ But even if this statement is the MRRMP-EIS's purpose and need statement, it violates NEPA by failing to provide any guiding criteria for the Corps to determine whether it has met its substantive obligations under the ESA. To correct this shortcoming, the Coalitions urge the Corps to incorporate into the purpose and need statement the primary goals for species restoration and a brief description of the various measures that can accomplish those goals.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 166 **Comment Id:** 644923 **Coder Name:** jgutierrez

Comment Text: The Corps DEIS for recovery of the pallid sturgeon, least tern and piping plover has failed to provide a reasonable range of alternatives to meet the agency's responsibility under NEPA and under the Endangered Species Act. The Corps five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644921 **Coder Name:** jgutierrez

Comment Text: The Corps DEIS for recovery of the pallid sturgeon, least tern and piping plover has failed to provide a reasonable range of alternatives to meet the agency's responsibility under the Endangered Species Act. The Corps five alternatives numbered two through six should provide a reasonable range of actions, or collection of actions, designed to recover the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery and with reference to any other relevant factors the Corps identifies. The DEIS fails to do this.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644898 **Coder Name:** jgutierrez

Comment Text: Volume Four of the draft MRRMP-EIS is titled "Implementation of Preferred Alternative under Adaptive Management" and contains only select components of the larger AMP. Volume 4 also labels the AMP as a "companion document" to the MRRMP-EIS. The AMP is much more than a companion document; it is integral and its full contents should be recognized and its acceptance documented by the ROD. The ROD should also acknowledge the living nature of these documents as Volume 4 does. The ability to draw readily from the other alternatives fully analyzed in this NEPA process and the entire AM Plan should not be hindered by a limited ROD.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644897 **Coder Name:** jgutierrez

Comment Text: TNC is concerned "Implementation of Preferred Alternative Under Adaptive Management" is too narrow to allow for cost-effective, efficient, and effective Adaptive Management Program. TNC recommends USACE capture the current full contents of the AMP (it attachments and appendices) in the final MRRMP-EIS and the approval of their contents in the Record of Decision (ROD). The creation and use of an EA as the basis of the Adaptive Management Plan (AMP), involvement of the Missouri River Recovery Implementation Committee (MRRIC) and its ISAP and ISETR have greatly enhanced the draft MRRMP-EIS. Given these enhancements, and the quality content and effort put into the EA and AMP it is imperative to capture the complete contents of the USACE-authored AMP in the final MRRMP-EIS and the approval of its contents in the Record of Decision (ROD).

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644877 **Coder Name:** jgutierrez

Comment Text: It is, indeed, our expectation that future habitat construction projects will, or may, require large changes to river geometry, to both avoid jeopardies created by the existing geometry and to reduce the negative human considerations outcomes for future operation and management of the river. Further, to have assumed at this stage in the NEPA process that flood pulse alternatives would not be selected is an error that preordains the outcome and shorts the NEPA process.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644765 **Coder Name:** jgutierrez

Comment Text: "The Adaptive Management (AM) Plan permits the Corps to take actions not presently authorized by the Record of Decision (ROD) without first satisfying additional NEPA requirements. In its present state, the DEIS allows the Corps unchecked authority by permitting a broad application of adaptive management that goes beyond the authority established by other previous AM Plans. The Corps does not have independent authority to proceed on flow changes without Congressional authorization and utilization of the NEPA process.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 644759 **Coder Name:** jgutierrez

Comment Text: "The ISETR panel does not have the technical expertise to tackle the impacts and outcomes of the human consideration navigation model and its effects on transportation costs, rail loads, infrastructure impacts, and water-compelled rates. The review team that conducts the comprehensive Independent Peer Review of the Corps DEIS to ensure its validity must include individuals that have a firm and comprehensive understanding of the navigation economic model.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644423 **Coder Name:** jgutierrez

Comment Text: I felt like the members of MRRIC were not appropriately treated in making available materials for the MRRIC meetings of thousands of pages to read, study, and review in fewer days than a week before meetings, and for terms and wording to be changed at the US Corps whim or decision. This also complies to the time period of the DEIS material of 6000 pages or more, even though we should have knowledge of what was written, it didn't give us enough time to read it completely word for word.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 225 **Comment Id:** 644421 **Coder Name:** jgutierrez

Comment Text: I totally believe that in the pass two years of MRRIC, there has been some success and knowledge gained, but on the other hand the missed or misconstrued knowledge will lead to more wasted money and lost habitat as well as other interest supported by the river. MRRIC seems to me, was put on the FAST TRACK to finish, and loss some valuable knowledge. We need more design for habitat discussions, for benefits and non-benefits for the birds, fish, and human interest values, for the building and upkeep of these projects.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643965 **Coder Name:** jgutierrez

Comment Text: The U.S. Army Corps of Engineers acknowledges in the Draft Environmental Impact Statement that existing National Environmental Policy Act compliance coverage will be limited to those possible actions already included among the array of six alternatives. Management actions outside the scope of the six alternatives will require further NEPA compliance coverage in the future. We recommend that the Corps establish a process within the Adaptive Management Plan for identifying new, potential management actions and their status with regard to existing NEPA coverage early in the study process, e.g., Level 1. Early NEPA compliance documentation would allow rapid implementation of new approaches at Levels 2 and 3.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643934 **Coder Name:** jgutierrez

Comment Text: The USFWS is concerned the Corps has artificially constrained the range of actions in crafting the Draft MRRMP/EIS. While a variety of actions are considered, the scope of the actions currently presented in alternatives three through six are insufficient to achieve objectives of the Draft MRRMP/EIS. The USFWS recommends a broader range in both scope and magnitude of management actions be considered in the Final EIS.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 23 **Comment Id:** 626671 **Coder Name:** jgutierrez

Comment Text: 4. The DEIS document should be subject to independent scientific review.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 9 **Comment Id:** 627490 **Coder Name:** JGUTIERREZ

Comment Text: You need to come to community/reservation to discuss, etc. You have money for travel. We don't!

Organization: OLN Tribe

Commenter: Maria Pueirst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628482 **Coder Name:** jgutierrez

Comment Text: It's understood that the Fish and Wildlife Service coordination act BiOp acquisition acreage requirements for the lower basin is currently deficient by approximately 100,000 acres. I'm going to get real close to my time. It's feared and bears to be restated that while the authority for the amended BiOp remains, that there will likely be no priority for those once this DEIS is finalized. It's owed to the system.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633523 **Coder Name:** jgutierrez

Comment Text: Finally, AWO is very concerned about the implementation of any preferred alternative under an Adaptive Management plan. Our members are particularly concerned with the section of the Adaptive Management plan dealing with management actions outside the Record of Decision. Whenever new actions are proposed or existing actions are modified, those changes must be subject to thorough review, including public comment and environmental impact statements under NEPA, and must be in compliance with the Master Manual.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 98 **Comment Id:** 633688 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full National Environmental Policy Act (NEPA) review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: Iowa Corn Growers Association

Commenter: Kurt Hora **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 77 **Comment Id:** 636785 **Coder Name:** jgutierrez

Comment Text: This DEIS should be subjected to scientific review and allow more time for public review and input.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 90 **Comment Id:** 636828 **Coder Name:** jgutierrez

Comment Text: I would like to express my thoughts on the open house and hearing. Who has ever heard of not being allowed to ask questions in front of all who attended the hearing. The definition of hearing is: the ability to hear, chance to be heard, formal meeting to hear testimony. All present were there with the same concerns. Then stating that we only had three minutes to talk. Who, of any of us that spoke, pre-timed their talk?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637641 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full NEPA review and a separate EIS. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640107 **Coder Name:** jgutierrez

Comment Text: The Corps' DEIS for recovery of the pallid sturgeon, least tern and piping plover has failed to provide a reasonable range of alternatives to meet the agency's responsibility under NEPA and under the Endangered Species Act.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640155 **Coder Name:** jgutierrez

Comment Text: The Corps apparently has information on the number and character of acres offered to the Corps for sale under the BSNP mitigation or other programs in the Missouri Basin. One can assume it has assessed those acres in terms of their appropriateness for the mitigation and or recovery programs. The Corps should have included that information in this DEIS.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640172 **Coder Name:** jgutierrez

Comment Text: The MRRMP-EIS contains a number of shortcomings that are of concern to the State of North Dakota. Among those are that it fails to consider a reasonable range of alternatives under the National Environmental Policy Act (NEPA): the only bird habitat management options evaluated in Alternatives 1 through 6 are really just "sub-alternative" variations in pursuing a singular approach of Emergent Sandbar Habitat (ESH) creation through mechanical and flow means, rather than being inclusive of other bona fide alternative habitat approaches for the birds.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641391 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) Plan included in the DEIS, we believe any AM decision made outside of the Record of Decision must go through full NEPA review and a separate Environmental Impact Study. Rigorous review should also apply to any AM decision that goes beyond the scope of the Master Manual.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 181 **Comment Id:** 641459 **Coder Name:** jgutierrez

Comment Text: Even more remarkable is the product developed as a result of a great deal of federal resources in terms of employee hours, travel, consultation fees, and overall funds fails to provide a reasonable range of alternatives to meet the agency's responsibility under NEPA and under the Endangered Species Act. The Corps five alternatives numbered two through six should have provided a reasonable range of actions, or collection of actions, designed to recover (not avoid jeopardy which simply means maintaining the status quo) the 3 species over a period of time. The public should be able to compare these alternatives with reference to likelihood of success of recovery (again not jeopardy) and with reference to any other relevant factors the Corp identifies. The DEIS fails to provide information from which the public can make an assessment. At times the information the Corp provides is misleading. The range among alternatives 2 through 6 are inadequate in that there are significant differences between alternative 2 and between the group of 3 through 6. But among alternatives 3 through 6 the differences are minimal. Alternatives 3 through 6 overlap considerably with only minor differences among 3 and 6 are in flow releases prescriptions. But even these differences are minor considering how infrequently the flow releases are likely to occur. For example, alternative 4 includes a spring ESH release, but that is anticipated to fully occur less than one in ten years. Thus, as written Alternatives 3 through 6 are too similar to contribute significantly to the Corps requirement to provide a reasonable range of alternatives.

Organization: Nebraska Chapter Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641616 **Coder Name:** jgutierrez

Comment Text: 1. The allotted time for the preparation and release of the Draft Plan with six alternatives was compressed and did not allow development of additional alternatives.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642125 **Coder Name:** jgutierrez

Comment Text: Sioux City wishes to stress the importance of the selected alternative meeting the eight Authorized Purposes as established by the Pick-Sloan Act. Sioux City does not feel that adequate time was allocated to the process, thus limiting the number of alternatives.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642690 **Coder Name:** jgutierrez

Comment Text: Volume Four of the draft MRRMP-EIS is titled Implementation of Preferred Alternative under Adaptive Management and contains only select components of the larger AMP. Volume 4 also labels the AMP as a companion document to the MRRMP-EIS. The AMP is much more than a companion document; it is integral and its full contents should be recognized and its acceptance documented by the ROD. The ROD should also acknowledge the living nature of these documents as Volume 4 does. The ability to draw readily from the other alternatives fully analyzed in this NEPA process and the entire AM Plan should not be hindered by a limited ROD.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643878 **Coder Name:** jgutierrez

Comment Text: Further, Montana-Dakota would appreciate the opportunity to review any future changes to the proposed Missouri River system operations that would result from implementation of the new system of adaptive management process. The proper notification and review of the adaptive changes, as well as potential impacts, by all parties should occur early to allow for meaningful review and comment.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

OPP100 General Opposition of the Missouri River Recovery Management Plan and EIS (Non-Substantive)

Correspondence Id: 8 **Comment Id:** 626208 **Coder Name:** jgutierrez

Comment Text: I own property at Big Lake, Missouri and was negatively impacted by previous planned flooding of this area in 2011 and prior years. The intentional actions of the Corp. caused extreme economic hardship to many people in Holt County, Missouri. Therefore, I object to any actions by the Corp which would cause intentional flooding in this area.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645489 **Coder Name:** jgutierrez

Comment Text: With respect to the draft plan, we do not support adoption of any the proposed alternatives - and the League strongly opposes Alternative 3. The League has serious concerns with the Corps' preferred Alternative 3 which we'll detail later in these comments.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645486 **Coder Name:** jgutierrez

Comment Text: For these reasons, the Standing Rock Sioux Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe and Flandreau Santee Sioux Tribe, together as the Great Plains Tribal Water Alliance, reject the Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645355 **Coder Name:** jgutierrez

Comment Text: As articulated in the attached report, the Draft EIS addresses none of our concerns. Impacts on our Tribes from the Pick-Sloan plan and then alternatives in the Draft EIS are neither addressed nor mitigated. Accordingly, we reject the Draft Missouri River Recovery Management Plan and Environmental Impact Statement.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 1 **Comment Id:** 645350 **Coder Name:** jgutierrez

Comment Text: It is of grave concern for the entirety of the Missouri River Valley that I write this note regarding the Army Corps of Engineers proposed changes for the Missouri River to aid in the propagation of the pallid sturgeon and any other Endangered Species by increasing the length or intensity of flow events. ANY increase in the flood constraints by the corps will have lasting and compounding effects to all users of the great Missouri River.

Organization: River User

Commenter: Madison A Davis **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645188 **Coder Name:** jgutierrez

Comment Text: Additionally, the courts have a history of reminding the Corps of its legislative obligation to treat flood control and navigation as the primary purposes of the system. While the courts understand and sympathize with the complexity of balancing multiple and varied interests, it has been made clear that the Corps cannot sacrifice flood control and navigation for endangered species. Thus, drastically altering an established course of action from a published EIS, has been soundly rebuked by the courts.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645127 **Coder Name:** jgutierrez

Comment Text: With continued reliable flows, operators and stakeholders expect the increase during the last five plus years to continue. The Corps, unlike the early 2000s, has not changed the flows in recent years. A return to scientifically unjustified changes in flows to allegedly recover endangered and threatened species is untenable.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645040 **Coder Name:** jgutierrez

Comment Text: For these reasons, the Coalitions strongly oppose the preferred alternative selected by the MRRMP-EIS.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 181 **Comment Id:** 641457 **Coder Name:** jgutierrez

Comment Text: The language in the Corps' DEIS states that this document is a Missouri River Recovery Management Plan and Environmental Impact Statement, however, the phrase "Missouri River Recovery Management" is quickly replaced by terms describing this EIS as a decision document designed to avoid jeopardy to the federally listed species due to actions by the Corps in carrying out its responsibilities of the Missouri River Bank Stabilization and Navigation Project (BSNP). Unfortunately this document fails miserably at addressing Missouri River Recovery, and in no way provides a blueprint for recovery of the three (3) listed species driving the EIS. Sadly, the never ending saga of Missouri River management in context with the widely recognized need to mitigate the immense damages the BSNP has caused to the Nation's longest river, as well as the statutory responsibilities under the Endangered Species Act (ESA) remains hollow these long number of years since the revision of the Master Manual after the great flood of 1993. Some 24 years later, the Corps refuses to demonstrate coherent understanding of ecosystem science that has been developed over the last quarter century and refuses to taking on the responsibility of incorporating ecosystems services economics and conservation science into the management of the Missouri River.

Organization: Nebraska Chapter Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 154 **Comment Id:** 640727 **Coder Name:** jgutierrez

Comment Text: Our comments on the six alternatives are predicated on background gained from those who live and work along the Missouri River. We can attest to their ongoing frustration with the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (Corps) over the continued uncertainty of river management. Many believe Adaptive Management is a synonym for experimenting on private property. Ongoing disagreements over the construction of shallow water habitat (chutes) in Missouri have called into question the agencies desire to find commonsense ways to enhance habitat for the pallid sturgeon. To put it succinctly, it is difficult to point to progress despite spending \$825 million on the recovery program since 1992.

Organization: Missouri Farm Bureau

Commenter: Blake Hurst **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 235 **Comment Id:** 640502 **Coder Name:** jgutierrez

Comment Text: Many of the proposed options of operation would unnecessarily contribute to flooding problems, as well as seep water problems. The Carroll County Commission respectfully requests that operation of the Missouri River continue with flood control and navigation as top priority.

Organization: Carroll County Commission

Commenter: Nelson Heil **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640490 **Coder Name:** jgutierrez

Comment Text: With respect to the draft plan, we do not support adoption of any the proposed alternatives - and the League strongly opposes Alternative 3.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 80 **Comment Id:** 640105 **Coder Name:** jgutierrez

Comment Text: Indeed, the proposed MRRMP-EIS states Risk and uncertainty are inherent with any model that is developed and used for water resource planning. Unforeseen events such as climate change and weather patterns may cause river and reservoir conditions to change in the future. Although the EIS states The project team has attempted to address risk and uncertainty in the Management Plan by defining and evaluating a reasonable range of plan alternatives that include an array of management actions within an adaptive management framework for the Missouri River. All of the alternatives were modeled to estimate impacts to fish and wildlife, I believe the proposed plan alternatives cannot in any effective way counter the vagaries of variations in river flow that have been and will continue to be experienced in the Lower Missouri River Valley. These vagaries are reflected in the highly variable census data shown in Fig 3-29 of the MRRMP-EIS, Volume 2, and will mask any effects of the plan alternatives. Thus, in my opinion the less done on the river ostensibly in order to reduce jeopardy the better; the futures of Piping Plover and Least Tern are not dependent on conditions on the Lower Missouri River.

Organization: Responsible River Management

Commenter: Ross Silcock **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638513 **Coder Name:** jgutierrez

Comment Text: While we support Alternative 3, serious flaws exist in the DEIS which should be reviewed and corrected to create an accurate public record.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 145 **Comment Id:** 637624 **Coder Name:** jgutierrez

Comment Text: We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we opposed. In 2015, 20 members of Congress from Missouri to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Organization: UMIMRA

Commenter: Aaron Baker **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 95 **Comment Id:** 636829 **Coder Name:** jgutierrez

Comment Text: The implementation of the alternatives proposed in the Draft Missouri River Recovery Plan and Environmental Impact Statement have the potential to be costly to not only the United States tax payers that provided the funding for such projects, but also to industries that rely on the Missouri River for transportation of commodities and oversized equipment and also of course to the species that these plans seek to protect.

Organization: AGRIServices of Brunswick

Commenter: Lucy A Fletcher **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 87 **Comment Id:** 636794 **Coder Name:** jgutierrez

Comment Text: After a decade of attending public comment meetings similar to the one held on February 14, 2017 in Omaha, NE I have become more concerned that pleas for improved flood control are falling on deaf ears. All proposed alternatives will damage

wildlife, infrastructure, cities, farms, and families along the Missouri River. The U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service can do better and provide flood control to all that live along the Missouri River.

Organization: Benton-Washington Levee District

Commenter: Michael R Woltemath **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 87 **Comment Id:** 636792 **Coder Name:** jgutierrez

Comment Text: All of the alternatives proposed by the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service regarding the Missouri River Recovery Management Plan are far too damaging to flood control of the Missouri River and far too risky for the ecosystem along the Missouri River.

Organization: Benton-Washington Levee District

Commenter: Michael R Woltemath **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633863 **Coder Name:** jgutierrez

Comment Text: At 18 ft Hermann, MO river stage, which is 3 feet below flood stage, the Tri County Levee District, of which I am a Director, and where I farm, begins to have challenges with drainage. This is quite serious and the financial risks to myself, my neighbors, and to the general economy of the state and nation are AT RISK! For what? And unproven method for saving a prehistoric fish that has survived for eons without these ridiculous costs to the economy and taxpayers!

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633829 **Coder Name:** jgutierrez

Comment Text: As a Registered Engineer in the state of Missouri with 48 years of experience work for levee and drainage districts, landowners, and Counties and Cities in the Missouri River flood plains from St. Louis to St. Joseph, I am particularly concerned about the alternatives set forth in the Corps' Draft Missouri River Recovery Program and Management Plan (DEIS). Through implementation of any of the six DEIS alternatives, the Corps will substantially increase the risk of direct flooding from the river and interior flooding due to no drainage.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 66 **Comment Id:** 633526 **Coder Name:** jgutierrez

Comment Text: For the reasons stated, several of the alternatives under consideration are non-starters. Given the prescribed flow modifications, we do not support Alternatives 2, 4, 5 and 6.

Organization: Missouri Farm Bureau

Commenter: Adam Jones **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 54 **Comment Id:** 631129 **Coder Name:** jgutierrez

Comment Text: And me and at least two or three other people in here, we're the ones that are going to pay the risk, because if you lose the birds, that's tragic, but it sounds to me like we got other birds, and we can figure out how to replace that. But you lose me, my kids probably aren't going to fight this fight for 150 years like my ancestors have.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 53 **Comment Id:** 631015 **Coder Name:** JGUTIERREZ

Comment Text: I think the pushback on this is going to be very, very great, and I hope it is very great. I hope everyone in this room passes this on to someone else, and I hope that it goes just as far down the line, up and down the river, as we can make it work.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 49 **Comment Id:** 628662 **Coder Name:** JGUTIERREZ

Comment Text: To the point, the six options, none of them work for me. Three of them will guarantee I'm done. Two of them, there's a 50/50 chance I can participate in farming that we've been doing for 150 years. One of them might work. I'm told that's the status quo, kind of what the last few years have been like, a couple years.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 47 **Comment Id:** 628658 **Coder Name:** JGUTIERREZ

Comment Text: None of the alternatives are acceptable. Do not change the manual for any reason whatsoever.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 19 **Comment Id:** 626500 **Coder Name:** jgutierrez

Comment Text: Farm Bureau policy opposes any plans by the U.S. Army Corps of Engineers or any federal or state agencies that would alter the flow levels of the Missouri or any river and would adversely affect domestic water supplies, drainage, irrigation and transportation, that would cause traffic bottlenecks on the Missouri or any navigable river and take private property without compensation.

Organization: West Pottawattamie County Farm Bureau

Commenter: Mike Schropp **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 17 **Comment Id:** 626462 **Coder Name:** jgutierrez

Comment Text: Therefore, we as the Board of Trustees for the Pigeon Drainage District #2, Sub 1, Sub 2, and Sub 3 are sending this written objection to the Army Corp of Engineers prior to this disastrous decision making course being taken.

Organization: Mumm Law Firm

Commenter: Ashley N West **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 17 **Comment Id:** 626355 **Coder Name:** jgutierrez

Comment Text: We, the Trustees, of the Pigeon Drainage District #2, Sub 1, Sub 2, and Sub 3 are writing this letter to serve as our written objection to the Army Corp of Engineer's plan to create an artificial rise of the Missouri River in Spring of the upcoming

years. This is in a manner that is inconsistent with historical flooding of the Missouri River and in a manner, that will jeopardize the work the Drainage District has done since the unprecedented flooding of 2011.

Organization: Mumm Law Firm

Commenter: Ashley N West **Page:** **Paragraph:**

Kept Private: No

OT1000 Other AE/EC Resource Topics (Substantive)

Correspondence Id: 166 **Comment Id:** 644875 **Coder Name:** jgutierrez

Comment Text: We were surprised not to find "Dam Safety" discussed as one of the primary risk categories. During the summer of 2012, the Corps completely shut off Missouri River flows at Gavins Point dam in order to study possible damages done to the dam by the 2011 flood flow rates. There was little notice, and no public comment. Risks became observed realities for cultural resources. Mussel populations downstream were left stranded out of water for a couple of days. It would have been a good time to look for these mussel populations, and study the effects; but no study was done that we can see reported in peer reviewed journals. More importantly, dam safety at Fort Peck and each of the down stream dams is seen as a Corps' primary critical mission. Yet, budget and time constraints did not allow sufficient resources to do the Monte Carlo simulations necessary for this critical mission in this DEIS.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

PN10000 Purpose and Need: Compliance with Other Laws, Policies, and Regulations (Substantive)

Correspondence Id: 27 **Comment Id:** 626710 **Coder Name:** jgutierrez

Comment Text: Flow rises in other alternatives raise questions about implementations, as those actions require amending the Master Manual. We oppose such revision because the time involved, the risk to the species and the potential for litigation during which time the species could decline even further. Should the Corps choose something other than alternative 3, the process for creating flow changes needs to be clear to stakeholders and be aligned with the Master Manual. For the same reasons, any adaptive management actions could cause concern. Whenever new actions are proposed or existing actions are modified, including those outside the Record of Decision, they must be subject to thorough review, including public comment and EIS impact assessments and be in compliance with the Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 161 **Comment Id:** 646271 **Coder Name:** JGUTIERREZ

Comment Text: In addition, any alternative must also be consistent with the eight authorized purposes of the 1944 Flood Control Act.

Organization: Iowa Farm Bureau Federation

Commenter: Rick Robinson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 645991 **Coder Name:** jgutierrez

Comment Text: The USFWS also encourages the Corps to include our recommendations in this letter to 'frontload' their biological assessment, to meet the purpose and objectives of the Draft MRRMP/EIS. These actions should be included within the Final EIS.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 240 **Comment Id:** 645874 **Coder Name:** jgutierrez

Comment Text: In light of some of the most dramatic differences in the management actions, especially between Alternative 2 and Alternative 3 through 6, the Corps should not wait until after the selection of an alternative to reinitiate consultation. Rather, consultation should serve to narrow the range of reasonable alternatives based on updated scientific data (while of course maintaining the flexibility associated with a robust AM plan). It is therefore reasonably assumed that the MRRMP-EIS would not only benefit from an updated BA and subsequent BiOp containing new RPA's before any decision on the EIS is rendered, but that the MRRMP-EIS violates both the ESA and NEPA by failing to initiate consultation until after the Corps decides which course of action to take.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Elizabeth Hubertz **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 645805 **Coder Name:** jgutierrez

Comment Text: Any alternative, including 2,4,5, and 6 that would change the Master Manual for the recovery of the species cannot be considered without a separate NEPA process.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645788 **Coder Name:** jgutierrez

Comment Text: Any action, such as mechanical ESH construction, which results or is likely to result in dredge or fill in the Missouri River or any tributary to the Missouri River will require a section 401 permit and possibly a general storm water construction permit as well. Additionally, North Dakota's sovereign lands are those areas, including the beds and islands, lying within the ordinary high water mark of navigable lakes and streams. The State Engineer is responsible for administering the state's non-mineral interests on North Dakota's sovereign land. A sovereign land permit application and review by the Office of the State Engineer would be required for ESH construction on the Missouri River in North Dakota.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645787 **Coder Name:** jgutierrez

Comment Text: Also, any requests to restrict human access on Missouri River sandbars in North Dakota would require the issuance of a sovereign lands permit from the Office of the State Engineer.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 645784 **Coder Name:** jgutierrez

Comment Text: We recommend a new Biological Assessment before the final EIS.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 176 **Comment Id:** 645775 **Coder Name:** jgutierrez

Comment Text: WCI opposes alternatives 2,4,5, and 6 and any alternative or actions that would modify the flows of the river and require a change to the Missouri River Master Manual.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645629 **Coder Name:** jgutierrez

Comment Text: 1. The CPR objects to any alternative that fails to recognize Master Manual constraints.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645563 **Coder Name:** jgutierrez

Comment Text: The League believes that BSNP Mitigation must be included in the recovery actions and we want this clearly stated in the final EIS. Mitigation for the BSNP has numerous congressional authorizations and we urge the Corps to complete the authorized mitigation goals. BSNP mitigation should be integrated into other future recovery actions. The AMP (AMP-2-page 45) states that habitat development should be implemented on any acquired lands, which would be credited toward the BSNP mitigation requirements.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645556 **Coder Name:** jgutierrez

Comment Text: The DEIS (V2-page 256) states "each project will be designed to not impact other authorized purposes including sand and gravel dredging as described in Section 2.5.3.1." The eight authorized purposes from the Flood Control Act include flood control, hydropower, water supply, water quality, recreation, fish and wildlife, navigation and irrigation. We ask that this statement be corrected in the final EIS.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645498 **Coder Name:** jgutierrez

Comment Text: In the DEIS there are numerous references to the Missouri River Master Manual. We question what happened to the provision in that manual that called for a 3,000 foot floodplain above Kansas City and a 5,000 foot floodplain below Kansas City. If this provision would be implemented in selected areas of the lower Missouri, the river could heal itself in those locations with little or no continuing cost to the taxpayer. We believe the final EIS should also state that according to the Master Manual, the Missouri River cannot be managed to benefit the Mississippi River.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645468 **Coder Name:** jgutierrez

Comment Text: Regarding the Adaptive Management (AM) plan included in the DEIS, the CPR is circumspect of decisions made outside of the Record of Decision (ROD) and we believe those must only be made after full NEPA analysis and independent peer review as well as separate EIS that contains complete hydrologic and economic modeling. Additionally, we have the same questions and concerns about AM plan actions that may go beyond the limitations of the current Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 228 **Comment Id:** 645449 **Coder Name:** jgutierrez

Comment Text: The CPR has long been opposed to Master Manual revisions to accommodate environmental flow experiments that could have adverse effects on lower Missouri River stakeholders. To highlight congressional interest in this topic, we wish to remind the Corps of the December 17, 2015 letter to former Assistant Secretary Darcy, signed by 20 members of the U.S. Congress from across the basin, in which they stated: Due to our concerns regarding the current process, we strongly urge the Corps and FWS to only pursue a management plan that would not necessitate a revision of the Master Manual or incur damaging impacts to stakeholders and landowners.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645403 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 3.5.1.7, p. 3-111 Comment: The USACE should be aware of North Dakota's Aquatic Nuisance Species (ANS) policy that is in place when working on waters within our state, and ensure that it is being followed in the implementation of the MRRMP.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645372 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 2.5.4, p. 2-31 - 2-32 Comment: This section is about habitat creation in accordance with WRDA 1986, 1999, and 2007, and only describes habitat development for pallid sturgeon in the lower basin of the Missouri River. Section 3176 of the Water Resources and Development Act (WRDA) of 2007 authorizes the Secretary of the Army to use recovery funds in the upper basin of the Missouri River, including the states of Montana, Nebraska, North Dakota, and South Dakota. It is our understanding that guidance has not been developed for this section of the WRDA of 2007, which may prove vital in expanding the geographic scope of the MRRMP-EIS. Guidance should be developed for Section 3176 of the WRDA of 2007 that allows the USACE to implement actions which, based on science, will avoid jeopardy and contribute to recovery of the listed species - regardless of whether or not the action is on the mainstem of the Missouri River.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645361 **Coder Name:** jgutierrez

Comment Text: Section & Page Numbers: 1.6.2, p. 1-27; 2.1, p. 2-1; 2.2, p. 2-2; 2.10.2, p. 2-93 Comment: In a number of places, the MRRMP-EIS omits references to the states and fails to recognize state governments as sovereign entities that have authority to manage natural resources within their boundaries. We request that the document include specific references to the states and their authorities in this regard. Instances where this is needed include: "AM and NEPA are similar in that each emphasizes collaboration principles and working with stakeholders and Tribes." (1.6.2, p. 1-27) "The goal was to formulate a set of reasonable alternatives to meet the species objectives described in Chapter 1.0 and clearly articulate the effects of those alternatives to provide necessary information to decision makers, stakeholders, Tribes, and the public." (2.1, p. 2-1) "CEMs are frequently cited as a necessary step in formal adaptive management (AM), in which stakeholders, Tribes, and scientists jointly develop a shared understanding of what

influences an ecosystem or population, and then apply the model to predictions of system behavior (i.e., hypotheses) under management scenarios." (2.2, p. 2-2) "This action would require extensive coordination with the Tribes in developing site-specific plans for construction in the Garrison Reach in order to avoid sensitive areas." (2.10.2, p. 2-93)

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645323 **Coder Name:** jgutierrez

Comment Text: The second basis for our comments is the implementability of the proposed alternatives. The Corps has a history of implementing structural changes to the river, such as shallow water habitat (SWH), yet has failed to achieve mandated changes in flows from the reservoirs that could benefit pallid sturgeon recovery. The Corps has failed to fully implement any flow related Reasonable and Prudent Alternative (RP A) as legally required for the pallid sturgeon in the 2000 and 2003 Biological Opinions from their sister agency, the U.S. Fish and Wildlife Service.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645298 **Coder Name:** jgutierrez

Comment Text: 2.5.3.1 Channel Reconfiguration Comment: P. 2-28: It is imperative that projects not adversely affect the authorized purposes of the Missouri River, including flood control and navigation.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645291 **Coder Name:** jgutierrez

Comment Text: Page xiv, Executive Summary: "The operation of the System is guided by the Master Manual (USACE 2006a). This Master Manual records the basic water control plan and objectives for the integrated operation of the mainstem reservoirs. The reservoir stage and flow releases vary throughout the year as a result of reservoir operations that follow the Master Manual." Comment: The Master Manual is a rule. 5 U.S.C. Â§706 et seq.; 33 U.S.C. Â§2312. "Any revision involving a long term or permanent change in the operation of the system that would serve as a significant detriment to one or more of the actual purposes of

the currently settled priorities of the system would suggest the need for prior congressional authorization." Office of Counsel, Department of the Army, "The Role of Recreation in the Regulation of the Corps of Engineers Constructed and Operated Main Stem Reservoirs of the Missouri River" 25 (August 16, 1990).

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645259 **Coder Name:** jgutierrez

Comment Text: We are cognizant of uncertainty regarding its implementation, but Missouri suggests that the Corps review the most recent executive order concerning federal actions for projects in flood plains (EO 13960) to determine whether the various environmental flow alternatives comply with current federal requirements.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645246 **Coder Name:** jgutierrez

Comment Text: Maintaining Existing Flood Control and Navigation is Paramount Throughout this process the State of Missouri's message has been clear and consistent: flood control and navigation are the primary purposes of the Missouri River Mainstem Reservoir System (System). These purposes were established by Congress in the 1944 Flood Control Act and must not be diminished or undermined. Northwest Deputy Division Commander Colonel Torrey DiCrio clearly articulated this very point during his presentation at the February 2017 Missouri River Navigators Meeting in Kansas City, Missouri. Even though NEPA requires the Corps to analyze a broad range of alternatives, most of the alternatives presented in the DRAFT EIS are inconsistent with the Corps' authority given the impacts they would have to flood control and navigation. As the Corps considers which actions it will ultimately implement, Missouri asserts the agency must insure that such actions are consistent with existing Congressional authority and established priorities.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645245 **Coder Name:** jgutierrez

Comment Text: Corps staff also has indicated the agency may pursue a deviation from the Master Manual for a one-time flow event, rather than changing the Master Manual altogether. The Corps cites Engineering Regulation 1110-2-240 as its authority to deviate from the water control plan. But ER 1110-2-240 only describes the process by which a deviation can be sought and does not grant the authority to do so. A deviation from the Master Manual for such experimental purposes is not consistent with the Corps' Congressional authority and it should not be pursued.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645244 **Coder Name:** jgutierrez

Comment Text: Missouri Objects to Changes to the Master Manual In order to implement Alternatives 2, 4, 5, or 6, the Corps would have to change the existing Missouri River Mainstem Reservoir System Master Manual. Corps staff has asserted that the DRAFT EIS analysis would provide the National Environmental Policy Act (NEPA) coverage to make such changes to the Master Manual. The State of Missouri., however, asserts these proposed significant and controversial changes to the Master Manual would require a separate and distinct NEPA process in order to fully characterize the implications. To highlight the significant public interest in the possibility of Master Manual changes, twenty members of Congress have communicated their concern to the Corps and urged the agency to pursue an alternative that does not require such a change to the Master Manual (see "Master Manual Congressional Letter 121815" enclosed).

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645228 **Coder Name:** jgutierrez

Comment Text: There is a lack of mitigation in the Preferred Alternative, although the Corps recognizes that mitigation obligations still exist. In relation to how well the DEIS addresses all species in view of the Fish and Wildlife Coordination Act, a failing to include mitigation has been found. This DEIS is not to over-ride/modify the original EIS which contains the mitigation requirement, however the absence of even a reference to mitigation is troubling. Does the Corps hope to be able to gain momentum in deemphasizing and downsizing it. The Corps coverage of mitigation in the Executive Summary, which is all that most of the public reads, is minimal. It is as if the Corps would prefer to avoid the topic with the public, and not discuss the role mitigation has towards species recovery and restoration. This is not acceptable. The Corps must re-write the DEIS and include mitigations habitat planning.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 179 **Comment Id:** 645201 **Coder Name:** jgutierrez

Comment Text: The Water Resources Development Act (WRDA) of 2007 had asked for the recovery of listed and native species of the Missouri River and a study of the ecosystem. This was Congresss request. A stakeholder group, Missouri River Recovery Implementation Committee (MRRIC) was also established by the act to help provide guidance to the US Army Corps of Engineers (Corps), and the US Fish and Wildlife Service (USFWS). I (Marian Maas, Ph.D.) have served as a stakeholder on MRRIC for Water Quality since its inception. After several years the Corps developed MRAPS and MRERP to help carryout the requirements of WRDA. MRERPS was the study called-for to examine the habitat from bluff-to-bluff, and MRAPS was to examine the Authorized Uses. Unfortunately there were particular interests, many who sat on MRRIC, who did not want these studies to proceed, and their lobbying in Congress resulted in the defunding of the studies and their elimination despite the fact that the Corps had collected considerable data, especially for MRERP. A narrowing of recovery - avoidance of jeopardy - and the rise of Human Considerations in place of MRAPs The Corps changed direction after this and drastically reduced the extent of recovery. The Corps now only wants to avoid jeopardy of the three threatened and endangered species - a much more narrow effort and fails to carry-out the intent of WRDA 2007. No longer is the ecosystem nor any of the other native species part of the Recovery Program. This was an immense diminishment of the Corps Recovery efforts and of the intent of the 2007 WRDA. The Corps unilaterally made this change. It is a reasonable question to ask if this was a legally acceptable change?

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 206 **Comment Id:** 645152 **Coder Name:** jgutierrez

Comment Text: Consultation between the USAGE and each basin state, if proposed management actions involve components outside the scope of the current Master Manual, should be a requirement. This will allow South Dakota to more completely comprehend what is included in proposed actions outside the constraints of the current Master Manual and how they may impact South Dakota.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 206 **Comment Id:** 645135 **Coder Name:** jgutierrez

Comment Text: Efforts to increase sediment support of the river below Gavins Point Dam must be in association with pursuing an understanding with the Environmental Protection Agency (EPA) and state natural resources agencies that sediment augmentation is not pollution and a violation of the Clean Water Act. "The Big Muddy" cannot support the persistence of the listed species without sufficient sediment transport.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645126 **Coder Name:** jgutierrez

Comment Text: Under current law, any alternative including 2,4,5, and 6 that would change the Master Manual for the recovery of the species cannot be considered without a separate NEPA process.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644930 **Coder Name:** jgutierrez

Comment Text: Although the Corps references acquired acres for mitigation could play a role in any of the alternatives, it is only in Alternative 2 that the real value of that process is grudgingly given any sanctioned role in recovery. Moreover, this failure to include "mitigation" schedules and requirements expressed in Alt 2 harms the legal meaning of "mitigation" as a construct in ways that- - if left unchanged- - will require clarification in other forums. While the Corps makes clear that the BSNP Mitigation Plan stands on its own authority, it is difficult to see how the Corps will be able to ask the President or congress for budgetary appropriations for this purpose if Alt 2 is not, in some variation, a part of the selected alternative. The reduction of value and function of habitat diversity that necessitated the BSNP Mitigation language in 1986 and 1999 has partly contributed to the decline of pallid sturgeon, terns and plovers on the lower Missouri River, as the Corps indicates many times in this DEIS.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644901 **Coder Name:** jgutierrez

Comment Text: TNC is concerned with the lack of specific actions related to acquiring and developing lands associated with the Bank Stabilization and Navigation Project (BSNP) Mitigation Project authorities in the draft MRRMP-EIS and current Preferred Alternative. Although the Preferred Alternative does note the inclusion of " riparian habitat development on any acquired land", the MRRMP-EIS seems to lack any detail on the amount of acquired land would occur or the types of habitat development. TNC has been and remains supportive of the acquisition and development of lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986 and modified by Section 334(a) of WRDA 1999 and agrees with the USACE characterization in Volume 1 of these authorities being obligations of the Fish and Wildlife Coordination Act. TNC observed at the public comment meeting held in Omaha on the draft MRRMP-EIS two out of the three self-identified agricultural based landowners who provided public oral comments described how they wanted and were willing to participate in restoration activities along the river.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644895 **Coder Name:** jgutierrez

Comment Text: USACE is selecting what it believes to be possible and not what it has been directed to do previously by Congress and what needs to be done for the Missouri River. Section 5018 of Water Resources Development Act of 2007 states USACE shall conduct a study in consultation with MRRIC: "to mitigate the losses of aquatic and terrestrial habitat; to recover the federally list species under the Endangered Species Act; to restore the ecosystem to prevent further declines among other native species." To contrast, the draft MRRMP-EIS is a document to only provide: "a programmatic assessment of 1. major federal actions necessary to avoid a finding of jeopardy to the pallid sturgeon (*Scaphirhynchus a/bus*), interior least tern (*Sterno antillarum atha/assos*), and the Northern Great Plains piping plover (*Charadrius melodus*) caused by operation of the Missouri River Mainstem and Kansas River Reservoir System and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP) in accordance with the Endangered Species Act (ESA) of 1973, as amended; and 2. the Missouri River BSNP fish and wildlife mitigation plan described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Act (WRDA) of 1986". A directive to assess how to mitigate losses of habitat, recover the listed species and restore the ecosystem was selectively narrowed to identify actions to only avoid jeopardy and evaluate an already established plan. The draft MRRMP-EIS cannot and should not be viewed as fulfilling the study directive detailed in Section 5018.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644815 **Coder Name:** jgutierrez

Comment Text: We remind the Corps and FWS that the integrity of the channel remains the primary responsibility until obviated by Congress. Design challenges of IRC's must hold that as the primary consideration.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644793 **Coder Name:** jgutierrez

Comment Text: 13. The Corps agreed in the MRRIC process to identify those aspects of alternatives that would require revisions to the Master Manual. No items appeared to be called out for consideration.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644782 **Coder Name:** jgutierrez

Comment Text: 4. We support adaptive management as a method to expedite knowledge, generate scientific information, and test hypotheses. We believe that adaptive management provides for a more nimble position for the Corps in making decisions toward protection of the endangered species. However, we find no legal premise for the adaptive management scenario to exceed the guidelines and provisions of the Master Manual on its own accord. We believe that this process does not allow or endorse changes to the Manual without appropriate Manual review, analysis, procedure, and public hearings.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644781 **Coder Name:** jgutierrez

Comment Text: 3. The states of Missouri, Kansas, Iowa and Nebraska own the bed of the lower river. As such, activities that would compromise the bed's integrity, loss of resources, and modification of the States' real estate and resource rights, all constitute issues relating to taking. The States have their sovereign right to their real estate and actions that compromise that real estate, and the decisions relating to the real estate's resources represent a federal takeover of rights related to States' real estate and resource assets.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 222 **Comment Id:** 644780 **Coder Name:** jgutierrez

Comment Text: 2. Modifications in flow as presented in Alternatives 2, 4, 5, and 6 undermine the primary purposes of navigation and flood control and are, therefore, problematic. Where flow changes are proposed, we believe they are required to be within the confines of the current Master Manual, and any changes beyond the Manual must be made by following the Manual public process.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 222 **Comment Id:** 644779 **Coder Name:** jgutierrez

Comment Text: 1. The congressionally-authorized purposes establish the baseline criteria for evaluation. Failure to reasonably maintain the authorized purposes close to their current baseline will constitute a failure of this exercise. The authorized purposes and the priority purposes of navigation and flood control are under emphasized in the document.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 176 **Comment Id:** 644775 **Coder Name:** jgutierrez

Comment Text: Under the Flood Control Act of 1944, Congress authorized the Corps to govern the U.S. waterways. Additionally, this act required the Corps to prioritize flood control and navigation as dominant functions of its authority. Though the responsibilities of the Corps have increased over time with additional directives from Congress, namely those to assist in protecting endangered species, the new obligations have not diminished the original priorities. While the courts have noted the difficulty in balancing these varied interests, case law is clear that endangered species do not get to take precedence to the detriment of flood control and navigation. Thus, while it is a painstaking task, it is nonetheless imperative the Corps find a fair balance for these complex issues.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 176 **Comment Id:** 644745 **Coder Name:** jgutierrez

Comment Text: WCI believes recovery of endangered and threatened species can be accomplished without changes to the Master Manual or with major flow modifications. We point out the bi-partisan, basin-wide letter sent from numerous Members of Congress to the Corps on December 18, 2015 opposing any flow changes. That species recovery is deliverable through the mechanical emergent sandbar habitat construction.

Organization: Waterways Council, Inc

Commenter: Paul C Rohde **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644657 **Coder Name:** jgutierrez

Comment Text: Additionally, the EIS should reflect the USACE duty to the citizens of Missouri to fulfill its obligations under the Mitigation Project and provide details describing how this part of the mission will be accomplished.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644635 **Coder Name:** jgutierrez

Comment Text: The Introduction describes that the EIS is prepared as a programmatic assessment of evaluate major federal actions on: Endangered Species affected by the reservoir system; and the Bank Stabilization and Navigation Project (BSNP); as well as on the BSNP Fish and Wildlife Mitigation Project (Mitigation Project) authorized by Congress. U.S. Army Corps of Engineers (USACE) funded the Mitigation Project for the BSNP from federal Fiscal Year 1992-2005. With an amended Biological Opinion (2003), the USACE added a second program known as 2003 Biological Opinion Implementation, which retained separate allocation from federal Fiscal Year 2004-2005. In Fiscal Year 2006 and subsequently, these programs were combined as the Missouri River Recovery Program, funding was co-mingled, and the proportion of funds budgeted or spent for meeting the USACEs Mitigation Project responsibility was significantly reduced. While the Mitigation Project can be complimentary and beneficial to Endangered Species Act (ESA) compliance, it is designed to be a tool for Clean Water Act, Section 404 compliance. Elimination or significant modification of Mitigation Project activities from the MRRP would seem to constitute a major program change. Without a component of the Mitigation Project dedicated to sport and other native, non-endangered species, it is unclear how such program changes might continue to meet the USACEs responsibility for compensatory mitigation from the BSNP project to Missourians and the nation.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644540 **Coder Name:** jgutierrez

Comment Text: 1. The Department supports all eight Congressionally-authorized purposes of the Missouri River. Balancing river flows to meet all expectations is a challenging assignment. Science-based planning of the Missouri River system can promote agriculture, offer sustainable economic development, continue navigation, support public water supplies, provide for public recreation, and sustain fish and wildlife. These purposes enhance benefits for Missourians and the nation.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643966 **Coder Name:** jgutierrez

Comment Text: Since 1986, the Corps has been authorized by Congress to acquire up to 166,750 acres of land and construct habitat to mitigate for fish and wildlife losses resulting from construction of the Missouri River Bank Stabilization and Navigation Project. This authorization, if completed, would replace only 32% of the 474,600 estimated acres of habitat lost between 1912 and 1980. Approximately 66,000 acres of land has been acquired to-date. This acquisition constitutes only 39% of that authorized by Congress and 14% of the estimated habitat lost as a result of the construction and maintenance of the BSNP. We encourage the Corps to confirm its commitment to continued execution of the BSNP Mitigation Project separately from the Corps' overall efforts to comply with the ESA. Critical to the Mitigation Project is a resumption of property purchase from willing sellers and habitat development within the meander belt to benefit all native species. Perhaps the Record of Decision could confirm the Corps commitment to continued acquisition of quality restoration sites specifically under the BSNP Mitigation Project to benefit native fish and wildlife species. Continued execution of this project provides a template for future implementation of new actions to recover listed species called for under the AMP and will support a reduction in flood risk to private property.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643962 **Coder Name:** jgutierrez

Comment Text: Page 89, Section 2.3.6.3, Lines 1-11 - Include specific bullet regarding WSRA Section 7 consultation requirement for actions within the MNRR.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643961 **Coder Name:** jgutierrez

Comment Text: Page 70, Section 2.3, Table 10 - Include specific (bulleted) reference within an appropriate block of Table 10 regarding WSRA Section 7 consultation requirement with the NPS for actions within the MNRR.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643956 **Coder Name:** jgutierrez

Comment Text: The MRRMP states that 166,750 acres are authorized as mitigation for 474,600 acres of fish and wildlife habitat lost between 1912 and 1980 (attributable to construction of the Bank Stabilization and Navigation Project). Of this authorized amount, 66,000 acres have been acquired in fee title or easement. Further efforts should be made to complete the authorized mitigation for this habitat loss pursuant to Section 5018 of the Water Resources Development Act.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643954 **Coder Name:** jgutierrez

Comment Text: The MNRR has developed an Emergent Sandbar Management Planning Approach and Management Plan (ESHMP). At a recent interagency coordination meeting (April 6, 2017 in Yankton, SD) attended by NPS, USFWS, and USACE, representatives agreed to further collaboration regarding sandbar set-aside areas to meet MNRR goals without adversely affecting recovery objectives for listed species. As the MRRMP proceeds to implementation, NPS requests that continued consideration be given to the ESHMP for management actions contemplated within MNRR. The ESHMP sets aside up to 35% of the existing emergent sandbar habitat within the park's boundary, and will inform future management and administrative decisions within the MNRR.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643949 **Coder Name:** jgutierrez

Comment Text: Outstandingly Remarkable Values (ORVs) must be protected under Section 10(a) of the WSRA. The NPS manages the MNRR to protect and enhance for present and future generations the following ORVs: cultural, ecological, fish and wildlife, geological, recreational, and scenic values. To protect these ORVs, activities proposed within the MNRR will also be reviewed for consistency with the anti-degradation policy in Section 10(a) of the WSRA, which states: "Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration, primary emphasis shall be given to protecting its esthetic, scenic, historic, archaeological, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area."

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643948 **Coder Name:** jgutierrez

Comment Text: Activities proposed in the MRRMP that meet the criteria for a federally-assisted water resources project and are located within the MNRR will require a Section 7(a) determination prior to implementation. As stated in the Act below, the determination must ensure that there are no direct and adverse effects on the values for which the river was established. Section 7(a) of the WSRA states: "...no department or agency of the United States shall assist by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic, or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area..."

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643940 **Coder Name:** jgutierrez

Comment Text: Based upon actions currently identified in the Draft MRRMP/EIS, only a small amount of land will be purchased to help meet endangered species objectives. Previous consultations and listing decisions hinged upon significant progress being made and ultimately completion of the BSNFWMP, as such, the USFWS recommends the Corps work toward furthering implementation of the BSNFWMP to meet the objectives of the Draft MRRMP/EIS.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643939 **Coder Name:** jgutierrez

Comment Text: As addressed on page 1-7 of the Draft MRRMP/EIS, the 2003 BSNFWMP was authorized by Congress to mitigate for the 522,000 acres of fish and wildlife habitat lost between 1912 and 1980 due to construction of the Bank Stabilization and Navigation Project (BNSP) (USACE 2003) with habitat restoration of 48,100 acres. Section 334 of WRDA 1999 increased the acreage of habitat to be mitigated for the BSNFWMP by 118,650 acres, bringing the total acres to be mitigated to 166,750 acres. It has taken 14 years to acquire land in fee title or easement to restore approximately 66,000 acres of habitat (approximately 40%) of the required 166,750 acres BSNP mitigation lands. Habitat types to be restored include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat (SWH), backwater areas, and slack water habitats. To date, the obligations of the BSNFWMP have not been completed, but are still relevant and remain unchanged (Page 1-14), over 100,750 acres still need to be acquired. The USFWS recommends the Final EIS address the continued commitment to acquiring these mitigation lands.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643938 **Coder Name:** jgutierrez

Comment Text: The Draft MRRMP/EIS (Page 1-1) states that this document is a programmatic assessment for two purposes, (1) major federal actions necessary to avoid jeopardy of the three listed species and (2) implement the BSNFWMP described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Act (WRDA) of 1986, 1999, and 2007. The Draft MRRMP/EIS (Page 1-7, Section 1.1.5) further states that the MRRP is the umbrella program that coordinates the Corps efforts in three programs, one being "Acquiring and developing lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986, and modified by Section 334(a) of WRDA 1999 (collectively known as the BSNFWMP)." Although, the Corps has stated that everything they are proposing to do for the listed species is consistent with and contributes to the BSNFWMP, the USFWS is concerned that the Draft MRRMP/EIS does not fully described how the Corps proposes to do that, nor what actions they will engage

in to further the BNSFWMP. The USFWS recommends that the Final EIS fully disclose how the Corps will meet their FWCA mitigation responsibilities for all native fish and wildlife species habitat on the river during implementation of the MRRP, and consider the adverse impacts to non-federally listed species by focusing habitat mitigation to only listed species for the next 15 years.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 167 **Comment Id:** 643878 **Coder Name:** jgutierrez

Comment Text: Further, Montana-Dakota would appreciate the opportunity to review any future changes to the proposed Missouri River system operations that would result from implementation of the new system of adaptive management process. The proper notification and review of the adaptive changes, as well as potential impacts, by all parties should occur early to allow for meaningful review and comment.

Organization: Montana-Dakota Utilities Co.

Commenter: Abbie S Krebsbach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643514 **Coder Name:** jgutierrez

Comment Text: One important tool for this aspect of Recovery is the Mitigation Program referenced in the DEIS. Estimates of public property lost to Missouri River modifications in Kansas top 55,000 acres of which only 6,100 has been replaced by 5 Missouri River Mitigation sites. There must be continued acquisition of additional property from willing sellers to mitigate for the thousands of acres of lost habitat. This also represents the land base necessary to provide habitats necessary for Recovery while preserving other existing uses of the river.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 219 **Comment Id:** 643483 **Coder Name:** jgutierrez

Comment Text: Alternative 3 operates inside the current Master Manual, however, four of the six alternatives include operating scenarios outside of the current Master Manual.

Organization: Missouri Regional Advisory Committee

Commenter: Carl Johnson **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 216 **Comment Id:** 643420 **Coder Name:** jgutierrez

Comment Text: The Corps has an obligation to meet targets proposed in each AOP as close as possible without violating the 8 Authorized Purposes. Alternatives #1 and #3 come the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 216 **Comment Id:** 643415 **Coder Name:** jgutierrez

Comment Text: We, water supplies of this Association, want to remind the United States Army Corps of Engineers of their obligation to meet all the 8 Authorized Purposes which Water Supplies is one of these Authorized Purposes. The Missouri River makes up about 60% of the Mississippi River near St. Louis, Missouri. Changes in flows on the Missouri River will impact the Mississippi River elevation.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 236 **Comment Id:** 643311 **Coder Name:** jgutierrez

Comment Text: With regard to the regulation of the Missouri River Mainstem Reservoir System, the USA CE will continue to provide a draft and final Annual Operating Plan (AOP) each fall that describes the planned operation of the reservoir system within the conditions of the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) for the coming year under a variety of runoff conditions. The States will have the opportunity to provide comments on the draft and final AOP at the fall public meetings or by providing written comments during the comment periods. If at any time during AM Plan implementation actions are proposed to the proposed draft AOP actions would occur outside of the conditions of the Master Manual, the Corps will first consult with all the Basins States, their designated representatives and/or other interstate organizations (as long as they consist of representatives of the Governors of Missouri River Basin States) before making any substantive modifications.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 643104 **Coder Name:** jgutierrez

Comment Text: In addition, if Preferred Alternative 3 is approved, at the end of 15 years with just the minimal amounts of spawning and interception habitat added, the BSNP Congressional authorization of 166,750 acres would still need to be met. According to the 2015 Biennial report to Congress on the status of the Missouri River BSNP Project by the Assistant Secretary of the Army for Civil Works in Accordance with Section 4003 (e) of the Water Resources Reform and Development Act of 2014, 66,616 acres have already been acquired. That leaves a little over 100,000 acres left to meet Congressional authorization. Since a Final Supplemental EIS was already completed in March 2003 for this project, it is paramount that Congressional intent be followed to compensate the States for the loss of 522,000 acres of aquatic and terrestrial habitat. We believe creating habitat and avoiding jeopardy to the pallid sturgeon can occur concurrently. Concurrently pursuing habitat and avoiding jeopardy to pallid sturgeon as described above would seem to be a prudent path to follow. The Nebraska Game and Parks Commission fully believes that systematic top-width widening is the only practical means to create the amount of functional habitat necessary to support Pallid Sturgeon and the ecosystem on which they depend.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 643033 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 6.5, p. 6-4 - 6-5 Comment: The "Water Rights" section does not mention state water rights. Each state has its own way of addressing water use and control. In the Enabling Act, Congress provided for the people of the Dakota Territory to form constitutions and state governments and be admitted into the union on an equal footing with the original states.¹ In North Dakota, the constitution provides that "[a]ll flowing streams and natural watercourses shall forever remain the property of the state for mining, irrigating and manufacturing purposes."² This constitutional language was adopted through the Enabling Act by proclamation of the President when North Dakota was declared a state in 1889.³ "A right to appropriate water can be acquired for beneficial use only as provided in [chapter 61- 04]. Beneficial use shall be the basis, the measure, and the limit of the right to the use of water."⁴ Throughout history, Congress and the Supreme Court have spoken with a clear and consistent voice regarding state deference with respect to water allocation. As the Court observed in the landmark California v. United States decision: The history of the relationship between the Federal Government and the States in the reclamation of the arid lands of Western States is both long and involved, but through it runs the consistent thread of purposeful continued deference to state water law by Congress.⁵ ¹ Enabling Act

of 1889, 25 Stat. 676, ch. 80. 2 N.D. Const. art. XI, Â§ 3. 3 See Enabling Act of 1889, 25 Stat. 676, ch. 180, Â§ 8. 4 N.D.C.C. Â§ 61-04-01.2. 5 438 U.S. 645, 653 (1978).

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 642829 **Coder Name:** jgutierrez

Comment Text: The USACE has a duty to meet water management guidelines designed to meet the reservoir regulation objectives of the Missouri River Master Water Control Manual (Master Manual) as proposed in each AOP as close as possible without violating the Eight (8) Authorized Purposes. Alternative Nos. 1 and 3 are the closest in meeting the goals of the AOP. Flows are set annually based on available water stored in the reservoirs.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642698 **Coder Name:** jgutierrez

Comment Text: TNC is concerned with the lack of specific actions related to acquiring and developing lands associated with the Bank Stabilization and Navigation Project (BSNP) Mitigation Project authorities in the draft MRRMP-EIS and current Preferred Alternative. Although the Preferred Alternative does note the inclusion of “riparian habitat development on any acquired land”, the MRRMP-EIS seems to lack any detail on the amount of acquired land would occur or the types of habitat development. TNC has been and remains supportive of the acquisition and development of lands to mitigate for lost habitats as authorized in Section 601(a) of WRDA 1986 and modified by Section 334(a) of WRDA 1999 and agrees with the USACE characterization in Volume 1 of these authorities being obligations of the Fish and Wildlife Coordination Act. TNC observed at the public comment meeting held in Omaha on the draft MRRMP-EIS two out of the three self-identified agricultural based landowners who provided public oral comments described how they wanted and were willing to participate in restoration activities along the river.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642648 **Coder Name:** jgutierrez

Comment Text: USACE is selecting what it believes to be possible and not what it has been directed to do previously by Congress and what needs to be done for the Missouri River. Section 5018 of Water Resources Development Act of 2007 states USACE shall conduct a study in consultation with MRRIC: "to mitigate the losses of aquatic and terrestrial habitat; to recover the federally list species under the Endangered Species Act; to restore the ecosystem to prevent further declines among other native species." To contrast, the draft MRRMP-EIS is a document to only provide: "a programmatic assessment of 1. major federal actions necessary to avoid a finding of jeopardy to the pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sterna antillarum athalassos*), and the Northern Great Plains piping plover (*Charadrius melodus*) caused by operation of the Missouri River Mainstem and Kansas River Reservoir System and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP) in accordance with the Endangered Species Act (ESA) of 1973, as amended; and 2. the Missouri River BSNP fish and wildlife mitigation plan described in the 2003 Record of Decision (ROD) and authorized by the Water Resources Development Act (WRDA) of 1986." A directive to assess how to mitigate losses of habitat, recover the listed species and restore the ecosystem was selectively narrowed to identify actions to only avoid jeopardy and evaluate an already established plan. The draft MRRMP-EIS cannot and should not be viewed as fulfilling the study directive detailed in Section 5018.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 220 **Comment Id:** 642149 **Coder Name:** jgutierrez

Comment Text: The Department of Agriculture's rule under the Farmland Protection Policy Act requires the Corps to examine the potential impacts of the proposed actions, and if there are adverse effects on farmland preservation, to consider alternatives to lessen the adverse effects. Such an analysis is an integral part of the environmental assessment process under NEPA. 7 U.S.C. Â§4201 et seq.; 7 C.F.R. 658; ER 1105-2-100, Guidance for Conducting Civil Works Planning Studies.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 220 **Comment Id:** 642148 **Coder Name:** jgutierrez

Comment Text: In addition, we urge the agencies to evaluate the conversion of prime farmland to fallow land or habitat mitigation through land acquisitions for projects like the Big Muddy National Wildlife Refuge. While the Act and these regulations do not authorize the Federal Government to in any way affect the property rights of owners of such land, the Corps and the Fish & Wildlife

Service should not be able to avoid the requirements of the Act because they only acquire land from "willing sellers." In fact, these acquisition programs are a form of "federal assistance" that converts farmland to nonagricultural uses. 7 C.F.R. Â§658.3(c).

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 211 **Comment Id:** 642140 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization: Beckmeyer Farms, Inc.

Commenter: Glen Beckmeyer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 642117 **Coder Name:** jgutierrez

Comment Text: Sioux City wants to remind the United States Army Corps of Engineers of their obligation to meet all the eight Authorized Purposes where water supply and flood control are major components of the Authorized Purposes.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 213 **Comment Id:** 641735 **Coder Name:** jgutierrez

Comment Text: The decisions of the USACE and any changes to the Master Water Control Manual could have a significant impact on SW A and those we serve. SW A would like to gain assurance that North Dakota state agencies, experts, and authorities would be involved in the decision making process if any changes to the Master Water Control Manual are to be considered. It is necessary to ensure water supply and water quality is maintained to our region for the residents of our State that rely on the Missouri River as a sole source of drinking water.

Organization: Southwest Water Authority

Commenter: Mary Massad **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 192 **Comment Id:** 641630 **Coder Name:** jgutierrez

Comment Text: 4. A selected alternative should generally stay within the parameters of the Master Manual.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 189 **Comment Id:** 641575 **Coder Name:** jgutierrez

Comment Text: We ask human considerations and flood control be number one priority in your evaluations. We would believe that flood control remain paramount in any decisions made in the operation of the Missouri River now and in the future. Your judgement and decisions will affect numerous people, commerce, taxpayers for years to come. Your decisions are of extreme importance.

Organization: Halls Levee District

Commenter: Lanny Frakes **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 187 **Comment Id:** 641548 **Coder Name:** jgutierrez

Comment Text: When the Master Manual was adjusted in 2004 we missed an opportunity to make changes to the operation plan to maintain a 300x9 channel. The amount of water released for navigation was reduced but there was no adjustment made to the structures that make up the BSNP. We can have a solid channel with the water that is currently provided with some minor adjustments needed between Kansas City and St. Louis. If there are changes made to the authorized purposes how can we insure that we will have flood control and a solid navigation channel to sustain our business?

Organization: Hermann Sand & Gravel, Inc./Missouri River Towing, LLC

Commenter: Steven W Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 186 **Comment Id:** 641527 **Coder Name:** jgutierrez

Comment Text: Pursuant to 7 CFR 1468.6, USACE must obtain prior authorization from NRCS for any activities that will impact NRCS easement lands. Where a Compatible Use Authorization cannot be granted, USACE must replace the impacted easement area

using NRCS' existing easement administration action procedures to exchange for replacement acres. Replacement acres must be solely under administrative control of NRCS.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 181 **Comment Id:** 641469 **Coder Name:** jgutierrez

Comment Text: The Corps must recognize and accept that the key ecological attributes that sustain riverine ecosystems are not massively expensive mechanically created habitat or perpetually operated hatcheries, but are instead operation measures that mimic the nature hydrograph, recognize the need for sediment management and potential augmentation in sediment deprived river segments, and fully accepting the critically role floodplain connectivity serves in ecosystem function. Imperative to establishing floodplain connectivity is the realized benefits of fully complying with the authorized authority of the 1986 and 1993 BSNP mitigation WRDA legislation.

Organization: Nebraska Chapter Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 175 **Comment Id:** 641400 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization: MLM Farms, Inc.

Commenter: Misti L McKenzie **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641385 **Coder Name:** jgutierrez

Comment Text: This could equate to an increase in river stage of nine feet at Omaha or as much as six feet at St. Joseph. That doesn't even take into consideration additional rainfall below the reservoirs. We believe the only way the Corps can implement flow changes is through a Master Manual revision, of which we have long been wary of. In 2015, 20 members of Congress from Missouri

to Montana went on record in a letter to then Asst. Secretary of the Army Jo Ellen Darcy, urging the Corps to not implement a plan that would cause such revision, nor one that would incur damaging impacts to stakeholders and landowners.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641384 **Coder Name:** jgutierrez

Comment Text: We have concerns with each of the six alternatives in the DEIS. Of particular concern, with the exception of Alternative 1 (No Action), each of the alternatives relax current flood control constraints within the Missouri River Reservoir Mainstem Water Control Manual (Master Manual) in an effort to provide flow support to the pallid sturgeon. The Corps or the Services have yet to provide science to support the hypothesis that these increased flows help pallid sturgeon recovery. Given this fact, we are alarmed this option remains on the table in any of the plans.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 173 **Comment Id:** 641383 **Coder Name:** jgutierrez

Comment Text: MCGA has consistently advocated for flood control and navigation to remain the top priorities for river management, as authorized by Congress. The continual divergence from these priorities, in lieu of a lopsided focus on endangered species recovery without proper science, remains a top concern to our growers.

Organization: Missouri Corn Growers Association

Commenter: Gary Porter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 163 **Comment Id:** 641285 **Coder Name:** jgutierrez

Comment Text: The Corps has ample sources of authority to increase significantly its habitat restoration projects and to provide efficacy and effectiveness to the restoration process for ecological and hydrological function activities that will also provide more room for the river and thereby reduce flood risk. These include the Fish and Wildlife Coordination Act of 1958 and the Water Resources Development Acts of 1986, 1999, and 2007. And of course the Corps must also comply with the Endangered Species Act of 1973 and the 2000 Biological Opinion as amended in 2003.

Organization: Audubon Missouri

Commenter: Anita C Randolph **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640696 **Coder Name:** jgutierrez

Comment Text: Additionally, in Section 2.9.2.3, page 2-81, lines 7-11: it states, preferred alternative 3 would reduce the need to purchase as much land as alternative 1. How does this relate to the Mitigation Project?

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640694 **Coder Name:** jgutierrez

Comment Text: On page v, lines 5-18: It states, "Land acquisition priorities has focused on areas that were most conducive to the creation or enhancement of shallow and backwater areas, off-channel chutes, and flats for foraging." On page v, lines 9-11 it states, The Bank Stabilization and Navigation Project Mitigation Project is considered still relevant and remains unchanged. Despite still being relevant, and unchanged, mitigation efforts have been reduced in recent years.

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640208 **Coder Name:** jgutierrez

Comment Text: The State of North Dakota has serious concerns with respect to potential changes to or deviation from the Master Manual. The MRRMP-EIS includes alternatives with several flow management actions that would deviate from the current Master Manual. The Adaptive Management Plan (AMP) adds another layer of uncertainty due its lack of sideboards and vagueness in how the state would be involved in the decision-making process if the Master Manual were to change. The last update to the Master Manual took over 15 years to complete and caused great discord in the basin. The current Master Manual incorporates flood control and drought conservation measures that are critical, not only for North Dakota, but for the entire basin. It was and still is important to the State of North Dakota that the Missouri River be operated in a manner that equitably shares the pain during periods of drought and equitably distributes the benefits of Missouri River operations. The State of North Dakota adamantly opposes any changes to the contrary. Accordingly, we request that the Final EIS and ROD contain express procedural protections that will govern future

consideration of any proposed flow modifications or deviations outside the bounds of the current Master Manual. These should provide for a direct consultation opportunity with North Dakota (and other affected states) apart from the Missouri River Recovery Implementation Committee (MRRIC), Fish and Wildlife Coordination Act (FWCA), and Annual Operating Plan (AOP) processes, and for additional NEPA compliance prior to a decision to approve any such change.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640189 **Coder Name:** jgutierrez

Comment Text: However, even with these shortcomings, North Dakota tentatively supports the Preferred Alternative under the following conditions: (1) Reconvene consultation with the North Dakota Interagency ESH Team on annual activities related to the Missouri River Recovery Program; (2) The final EIS and Record of Decision (ROD) state that any flow modifications outside the bounds of the current Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) would require the preparation of an additional EIS, including consultation with affected states; and (3) The final EIS commits the USACE to obeying all applicable state laws, permit and regulatory requirements, and policies. Further explanation of these conditions is provided throughout these comments. North Dakota's tentative support of the Preferred Alternative (Alternative 3) is based on the unacceptability of Alternatives 2, 4, 5, and 6 due to the adverse impacts those alternatives would cause. In addition, the potential model deficiencies are less likely to understate the impacts for Alternative 3 than for the other alternatives.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640141 **Coder Name:** jgutierrez

Comment Text: Declines in native species can be traced largely to these changes. When a species peril is so great it becomes endangered, it is right to look for those critical aspects of habitat it most needs. But it just as critical to look at the entire ecosystem that supports those aspects of habitat. If not we will always be fixing patches of habitat. And those patches will end up being fragile and unsustainable in the absence of a larger recovery. This sadly is the path the Corps has taken in this DEIS. The Corps has a responsibility to mitigate for the BSNP (WRDA1986 and 1999). The Big Muddy Wildlife Refuge system and other areas represent progress in that responsibility. But funds have been stalled. Also the Corps has, in our experience, failed to express full support for this mitigation program. The Corps has failed to promote the need for this program. Within this DEIS it has failed to accurately

measure and promote the value of achieving progress on both its mitigation responsibility and its recovery responsibilities with the same acres.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 55 **Comment Id:** 640084 **Coder Name:** jgutierrez

Comment Text: Another important component we feel is missing in the DEIS is the mitigation program for the Bank Stabilization and Navigation Project. Mitigation is authorized in several prior Water Resource Development Acts, or WRDAs, but is seldom mentioned. We wonder what will become of habitat restoration goals and objectives in the BSNP Mitigation Program in the future. Also, how will the new Recovery Management Plan and the BSNP Mitigation Program be integrated.

Organization: Izaak Walton League of America (South Dakota, Nebraska, Iowa)

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 122 **Comment Id:** 638303 **Coder Name:** jgutierrez

Comment Text: WaterOne objects to any alternative that would not recognize the constraints of the Master Manual. WaterOne also objects to any alternative that would include a low summer flow. Alternative 2 is the worst possible approach because it relies on the 2000 and 2003 Biological Opinions, which lack scientific basis and are deeply flawed. The science developed since that 2003 Bi Op contradicts the hypotheses relied upon by the 2003 Bi Op and disproves the effectiveness of most of the projects and actions mandated by the 2003 Bi Op.

Organization: WATERONE

Commenter: MICHAEL J ARMSTRONG **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 101 **Comment Id:** 636861 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 90 **Comment Id:** 636824 **Coder Name:** jgutierrez

Comment Text: As I said before, this is our livelihood and by notching the dikes, that are causing bank erosion, you are unlawfully taking without compensation which is violating the 5th amendment.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 69 **Comment Id:** 634896 **Coder Name:** jgutierrez

Comment Text: Secondly, several of the proposed alternatives will modify the flood control constraints of the System, which would require a change to the Master Manual. For example, under Alternatives 4 and 5, the flood control constraints are increased by at least 30,000 cfs. This action would be contrary to flood control.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 144 **Comment Id:** 633924 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization: Engemann Bros. Farms

Commenter: Denis Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 140 **Comment Id:** 633867 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization: Tri County Levee District

Commenter: Dale A Gloe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 136 **Comment Id:** 633851 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization: McNeall Farms Inc.

Commenter: Raymond L McNeall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 132 **Comment Id:** 633837 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the Congressional directive of the 1944 Flood Control Act as well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization: Mo Levee & Drainage Dist. Assoc

Commenter: Joseph B Gibbs-PE **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 130 **Comment Id:** 633825 **Coder Name:** jgutierrez

Comment Text: I believe species recovery can and should be done in a responsible way that doesn't cause severe economic damage to stakeholders. I also believe species recovery can only be done under the congressional directive of the 1944 Flood Control Act as

well as recent court rulings requiring the Corps to maintain flood control as one of the Missouri River's primary congressionally authorized purposes.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 126 **Comment Id:** 633771 **Coder Name:** jgutierrez

Comment Text: The Corps is offering 6 alternative plans for our consideration; one of these is labeled the preferred alternative. I'm sure we are expected to accept the preferred alternative. However, we have our own preferred alternative. The Corps should return to the original design and operation of the Missouri River and the reservoir system as stated in the Master Manual as it was originally created. Management of the Missouri River has strayed from the intent of the Master Manual, often with tragic results. It is time to return to what worked and stop implementing unproven science experiments, which only serve to waste tax dollars and damage the hardworking people of this nation. Surely there is a way to protect the endangered birds and fish without endangering families and their futures.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 64 **Comment Id:** 633523 **Coder Name:** jgutierrez

Comment Text: Finally, AWO is very concerned about the implementation of any preferred alternative under an Adaptive Management plan. Our members are particularly concerned with the section of the Adaptive Management plan dealing with management actions outside the Record of Decision. Whenever new actions are proposed or existing actions are modified, those changes must be subject to thorough review, including public comment and environmental impact statements under NEPA, and must be in compliance with the Master Manual.

Organization: Midcontinent Office for the American Waterways Operator

Commenter: Tom Horgan **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631575 **Coder Name:** jgutierrez

Comment Text: And for the same reasons, any adaptive management actions could cause the same concerns, especially those outside the Record of Decision, and we urge those to be subject to thorough review, public comment, and be in compliance with the Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 65 **Comment Id:** 631574 **Coder Name:** jgutierrez

Comment Text: Should the Corps choose something other than Alternative 3, the process for creating flow changes needs to be clear to stakeholders and be aligned with the Master Manual.

Organization: Coalition to Protect the Missouri River

Commenter: Dan Engemann **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 62 **Comment Id:** 631182 **Coder Name:** jgutierrez

Comment Text: Of course, the science associated with the three threatened endangered species is extremely complicated and inevitably carries some degree of uncertainty. That uncertainty, however, should not be used to obfuscate the intent of congress as embodied in Section 7 of the Endangered Species Act.

Organization: Missouri Coalition for the Environment

Commenter: Tim Briscoe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 60 **Comment Id:** 631137 **Coder Name:** jgutierrez

Comment Text: We feel and certainly believe that the Corps of Engineers has a duty and a mission and a moral obligation outlined by congress to provide flood control for the citizens of not only that area, but our nation. The northwest division cannot turn its back on congress, and it's got to find a way to protect the species and still follow the mission of flood control. This is the directive that congress and it's the desire of the people, but it's not what this draft environmental impact statement sets out to do.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 50 **Comment Id:** 628642 **Coder Name:** jgutierrez

Comment Text: I would also like to mention, as has been said this evening, that the BSNP mitigation needs to be in the final record of decision, and that it should be observed and acknowledged and plans clearly laid out for following it and getting it done in a timely basis.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628523 **Coder Name:** jgutierrez

Comment Text: Third, if the Corps were to consider changing the master manual, that would require a separate public process and cannot be embedded in any other process. Should the Corps pursue a deviation to the master manual or a one-time flow event, it is imperative that the Corps consult with the governors of the states before implementing this high-consequence action.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628519 **Coder Name:** jgutierrez

Comment Text: Secondly, several of the proposed alternatives would modify the flood control constraints of the system, which would require a change to the master manual. For example, under Alternatives 4 and 5, the flood control constraints are increased by at least 30,000 CFS. This action would be contrary to flood control.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 46 **Comment Id:** 628518 **Coder Name:** jgutierrez

Comment Text: First, flood control and navigation are the primary purposes of the Missouri River system, and as such, the Corps must implement recovery program actions without preemption of fully accomplishing those critical and existing lawful uses of the system.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 37 **Comment Id:** 628455 **Coder Name:** jgutierrez

Comment Text: First of all, I want to remind the Corps that you're obligated to support the eight authorized purposes. Of those eight authorized purposes, we believe water supply is the most important to our communities. The Corps must do everything in your power to protect water supplies in the communities - - in the Missouri River basin.

Organization: WaterOne

Commenter: Mike Armstrong **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 34 **Comment Id:** 628334 **Coder Name:** jgutierrez

Comment Text: Modifications in flow as presented in alternatives 2, 4, 5 and 6 undermine the primary purposes of navigation and flood control and are, therefore, problematic.

Organization: Commercial Sand Dredging Interests

Commenter: David Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 44 **Comment Id:** 627015 **Coder Name:** jgutierrez

Comment Text: I would like to have you not change the master manual from where it is now with one of your alternatives. The spring and fall pulses will flood us again. And this will also interfere with the planting and the harvesting time.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 31 **Comment Id:** 626928 **Coder Name:** jgutierrez

Comment Text: One of the questions we have is how the Bank Stabilization & Navigation Fish & Wildlife Mitigation Project will be impacted by this, whether it will be folded in, superseded, or continue its work. The land that is being put into habitat mitigation under that project also creates recreational opportunities for the public.

Organization: Sierra Club - Kansas Chapter

Commenter: Elaine Giessel **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 29 **Comment Id:** 626732 **Coder Name:** jgutierrez

Comment Text: Secondly, several of the proposed alternatives would modify the flood control constraints of the system, which would require a change to the Master Manual. For example, under alternatives 4 and 5, the flood control constraints are increased by at least 30,000 cfs. This action would be contrary to flood control. Third, if the Corps would consider changing the Master Manual, that would require a separate public process and cannot be embedded in any other process. Should the Corps pursue a deviation to the Master Manual for a one-time flow event, it is imperative that the Corps consult with the governors of the states before implementing this high consequence action.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 29 **Comment Id:** 626715 **Coder Name:** jgutierrez

Comment Text: First, flood control and navigation are the primary purposes of the Missouri River System, and as such, the Corps must implement Recovery Program actions without preemption of fully accomplishing those critical and existing lawful uses of the system.

Organization: Missouri Department of Natural Resources

Commenter: Karen Rouse **Page:** **Paragraph:**

Kept Private: No

PN3000 Purpose And Need: Scope Of The Analysis (Substantive)

Correspondence Id: 23 **Comment Id:** 626673 **Coder Name:** jgutierrez

Comment Text: 5. We should protect endangered species by restoring a more natural river for all fish and wildlife.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628476 **Coder Name:** jgutierrez

Comment Text: That being said, it's understood, at least by myself and a number of others, that "avoiding jeopardy" is the minimal that can be done for the three species that are fairly grossly shortsighted as far as the - - what we're trying to accomplish. I would prefer an ecosystem approach for restoration and strongly urge that.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 42 **Comment Id:** 628477 **Coder Name:** jgutierrez

Comment Text: I would like to link the bank stabilization navigation project (BSNP) mitigation requirements to this DEIS, as they would subsequently benefit all species, as opposed to just the three that are currently being considered as threatened or endangered.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 48 **Comment Id:** 628596 **Coder Name:** jgutierrez

Comment Text: One thing that we insist on is that the Corps link any proposed alternative to its existing authority carrying out the much needed mitigation of the past bank stabilization navigation activities. We believe the restoration of the nation's longest river should deserve the same attention and fiscal resources as the nation's other great restoration programs, such as the Florida everglades and the Chesapeake Bay.

Organization: Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 62 **Comment Id:** 631174 **Coder Name:** jgutierrez

Comment Text: We believe the purpose and need statement of the EIS does not make its goals sufficiently clear and, as a consequence, does not provide the public with a concise and focused set of objectives for the evaluation of the project alternatives. The Corps provides multiple and potentially conflicting goals in different sections of the EIS. For example, the executive summary states, quote, the purpose of the EIS is to develop a suite of actions that meets Endangered Species Act responsibilities for the piping

plover, the interior least tern, and the pallid sturgeon, end quote. The statement effectively summarizes the Corp's obligation to ensure that the continued existence of the three species is not jeopardized by Missouri River operations. However, the Corps adds within the problem definition section of the first volume of the EIS, rather than the executive summary, that the plans should continue to, quote, serve the Missouri River authorized purposes and accounts for human considerations, end quote. The original purpose specified in the Endangered Species Act becomes subordinate to the EIS's lengthy discussion of human considerations, which consists largely of the economic effects on certain special interests. We are concerned that those considerations, which are not identified within the purpose and need statement, become controlling factors in the ultimate selection of the preferred alternative. What gets lost in translation is how effectively the selected alternatives will actually meet species' goals relative to the other alternatives, or at least a clear statement to that effect at the beginning of the EIS.

Organization: Missouri Coalition for the Environment

Commenter: Tim Briscoe **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 73 **Comment Id:** 635353 **Coder Name:** jgutierrez

Comment Text: The current DEIS falls short of the expected mark in troublesome ways. First, the scope is, as we maintained during the scoping phase, too small. It appears to abandon pallid sturgeon, least tern and piping plover populations above Fort Peck and on the Yellowstone River. This abandonment occurs despite previous Corps environmental analysis and draft review documents that justified their work under the MRRP and spent moneys appropriated for BSNP mitigation in Montana.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 139 **Comment Id:** 637279 **Coder Name:** jgutierrez

Comment Text: Toward the end of directing scarce resources to reasonable alternatives, we request that the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service expand the scope of the EIS and the amended biological opinion for the Management Plan to include the Middle Mississippi River. We believe that such an expanded scope is necessary to avoid alternatives whose implementation is remote and speculative and that have little chance of aiding the recovery of the pallid sturgeon. Our request to ensure that the scope of the EIS includes the Middle Mississippi River mirrors the findings of the Missouri River Recovery Program Independent Science Advisory Panel (ISAP), in its Final Report on Spring Pulses and Adaptive Management, dated November 30, 2011 (11-STRI-1482), page 51: Recovery of pallid sturgeon in the lower Missouri River ultimately might not depend on successful recruitment below Gavins Point Dam. Given the minimal extent of low-velocity habitat that exists downriver from Gavins Point Dam,

pallid sturgeon larvae may be transported downstream at rates proportional to discharge, and exit the lower Missouri River. Such potential contributions of larval pallid sturgeon to the middle Mississippi River suggests that the importance of conservation efforts on the lower Missouri River may be realized in sustaining pallid sturgeon in a greater geographic context. Recruitment in areas where pallid sturgeon are known to spawn below Gavins Point Dam likely needs to be inferred from sampling an extensive area of the Missouri and Mississippi river basins. In addition, at page 58, the Final Report on Spring Pulses and Adaptive Management goes on state that the three listed species (pallid sturgeon, interior least tern and piping plover) would benefit from review and integration of data and recovery efforts in an expanded geographic area: The ISAP recognizes that the demographic units of the three listed species, located on the lower Missouri River below Gavins Point Dam, constitute a limited portion of the populations (or metapopulations) in the greater Missouri River system, and that each ecologically interact with conspecific individuals in other areas occupied by the species. For that reason, and to better facilitate the recovery of the listed species, any adaptive management program that includes actions on the lower Missouri River should be integrated with conservation efforts elsewhere in the system, and supported by a synthetic program of data acquisition and analyses that takes advantage of information derived from studies undertaken beyond the focal area considered in this report. This logic supports the expansion of the EIS for the Management Plan to include the Middle Mississippi River. The data collected on pallid sturgeon in the Middle Mississippi is relevant to issues of recruitment for pallid sturgeon that utilize the Lower Missouri River. According to the U.S. Fish & Wildlife Service, Midwest Region, Endangered Species Section 7 Consultation on the Operation of the Upper Mississippi River 9-Foot Channel, there is evidence of natural reproduction: in 1998 a young-of-year pallid sturgeon was collected in the Middle Mississippi River; in 1999, larval pallid sturgeons were collected in the Lower Missouri River; and in 2000, larval pallid sturgeons were collected in the Middle and Lower Mississippi River. The Middle Mississippi River is indeed the core of the pallid sturgeon's range.

Organization: Missouri Levee and Drainage District Association

Commenter: Robert J Vincze **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 80 **Comment Id:** 640103 **Coder Name:** jgutierrez

Comment Text: The inordinate focus on attempts to reduce jeopardy in the Lower Missouri River (Lewis and Clark Lake down-river to the Mississippi River junction) is a direct consequence of the belief in the 2000 and 2003 BiOps that Piping Plovers consist of several essentially separate sub-populations and that extirpation of any of these must be avoided at all costs. Indeed, the level of interchange of Piping Plovers between the sub-populations was estimated in those BiOps at only 2%, based on an essentially best guess by experts. At that time there were little or no data to support this, or any, estimate of interchange between sub-populations; it is only recently that such estimates have become available. Recent estimates are based on actual data from the Alkali Lakes and Missouri River reservoirs in the northern USA and southern Canada collected by Michael Anteau and colleagues at Northern Prairie Wildlife Research Center, Jamestown, ND Canada, and in Nebraska away from the Missouri River collected by the Nebraska Tern

and Plover Conservation Group, Lincoln, NE. Even though these locations are at opposite ends of the overall Piping Plover range, the interchange data are remarkably consistent despite differing habitats. These studies estimate subsequent-year return rates of successfully-breeding adults at 86.7% and 61% respectively, and 49.9% and 21% respectively. Thus there appears to be widespread dispersal, presumably each year, of 50-79% of the one-year-old potential breeding birds. Although re-sight data are few, they are indicative of movement between the formerly-constituted sub-populations, even to the extent of at least one Nebraska bird reaching the Alkali Lakes in Canada. Of course, Piping Plovers have evolved for some 10,000 years on the Great Plains to adapt rapidly to changing conditions, natural or man-made. Examples of this adaptability are numerous. Lake McConaughy, on the eastern North Platte River in Nebraska is a prime example; during periods of low lake water levels, studies counted as many as 245 nests (Peyton and Wilson, 2007). In high water level years such as 2016, only 10 adults and 9 nests were found when the lake was near full pool (Zorn and Wilson 2016). Anteau (2017) noted that dispersing young Piping Plovers in the northern parts of the species range showed a preference for margins of Alkali Lakes and Missouri River reservoirs. Similarly, extensive use of off-channel habitats (definition below) by Piping Plovers throughout their breeding range also illustrates their impressive innate ability to rapidly colonize newly-formed habitat from one year to the next. Thus, to summarize, current data indicate that there is one interconnected breeding population of Piping Plovers, characterized by Anteau (2017) as being More like a single population with many breeding areas than a meta-population. The overall population is maintained by a marked amount of dispersal, especially by one-year-old potential breeders, in the range of 21-50%. Because of this adaptability, I strongly recommend that the DEIS adopt the one population concept, and cease so-called jeopardy avoidance operations on the lower Missouri River. The latter are a good example of high cost-low return use of taxpayer dollars, implemented solely because of a drastically underestimated degree of dispersal by young Piping Plovers in the 2000 and 2003 BiOps. Further, I strongly recommend that the delisting process be completed for this species.

Organization: Responsible River Management

Commenter: Ross Silcock **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 131 **Comment Id:** 640175 **Coder Name:** jgutierrez

Comment Text: There is much experimentation regarding pallid sturgeon habitat in the preferred alternative 3. With the acknowledged uncertainty it would be more than prudent to include SWH, IRCs, and spawning habitat all in a preferred alternative. Measuring success for species recovery needs to eventually include designation of critical habitat for the pallid sturgeon. The pallid sturgeon has been listed for nearly 30 years with no habitat designation yet. A petition for critical habitat designation was submitted to USFWS in 2010. The Service responded that it was unable to complete the designation due to workload. As this DEIS demonstrates identification of pallid sturgeon habitat for various life cycle stages is complicated and the subject of ongoing study. A part of all this effort should result in an understanding of population dynamics and location. We encourage the Corps to not overlook any tributary as well as the Missouri river itself. The work put into the DEIS would be incomplete if critical habitat designation remains unresolved.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640497 **Coder Name:** jgutierrez

Comment Text: We believe the range of the proposed alternatives is extremely narrow. While all the proposed alternatives contain management actions designed to recover pallid sturgeon, piping plovers, and least terns the proposed alternatives do not go far enough to restore the river and its aquatic and terrestrial habitat. We urge the Corps to select recovery actions that will also benefit the wide variety of other Missouri River fish and wildlife species.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640685 **Coder Name:** jgutierrez

Comment Text: While we are in support of the Army Corps of Engineers efforts to avoid a finding of jeopardy of the listed endangered species, we believe this management plan and impact statement is narrowly focused on listed species. On page v, lines 34-36: It states, "The purpose is to develop a suite of actions that meets Endangered Species Act responsibilities for already listed species." We believe this document should take a more holistic approach as to prevent additional species listings and not focus solely on endangered species.

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640711 **Coder Name:** jgutierrez

Comment Text: Currently, the EIS is somewhat narrowly focused on the Endangered Species Act, and within that on age-0 Pallid Sturgeon. The EIS may need to take a broader focus on an ecosystem level to provide benefits to all fish and wildlife and all users in the landscape. There are numerous other species that have documented declines with potential listings in the very near future due to habitat degradation and changes to the river system. Instead of chasing listings, the EIS should take a proactive approach to prevent these declines and future listings from occurring. This ecosystem level approach would likely need to take on much larger and more impactful projects in the watershed that will not only provide benefits to Pallid Sturgeon and fish and wildlife, but also to the users

and landowners within the landscape. Many of Iowa streams have impaired water quality and have had increased floods in recent years due to changes in the Missouri River and its landscape, thus creating habitats that will mitigate these negative effects are necessary.

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641580 **Coder Name:** jgutierrez

Comment Text: The role of the United States Army Corps of Engineers (Corps) in producing and implementing the Missouri River Recovery Management Plan is to restore the populations of the piping plover, interior least tern, and pallid sturgeon. The role is not to perform a balancing act between the various commercial interests and the three endangered species. The Endangered Species Act requires the Corps to undertake the most protective actions for those species. It was the Corps whose actions imperiled the piping plover, interior least tern, and pallid sturgeon and placed the on-going existence of those species in jeopardy. And it is the Corps that has the responsibility to restore the habitat along the Missouri River so that these species can continue to exist, to thrive, and to increase their numbers.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 148 **Comment Id:** 642660 **Coder Name:** jgutierrez

Comment Text: TNC acknowledges the Missouri River Ecosystem Restoration Plan effort was stopped by factors largely outside of USACE's control, but it does not eliminate the directive or the need for a broader plan. The draft MRRMP-EIS's focus on the currently listed species is warranted and should advance their recovery if the AMP is diligently followed, but this sole focus will also come at a cost. If USACE does not identify and implement actions to restore the ecosystem to prevent further declines among other native species, it will ensure further declines and eventually other federally listed species. TNC requests that USACE - in consultation with MRRIC - begin a broader Missouri River ecosystem assessment. Ideally this assessment would fulfill the directive of Section 5018 and evaluate how different levels of restoration of the ecological structure (e.g. riverine/floodplain ecosystem, flow regimes, sediment regimes) can also address and modernize dated aspects of infrastructure and operations associated with the authorized purposes. For example, TNC has long been a proponent of coupling river/floodplain restorations at the known lower river "pinch" points. These areas are where at high flows infrastructure located too close to the river increases local river stages. Levees with repetitive failures due to placement over historic river channels are also areas where both ecological and infrastructure restoration

could take place. These are just two examples of science-based, practical solutions that meet the needs of people and nature a broader assessment could identify.

Organization: The Nature Conservancy

Commenter: Jason J Skold **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 237 **Comment Id:** 642897 **Coder Name:** jgutierrez

Comment Text: Pallid Sturgeon do not and cannot live in isolation, they are a part of and supported by the ecosystem within which they evolved. As a predator at the very top of the Missouri River aquatic food chain they are even more intrinsically linked to the health of the ecosystem within which they live than many of the species upon which they depend. Therefore, the Nebraska Game and Parks Commission believes that any plan to avoid jeopardy for Pallid Sturgeon should include a significant habitat restoration and management plan targeted at the specific habitat needs of all of the life stages of Pallid Sturgeon (spawning, drift, interception, and rearing) and that this plan would be inadequate if it did not also include habitat restoration and management to support the native fish community necessary to support a healthy, reproducing population of this top predator.

Organization: Nebraska Game and Parks

Commenter: Tim McCoy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643304 **Coder Name:** jgutierrez

Comment Text: The designation of the upstream extent of the action area at Fort Peck Dam ignores effects of USACE operations on Pallid Sturgeon in the Missouri River upstream of the impoundment in the section of the Great Plains Management Unit, formerly known as Recovery Priority Management Area 1 (RPMA 1). The 2000 Bi Op explicitly states that USA CE operations affect " ... the area of the Missouri River and its reservoir system from the headwaters of Fort Peck Lake in Montana," and the subsequent absence of this designation in the current BiOp, as amended, has not been justified. As the 2000 BiOp notes, " ... the point furthest upstream where the Corps [USA CE] regulates Missouri River flows is at [U.S. Bureau of] Reclamation's Canyon Ferry Dam in Montana,". Under the Flood Control Act of 1944 the USACE has regulation requirements for two non-USACE projects, Canyon Ferry Reservoir and Lake Elwell (Tiber Reservoir), that influence flows in the Marias River and Missouri River in RPMAL.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 643305 **Coder Name:** jgutierrez

Comment Text: Under 33 CFR 208.11 (b): Responsibilities ... The basic responsibilities of the Corps of Engineers regarding project operation are set out in the cited authority and described in the following paragraphs: (1) Section 7 of the Flood Control Act of 1944 (58 Stat. 890, 33 US. C. 709) directs the Secretary of the Army to prescribe regulations for flood control and navigation in the following manner: Hereafter, it shall be the duty of the Secretary of War to prescribe regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided on the basis of such purposes, and the operation of any such project shall be in accordance with such regulations ... As recently as 2011, the USA CE exercised its operations authority of Tiber Reservoir for flood control and navigation in waters downstream of Tiber Dam and likely outside of Montana. During this event, flows in the Marias River were held back which caused massive flooding in the Tiber Dam forebay. Had the USACE not intervened, the flows in the Marias and Missouri rivers in RPMA 1 would have been much higher and would have mimicked the natural flow regime during normal spawning periods for Pallid Sturgeon and a host of native fishes. As such, it is clear the USA CE has water flow operational authority in RPMA1 and those actions have influenced the natural habitat of Pallid Sturgeon. Determination in avoidance of jeopardy to Pallid Sturgeon through USA CE actions in the MRRMP-EIS is incomplete without accounting for impacts to the species in RPMA 1. Under their respective obligations to avoid jeopardy to the species and to ensure instances of "take" are accounted for under the restrictive management and protections of the ESA, the USACE and the USFWS need to evaluate these effects. Considering these factors, the State recommends the MRRMP-EIS include the Missouri River upstream of Fort Peck Dam.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643521 **Coder Name:** jgutierrez

Comment Text: The decline in the biological community of the Missouri River is well documented with 3 species currently listed. In addition, a large number of additional species are known to be in decline. The underlying issue in the decline of these communities is habitat, and if the Corps is to succeed in restoring this ecosystem, it will only be accomplished through habitat. As the DEIS points out, in broad terms the system is roughly 1/3 natural (with modifications), 1/3 impounded or heavily influenced by impoundments, and 1/3 (735 miles) channelized. The result is a highly modified system from a physical habitat perspective and a modified flow regime. With this extent of alteration the Corps must focus efforts on habitat restoration for there to be any chance of success. We are not suggesting that other related efforts, such as studies, monitoring and evaluation are not valuable tools. They are valuable, and many tools will be needed, but on the ground habitat must be the focus. Recent budgets, discussions at meetings and the emphasis within this document do not give us confidence that on the ground habitat is the focus of this effort at this time.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 207 **Comment Id:** 643522 **Coder Name:** jgutierrez

Comment Text: Failure to focus efforts and available budget resources on habitat will not only result in failure to reach the goal of this program to recover the currently listed species, but would likely result in additional species being formally listed. A scenario of "chasing listings" as declines continue and additional species are listed results in not only a loss of our natural resource base, but represents a threat to the State's broader interests related to the river by creating uncertainty and vulnerability to litigation.

Organization: Kansas Water office

Commenter: Tracy Streeter **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643917 **Coder Name:** jgutierrez

Comment Text: However, research in and of itself will not achieve the purpose and objectives of the Draft MRRMP/EIS. Management intervention of sufficient scope and magnitude with associated monitoring will increase the rate of learning and pathways to the ultimate actions needed to achieve the purpose and objectives of the Draft MRRMP/EIS. The USFWS recommends the Corps increase the level of implementation (magnitude and scope) of management actions to improve and expedite the adaptive management process and to help ensure the purpose and objectives of the Draft MRRMP/EIS are achieved.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643918 **Coder Name:** jgutierrez

Comment Text: Section 3.4.1.2, Page 3-90, First Paragraph - There is very little historic (pre dams) information on use of ESH on the Missouri by terns and plovers and in many years the timing of peak flows would not have been conducive to nesting. In all likelihood the historic habitat was quite varied and birds used other areas than channel habitat ESH. Such areas would have included out of channel sand deposits, islands in oxbows, large point bars, etc. In more modern times breeding birds have been documented in a wide range of conditions including but not limited to alkaline lakes, sand mines, ash pits, islands constructed in reservoirs etc. these

habitats must be included as management actions in the alternative implemented by the USACOE. They are supported by the literature, the science and the ISAP and ISETER. To not include them as suitable habitats for the Alternative implemented is flawed.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643933 **Coder Name:** jgutierrez

Comment Text: As the result of ongoing research, appears there may be potential for survival/recruitment of larval pallid sturgeon within the Missouri River below Fort Peck Dam (Ryan Wilson. pers. comm. 2017). The USFWS encourages consideration of MRRP actions within that reach of the Missouri River, pending the additional information and subsequent review. The following are examples of potential actions the Corps should consider to expand the scope of the MRRMP/EIS: • Flow and temperature modifications - utilize surface water discharges from Fort Peck and Fort Randall Dams to increase river water temperatures; Implement summer low flows from Gavins Point, Fort Randall, and Fort Peck dams to increase seasonal water temperature and habitat heterogeneity; • Discontinue hydro-peaking from Fort Peck and Fort Randall dams to increase recruitment of pallid sturgeon; • Increase floodplain connectivity to allow for nutrient and sediment inputs; • Implement top-width widening to increase organic and sediment input and habitat diversity.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643937 **Coder Name:** jgutierrez

Comment Text: While the USFWS recognizes the purpose of the Draft MRRMP/EIS focuses on ESA listed species, the USFWS is also committed to an ecosystem approach for the benefit of all fish, wildlife and people. Lands acquired through the BSNFWMP have made important contributions to the ecological health of the Missouri River benefitting a variety of species. Habitat and its associated ecological functions are the keys to a healthy ecosystem that will provide the needs of all fish and wildlife on the Missouri River. Habitat restoration on mitigation lands can benefit multiple non-listed species, including species at risk, in addition to the pallid sturgeon, interior least tern and the piping plover.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643941 **Coder Name:** jgutierrez

Comment Text: The USFWS recommends the Corps include the reach between Gavins Point Dam and Fort Randall Dam within the geographic scope of the Draft MRRMP/EIS and adaptive management plan. This reach of Missouri River has and continues to be profoundly impacted by operation of the dams through alterations to hydrologic regime, temperature regimes, and sediment regimes, for example. A significant number of pallid sturgeon (12,000) have been stocked in this reach, with nearly all year classes represented. The survival and growth of hatchery reared fish is similar to other reaches. Despite effects of the operations of the mainstem dams, portions of this reach still provides the type of natural habitat complexity that are highly altered or absent elsewhere in the basin. The habitat complexity developed downstream of the Niobrara River confluence is the size and scope that likely retard and delay the drift of larvae or perhaps even intercept larvae. If larval fish move downstream through the delta and reservoir, they may contribute to recruitment in the lower Missouri River. At this time, few fish are reproductively mature, but as more hatchery reared fish reach sexual maturity, this reach will warrant more detailed monitoring to determine the role that this population and river reach play in achieving the MRRP objectives.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644064 **Coder Name:** jgutierrez

Comment Text: Comment 1: The geographical range of the DEIS should be expanded to include the reach of the Missouri River above Fort Peck Reservoir and the Yellowstone River upstream of Intake Dam, including at least the lower reach of the Powder River and, perhaps, as far as the Big Horn River. The geographical range of the DEIS should include the reach of the Missouri River above Ft Peck Reservoir because: 1) This reach of river is designated as Recovery Priority Management Area 1 by the USFWS. 2) Fragmentation by dams is identified as a limiting factor in the pallid sturgeon recovery plan. 3) Entrainment of free embryos into downstream anoxic reservoir habitat is strongly suspected of preventing recruitment in RPMAs 1 and 2 since the two dams (Ft Peck & Garrison) were closed. 4) The effects of Fort Peck Reservoir on the upstream pallid sturgeon population (genetic isolation from other pallid sturgeon, inundation of fluvial pallid sturgeon habitat, mortality of drifting free embryos and others) are completely ignored. Although Chris Guy's report of the anoxic conditions in Fort Peck Reservoir are used in the DEIS to document anoxic conditions in the headwaters of Lake Sakakawea, the effects on pallid sturgeon above Fort Peck Reservoir are ignored. Further, the need to ameliorate these impacts are ignored. 5) Had the USFWS designated critical habitat for pallid sturgeon it is unlikely that RPMA 1 would have been excluded from consideration in the USACE's DEIS. The geographical range of the DEIS should include the Yellowstone River above Intake Dam because: 1) Telemetered pallid sturgeon have been documented as using an existing side

channel to pass beyond Intake Dam., thus it is not a complete barrier. 2) Pallid sturgeon have been documented to spawn in the lower Powder River. 3) There is photographic evidence of historic use of pallid sturgeon of the Big Horn River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644088 **Coder Name:** jgutierrez

Comment Text: Although USACE believes it has done its due diligence to eliminate from consideration any modifications at Fort Peck Dam to provide flows and temperatures, "take" of pallid sturgeon will continue in the Missouri River between Fort Peck Dam and Lake Sakakawea due to the effects of unnatural flows and temperatures on pallid sturgeon and their habitats caused by the hypolimnetic discharge from Fort Peck Dam. Further, this leaves the Yellowstone River as the only potential source of recruitment in RPMA 2, which a 2016 Upper Basin workshop exercise predicts is unlikely. There are measures that could be taken that would attract spawning pallid sturgeon to spawn below the mouth of the Milk River and achieve survival of at least a portion of the resulting free embryos. Recommendations will be forthcoming from Montana pallid sturgeon experts that accomplish exactly this.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644100 **Coder Name:** jgutierrez

Comment Text: Comment 1: No actions are proposed that will recover Montana pallid sturgeon populations, the least hybridized populations in the species' range and, therefore, the most valuable. The preclusion from consideration of modifications to Fort Peck Dam to address the downstream impacts of hypolimnetic dam discharge severely limit the list of possible management actions in Montana that would benefit pallid sturgeon and their habitats.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 191 **Comment Id:** 644110 **Coder Name:** jgutierrez

Comment Text: Comment 6: Based on the paucity of management action proposed to address the USACE-caused factors limiting pallid sturgeon in Montana, I can only conclude that the USACE's intent is to use taxpayers' money to delay substantive operational

and infrastructure changes for the benefit of pallid sturgeon and their habitats. Although the Intake Dam project may provide fish passage above that structure, the potential for achieving natural recruitment from the Yellowstone River is highly suspect, as telemetry studies suggest pallid sturgeon have periodically pass and spawn upstream of Intake Dam since its construction but recruitment has not occurred since the closing of Garrison Dam. It is both biologically unsound and inconsistent with the purpose of the Endangered Species Act for the USFWS to not require the USACE to address pallid sturgeon limiting factors in both the Missouri and Yellowstone rivers, including the reach of the Missouri River upstream of Fort Peck Reservoir which is designated as a recovery priority management area by the USFWS.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644597 **Coder Name:** jgutierrez

Comment Text: 3. The loss of public trust resources is a loss for the citizens of Missouri and a majority of the loss (305,000 acres) occurred in Missouri. To date, roughly 30 percent of the 105,000 acres required for compensatory mitigation in Missouri has been completed. These existing mitigation lands provide partial restitution to Missouri citizens by providing Missourians and visitors with greater access to the river for floodplain fishing, hunting and other wildlife-associated recreation.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 177 **Comment Id:** 644613 **Coder Name:** jgutierrez

Comment Text: 4. The nearly 72,000 acres of habitat yet due as restitution to the citizens of Missouri represents an opportunity for enhanced public recreation, restoration of lost habitat for fish and wildlife, economic growth and ecological sustainability that is necessary to also maintain a wide variety of uses along the river, including agricultural, water supply, and other uses.

Organization: Missouri Department of Conservation

Commenter: Jennifer Campbell **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 222 **Comment Id:** 644833 **Coder Name:** jgutierrez

Comment Text: The Middle Mississippi is reliant upon the Missouri River for its flow. The pallid appears to be using the Middle Mississippi to its benefit. Decisions regarding alternatives should consider the Middle Mississippi and the Missouri as one and evaluated as such.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644834 **Coder Name:** jgutierrez

Comment Text: First, the scope is- - as we maintained during the scoping phase- - too small. The scope of the document is limited to small portions of the complete project and does not identify the related effects from the entire project segment. The geographic scope should include the full range of the endemic species, not just that part of the range over which the Corps, asserts for itself, capacity for operational management actions.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644835 **Coder Name:** jgutierrez

Comment Text: Recent science papers (Guy CS, Treanor HB, Kappenman KM, Scholl EA, Ilgen JE, Webb MA. 2015. Broadening the regulated-river management paradigm: a case study of the forgotten dead zone hindering Pallid Sturgeon recovery. Fisheries 40(1): 6-14. DOI:10.1080/03632415.2014.987236) have identified anoxic, lethal conditions in the reservoirs below, and above, Fort Peck dam. The full geographic range of jeopardizing conditions for all three species should be included and studied as part of a comprehensive, scientific evaluation; not just the downstream effects. Operations and management at Fort Peck could increase larval drift distances and may even improve, or at least move, the anoxic zones in that reservoir. The Corps should not ignore this proximate cause of jeopardy to pallid sturgeons identified. Likewise, the full and extended range of new spawning habitat afforded by fish passage at the Yellowstone Intake Project should be included as part of the current DEIS. It is ironic that the Corps' solution to partial fish impassability at Intake, MT is to build a taller dam. The Corps and Bureau of Reclamation should share full responsibility for the success, or failure, of this project in its final form. That shared responsibility should have been considered within the geographic footprint of this DEIS, as it is not. The purpose and need statements do not reflect the full geographic range where the Corps has both authority and current management actions.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644839 **Coder Name:** jgutierrez

Comment Text: The scope received another major curtailment or contraction in the Corps decision to tailor this DEIS, and restrict it to the sole aim of "avoiding jeopardy". The effect has been to move from a "greatest benefits" utilitarian model for the 8 authorized purposes, to a "least cost" model. When combined with the metaphysical regulatory language found in the 1983 Planning & Guidance documents, the net effect is to move from maximizing utilitarian benefits to minimizing or avoiding costs. " The intent of the Pick-Sloan Plan was to secure the maximum benefits for flood control, irrigation, navigation, power, domestic, industrial and sanitary water supply, wildlife, and recreation (Senate Document 247, quoted in Weeks et al. 2005). The results of the Pick-Sloan Plan represent the most important and lasting alteration of the Missouri River ecosystem (Weeks et al. 2005)." (Stark, et al. - - Stark, K.J., L.J. Danzinger, M.R. Komp, A.J. Nadeau, S. Amberg, E. Iverson, D. Kadlec, and B. Drazkowski. 2011. Missouri National Recreational River: Natural Resource Condition Assessment. Natural Resource Report NPS/MNRR/NRR-2011/476. National Park Service, Fort Collins, Colorado.) A major deficiency created by this policy decision to restrict considerations to "avoiding jeopardy" is to move from multivariate science questions (the Big questions) to causative assign-ability or liability questions while deferring some testable hypotheses (aka the "Reserve Hypotheses") based on jurisdictional or appropriational authorities. Whether any, or which, of these hypotheses might have survived a structured decision making process to enter the pool of "dominant hypotheses" is a topic of irrelevant speculation in hypothetical counterfactuals. The Reserve Hypotheses are off the table for consideration until such time as all policy-accepted hypotheses have been exhausted. Thinking within this smaller scope creates new and different kinds of "jeopardy" for the three species, if it should emerge that some reserve hypothesis turns out to be the critical, scientific issue that might have been considered during a time-critical window. These endangered species deserve our collective best and effective effort. They may not survive the 15 year calendar timelines, or 50 year period of analysis, contained in the DEIS.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644870 **Coder Name:** jgutierrez

Comment Text: First, the restrictions in scoping are the subsequent product, as interpreted through Regulation by the Agencies, of the Congressional decision not to appropriate resources for the study authorized in WRDA 1986, . 1850 ss. A. This DEIS does not contain any semblance of an "ecosystem restoration" study (MRERP), neither does it valueate or reconsider any of the 8 Authorized Purposes (MoRAP)- - those studies might have led to different results in avoiding jeopardy for the three species. As importantly, the Human Considerations elements would likely have had different outcomes if either, or both, of those studies were before us now for

comment. They are not. As such, it remains for future reconsideration whether an ecosystem restoration or landscape conservation approach will be required to recover the species, rather than just avoiding jeopardy, as the Agencies have asserted in past documents.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644888 **Coder Name:** jgutierrez

Comment Text: If efficiency of budgetary appropriations and expenditures is to be the guiding influence determining this DEIS, then the purpose and needs statements should reflect that. Additionally, alternative financing sections could be written with headings like "Mitigation Banking", "title fee easements", "collaborative cost share" or some others.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 229 **Comment Id:** 644896 **Coder Name:** jgutierrez

Comment Text: TNC acknowledges the Missouri River Ecosystem Restoration Plan effort was stopped by factors largely outside of USACE's control, but it does not eliminate the directive or the need for a broader plan. The draft MRRMP-E IS's focus on the currently listed species is warranted and should advance their recovery if the AMP is diligently followed, but this sole focus will also come at a cost. If USACE does not identify and implement actions to restore the ecosystem to prevent further declines among other native species, it will ensure further declines and eventually other federally listed species. TNC requests that USACE - in consultation with MRRIC - begin a broader Missouri River ecosystem assessment. Ideally this assessment would fulfill the directive of Section 5018 and evaluate how different levels of restoration of the ecological structure (e.g. riverine/floodplain ecosystem, flow regimes, sediment regimes) can also address and modernize dated aspects of infrastructure and operations associated with the authorized purposes. For example, TNC has long been a proponent of coupling river/floodplain restorations at the known lower river "pinch points". These areas are where at high flows infrastructure located too close to the river increases local river stages. Levees with repetitive failures due to placement over historic river channels are also areas where both ecological and infrastructure restoration could take place. These are just two examples of science-based, practical solutions that meet the needs of people and nature a broader assessment could identify.

Organization: The Nature Conservancy

Commenter: Todd Strole **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644936 **Coder Name:** jgutierrez

Comment Text: A. The Purpose and Need Statement Fails to Provide Guiding Criteria for the Corps to Meet Its Obligations Under the Endangered Species Act. As written, the Corps' purpose and need statement accomplishes three things: it identifies the species requiring protection, states that their protection is mandated by the ESA, and lists nonexclusively three statutes which authorize the Corps to act in pursuit of that protection. The statement is incomplete where it fails to identify what species goals the alternatives will accomplish and how the alternatives will be analyzed. Due to the vagueness of the purpose and need statement, the MRRMP-EIS is permitted to use criteria for the selection of an alternative that have little to do with accomplishing species objectives, and much to do with ensuring that the selected alternative maximizes human consideration interests. To remedy this inadequacy, the Coalitions request that the Corps reformulate its purpose and need statement to efficiently identify the agency's BSA responsibilities and produce an EIS which properly focuses on species objectives.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644939 **Coder Name:** jgutierrez

Comment Text: 2. The Corps should correct the purpose and need statement and produce an environmental impact statement that more efficiently focuses on species goals. To properly redirect the analysis of the MRRMP-EIS towards the purpose of avoiding jeopardy to and restoring the natural viability of the three species, the Coalitions urge the Corps to adopt the following purpose and need statement: The purpose and need of this MRRMP-EIS is to develop a suite of actions to avoid jeopardizing the continued existence of the piping plover, the interior least tern, and the pallid sturgeon in accordance with the Endangered Species Act and other Congressional directives mandating the protection and restoration of the ecological health of the Missouri River. To avoid jeopardy and secure the long-term natural viability of the three species, each alternative set of management actions must at minimum accomplish the following species objectives: Pallid sturgeon: increase recruitment to age 1 and maintain or increase numbers of age 2 and older until sufficient and sustained natural recruitment occurs. Piping plover: maintain and increase a geographically distributed population with a modeled 95% probability that at least 50 individuals will persist for at least 50 years in both Regions. Interior least tern: it is assumed that achieving the stated objectives for the piping plover would also achieve ESA goals for the interior least tern. 24 Management actions utilized to meet this purpose and need include but are not limited to: mechanically and flow-created emergent sandbar habitat, construction of early life stage habitat, habitat-forming seasonal flow releases, floodplain reconnection, and a robust adaptive management plan.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 644941 **Coder Name:** jgutierrez

Comment Text: B. Even if the MRRMP-EIS Gives Proper Weight to Human Considerations, the Purpose and Need Statement Does Not Provide the Public an Honest Description of the Project's Goals. Despite the weight given to the economic impacts on human considerations in the selection of a preferred alternative, the term "human considerations" is mentioned merely once in the Executive Summary- not in either the "Need for the Plan" or "Purpose for the Plan" sections but near the end of the Executive Summary under the heading "Implementation of Preferred Alternative under Adaptive Management." Later in the MRRMP-EIS, the "Problem Definition" section adds to the "suite of actions" language that the plan "continues to serve the Missouri River authorized purposes and accounts for human considerations." Then in Chapter 4 on implementation of the preferred alternative (about 800 pages into the MRRMP-EIS), the Corps plainly states: "[m]inimizing impacts on HC while fulfilling the requirements of the ESA is an objective of the [MRRMP-EIS]." Even assuming the Corps grants permissible weight to the expansive range of human considerations in the selection of a preferred alternative, the Corps should more candidly acknowledge that weight in its purpose and need statement. The Corps' failure to identify human considerations as a component of its purpose and need statement misleads members of the public into believing that the analysis focuses primarily on alternative means of restoring the viability of the three species, when in fact the analysis attempts to meet species goals through alternative ways of minimizing human consideration impacts. For the MRRMP-EIS as currently structured to comply with NEPA, the Coalitions propose that the Corps modify the purpose and need statement to the following: The purpose and need of this MRRMP-EIS is to develop a suite of actions that potentially meet ESA responsibilities for the piping plover, the interior least tern, and the pallid sturgeon while reducing federal program expenditures and minimizing economic impacts to stakeholders. This version of the statement adequately reflects the uncertainty of the MRRMP-EIS in meeting BSA obligations and is sufficiently expansive to show the balancing test which the MRRMP-EIS conducts regarding species goals, program expenditures, and human considerations. While the Coalitions urge the Corps to adopt the purpose and need statement suggested in part (A)(2) of this section and thereby narrow the scope of the MRRMP-EIS's analysis to focus on species objectives, this alternative version of the statement is offered to demonstrate how the Corps can more candidly acknowledge the scope of the MRRMP-EIS as it is currently structured.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 206 **Comment Id:** 645153 **Coder Name:** jgutierrez

Comment Text: In summary of South Dakota's comments on the MRRMP and EIS, the State supports Alternative 3 (Mechanical-only construction) with modifications to increase the emphasis on development of pallid sturgeon science, include sediment

management as a component of the management plan, and actively address flow constraints from Fort Randall Dam to Lewis and Clark Lake. We have provided specific impacts to South Dakota for each of the various management actions in the MRRMP alternatives.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 168 **Comment Id:** 645164 **Coder Name:** jgutierrez

Comment Text: An implementation period of 15 years was chosen for the planning process and this DEIS. However, according to the DEIS, the geographical scope of this federal action includes the Missouri River within its meander belt from Fort Peck Dam in Montana to its confluence with the Mississippi River near St. Louis, Missouri, and the Yellowstone River from Intake Dam at Intake, Montana to the confluence with the Missouri River. It is very important to note that the geographic scope of this DEIS does not include the Middle Mississippi River from St. Louis, Missouri downstream to Cairo, Illinois. The failure to include the middle Mississippi River in the geographic scope of the DEIS calls into doubt the Corps ability to analyze the impacts of the proposed alternatives on the Mississippi River in a thorough and accurate manner.

Organization: The American Waterways Operators

Commenter: Justin L Lampert **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645200 **Coder Name:** jgutierrez

Comment Text: However, Alternative 2 has been made untenable by the excessive cost for land and acres, far greater than any other alternative, almost guaranteeing it won't be acceptable to Congress or the public. We therefore ask that the Corps re-work the alternatives analysis, develop a greater range of alternatives, revise Alternative 2's costs and add the new Adaptive Management Plan to it, develop a more specific Purpose and Need Statement, and reduce the over-reaching of the Human Considerations impacts.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645202 **Coder Name:** jgutierrez

Comment Text: It is ironic that the Corps did not seem to protest the loss of MRAPS, and yet later spend so much time and money into promoting and developing the Human Considerations filter through which all considerations for DEIS alternatives had to successfully pass. Though never referred to as such, the Human Considerations (HC) are really the Authorized Uses and close outgrowths from them. The Corps has placed so much emphasis upon them and spent considerable manpower and money, for example: contracts with a facilitating company to develop the HCs, another company to help figure-out criteria for them, countless sessions in MRRIC and work group calls, development of proxies and proxy voting, and more. All hypotheses and management actions considered for the prevention of jeopardy of the species had to be evaluated for impact on all Human Considerations and if certain HCs were slightly impacted, the management action (i.e., habitat improvement) was dropped. The question remains: Why did the USACE wish to develop the Human Considerations to such an extent and over-reach in their weight in this EIS effort?

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 179 **Comment Id:** 645203 **Coder Name:** jgutierrez

Comment Text: The Authorized Uses in the 1944 Flood Control Act served as the human considerations for the Act. From a legal standpoint, the 8 authorized uses were the means to address the human needs and uses of the river. Irrigation never materialized, nor navigation on the IA-NE reach of the river (except for a small surge in the 1970s), which shows that times change and assumptions made in one era may not have an application many decades later. To have the Authorized Uses, and then to double-whammy them with Human Considerations, is an injustice to the potential habitat and species recovery management actions that are diminished or eliminated because of them. In evaluating the DEIS, it is clear that impacts to HCs are the big hurdle that any and all management actions have to pass through. It appears that HC are driving the decision-making. The DEIS does not explain the weighting of criteria nor the degree to which the Corps is using HC to prioritize. It seems that any recovery management action must not infringe, or cause impediments, on any HC. It would appear that this serves as an escape hatch for the Corps to avoid doing an environmentally favorable alternative or any an action for which certain interest groups oppose.

Organization: Nebraska Wildlife Federation

Commenter: Marian Maas **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 221 **Comment Id:** 645299 **Coder Name:** jgutierrez

Comment Text: 2.5.4 Habitat Development and Land Management on MRRP Lands Comment: P. 2-31: Land acquisition programs should include sale-leaseback. In this way, portions of prime farmland could be kept productive while conservation plans are devised and implemented.

Organization: Missouri Levee and Drainage District Association

Commenter: Tom Waters **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645325 **Coder Name:** jgutierrez

Comment Text: The preferred alternative would benefit from additional measures, some of which are described in more detail below. -Habitat: Creation of IRC or other hydraulic roughness in the Upper Missouri section. The preferred alternative includes the creation of IRC habitat in the lower Missouri River. However, the scientific studies on the Yellowstone and Upper Missouri River indicate that drift distance is insufficient to support survival of young pallid sturgeon. The EIS could consider additional steps to improve anoxic conditions at reservoir arms which also tend to serve as nursery habitat. -Modifications at Fort Peck could be put in place to support flows, warmer temperatures, and hydraulic roughness.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645335 **Coder Name:** jgutierrez

Comment Text: 5) A holistic watershed approach should be a core component of the EIS - Tributaries should be considered in the EIS and in Alternatives Development, including Fort Peck. According to the EIS, five dams were deemed critical to the success of the upper Missouri reservoir modeling effort. The Corps modeled non-Corps managed dams, including: Canyon Ferry Dam, Tiber Dam, Buffalo Bill Dam, Boysen Dam, and Yellowtail Dam.³⁹ However, the EIS excludes these reservoirs from the development of alternatives. In addition and perhaps even more important, the Corps excludes Fort Peck reservoir from the development of alternatives, even with its importance to the survival of the pallid sturgeon. The Adaptive Management Plan states the geographic scope includes those portions the Great Plains Management Unit (GPMU) below Fort Peck Lake, stating the Corps has jeopardy responsibilities for pallid sturgeon in this portion of the river. The need to address areas of the river above Fort Peck and to include additional tributaries in the EIS are stated in the section below. Further they could be better supported through the designation of critical habitat within these sections to include habitat that support prey species and address the influence of reservoirs on anoxic conditions.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 238 **Comment Id:** 645336 **Coder Name:** jgutierrez

Comment Text: Management actions should be designed to support native prey species. Tributaries and side channels in the Missouri River watershed provide some of the best natural flows, water temperature regulation, and water quality regulation in the basin.⁴⁰ Of 85 species studied in the basin, 77 spawn in tributaries of the Missouri River, while 25 spawn in tributaries or the mainstem.⁴¹ These habitats serve as refugia for juvenile fish and provide water quality benefits such as warm water, turbidity, and preferred substrate.⁴² Sediment input from these tributaries, now lacking due to dam construction, is important to fisheries and in providing sediment to develop or augment sandbars and in-channel islands.⁴³ ⁴⁴ Essentially, without tributary habitat, the prey species the pallid sturgeon depends on would disappear. A holistic watershed-based approach should quantify the habitat needs of important prey species as well as the pallid sturgeon and develop management actions to enhance habitat for the most important prey species.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 238 **Comment Id:** 645337 **Coder Name:** jgutierrez

Comment Text: -Fort Peck Reservoir is integral to pallid sturgeon survival The EIS does not consider the Fort Peck reach in the development of alternatives or management actions, even though it is part of the MRRP. The Adaptive Management Plan states that the Effects Analysis included the Upper Missouri River main stem from Fort Peck Dam to the headwaters of Lake Sakakawea, the Yellowstone River upstream from the confluence with the Upper Missouri River for an unspecified distance. One of the key challenges is that the Corps fails to admit that sufficient data are available in the upper Missouri River to take action. For instance, page 25 (32/40) in the Development of Working Hypotheses- Pallid Sturgeon states: "However, it should be noted that despite the large and increasing knowledge base on pallid sturgeon reproductive ecology, research has yet to prove one or more critical processes that are responsible for lack of population growth. "

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 238 **Comment Id:** 645338 **Coder Name:** jgutierrez

Comment Text: Information below provide sufficient evidence to begin testing approaches in the upper portion of the river. -The Upper Missouri River pallid sturgeon population is unique and important to a genetically secure population. According to a review of the science of the pallid sturgeon and subsequent development of conceptual models, the pallid sturgeon in the upper river may be a genetically distinct population.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645340 **Coder Name:** jgutierrez

Comment Text: -A holistic watershed approach should maintain recovery priorities upstream of Fort Peck. The Missouri River basin is a watershed, not a series of disconnected tributaries. Sacrificing the Fort Peck RPA for the Yellowstone Intake project again limits the scope of recovery efforts. Given that the Upper Basin is one of the least disturbed regions of the Missouri River, efforts should be focused here. Again, evaluating federal projects at the watershed scale was a requirement of the Principles, Requirements and Guidelines for federal investments in water infrastructure.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645341 **Coder Name:** jgutierrez

Comment Text: Historically, the pallid sturgeon has been documented in both the Upper Missouri and Yellowstone rivers in Montana and has been found in tributaries such as the Milk River and Tongue River. Currently, SO wild adult pallid sturgeon are estimated to exist in the Missouri River upstream of Fort Peck Reservoir⁵¹ and 125 wild pallid sturgeon remain in the Missouri downstream of Fort Peck Dam to the headwaters of Lake Sakakawea as well as the lower Yellowstone River.⁵² Additionally, during high flow events, pallid sturgeon have been found in the Matias River, stressing the importance of maintaining access to additional river miles for this species.⁵³ RPM.A #1 above Fort Peck reservoir is an important reach for the maintenance of genetic diversity for the pallid sturgeon. The Bureau of Reclamation states this area "is considered a 'heritage' population because of its relative genetic purity and large body size." The geographical range of the DEIS should include the reach of the Missouri River above Fort Peck Reservoir since this reach of river is designated as Recovery Priority Management Area 1. The reservoir is operated by the Corps and efforts to alter operations downstream of the reservoir will ultimately impact immediately upstream of the reservoir.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645343 **Coder Name:** jgutierrez

Comment Text: None of the alternatives in the EIS support IRC construction in the upper river segments. However, the conceptual model for the pallid sturgeon in the upper river support "Optimization of spawning patches to increase retention of newly hatched free embryos or reconstruction of channel morphology to enhance interception of drifting free embryos could serve to decrease time and distance in the drifting stage, in either river." Additionally, the development of the conceptual model states that floodplain and lateral connectivity are "critical" to creating food resources for pallid sturgeon and possibly to increase retention of young pallid. The EIS provides evidence that drift distance is important for pallid sturgeon embryos in the Yellowstone and Upper Missouri rivers. Given the importance of pallid sturgeon recovery in the upper river, the Corps should consider testing and implementing IRC habitat in the upper river, which could enhance hydraulic roughness and slow down drift of embryos and potentially provide additional food for young of year pallid.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645360 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 1.5.2, p. 1-23 Comment: The geographic scope for the piping plover is described as the Missouri River from Fort Peck Lake, MT to Fort Randall Dam, SD (Northern Rivers Region); and the Missouri River from Fort Randall Dam, SD to Ponca, NE (Southern Rivers Region). The U.S. Geological Survey is conducting a piping plover metapopulation study. The study evaluates the degree of connection between certain breeding regions, mainly the connection between Lake Sakakawea, Lake Oahe, Garrison Reach, and the alkali lakes in Montana, North Dakota, and South Dakota. Understanding the degree of connection between the breeding areas is critical because bird abundance in one area may be substantially affected by movement between areas. The state strongly supports this study as it will improve future population modeling efforts and provide a better understanding of actions to implement for the recovery of the piping plover. The USFWS and USACE should not confine the geographic scope for the piping plover to the mainstem Missouri River only, but also consider other habitat (i.e. non-ESH habitat) to assist in achieving their goals. If science confirms that there is a significant connection between the Missouri River and alkali lakes, we request consideration of implementing actions in the alkali lakes region to help achieve the Missouri River goals.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 242 **Comment Id:** 645540 **Coder Name:** jgutierrez

Comment Text: The Platte River, referenced in the DEIS (AMP 2-page 320), is utilized by pallid sturgeon and the spawning information from the Platte River could be very beneficial to the recovery of the pallid sturgeon on the lower Missouri River. We are disappointed that the Platte as well as the other tributaries are not within the geographic scope of the MRRMP. We believe the proposed alternatives and recovery actions are too narrow. Key tributaries should be included, as intended by the Missouri River Ecosystem Recovery Plan (MRERP). The Missouri River is a complex ecosystem. The condition of the tributaries is part of the problem so we strongly believe it needs to be included in the recovery of the Missouri River.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 50 **Comment Id:** 645743 **Coder Name:** jgutierrez

Comment Text: And this is something that also is not mentioned. These rises help to replicate natural rises in the river and helps actually by filling these backwaters for other native species that are not being included in this, which is something that has been mentioned this evening, that we are only doing this whole plan for three species and all the others, such as the 67 native fish species which are declining or have gone, will not necessarily get any benefit. None of the plan is intended for other species.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 224 **Comment Id:** 645744 **Coder Name:** jgutierrez

Comment Text: It is the Corps' responsibility within the Mitigation Authority to acquire additional habitat dedicated to all Missouri River channel and floodplain native species. As stated in the executive summary, "the Missouri River and its floodplain have historically consisted of a multitude of aquatic and terrestrial habitat types that sustained rich assemblages of fish and wildlife species. These assemblages include species that live year-round within the river and its floodplain as well as migratory species for which the ecosystem provides vital seasonal habitat (e.g., wintering and breeding), movement corridors, and stopover habitats. Aquatic habitats generally include open water habitats of varying depths (i.e., main channel, secondary channels and chutes, backwaters, floodplain lakes/oxbows). Terrestrial habitats include emergent wetlands, forests, woodlands, grasslands, and shrublands." We believe the Management Plan and the Environmental Impact Statement should take a more holistic approach as to prevent additional species listings.

Organization: State of Iowa

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 645776 **Coder Name:** jgutierrez

Comment Text: Also, the final EIS should evaluate the potentially benefits, if any, of placing IRC habitats in the Mississippi River at appropriate locations below Missouri River spawning habitats.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 645779 **Coder Name:** jgutierrez

Comment Text: More emphasis should be placed on ensuring available empirical information is utilized in the process of evaluating hypotheses and developing alternatives for management and implementation. Working with the State to utilize our expertise and local knowledge of the connected Missouri River Yellowstone River ecosystem would substantially improve the effectiveness of recovery actions and would be far more cost-effective. The Science and Adaptive Management Plan (SAMP) was developed to " ... address the uncertainty associated with potential Pallid Sturgeon limiting factors," (p. 1-17, sec. 1.3.1 , Volume 1, MRRMP-EIS). Unfortunately, the document arbitrarily ignores uncertainties associated with attaining successful two-way fish-passage at the Intake Diversion Dam (a structure not operated by the USACE) while postponing needed improvements to Fort Peck Dam operations that are inexplicably deemed infeasible. The predecisional opposition to modify discharge or correct thermal pollution at Fort Peck Dam is surprising, given that the 2003 Biological Opinion (BiOp) clearly states, "In the Upper Missouri River, continued operation of Fort Peck Dam as proposed will continue to significantly impair the reproduction and recruitment of Pallid Sturgeon in this reach. These factors affect the production of forage fish which are important to the overall survival of Pallid Sturgeon," (p. 179, 2003 Amendment to the 2000 BiOp). Selective withdrawal devices are operational at other USACE-operated projects, including Libby Dam in western Montana, and their implementation has greatly benefited the federally-listed Bull Trout and other native fishes. Addressing Pallid Sturgeon limiting factors objectively (e.g., in parallel approach) in the connected Missouri River Yellowstone River ecosystem would serve to more effectively avoid jeopardy to Pallid Sturgeon and would exemplify the" ... demonstrated need to develop a management plan comprised of actions informed by best available science," (p. 1-17, sec. 1.3.1, Volume 1, MRRMP-EIS). As such, the State recommends that the MRRMP-EIS address the Missouri and Yellowstone rivers as connected Pallid Sturgeon habitat and work in parallel to develop alternatives for management and implementation. Specifically, the State requests that efforts to improve Fort Peck

Dam operations for the benefit of Pallid Sturgeon and the downstream Missouri River ecosystem not be conditioned on the success of Pallid Sturgeon passage at Intake Diversion Dam in the MRRMP-EIS.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 645789 **Coder Name:** jgutierrez

Comment Text: In addition, the FEIS should describe what and when actions would be taken both by the Corps and the Service should aspects or the entirety of the AMP not be implemented within the timeframe identified. The FEIS could, for example, state that the Corps would continue with the 'no action' alternative as its baseline action should funding sufficient to support the preferred alternative, as designed, not be provided. These kinds of comparisons and the identification of baseline actions necessary to project purpose inform the decision-maker and public discourse.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 236 **Comment Id:** 645815 **Coder Name:** jgutierrez

Comment Text: The State asserts that any determination of avoidance of jeopardy to Pallid Sturgeon in the Upper Missouri River Basin is incomplete without fully including USACE operational impacts above Fort Peck Dam.

Organization: Montana Fish, Wildlife & Parks

Commenter: Martha Williams **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645819 **Coder Name:** jgutierrez

Comment Text: Additionally, the preferred alternative only commits to Level 1 and 2 research but not to implementation of management actions that adaptive management research demonstrates are required for pallid sturgeon recovery in Montana. If Level 3 and 4 actions are not implemented, no population level changes are to be expected, therefore jeopardy will still exist, as limiting factors are not alleviated or mitigated. It is both biologically unsound and inconsistent with the purpose of the Endangered Species Act for the FWS to not require the Corps to address pallid sturgeon limiting factors in both the Missouri and Yellowstone rivers,

including the reach of the Missouri River upstream of Fort Peck Reservoir which is designated as a recovery priority management area by the FWS.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645835 **Coder Name:** jgutierrez

Comment Text: We also feel that the best way to protect this species in the Upper Missouri River is through a combination of actions on both the Yellowstone and the Missouri rivers.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

PN8000 Purpose And Need: Objectives In Taking Action (Substantive)

Correspondence Id: 89 **Comment Id:** 636795 **Coder Name:** jgutierrez

Comment Text: We are not opposed to wildlife management. We are not opposed to reasonable efforts to protect endangered species, but is anyone taking into account that the American family farmer is an endangered species that could use some consideration as well? Does it make any sense at all to protect the shoreline nests and the water habitat of birds and fish when that protection comes at the expense of a human's livelihood? Is it right to let a farmer's land and home literally "go down the river" to save some birds and fish?

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 646377 **Coder Name:** JGUTIERREZ

Comment Text: As a result of the MRRMP-EIS's vague purpose and need statement, the alternatives analysis is permitted to rely on convoluted analyses of human consideration impacts which have no connection to accomplishing species objectives. This dynamic can be witnessed in the first chart of the MRRMP-EIS, which presents the alternatives in comparative form. The chart violates NEPA's requirement to provide the public with meaningful analysis, making it nearly impossible for the public to understand the consequences of the alternatives for the species and for the environment. First, the material in the chart fails to make meaningful

comparisons among the alternatives as they pertain to species objectives. Out of about twenty impact categories listed on the chart, only two are related to the species and both are vague. For the first species criterion, "Addresses Critical EA Pallid Hypothesis," the word "yes" is simply repeated under each alternative's column. This repeated affirmation draws no distinctions among the alternatives regarding their relative effectiveness in accomplishing the pallid sturgeon hypotheses. Likewise, for the criterion "Expected to Meet Revised Bird Targets," the chart repeats the word "meets" for each action alternative besides Alternative 2, which apparently "exceeds" revised bird targets. How Alternative 2 exceeds the bird targets or by how much it exceeds the targets is not indicated.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 223 **Comment Id:** 645773 **Coder Name:** jgutierrez

Comment Text: One reason why these questions are difficult to answer is because the MRRMP-EIS does not clearly identify its goals and the means of accomplishing them in its purpose and need statement. The statement fails to bound what considerations are truly significant for accomplishing species objectives, and the alternatives analysis follows suit by confounding the analysis with virtually limitless human consideration impacts.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Kept Private **Page:** **Paragraph:**

Kept Private: Yes

Correspondence Id: 242 **Comment Id:** 645526 **Coder Name:** jgutierrez

Comment Text: The Corps estimates a need to acquire 7.7 additional acres of land, on average, for every one acre of pallid sturgeon habitat created (V1-page 9 -sub objective 2) as a buffer for neighboring lands. This is to be done "until sufficient and sustained natural recruitment occurs". The final EIS should define the parameters of "sufficient and sustained natural recruitment" and identify the metrics that will be used to measure this standard.

Organization: The Izaak Walton League of America

Commenter: Paul Lepisto **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645480 **Coder Name:** jgutierrez

Comment Text: The Draft EIS states on page 1-1 that the purpose is to avoid jeopardy for the three listed species, whose habitat is degraded by the Corps' Missouri River operations. Nevertheless, the mechanical construction and limited adaptive management prescribed in the preferred alternative are unlikely to avoid jeopardy to the pallid sturgeon. According to USGS, "Results indicate that reproductive readiness and spawning in pallid sturgeon is the result of a complex interaction between internal physiological conditions and environmental factors or 'cues.' Day length and temperature appear to be the most important of the cues that trigger reproductive readiness." (USGS 2010). The data on pallid sturgeon reproduction in the lower Missouri and the upper basin demonstrates limited success. "(R)ecruitment of pallid sturgeon to the adult population is rare or non-existent throughout most of the Missouri River." (USGS 2014). The Corps of Engineers has not demonstrated an ability to influence water temperature in the lower Missouri with releases from the main stem reservoirs, for the range of temperatures required for successful reproduction and survival of pallid sturgeon. Data from USGS and elsewhere indicate that climate influences water temperature in the lower Missouri far more than the release of water from main stem or tributary dams. Mean temperatures of the Missouri River at Sioux City and Omaha tend to be comparable, while temperatures below Nebraska City have averaged 1 degree Fahrenheit cooler, probably due to Platte River inflows, and temperatures increase significantly further downstream. The temperature data undermines the implication that the limited adaptive management contemplated in the Draft EIS will avoid jeopardy.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 239 **Comment Id:** 645358 **Coder Name:** jgutierrez

Comment Text: Section & Page Number: 1.2.1, p. 1-13 Comment: The "Problem Definition" inset makes no reference to the Flood Control Act of 1944. Continued service to the Missouri River authorized purposes in accordance with the Flood Control Act of 1944 should be included in the Problem Definition.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645348 **Coder Name:** jgutierrez

Comment Text: We find that the described actions are insufficient to avoid jeopardy for the pallid sturgeon. In general we find the utilization of the current state of science on the species lacking.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 238 **Comment Id:** 645321 **Coder Name:** jgutierrez

Comment Text: The current population status of the pallid sturgeon, particularly in the upper 1-issouri River Basin, is tenuous. Most scientific evidence suggests that the decline of the species was caused by the construction of reservoirs along the river by the U.S. Army Corps of Engineers (Corps). Dams have reduced the timing and extent of flows, the drift distance necessary for recently hatched pallid sturgeon, and the spring cues required for the success of the pallid. Current estimates suggest only a few thousand pallid sturgeon remain, fewer than 200 upstream of Lake Sakakawea (including those upstream of Fort Peck Reservoir) and between 2,000 to 4,000 in the Middle Mississippi. A similar species, the shovelnose sturgeon, is also declining and has been extirpated or is at risk of extirpation from parts of its native range. Most of the surviving pallid sturgeon population is stocked, and reproductive adults are rare. Though spawning does occur, recruitment is limited or non-existent in the Missouri and Middle Mississippi Rivers and in the Middle Mississippi River. It is for the above reasons that the Corps should prioritize river restoration and modifications to reservoir operations to support recovery of the pallid sturgeon. The federal agencies believe two key goals would be most relevant to recovery of the pallid sturgeon: -Increase pallid sturgeon recruitment to age 1. -Maintain or increase numbers of pallid sturgeon of age 2 and older until sufficient and sustained natural recruitment occurs.

Organization: Defenders of Wildlife

Commenter: Aaron Hall **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 223 **Comment Id:** 644941 **Coder Name:** jgutierrez

Comment Text: B. Even if the MRRMP-EIS Gives Proper Weight to Human Considerations, the Purpose and Need Statement Does Not Provide the Public an Honest Description of the Project's Goals. Despite the weight given to the economic impacts on human considerations in the selection of a preferred alternative, the term "human considerations" is mentioned merely once in the Executive Summary- not in either the "Need for the Plan" or "Purpose for the Plan" sections but near the end of the Executive Summary under the heading "Implementation of Preferred Alternative under Adaptive Management." Later in the MRRMP-EIS, the "Problem Definition" section adds to the "suite of actions" language that the plan "continues to serve the Missouri River authorized purposes and accounts for human considerations." Then in Chapter 4 on implementation of the preferred alternative (about 800 pages into the MRRMP-EIS), the Corps plainly states: "[m]inimizing impacts on HC while fulfilling the requirements of the ESA is an objective of the [MRRMP-EIS]." Even assuming the Corps grants permissible weight to the expansive range of human considerations in the selection of a preferred alternative, the Corps should more candidly acknowledge that weight in its purpose and need statement. The Corps' failure to identify human considerations as a component of its purpose and need statement misleads members of the public into believing that the analysis focuses primarily on alternative means of restoring the viability of the three species, when in fact the

analysis attempts to meet species goals through alternative ways of minimizing human consideration impacts. For the MRRMP-EIS as currently structured to comply with NEPA, the Coalitions propose that the Corps modify the purpose and need statement to the following: The purpose and need of this MRRMP-EIS is to develop a suite of actions that potentially meet ESA responsibilities for the piping plover, the interior least tern, and the pallid sturgeon while reducing federal program expenditures and minimizing economic impacts to stakeholders. This version of the statement adequately reflects the uncertainty of the MRRMP-EIS in meeting BSA obligations and is sufficiently expansive to show the balancing test which the MRRMP-EIS conducts regarding species goals, program expenditures, and human considerations. While the Coalitions urge the Corps to adopt the purpose and need statement suggested in part (A)(2) of this section and thereby narrow the scope of the MRRMP-EIS's analysis to focus on species objectives, this alternative version of the statement is offered to demonstrate how the Corps can more candidly acknowledge the scope of the MRRMP-EIS as it is currently structured.

Organization: Interdisciplinary Environmental Clinic - Washington University in St. Louis

Commenter: Page: **Paragraph:**

Kept Private:

Correspondence Id: 222 **Comment Id:** 644819 **Coder Name:** jgutierrez

Comment Text: Structurally, the decision-making process appears to support the endangered species, and only the endangered species, to the detriment of all other species including humans. The authorized purposes are devalued, as is the political decision making for river management. The States' ownership and issues are relegated to a low position on the pyramid, which means the people are reduced in their operational say and participation.

Organization: Missouri River Dredgers Group

Commenter: David A Shorr **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643917 **Coder Name:** jgutierrez

Comment Text: However, research in and of itself will not achieve the purpose and objectives of the Draft MRRMP/EIS. Management intervention of sufficient scope and magnitude with associated monitoring will increase the rate of learning and pathways to the ultimate actions needed to achieve the purpose and objectives of the Draft MRRMP/EIS. The USFWS recommends the Corps increase the level of implementation (magnitude and scope) of management actions to improve and expedite the adaptive management process and to help ensure the purpose and objectives of the Draft MRRMP/EIS are achieved.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 107 **Comment Id:** 643807 **Coder Name:** jgutierrez

Comment Text: Section 1.5.2, Page 1-24, Sub-Objective 2 - Concerning a 95% modeled probability that at least 50 birds will persist for 50 years (Northern and Southern Regions). Piping plover populations continue to exist on the river with fairly stable or increasing numbers (see 2015 Annual Report) despite the construction of dams on the Missouri River in the 1950s and little or no nesting in on the Missouri River or associated reservoirs in years like 1997 and 2011. Therefore modeling the Missouri as two separate populations that have little or no interaction and holding emigration and immigration as steady and equal in the models obviously does not take into account the reality of the bigger metapopulation influence and has some limitations. How those limitations affect the persistence probability needs to be explained. Likewise if acres of ESH are to be used as a surrogate there should be a simple graph or table that demonstrates the historical relationship of plover populations to acres of ESH in the past to justify the proposed methodology.

Organization: Nebraska Public Power District

Commenter: John J Shadle **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 181 **Comment Id:** 641461 **Coder Name:** jgutierrez

Comment Text: We believe the most corrective course of action is for the Corps to revisit these Alternatives and fully embrace the current scientific thinking of ecosystem services economics and conservation science of larger riverine ecosystems. The Corps needs to fully embrace the notion that this document should be the document that was started under the Missouri River Ecosystem Restoration process several years ago.

Organization: Nebraska Chapter Sierra Club

Commenter: George Cunningham **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 96 **Comment Id:** 640177 **Coder Name:** jgutierrez

Comment Text: There is also confusion in the underlying purpose of the MRRMP-EIS. That purpose is stated to be the avoidance of jeopardy (executive summary, p. i); however, it is called a "Recovery Management Plan" and the species objectives appear to be recovery-oriented insofar as they support stable or improving trends.

Organization: State of North Dakota

Commenter: Doug Burgum **Page:** **Paragraph:**

Kept Private: No

RF1000 References: General Comments (Substantive)

Correspondence Id: 162 **Comment Id:** 641193 **Coder Name:** jgutierrez

Comment Text: 4) Using the best science, the current science. The 2003 Fish and Wildlife text is great, but a lot of good science has been done since then, and continues to be done. Incorporating the ongoing nature of scientific research and results would enhance the management and credibility of any plan.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 166 **Comment Id:** 644879 **Coder Name:** jgutierrez

Comment Text: Within this DEIS, or rather the Management Plan outcomes, citizens of the Missouri River basin need for the operations to be based on tools with higher, and faster, predictive power since many reservoir decisions are made at watershed levels on monthly, weekly and daily bases. Whether such toolsets are available, or ready for use... yet, is for scientists and experts to decide; but we recommend a close look at : Reager, J. T., Thomas, A. C., Sproles, E. A., Rodell, M., Beaudoin, H. K., Li, B., & Famiglietti, J. S. (2015). Assimilation of GRACE terrestrial water storage observations into a land surface model for the assessment of regional flood potential. Remote Sensing, 7(11), 14663-14679.

Organization: Sierra Club Missouri River Grassroots Network

Commenter: Thomas A Ball **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 216 **Comment Id:** 645754 **Coder Name:** jgutierrez

Comment Text: This report does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations.

Organization: MRPWSA

Commenter: Michael Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 233 **Comment Id:** 645759 **Coder Name:** jgutierrez

Comment Text: In addition, the Draft MRRMP-EIS does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations.

Organization: City of Saint Louis

Commenter: Curtis B Skouby **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 205 **Comment Id:** 646279 **Coder Name:** JGUTIERREZ

Comment Text: This report does not use the most recent data on the biological opinion available from the 2010 Independent Science Advisory Panel recommendations.

Organization: Sioux City

Commenter: Ricky J Mach **Page:** **Paragraph:**

Kept Private: No

RTT100 Recreation Technical Report: General Comments (Substantive)

Correspondence Id: 206 **Comment Id:** 645150 **Coder Name:** jgutierrez

Comment Text: Recreation Technical Report Comments The unit day value (UDV) method was used to evaluate National Economic Development (NED) impacts of the alternatives on recreation in the Missouri River basin. This method relied on the opinions of the project managers for assigning points that ultimately determine the unit day value for each reservoir/reach. Additionally, under this method, boating is included in the general recreation category which has a lower range of unit day values than the general fishing category. This is not appropriate for the upper 5 reservoirs, since the majority of boaters are engaging in fishing activity. This highly subjective valuation method may be fine for simply comparing impacts of the different alternatives, but not for weighing impacts between interest groups. We ask that the USAGE utilize the Regional Economic Development (RED) RECON valuation method that is based on expense/revenue data for estimation of economic impact when comparing benefit/loss across multiple interest categories.

Organization: South Dakota Department of Game, Fish, and Parks; Department of Environment and Natural Resources

Commenter: Kelly R Hepler **Page:** **Paragraph:**

Kept Private: No

SUP100 General Support of the Missouri River Recovery Management Plan and EIS (Non-Substantive)

Correspondence Id: 141 **Comment Id:** 637294 **Coder Name:** jgutierrez

Comment Text: I support an Environmental Impact Statement (EIS) for the Missouri River that is focused on species recovery, habitat restoration and a more naturalized river flow.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 184 **Comment Id:** 643964 **Coder Name:** jgutierrez

Comment Text: The EPA continues to support the efforts of the Corps, the U.S. Fish and Wildlife Service and the other federal, state and tribal partners in hydrologically reconnecting the Missouri River and its tributaries to their floodplains, restoring native fish and wildlife communities, restoring a more natural river hydrology and creating greater habitat heterogeneity necessary to the recovery of threatened and endangered species.

Organization: United States Environmental Protection Agency Region 7

Commenter: Edward H Chu **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 183 **Comment Id:** 643916 **Coder Name:** jgutierrez

Comment Text: The USFWS recognizes the value and supports an adaptive management approach to implementation of management actions in light of uncertainty.

Organization: United State Department of the Interior

Commenter: Robert F Stewart **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 214 **Comment Id:** 641736 **Coder Name:** jgutierrez

Comment Text: Please create and implement a vigorous plan to restore the habitat of the piping plover, least tern, and pallid sturgeon on the Missouri River.

Organization:

Commenter: Unaffiliated Individual **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 190 **Comment Id:** 641576 **Coder Name:** jgutierrez

Comment Text: The Iowa Chapter believes that work must be undertaken to restore the Missouri River habitat for the pallid sturgeon, interior least tern, and piping plover. Doing nothing, the no-build option, is not acceptable.

Organization: Sierra Club Iowa Chapter

Commenter: Pam Taylor **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 186 **Comment Id:** 641523 **Coder Name:** jgutierrez

Comment Text: The NRCS is supportive of USACE and USFWS efforts to improve conditions for the endangered Pallid Sturgeon, Piping Plover, Least Tern, and overall habitat restoration efforts in and along the Missouri River.

Organization: USDA/Natural Resources Conservation Service

Commenter: Doris Washington **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641456 **Coder Name:** jgutierrez

Comment Text: We favor actions that provide the best opportunities for recovery of the pallid sturgeon, piping plover, and least tern, as well as leading to self-sustaining populations of other native fish and wildlife. We support allowing the river corridor to also provide habitat for terrestrial species. We support actions that bring back aspects of the natural river and the historic Missouri River flows. We believe these efforts will be good for the health of the river, the listed species, native fish and wildlife, and all the people of the basin.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 641441 **Coder Name:** jgutierrez

Comment Text: We support increased monitoring and research on the river and funding for habitat recovery projects. We support aspects of the proposed Adaptive Management Plan that allow for any needed modification of recovery actions. We support future funding for all of these efforts.

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 147 **Comment Id:** 640715 **Coder Name:** jgutierrez

Comment Text: The majority of citizens of Iowa support improvements aimed at improving water quality, enhancing wildlife and fisheries habitat, protecting soil, and increasing recreational opportunities throughout Iowa. The Missouri River is one of those very important resources for the citizens of Iowa that needs protection and enhancement. Enhancing this important resource should be made through science-based decisions that can benefit all stakeholders and interests involved (e.g., agriculture, economic development, fish and wildlife, etc.).

Organization: Iowa Chapter of the American Fisheries Society

Commenter: N/A N/A **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 134 **Comment Id:** 640672 **Coder Name:** jgutierrez

Comment Text: The Adaptive Management Process (AMP) proposed in the DEIS is a reasonable component of the recovery plan, especially for the pallid sturgeon, largely because so little scientific data is currently available. For example, recent research (Anthony Civiello, USACE, The Influence of Shallow-Water Habitat on Age-0 Shovelnose Sturgeon Diet and Condition) calls into question the efficacy of constructing interception and rearing complexes (IRCs). However, IRC construction is a significant component of the recovery plan for the pallid sturgeon contained in the DEIS. The AMP will help to reconcile new or conflicting data about different theories for recovery of the pallid.

Organization: Central Montana Electric Power Cooperative Inc.

Commenter: Douglas Hardy **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 241 **Comment Id:** 640494 **Coder Name:** jgutierrez

Comment Text: We wholeheartedly support increased monitoring and research on the river and for habitat recovery projects.

Organization: The Izaak Walton League of America

Commenter: Jack Johnson **Page:** **Paragraph:**

Kept Private: No

TC1000 Resources of Concern - Tribal (Substantive)

Correspondence Id: 10 **Comment Id:** 627493 **Coder Name:** JGUTIERREZ

Comment Text: "Rip-rapping" of Tribal areas to preserve 1620 line.

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 10 **Comment Id:** 627495 **Coder Name:** jgutierrez

Comment Text: Understanding that cultural interests are just as important as the 3 endangered species when it comes to the environment. The environment shapes the traditions of the people living within it.

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 10 **Comment Id:** 627499 **Coder Name:** JGUTIERREZ

Comment Text: How will spring/fall pulse affect the intake systems with silt increases and inundation?

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 57 **Comment Id:** 632104 **Coder Name:** JGUTIERREZ

Comment Text: And our cultural resources, before the dams were built we had natural flows. There were sacred trees that we used for ashes and medicinal plants that was part of our culture. The cultural resource aspect, I know that's modeled off to the flows, but then there's a lot more to it with, you know, our plants and animals, too, that affect our tribes, too.

Organization: Oglala Sioux Tribe Water Resource Department

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 57 **Comment Id:** 632121 **Coder Name:** JGUTIERREZ

Comment Text: And then the water supply, we have the Mini Wiconi Water Project just right out here, out of Pierre here that has had a intake that supplies water to three reservations; the West River, Lyman, and Jones, but we have a concern with that with water supply to that, that the water quality stays at a high level and that, you know, that it would not be affected by sediment.

Organization: Oglala Sioux Tribe Water Resource Department

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 94 **Comment Id:** 633679 **Coder Name:** jgutierrez

Comment Text: As a tribal member of Standing Rock my family has been personally and economically impacted by the development on the Missouri River since the dams were first built. The water rights of the Tribe are being detrimentally impacted by the DEIS. As a member of the tribe I am opposed to mechanical construction in the Oahe reservoir. I am also opposed to the type of development which would impact the water quality or quantity. The water rights and water supply issues directly impact me as a tribal member. The plants, including medicinal and those which are important to the spiritual and cultural lifeways of my people are at high risk due to the development and resulting pollution along the length of the river.

Organization: Standing Rock Sioux Tribe

Commenter: Diana Spotted Horse **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 197 **Comment Id:** 645275 **Coder Name:** jgutierrez

Comment Text: Tribal Water Adjudication and Development: Tribal water rights adjudication and development is quickly advancing. The Corps needs to quantify, recognize, and assess these impacts among the alternatives within this study.

Organization: Missouri Department of Natural Resources

Commenter: Carol S Comer **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645356 **Coder Name:** jgutierrez

Comment Text: We reject the Draft EIS for the following reasons - (1) The Draft EIS fails to disclose and consider impacts on the Treaty rights of the Great Plains Tribal Water Alliance. (2) The Draft EIS infringes on Indian reserved water rights. (3) The Corps of Engineers failed to engage in timely and meaningful government-to-government consultation with the affected Indian Nations. (4) The Corps failed to comply with section 106 of the National Historic Preservation Act. (5) The Draft EIS fails to properly calculate

the cumulative environmental impacts of the Recovery Management Plan with other Corps programs on important Tribal resources. (6) The Corps continues to ignore the disproportionate adverse impacts of the Pick-Sloan program on the Tribes, and fails to mitigate these impacts. (7) The scope of the Draft EIS is too narrow, and significant alternatives were improperly omitted from consideration. (8) The preferred alternative will not prevent jeopardy to the pallid sturgeon.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645423 **Coder Name:** jgutierrez

Comment Text: As acknowledged by the Corps on page 3-28 of the Draft EIS, all of the alternatives will adversely impact the water supplies of the Great Plains Water Alliance Tribes in the upper basin. The adverse effect on Tribal water caused by the Recovery Management Plan compounds the impacts caused by Missouri River Master Manual. Neither the current damage nor the compounded harm is recognized or disclosed in the Draft EIS. Accordingly, the true environmental impacts on Tribes are not properly considered by the Corps of Engineers in the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645425 **Coder Name:** jgutierrez

Comment Text: The current operations under the Master Manual degrade Tribal water supplies and impact the Tribe's ability to put water to beneficial use. The Corps' current operations on the Missouri River also destroys the habitat of the listed species. Yet the stated purpose of the Draft EIS is to continue the status quo in the operation of the Missouri River main stem system under the Master Manual, through the limited adaptive management and mechanical construction prescribed in the preferred alternative. The Draft EIS establishes new demands for water, but proposes no changes to current Missouri River operations under the Master Manual in order to fulfill the increased demand. None of the downstream water users who benefit from the Corps' water management will be impacted. The Corps acknowledges in the Draft EIS that it is Tribal water supplies that will be the source for the downstream fish and wildlife uses that are proposed. (Draft EIS, p. 3-28). The Tribes did not cause the decline of these species, but under the Recovery Management Plan, we pay the price of habitat restoration - however inadequate it may be.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645445 **Coder Name:** jgutierrez

Comment Text: The alternatives in the Draft EIS, in combination with the construction of the main stem dams, the pattern of water releases pursuant to the Master Manual, and the management of Pick-Sloan project lands for oil and gas pipelines, have a significant, adverse and disproportionate impact on the Indian Nations of the Missouri Basin. The adverse impacts include socioeconomic distress and trauma caused by the forced relocation of Tribal communities, as well as the use of Tribal water for the exclusive benefit of non-Indian economies. The adverse effects also include the public health impacts caused by the degradation of drinking water supplies, and the environmental risk caused by the permitting of oil pipelines in Indian lands and waters. Important issues facing the Tribes such as noxious weeds and invasive species on Indian lands caused by the Corps' Missouri River operations are totally ignored in the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645447 **Coder Name:** jgutierrez

Comment Text: The CEQ regulations require the Corps of Engineers to evaluate the cumulative environmental impact of the proposed action with other past and foreseeable future actions. 40 CFR Â§ 1508. 7. The CEQ requires an "analysis and precise description of identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether... (the) alternatives may have a continuing, additive and significant relationship to those effects." (Memorandum from James L. Connaughton, Chairman, Council on Environmental Quality, to Heads of Federal Agencies, June 24, 2005). Adequate consideration of the cumulative impacts of agency projects requires "some quantifiable or detailed information" on the overall impacts. (Coggins et al, PUBLIC NATURAL RESOURCES LAW (2Ând ed.) Â§17.35). This is especially important in the Missouri River Basin, where the Pick-Sloan program destroyed Tribal riparian bottomlands along the Missouri liver, and caused adverse impacts to Tribal resources and water supplies on the tributaries to the Missouri. The eminent scholar Vine Deloria, Jr., an enrolled member of the Standing Rock Sioux Tribe, described Pick-Sloan as "the single most destructive act ever perpetuated on any tribe by the United States." (Deloria, Introduction to Michael L. Lawson, DAMMED INDIANS: THE PICK-SLOAN PLAN AND THE MISSOURI BASIN SIOUX, 1944-1980 (1982)). The construction and operation of the dams on the Missouri River and its tributaries in the upper basin have caused extremely significant impacts that must be included in the cumulative impact analysis. The most significant adverse impacts of the Pick-Sloan program were suffered by Tribal communities in the Missouri River bottomlands. The U.S. Senate Committee on Indian Affairs recently reported - ...seven reservations were strategically located along resource-rich the Missouri River. The Missouri River's wooded bottomlands provided the reservation economies with fertile agricultural lands, timber for lumber and fuel. .. seasonal fruits, habitat for wild game, medicines . . . and plentiful supplies of clean water. These lands were also an

important part of the tribes' social, cultural and spiritual lives. Much of the tribes' community infrastructure was located along the river, including tribal homes, schools, hospitals, government buildings, churches, graveyards, and roads... Relocated to the upland plains ... the remaining reservation lands were less suitable for sustaining the Tribes' economic base, including ranching and agriculture, due to poor soil and water quality... (P)romises to compensate the Tribes, in part, with discounted electricity went unfulfilled. (S. Rep. 111-357 (2010), p. 1-2, 4).

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645454 **Coder Name:** jgutierrez

Comment Text: There is a cumulative impact to Tribal water supplies in the upper basin, from current Corps' operations under the Master Manual, which will be made worse by the proposed alternatives in the Draft EIS. The Corps admits on page 3-28 that water levels in the upper basin will diminish due to the preferred alternative. As described above, the Corps' current water management violates the Treaty water rights of the Tribes - the added water demands imposed by the Recovery Management Plan will cause cumulative impact to Indian water.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645455 **Coder Name:** jgutierrez

Comment Text: Appendix E to the Draft EIS lists related projects for cumulative impacts analysis. It does identify "Missouri River Mainstem Reservoir System Construction" as a related project for cumulative impact analysis. However, there is no analysis of the extremely harmful impacts the projects have had on Indian land, water and communities. Although the Corps mentions the Missouri River Master Manual, the Draft EIS totally fails to disclose the significant adverse impact of the construction of the dams or the ongoing harm caused by the Master Manual on Indian water. These impacts are very well documented. Lawson, DAMMED INDIANS: THE PICKSLOAN PLAN AND THE MISSOURI BASIN SIOUX, 1944-1980 (1982); Marc Reisner, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER (1986); Peter Capossela, THE LAND ALONG THE RIVER: THE ONGOING SAGA OF THE SIOUX NATION LAND CLAIM, 1851-2012 (2015); Final Report and Recommendations of the Garrison Unit Joint Tribal Advisory Committee: Joint Hearing of the S. Comm. on Indian Affairs., the S, Comm. on Energy and Natural Res., and the H Comm. on Interior and Insular Aff., 100th Cong., (1987); Peter Capossela, Impacts of the Army Corps of Engineers' Pick-Sloan Plan on the Indian Tribes of the Missouri River Basin, J. ENV'T'L LA w AND LIT. 30:143 (2015); John H. Davidson, Indian

Water Rights, the Missouri River and the Administrative Process: What are the Questions? AMERICAN INDIAN L. REV. 1 (2000). Yet the Corps fails to disclose or analyze them in the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645459 **Coder Name:** jgutierrez

Comment Text: There is a cumulative socioeconomic impact as well. The historical costs of the destruction of Tribal land, resources and life ways in the inundated bottomlands remains unresolved. (S. Rep. 111-357, a Report on the Pick-Sloan Tribal Commission Act). In recent years, Tribes have had to expend millions of dollars to expand and rehabilitate drinking water and irrigation intakes on the Missouri River, due to diminished water elevations caused by water releases by the Corps for downstream navigation. (Missouri River Master Manual: Hearing Before the Committee on Indian Affairs, US. Senate, 108th Cong. (2003)). The Corps acknowledges that Tribes will incur increased costs to access water in the future, upon implementation of the alternatives in the Draft EIS. (Draft EIS, p. 3-28). These cumulative adverse impacts on Tribal economies must be disclosed and considered by the Corps.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645460 **Coder Name:** jgutierrez

Comment Text: Appendix E also identifies "Oil and Natural Gas Production" as a related project to the Recovery Management Plan. The cumulative impacts summarized in Table 3-1 identify oil and gas production as a related cumulative action affecting Tribes. However, the approval of the Dakota Access Pipeline and the Presidential Permit for the Keystone XL Pipeline pose significant environmental risk to the Missouri River, and there is no quantitative analysis of this risk. Table 3-1 simply is not an adequate disclosure of the cumulative impacts of oil and gas pipelines and the Recovery Management Plan on the Tribes.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645463 **Coder Name:** jgutierrez

Comment Text: The Draft EIS fails to properly account for the alternatives' effects on Indian Tribes, and fails to acknowledge the overall disproportionate impact of the Corps' Missouri River operations on Indian Tribes. This reflects the institutional racism against Native Americans that continues to permeate the Corps' decision-making today.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645465 **Coder Name:** jgutierrez

Comment Text: The Draft EIS states "For this analysis, the state and/or county in which the block group is located were used as the reference area. Therefore, census block groups whose minority population is ten percentage points higher than the state or county average... are identified as environmental justice populations." " (p. 3-563-3-564). The Corps may have performed an analysis of impacts on minority populations, but failed to do so on Tribes, as required in the CEQ Guidance. Moreover, the impacts assessment methodology "qualitatively" evaluated whether there are disproportionate impacts on minority communities, using the general impacts analysis. Since the general impacts analysis fails to identify Pick-Sloan's impact on Indian land and water, the assumptions used in the qualitative analysis are incorrect, and the conclusions in the Draft EIS with respect to Tribal impacts are erroneous.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645474 **Coder Name:** jgutierrez

Comment Text: The negative impacts experienced by Tribes far exceeds any negative impacts on non-Indian communities, because the Corps of Engineers located the main stem reservoirs in Indian Country, and the Bureau of Reclamation projects adversely impact Tribal waters and resources on the tributaries. With respect to overall "Human Considerations," Tribal impacts are not given sufficient weight as compared to "agriculture, irrigation, hydropower, local government, navigation, recreation " (Draft EIS, p. 3-5). For example, the Human Considerations analysis suggests that the destruction of Tribal resources is on a par with the inconvenience fishermen may face due to habitat restoration. The Human Conditions analysis totally downplays Tribal concerns with the disproportionate and long-term negative impacts suffered by the Tribes.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645475 **Coder Name:** jgutierrez

Comment Text: The Tribes of the Great Plains Water Alliance informed the Corps of Engineers and MRRIC of its concerns with the concept of Human Considerations impacts as developed by the Corps. A written submission on Human Considerations of the Standing Rock Sioux Tribe/Rosebud Sioux Tribe/Oglala Sioux Tribe/Flandreau Santee Sioux Tribe, as the Great Plains Tribal Water Alliance, has been totally ignored in the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645476 **Coder Name:** jgutierrez

Comment Text: We have corresponded, attended meetings, and been visited by officials of the Corps of Engineers ... and all has been to no value of the Standing Rock Sioux Tribe. The Corps of Engineers has proven it cannot analyze our environmental impacts, much less impacts on our valuable water rights. (Missouri River Master Manual: Hearing Before the Committee on Indian Affairs, US. Senate, 108th Cong. (2003), p. 27, statement of Mike Claymore). Thirteen years later, nothing has changed with the Corps of Engineers.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645485 **Coder Name:** jgutierrez

Comment Text: The main problem with the Draft EIS is that it purports to resolve the habitat issue, without addressing the impacts to Tribal resources, and without addressing the need for equitable access to the hydropower and other benefits of the Pick-Sloan program. A full evaluation of Pick-Sloan's impacts on Tribes, and the mitigation of those impacts, remains lacking.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 180 **Comment Id:** 645785 **Coder Name:** jgutierrez

Comment Text: i, · Utilize natural processes for habitat restoration whenever possible i, · Protect Tribal cultural & historic resources & work to compensate Tribes for adverse impacts from the dams & improve communications and relations with tribes i, · Fully discuss the threat from oil pipelines and protect the River from oil pipeline crossings .

Organization: Prairie Hills Audubon Society

Commenter: Nancy D Hilding **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645917 **Coder Name:** jgutierrez

Comment Text: Although pre-dam conditions are included in the assumptions for river and reservoir simulation models, pre-dam conditions on the Reservations are not taken into account as part of the Tribal interests. The negative impacts to Tribes from construction and operation of the dams are not identified. The costs incurred by the Tribes as a result of the Pick-Sloan program are ignored.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645926 **Coder Name:** jgutierrez

Comment Text: The Recovery Implementation Program will exacerbate these negative impacts, by supplying Indian water for habitat recovery.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

TC3500 Guiding regulations, policies, laws - Tribal (Substantive)

Correspondence Id: 26 **Comment Id:** 626693 **Coder Name:** jgutierrez

Comment Text: I came up here intending to listen with a good heart to everything that was said. And right off the bat, this gentleman upset me because the Corps has no right to give away my water or my land. You are only here to manage that for us. You do not own it and you cannot give it away.

Organization: Standing Rock Sioux Tribe

Commenter: Shirley Marvin **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 57 **Comment Id:** 632098 **Coder Name:** JGUTIERREZ

Comment Text: I know that the Draft EIS and the Missouri River Management Plan focus on flows and habitat, but then historically with the flows of the Missouri River, our tribe has tribal reserve water rights. I wanted to make sure that them - - they are acknowledged and recognized.

Organization: Oglala Sioux Tribe Water Resource Department

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 57 **Comment Id:** 632124 **Coder Name:** JGUTIERREZ

Comment Text: And then the Endangered Species Act, I know the least tern and the piping plover and the pallid sturgeon, but the tribes also need to be acknowledged with their water rights and the treaties of the Great Sioux Nation. And I know there's 29 or 30 other tribes within this, you know, this DEIS and Missouri River Management Plan, too, that I hope that they're being acknowledged and fully, how would you say, notified of the process, too.

Organization: Oglala Sioux Tribe Water Resource Department

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645356 **Coder Name:** jgutierrez

Comment Text: We reject the Draft EIS for the following reasons - (1) The Draft EIS fails to disclose and consider impacts on the Treaty rights of the Great Plains Tribal Water Alliance. (2) The Draft EIS infringes on Indian reserved water rights. (3) The Corps of Engineers failed to engage in timely and meaningful government-to-government consultation with the affected Indian Nations. (4) The Corps failed to comply with section 106 of the National Historic Preservation Act. (5) The Draft EIS fails to properly calculate the cumulative environmental impacts of the Recovery Management Plan with other Corps programs on important Tribal resources. (6) The Corps continues to ignore the disproportionate adverse impacts of the Pick-Sloan program on the Tribes, and fails to mitigate these impacts. (7) The scope of the Draft EIS is too narrow, and significant alternatives were improperly omitted from consideration. (8) The preferred alternative will not prevent jeopardy to the pallid sturgeon.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 232 **Comment Id:** 645357 **Coder Name:** jgutierrez

Comment Text: The entire study area of the Draft EIS is within the Treaty and aboriginal boundaries of the Great Plains Water Alliance Tribes. The habitat for the least tern, piping plover and pallid sturgeon that has been destroyed by the Missouri Basin Pick-Sloan program, was Treaty land and water. The Draft EIS totally ignores the Treaty rights of the Great Plains Tribal Water Alliance. "Agencies shall respect Indian self government and sovereignty, honor treaty and other rights, and strive to meet the responsibilities that that arise from the unique legal relationship between the Federal Government and Indian tribal governments." Executive Order 13175 (65 Fed. Reg. 67250). The requirement to honor Treaty rights applies to the Corps of Engineers with the Recovery Management Plan. Consequently, the Draft EIS must include a description of the Indian Treaty rights in the study area, and describe how the Corps of Engineer will comply with the dictates of Executive Order 13175 to honor Treaty rights. It fails to do so.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 232 **Comment Id:** 645414 **Coder Name:** jgutierrez

Comment Text: The study area is Lakota and Dakota Treaty and aboriginal land. Article II of the Fort Laramie Treaty of April 29, 1868, established the Great Sioux Reservation as follows: The United States agrees that the following district of country, to wit, viz: commencing on the east bank of the Missouri river where the 46th parallel of north latitude crosses the same, thence along low-water mark down said east bank to a point opposite where the northern line of the State of Nebraska strikes the river, thence west across said river, and along the northern line of Nebraska to the 104th degree of longitude west from Greenwich, thence north on said meridian to a point where the 46th parallel of north latitude intercepts the same, thence due east along said parallel to the place of beginning; and in addition thereto, all existing reservations of the east back of said river, shall be and the same is, set apart for the absolute and undisturbed use and occupation of the Indians herein named, and for such other friendly tribes or individual Indians as from time to time they may be willing, with the consent of the United States, to admit amongst them; and the United States now solemnly agrees that no persons, except those herein designated and authorized so to do, and except such officers, agents, and employees of the government as may be authorized to enter upon Indian reservations in discharge of duties enjoined by law, shall ever be permitted to pass over, settle upon, or reside in the territory described in this article. (15 Stat. 635). Thus, our Treaty Reservation comprised of all present-day South Dakota west of the Missouri River. The low water mark of the east bank is the Reservation's eastern boundary - placing the Missouri River within the exterior boundaries of the Great Sioux Reservation. Under Article XVI of the 1868 Fort Laramie Treaty, the Sioux Nation retained aboriginal lands previously recognized as Sioux territory in the 1851 Fort Laramie Treaty -

The United States hereby agrees and stipulates that the country north of the North Platte river and east of the summits of the Big Horn mountains shall be held and considered to be unceded Indian territory, and also stipulates and agrees that no white person or persons shall be permitted to settle upon or occupy any portion of the same; or without the consent of the Indians, first had and obtained, to pass through the same. (15 Stat. 639).

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645415 **Coder Name:** jgutierrez

Comment Text: The boundaries of the Lakota and Dakota aboriginal lands were adjudicated in Sioux Nation case, and affirmed by the Supreme Court. The study area for the Draft EIS on the Recovery Management Plan is within this area. The Council on Environmental Quality regulations require that an environmental impact statement "shall include discussions of... Potential conflicts between the proposed action and the objectives of... Indian tribe... land use plans, policies and controls for the area covered." 40CPRÂ§1502.16(c). Sioux Nation Treaty rights are clearly a major issue requiring disclosure of impacts in the Draft EIS. The Corps of Engineers failed to do so, in violation of the 1868 Fort Laramie Treaty, Executive Order 13175 and the CEQ regulations.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645416 **Coder Name:** jgutierrez

Comment Text: Moreover, Indian water rights are Treaty rights. The waters managed for habitat restoration in the Draft EIS are subject to the Winters Doctrine water rights claims of the Tribes. The Draft EIS appears designed to justify the continuation of the Corps' current water management under the Missouri River Master Manual. The Corps' operations under the Master Manual infringe on Indian reserved water rights, by degrading Tribal water supplies in favor of downstream navigation flows. This includes the water rights of the Great Plains Water Alliance Tribes.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645419 **Coder Name:** jgutierrez

Comment Text: The Corps of Engineers fails to consider changes in the operation of the main stem system - that is a fatal flaw in the Draft EIS. In order to avoid jeopardy of the pallid sturgeon, and in order to "honor treaty rights" as required in E.O. 13175, the Corps of Engineers must revise the Missouri River Master Water Control Manual.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645421 **Coder Name:** jgutierrez

Comment Text: Indian reserved water rights rely in part on the economic feasibility of Tribal water projects. (Department of the Interior, Notice, Working Group in Indian Water Settlements: Criteria and Procedures for the Participation of the Federal Government for the Settlement of Indian Water Claims, 55 Fed. Reg. 9223). The preferred alternative potentially diminishes the feasibility of Indian water projects by increasing the costs, as acknowledged by the Corps on page 3-513 of the Draft EIS. Thus, the Draft EIS infringes on Indian reserved water rights.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645422 **Coder Name:** jgutierrez

Comment Text: Section 2 of the Western Water Policy Review Act of 1992 provides that "the Federal government recognizes its trust responsibilities to protect Indian water rights and assist Tribes in the wise use of these resources." (106 Stat. 4694). Nevertheless, the Master Manual establishes priorities of "downstream flood control" and "downstream water supply and navigation." There are no provisions to protect the water supplies of Indian Tribes in upper basin, whose water rights are senior. The Corps' Missouri River operations pursuant to the Master Manual degrade Indian waters and create uncertainty for the availability of water, thereby violating the trust responsibility and infringing on Indian reserved water rights.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645424 **Coder Name:** jgutierrez

Comment Text: The Draft EIS proposes alternatives for the restoration of wildlife habitat that involve the use and management of water subject to our Winter Doctrine claims. This pits our water rights against threatened and endangered species recovery. We reject this management paradigm, and call upon the Corps to substantially revise the Missouri River Master Manual, in order to avoid jeopardy to the listed species and to mitigate the impacts of the Pick-Sloan program on the Tribes.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645426 **Coder Name:** jgutierrez

Comment Text: The Draft EIS fails to acknowledge that the exercise of Tribal rights in the future could affect the Corps' ability to implement the preferred alternative. There is an assumption that Tribes will not exercise our reserved water rights in the future. Consequently, the Draft EIS violates the Winter Doctrine. The Recovery Management Plan should propose alternatives that involve revisions to the Master Manual in order to recreate a natural hydrograph for the lower Missouri River, and for the protection of future Indian water uses in the upper basin.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645483 **Coder Name:** jgutierrez

Comment Text: The Corps must review the Missouri River Master Manual, and make changes as needed to fulfill Tribal water rights in the upper basin.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

TC4500 Tribal Consultation and Coordination (Substantive)

Correspondence Id: 10 **Comment Id:** 627492 **Coder Name:** JGUTIERREZ

Comment Text: More emphasis on Tribal Consultations. Tribal cultural property surveys need to be done as well as archeological surveys

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 10 **Comment Id:** 627494 **Coder Name:** JGUTIERREZ

Comment Text: Actual consideration of Tribal interest. Not leading the tribes on like you are willing to work with us, then choosing to do nothing to help conserve our lands

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 10 **Comment Id:** 627500 **Coder Name:** jgutierrez

Comment Text: Who are the 29 stakeholders?

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 10 **Comment Id:** 627501 **Coder Name:** JGUTIERREZ

Comment Text: 29 tribes have a right to consultation. Please fix this.

Organization: Standing Rock Sioux Tribe

Commenter: Bryanne Durkee **Page:** **Paragraph:**
Kept Private: No

Correspondence Id: 57 **Comment Id:** 632123 **Coder Name:** JGUTIERREZ

Comment Text: Then the Oglala Sioux Tribe does have its own ordinance for tribal consultations. So whenever the time - - when we get done with our review and comment, when the tribal consultation does come, we have our own process through our tribal ordinance. And I know there's going to be two types of consultation, government to government, 106 NEPA consultations. We're looking forward to that consultation.

Organization: Oglala Sioux Tribe Water Resource Department

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645354 **Coder Name:** jgutierrez

Comment Text: The Draft Environmental Impact Statement and the process by which it was developed are significant concerns. We take note that our participation in the collaborative process known as MRRIC is misportrayed as full Tribal consultation and participation in the Recovery Management Plan. That is untrue. Tribal participation in MRRIC and meetings with low-level Corps officials constitute neither government-to-government consultation, nor compliance with National Historic Preservation Act section 106. The misportrayal of our participation in regional stakeholder dialogues jeopardizes our future participation, and undermines the government-to-government relationship between our Tribes and the Department of the Army.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645356 **Coder Name:** jgutierrez

Comment Text: We reject the Draft EIS for the following reasons - (1) The Draft EIS fails to disclose and consider impacts on the Treaty rights of the Great Plains Tribal Water Alliance. (2) The Draft EIS infringes on Indian reserved water rights. (3) The Corps of Engineers failed to engage in timely and meaningful government-to-government consultation with the affected Indian Nations. (4) The Corps failed to comply with section 106 of the National Historic Preservation Act. (5) The Draft EIS fails to properly calculate the cumulative environmental impacts of the Recovery Management Plan with other Corps programs on important Tribal resources. (6) The Corps continues to ignore the disproportionate adverse impacts of the Pick-Sloan program on the Tribes, and fails to mitigate these impacts. (7) The scope of the Draft EIS is too narrow, and significant alternatives were improperly omitted from consideration. (8) The preferred alternative will not prevent jeopardy to the pallid sturgeon.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645428 **Coder Name:** jgutierrez

Comment Text: The right of Tribes to government-to-government consultation is also a Treaty right. Article XI of the 1868 Fort Laramie Treaty explicitly contemplates consultation in the development of "works of utility or necessity, which may be permitted by the laws of the United States." (15 Stat. 638). The Draft EIS contains rhetoric with respect to Tribal consultation; however, it makes no mention of Article XI, or of any other Treaty rights of our Tribes. The Treaty right of consultation is to be implemented pursuant

to Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments. Under E.O. 13175, the Corps of Engineers must - ... work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self government, tribal trust resources (and) Indian tribal treaty rights ... Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies ... (65 Fed. Reg. 67249-67250). The term "meaningful" suggests that Tribal views will be incorporated into the decision-making process. The term "timely" requires that Tribal views be solicited at the beginning of the decision-making process. With respect to the Draft EIS, the Corps of Engineers did none of this. The Corps' inaction speaks for itself. Form letters were sent to the Tribes on October 20, 2016 and December 16, 2016, inviting consultation. The Draft EIS and preferred alternative were published on December 16, 2016. The consultation process was not initiated in a timely manner. All alternatives were selected, the preferred alternative was identified, and the environmental impacts were supposedly evaluated before government-to-government consultation was even initiated. The Draft EIS explains on page 5-4 that "The intent of government-to-government consultation is to provide for identification and resolution of issues relating to the alternatives being evaluated in this draft EIS." That demonstrates the lack of timely consultation for the selection of the alternatives.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645429 **Coder Name:** jgutierrez

Comment Text: Appendix H to the Draft EIS includes a list of meetings identified as "Alternatives Development Meetings," with the names of Tribes and dates of meetings. The Draft EIS contains no record of the participants or the discussions - the list is meaningless and does not demonstrate that Tribal concerns were included in the alternatives. Significantly, the Oglala Sioux Tribe Natural Resources Regulatory Agency documented the discussion referenced "7/11/2016 - Oglala Sioux Tribe." Tribal meeting minutes reveal that there was no discussion of the alternatives to be published in the Draft EIS. The description by the Corps of the July 11, 2016 meeting with the Oglala Sioux Tribe as an "Alternatives Development Meeting" is false. The veracity of the entire list of "Alternatives Development Meetings" must be questioned.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645430 **Coder Name:** jgutierrez

Comment Text: The Draft EIS states on page 2-1 , "An interdisciplinary planning team made up of experts from multiple federal agencies in collaboration with basin stakeholders and Tribes participated in alternatives development." The "interdisciplinary

planning team" never met with any of the Tribal governments of the Great Plains Water Alliance. There was no government-to-government consultation with any Tribes on the Draft EIS.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645431 **Coder Name:** jgutierrez

Comment Text: The narrative in the Draft EIS combines Tribal consultation with "Agency and Public Involvement" and implies that MRRIC substitutes for compliance with the government-to-government consultation requirements in E.O. 13175. (Draft EIS, p. 5-1). MRRIC is a collaborative stakeholder group with which the Great Plains Alliance Tribes have cooperated. The implication that good faith Tribal participation in region-wide collaborative processes satisfies the Tribal consultation requirement is wrong and will discourage Tribal participation in the future. The Corps of Engineers should not make false statements in a Draft EIS about what was discussed in meetings, and should not misportray stakeholder discussions as Tribal consultation.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645432 **Coder Name:** jgutierrez

Comment Text: Ultimately, the lack of government-to-government consultation in the preparation of the Recovery Management Plan is evidenced by the fact that none of the Tribes' concerns are addressed in the plan. For example, Appendix E of the Draft EIS identifies "Special Status Species" of the states of Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas and Missouri. The Tribes have identified riparian plant species of extreme concern, due to historical medicinal and nutritional uses of these species. However, these species are not identified in the Draft EIS. Species of concern to the states are included, but species of concern to the Tribes are totally ignored. Had the Corps of Engineers consulted with the Tribal governments, this important information would be disclosed in the Draft EIS and the impacts to these resources properly evaluated. Instead, Corps merely continued the longstanding practice of the Omaha District to engage Tribes as a formality, only after decisions have been made.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645433 **Coder Name:** jgutierrez

Comment Text: The Corps of Engineers failed to comply with Article XI of the 1868 Fort Laramie Treaty, E.O. 13175, the DoD American Indian and Alaska Native Policy, the National Environmental Policy Act and the CEQ regulations, all of which require timely and meaningful government-to-government consultation in the preparation of the Recovery Management Plan.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645434 **Coder Name:** jgutierrez

Comment Text: The Draft EIS violates section 106 of National Historic Preservation Act because (1) the surveys of cultural sites utilized for the impacts analysis are outdated and incomplete; (2) the Corps failed to consult with the THPOs on traditional cultural properties, and the Corps' NHPA section 106 procedures in Appendix C violate the Advisory Council requirements at 36 CFR Part 800; and (3) the assumptions in the computer model are flawed. The Tribes of the Great Plains Water Alliance administer Secretariaily-approved Historic Preservation Offices pursuant to section 101 of the National Historic Preservation Act. 54 U.S.C. Â§302702. Accordingly, our THPOs must be consulted on the direct and indirect impacts on traditional cultural properties of the alternatives in the draft EIS, as well as their cumulative impact with other Corps programs, including the Missouri River Master Water Control Manual. The Corps of Engineers has not done so. The Corps' procedures for implementing the NHP A section 106 consultation requirement are widely viewed as violating the applicable regulations of the Advisory Council on Historic Preservation, in any event.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645439 **Coder Name:** jgutierrez

Comment Text: Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes or Native Hawaiian organizations and should consider that when complying with this part. 36 CFR Â§800.2(c)(2)(ii)(D). None of this has occurred. The surveys used for the computer models are outdated, and were not conducted in compliance with the consultation requirements for traditional cultural properties. 36 CFR Â§800.2(c)(2)(ii). The Great Plains Water Alliance Tribes are not signatories to the Missouri River Programmatic Agreement, and thus full compliance with section 106 and the implementing regulations at 36 CFR Part 800 is mandatory. The Corps has not done so with respect to the Draft EIS. The Corps admitted this on page 8 of the Technical Report - It is understood that there are many unknown cultural resource

sites existing on the landscape, as well as important cultural resources that do not meet the definition of a cultural resources site used in this study. The inventory of known cultural resource sites used in this analysis is intended to serve as a representative sample. That does not constitute compliance with the identification requirements of 36 CFR 36 CFR Â§800.2-800.5. Consequently, the Draft EIS violates the National Historic Preservation Act and its implementing regulations. The Advisory Council permits agencies such as the Corps to develop agency specific procedures for NHPA section 106, "if they are consistent with the Council's regulations." 36 CFR Â§800.14(a). The Corps has promulgated section 106 procedures which are codified at 33 CFR Part 325 App. C. The Corps' section 106 procedures are widely considered to violate 36 CFR Part 800.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645440 **Coder Name:** jgutierrez

Comment Text: According to the Advisory Council - Appendix C is not approved by the ACHP as a program alternative, as required by 36 CFR Â§800.14. Therefore, the ACHP considers Appendix C as an internal Corps process that does not fulfill the requirements of Section 106 of the NHP A... (T)his arrangement often leads to the Corps' failure to adequately consult with federally recognized Tribes regarding the identification of, and assessment of effects on, historic properties of religious and cultural significance. (Letter of Reid J. Nelson, Advisory Council on Historic Preservation, to David B. Olson, U.S. Army Corps of Engineers, August 1, 2016). That is exactly what has happened with the Draft EIS for the Recovery Management Plan.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645444 **Coder Name:** jgutierrez

Comment Text: In sum, the Corps has failed to comply with the required process under NHP A section 106. The findings in the Draft EIS are based on false or incomplete assumptions used in the determination of impacts to cultural resources. The Draft EIS is fatally flawed for lack of compliance with the National Historic Preservation Act and its implementing regulations.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645477 **Coder Name:** jgutierrez

Comment Text: For its part the CEQ has issued Guidance on determining the impacts of agency actions on minority and Tribal communities. The CEQ Guidance emphasizes the need for Tribal community involvement in scoping - If an agency identifies any potentially affected ... Indian tribes, the agency should develop a strategy for effective public involvement in the agency's determination of the scope of the NEPA analysis. Customary agency practices for notifying the public of a proposed action and subsequent scoping and public events may be enhanced through better use of local resources, community and nongovernmental organizations, and locally targeted media. Agencies should consider enhancing their outreach through the following means: Religious organizations; Newspaper, radio and other media, particularly media targeted to... Indian tribes... Minority business associations; Legal aid providers... Tribal governments... Community and social services organizations; Universities, colleges, vocational and other schools... Public health agencies and clinics... (Council on Environmental Quality, Environmental Justice: Guidance Under the National Environmental Policy Act (1997), p. 11). The Corps of Engineers has done none of this. The CEQ Guidance makes clear that environmental impacts on Tribal communities require rigorous scoping efforts. The Guidance outlines the steps to be taken for scoping on Indian Reservations. The Draft EIS contains erroneous information on the impacts of the Pick-Sloan program and Recovery Management Plan on Tribes, in part because the Corps never conducted the required scoping as prescribed in the CEQ Guidance. The lack of adequate scoping in Tribal communities, as well as the lack of government-to-government consultation with Tribes, necessitates an extension to the public comment period on the Draft EIS. The Great Plains Tribal Water Alliance hereby calls upon the Corps of Engineers to reopen and extend the public comment on the Draft EIS for an additional 90 days.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645479 **Coder Name:** jgutierrez

Comment Text: Scoping is designed to ensure the concerns of Tribal communities are considered. With respect to the Draft EIS, the Corps never conducted the proper scoping, and the Draft EIS fails to identify or address Tribal concerns as a result.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 232 **Comment Id:** 645482 **Coder Name:** jgutierrez

Comment Text: The Corps of Engineers should start all over. The Corps should establish a meaningful consultative relationship with the Indian Nations on the Recovery Management Plan and other concerns of Tribes relating to Pick-Sloan.

Organization: Great Plains Tribal Water Alliance

Commenter: Reno Red Cloud **Page:** **Paragraph:**

Kept Private: No

WSTR100 Water Supply Technical Report: General Comments (Substantive)

Correspondence Id: 32 **Comment Id:** 627964 **Coder Name:** jgutierrez

Comment Text: We had considered - - we have concerns about the information provided in the Water Supply technical memo. The information presented in this memo has a lot of the members in the association asking more questions as to where the Corps obtained their data. The information on the size of pumps and costs necessary to draw the water from the river seems to be underestimated. Trying to locate large pumps larger than 7,000 gallons a minute to rent would be a difficult task, especially if half the members of this association must find these large pumps. Some of the information presented seems to be grossly underestimating the impact if the water supplies are not able to have access to the river. The size of the pumps necessary to draw water and costs associated with finding large enough pumps to operate. The water supplies in this association service over 4 million customers, and billions in industrial commerce and services which depend on the water from the Missouri River. We do not feel this technical memo allows for the seven recommended actions made by the MRRIC in 2012 to evaluate the effects analysis.

Organization: Missouri River Public Water Supplies Association

Commenter: Mike Klender **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 38 **Comment Id:** 628358 **Coder Name:** jgutierrez

Comment Text: Some of the key concerns we have are the Human Consideration Technical Report on the water supply is inconsistent in assessing risk, presuming the worst case for flows, but often the best case for water utility ability to respond. Not all low water conditions could be solved using submersible pumps. This is not a reasonable assumption. The idea that pumps could be rented by all utilities in a low water situation is unreasonable. Low water affects too many utilities at one time for all utilities to be able to rent pumps. For larger utilities such as WaterOne, it is unlikely that large enough pumps could be rented to meet the supply needs available - could be - - to meet the supply needs will be available to us. The assumption of the report is unrealistic and should be modified. The report failed to consider that at low water some utilities may have to lay miles of pipe just to reach the water supply. When the reservoirs get low, whole arms of the lake have dried up in the past. The river channel could also migrate away from the intake, and these costs should be considered in the report.

Organization: WaterOne

Commenter: Greg Totzke **Page:** **Paragraph:**

Kept Private: No

Correspondence Id: 40 **Comment Id:** 628464 **Coder Name:** jgutierrez

Comment Text: I would like to reference the Human Considerations Technical Report- Water Supply, Section 3.1, Paragraph 2, which uses the Period of Record along with the minimum flow per the Master Manual as the flow condition. This worst case model scenario also does not include how often the scenario occurs. For example, does it include - - does it occur once every year or once every 25 years? The frequency of those occurrences and the associated costs should be included in the report.

Organization: WaterOne

Commenter: Michelle Wirth **Page:** **Paragraph:**

Kept Private: No