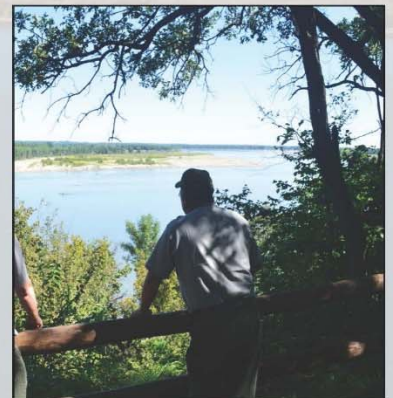
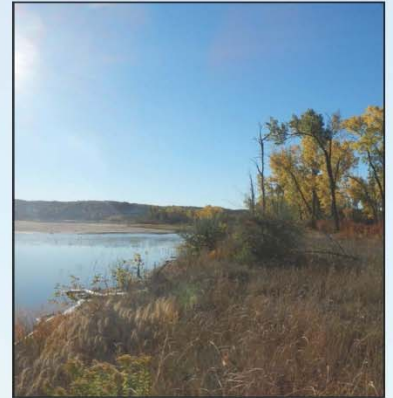




Missouri National Recreational River

South Dakota and Nebraska

Draft Property Management Plan/
Environmental Assessment



October 2015

SUMMARY

INTRODUCTION

This Environmental Assessment (EA) was prepared for the National Park Service (NPS) to develop a Property Management Plan (PMP) for the following Missouri National Recreational River (MNRR) properties: Green Island (60 acres), Bow Creek Recreation Area (205 acres), and Mulberry Bend (31 acres) (figure 1).

The National Environmental Policy Act (NEPA) of 1969 process is being conducted in accordance with NPS regulations for implementing NEPA, and examines the consequences of this proposed project on the environment. This EA presents the alternatives considered during the NEPA process, the affected environment, the impacts associated with the proposed project, potential mitigation measures, and the agency consultation and coordination conducted to support this project.

PURPOSE AND NEED FOR THE ACTION

The purpose of this plan is to decide how the NPS can best fulfill MNRR's purpose and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The Property Management Plan will identify actions for recreational site development, resource management, and interpretation/education, and establish management policy on certain issues, such as access, hunting, hiking, and camping.

MNRR's General Management Plan (GMP) was completed in 1998 and these properties were acquired after the GMP was written. A management plan for the three properties is necessary for the park to carry out the NPS mission and the congressional mandates found in the Wild and Scenic Rivers Act – the enabling legislation of the MNRR. The Wild and Scenic Rivers Act identified Administration Policy for designated rivers to protect and enhance the values for which it became a component of the national wild and scenic river system. It also identifies that “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.” A management plan is needed to fulfill the intent of the Congressional designation of MNRR.

OVERVIEW OF THE ALTERNATIVES

This EA analyzes the environmental impacts of the proposed development at each of the three sites. Alternatives analyzed included the no action alternative (current conditions), a low management/development alternative (alternative B), a moderate management/development alternative (preferred alternative C), and a high management/development alternative (alternative D), as described below.

No Action Alternative (Alternative A) – No additional development would occur at each site. Currently, some signage occurs at each site. Parking is available at Bow Creek Recreation Area and Mulberry Bend. Hiking trails and four vistas are available at Mulberry Bend. Non-designated camping occurs at Bow Creek Recreation Area and Green Island. Hunting currently occurs at Bow Creek Recreation Area. Resource management at each site includes the control of invasive species by herbicide application and mechanical treatments, such as cutting. Oak savannah and prairie restoration also occurs at Mulberry Bend. Cultural resource management which includes following CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources* occurs at each of the sites.

Alternative B (Low Management/Development) – Minimal development would occur at each site under alternative B. Additional signage would be installed at each of the three sites. Trails would be

constructed at Bow Creek Recreation Area and Green Island. Additional resource management techniques would be implemented including native species planting at Bow Creek Recreation Area.

Preferred Alternative C (Moderate Management/Development) – Moderate development would occur at each site under the preferred alternative. Additional interpretive signage, restrooms, trash/recycle receptacles, and picnic tables would be installed at each of the sites. Campgrounds would be established at Bow Creek Recreation Area and Green Island and a primitive amphitheater would be constructed at Mulberry Bend. Trail systems would be developed or enhanced and the Mulberry Bend vistas would be expanded. Canoe and kayak landing sites would be established at Green Island and Bow Creek Recreation Area for better access. Additional resource management techniques would be implemented including the installation of fencing around cultural resources at Green Island, the removal of additional trees at Mulberry Bend, and disking soils at Bow Creek Recreation Area to encourage cottonwood regeneration.

Alternative D (High Management/Development) – Alternative D would include the maximum amount of development at each site. Additional interpretive signage, restrooms, trash/recycle receptacles, and picnic tables would be installed at each of the sites. Campgrounds would be established at Bow Creek Recreation Area and Green Island and an amphitheater would be constructed at Mulberry Bend. Trail systems would be developed or enhanced. Mulberry Bend would include the clearing of additional native and non-native trees to maximum the vistas, and construction of observation platforms. The west side of the Mulberry Bend site would also be developed with a parking area, restroom, trail, and picnic area. Water wells would be installed at Mulberry Bend and Bow Creek Recreation Area. Canoe and kayak landing sites would be established and a land bridge would be constructed at Green Island for better access. The backwaters at Green Island and Bow Creek Recreation Area would also be restored.

SUMMARY OF IMPACTS

Impacts of the proposed alternatives were assessed in accordance with NEPA, NPS Director's Order 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*, which requires impacts to park resources to be analyzed in terms of their context, duration, and intensity. The following impacts would occur at the three properties:

Bow Creek Recreation Area – Under the no action alternative, it is likely there would be no impacts to water quality, floodplains, and archeological resources. Long-term beneficial impacts to wetlands would result from vegetation management including the removal of invasive species.

Alternatives B, C, and D would have negligible to adverse impacts to water quality during vegetation management activities and development of the sites. Adverse impacts to wetlands would also occur from the placement of boardwalk support structures within Wetland 2, less than 0.02 acres of wetlands would be impacted. Beneficial impacts from vegetation management activities would result to water quality, floodplains, and wetlands. No impacts to archeological resources would occur. The increase in visitation expected under alternatives C and D would adversely impact floodplains. The restoration of the backwater under alternative D would also have beneficial impacts to water quality and wetlands.

Mulberry Bend – Under the no action alternative, no impacts to archeology would occur. There are no wetland, surface waters, or floodplains within Mulberry Bend.

Alternative D would include the development of the west side of the site which would have an adverse effect on archeological resources. No impact to archeological resources would occur under alternatives B and C.

Green Island – Under the no action alternative, no impacts to water quality, floodplains, and archeological resources would occur. Vegetation management including invasive species removal would create beneficial impacts on wetlands.

The proposed development and use of Green Island would create negligible to adverse impacts to water quality under alternatives B, C, and D. Vegetation management, including the removal of invasive species, would create beneficial impacts to wetlands. Alternative B would have no impact to the floodplain; however, impacts to the floodplain under alternatives C and D would be negligible to adverse due to the additional development of the site. Alternative B would potentially have an adverse effect on the historic pilings; however, no effect is expected under alternatives C and D due to the installation of fencing around the resource. Alternative D includes the restoration of the backwater. This would have short-term adverse impacts to water quality, but in the long term, impacts to water quality, floodplains, and wetlands would be beneficial.

HOW TO COMMENT

Agencies and the public are encouraged to review and comment on the contents of this EA and the draft Statement of Findings in appendix C during a 30-day public review period. We invite you to comment on this plan and you may do so by any one of several methods. The preferred method of comment is on the park's Planning, Environment, and Public Comment (PEPC) website at <http://parkplanning.nps.gov/mnrrpropertyplan>. You may also submit written comments to:

Superintendent
Subject: MNRR Property Management Plan
Missouri National Recreational River
508 East 2nd Street
Yankton, South Dakota 57078

Only written comments will be accepted; faxed comments, emails, and telephone messages will not be accepted. Please submit your comments within 30 days of the posting of the notice of availability on the PEPC web site. Please be aware that your entire comment will become part of the public record. If you wish to remain anonymous, please clearly state that within your correspondence, although we cannot guarantee that personal information, such as email address, phone number, etc. will be withheld.

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ACRONYMS AND ABBREVIATIONS

| | |
|------|-------------------------------------|
| ADA | Americans with Disabilities Act |
| APE | Area of Potential Effects |
| BMPs | Best Management Practices |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| DGFP | Department of Game, Fish, and Parks |

| | |
|-------|--|
| DNR | Department of Natural Resources |
| DO | Director's Order |
| EA | Environmental Assessment |
| EO | Executive Order |
| EPMP | Exotic Plant Management Plan |
| ESA | Endangered Species Act |
| FEMA | Federal Emergency Management Agency |
| FMP | Fire Management Plan |
| FONSI | Finding of No Significant impact |
| GHG | Greenhouse Gas |
| GMP | General Management Plan |
| LRT | Local Resource Types |
| MNRR | Missouri National Recreational River |
| MWAC | Midwest Archeological Center |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NPS | National Park Service |
| NRHP | National Register of Historic Places |
| NWI | National Wetlands Inventory |
| ONPS | Operation of the National Park System |
| ORV | Outstandingly Remarkable Values |
| PEM1 | Palustrine Emergent Persistent Wetland Habitats |
| PEM2A | Palustrine, Emergent Wetland, Non-Persistent, Temporarily Flooded |
| PEM2C | Palustrine, Emergent Wetland, Non-Persistent, Seasonally Flooded |
| PEM2E | Palustrine, emergent Wetland, Non-Persistent, Seasonally Flooded/Saturated |
| PEPC | Planning, Environment, and Public Comment website (NPS) |
| PFO1 | Broad-Leaf Deciduous Forest Habitats |
| PFO1C | Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded Wetland |
| PMP | Property Management Plan |
| PUB2H | Palustrine, Unconsolidated Bottom, Sand, Permanently Flooded Wetland |
| R2UBH | Riverine Habitat, Unconsolidated Bottom, Permanently Flooded |
| SHPO | State Historic Preservation Officer |
| SOF | Statement of Findings |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |

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PURPOSE AND NEED

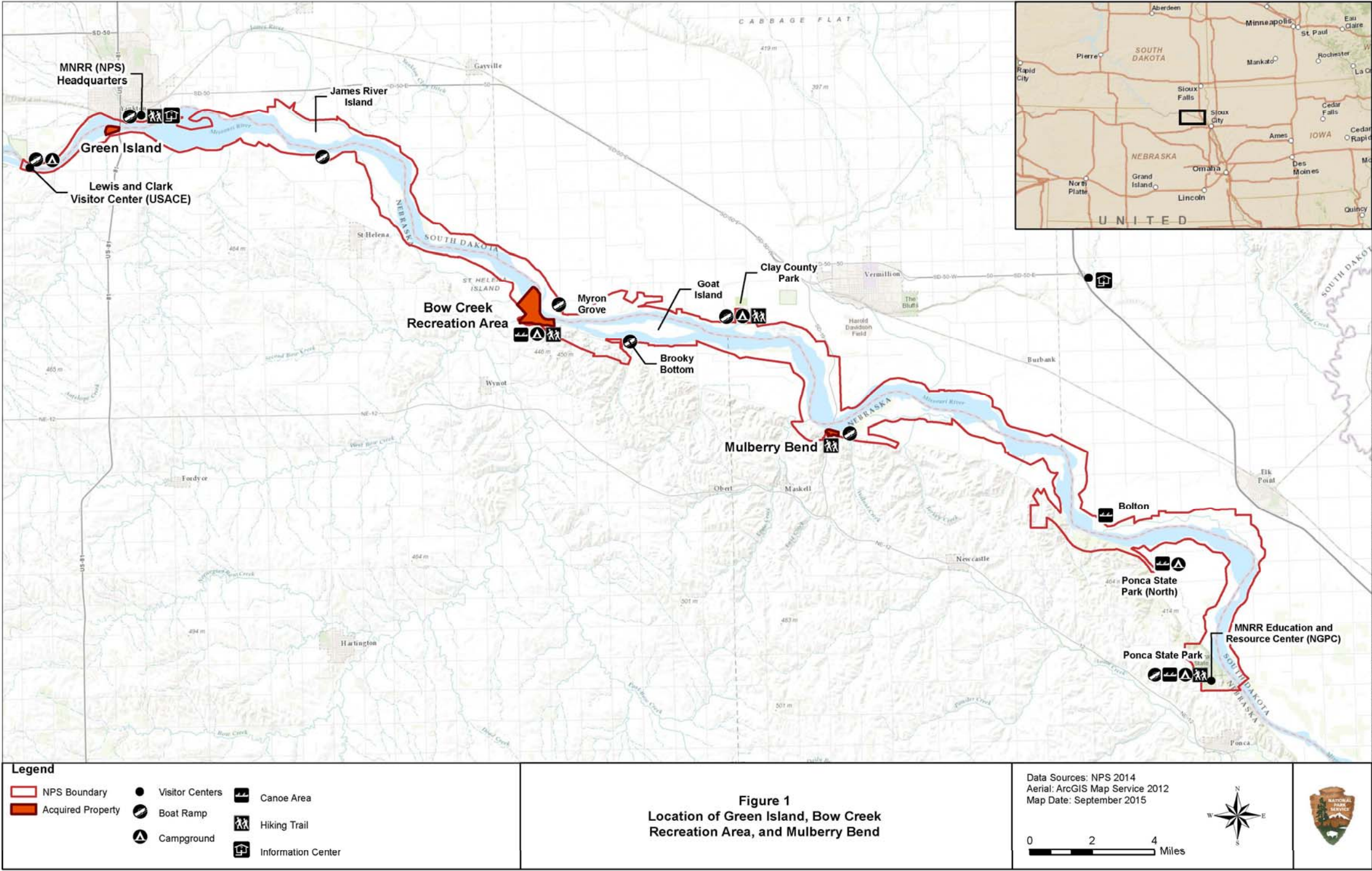
PURPOSE AND NEED FOR THE PROPOSED ACTION

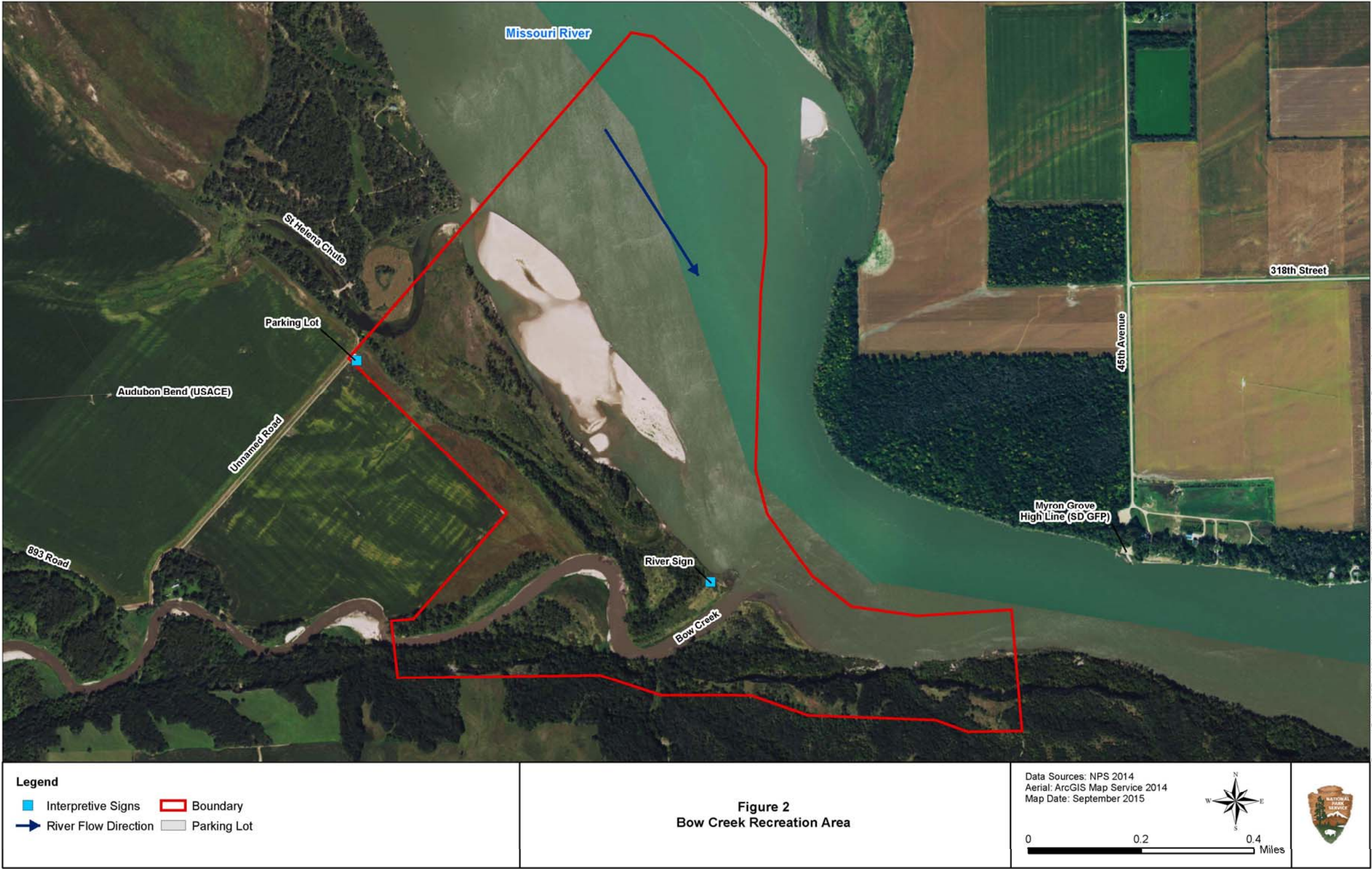
The National Park Service (NPS) is developing a Property Management Plan (PMP) for the following Missouri National Recreational River (MNRR) properties: Green Island (60 acres), Bow Creek Recreation Area (205 acres), and Mulberry Bend (31 acres) (figures 1, 2, 3, and 4). The purpose of this plan is to decide how the NPS can best fulfill MNRR's purpose and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The PMP will identify actions for recreational site development, resource management, and interpretation/education, and establish management policy on certain issues, such as access, hunting, hiking, and camping.

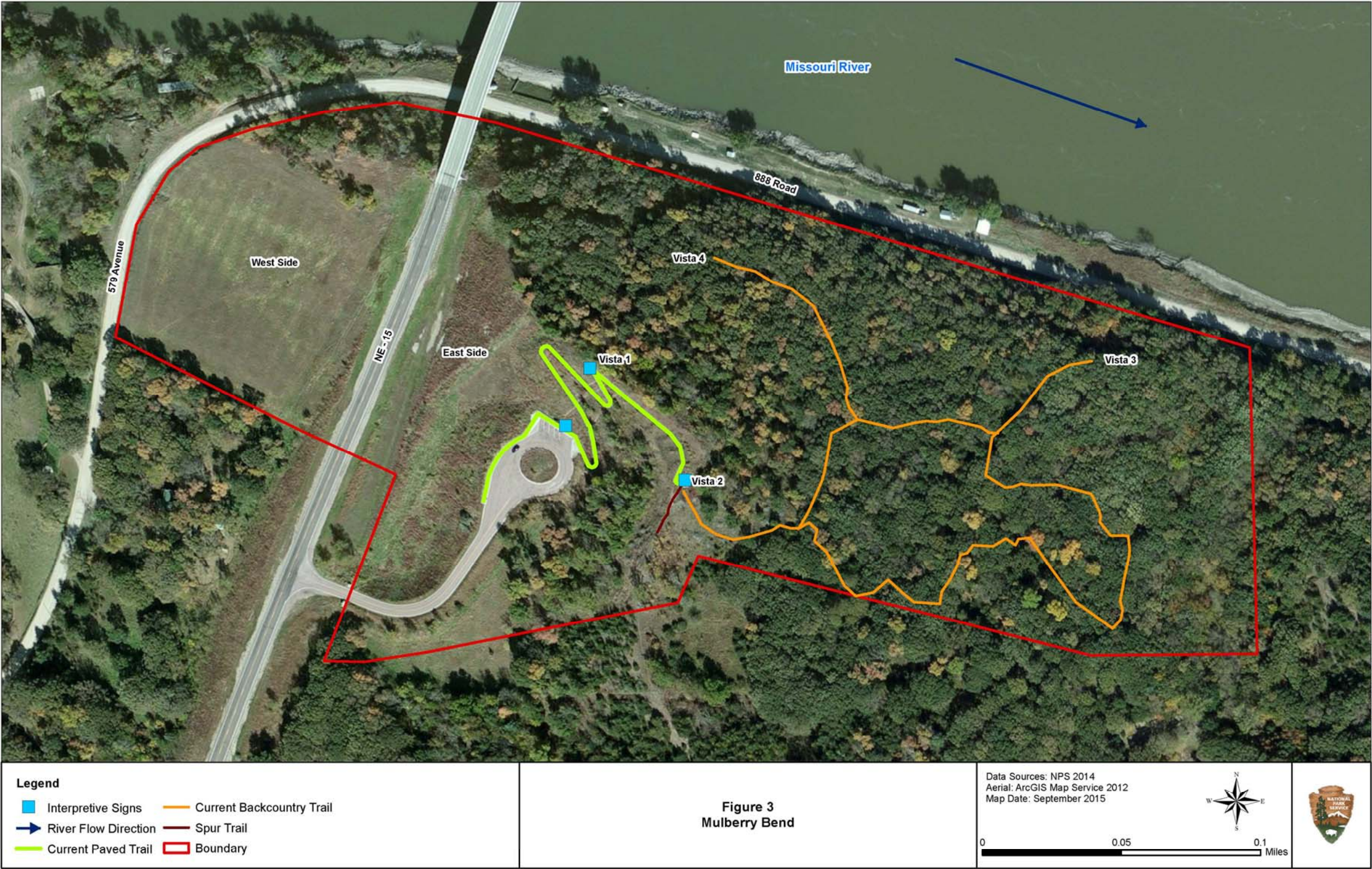
MNRR's General Management Plan (GMP) was completed in 1998 and these properties were acquired after the GMP was written. A management plan for the three properties is necessary for the park to carry out the NPS mission and the congressional mandates found in the Wild and Scenic Rivers Act – the enabling legislation of the MNRR. The Wild and Scenic Rivers Act identified Administration Policy for designated rivers to protect and enhance the values for which it became a component of the national wild and scenic river system. It also identifies that “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.” A management plan is needed to fulfill the intent of the Congressional designation of MNRR.

This environmental assessment (EA) is intended to analyze the action alternatives and the no action alternative and their impacts to the environment. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations; 40 Code of Federal Regulations (CFR) 1500–1508; NPS Director's Order (DO) #12 and Handbook, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001); and Section 106 of the National Historic Preservation Act of 1966 as amended (NHPA) and implementing regulations, 36 CFR Part 800. The NEPA process for this project is being used to comply with Section 106 of the NHPA.

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PURPOSE AND SIGNIFICANCE OF THE NATIONAL RECREATIONAL RIVER

MNRR was established by two acts of Congress which amended the Wild and Scenic Rivers Act of 1968. The first act (1978) created the 59-mile reach (also referred to as the Gavins Point Segment) from Gavins Point Dam to Ponca State Park, Nebraska. The second act (1991) established a 39-mile reach (also referred to as the Fort Randall Segment) from Fort Randall Dam to Running Water, South Dakota, 20 miles of the lower Niobrara River, and 8 miles of Verdigre Creek (NPS 2012a). Bow Creek Recreation Area, Mulberry Bend, and Green Island are located within the 59-mile reach of MNRR.

Purpose statements convey the reason for which the park unit was set aside as part of the national park system. Grounded in an analysis of national recreational river legislation and legislative history, purpose statements also provide primary criteria against which the appropriateness of plan recommendations, operational decisions, and actions are tested. The purpose of MNRR is to:

- Preserve the river in a free-flowing condition and protect it for the enjoyment of present and future generations;
- Provide streambank protection compatible with the river's significant natural and cultural resources;
- Preserve the significant recreational, fish and wildlife, and historic and cultural resources of the Missouri River corridor; and
- Provide for a level of recreation and recreational access that does not adversely impact the river's significant natural and cultural resources.

Significance statements capture the essence of the park unit's importance to the nation's natural and cultural heritage. They describe the unit's distinctiveness and describe why an area is important within regional, national, and global contexts. This helps managers focus their efforts and limited funding on protection and enjoyment of attributes that are directly related to the purpose of the park unit. The significance of MNRR includes the following components:

Natural

- The habitat within the 59-mile segment of the recreational river corridor supports at least 44 federal and state listed sensitive species, including the pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sterna antillarum*), and piping plover (*Charadrius melodus*). These species make up more than half of the threatened and endangered species found in Nebraska and South Dakota.
- The riverine and riparian habitats within the river corridor provide important wildlife habitat.
- The 59-mile segment is one of the last representative parts of the undammed, unchanneled middle Missouri River. It features a section of the river meandering in an older, wider river valley not found on the other undammed, unchanneled Missouri River sections. The large river environment found on the 59-mile Missouri River segment is rare on the Great Plains.

Cultural

- The Missouri River was the principal highway to the northern plains used throughout prehistoric and early historic times. The 59-mile segment retains a historic landscape similar

to that experienced by travelers over the centuries and captured in the writings and illustrations of early explorers.

- The number and variety of prehistoric and historic resources along the river attest to the long history of human use. Prehistoric villages, the route of Lewis and Clark, steamboat wrecks, the territorial capital of Yankton, and ethnic settlements have the potential for enriching visitors' understandings of past and present cultures.

Recreational

- The 59-mile river corridor provides high-quality outdoor recreation, including high-quality fishing, hunting, trapping, and boating. Opportunities for birdwatching and other wildlife observation abound.
- The 59-mile Missouri River segment supports recreation on a large, relatively natural river.
- The river valley provides scenic vistas of a variety of natural landscapes such as bottomlands, cottonwood forests, wooded draws, forested hills, sand dunes, high-bank islands, wetlands, and chalkrock bluffs.

Project Background

MNRR was added to the National Wild and Scenic Rivers System in 1978 (Public Law 95-625) by an amendment to the Wild and Scenic Rivers Act. Section 3 of the Act states that the federal agency charged with administration of a component of the national wild and scenic rivers system shall prepare a management plan to provide the protection of river values. The legislation adding the MNRR to the national wild and scenic rivers system gave administrative responsibility to the Secretary of the Interior, acting through NPS. The legislation directed the Secretary of the Interior to enter into a cooperative agreement with the Secretary of the Army, acting through the United States Army Corps of Engineers (USACE), to provide recreational river features, appropriate recreational development, and construction and maintenance of streambank protection work as deemed necessary by the Secretary of the Army. In 1980, the United States Department of the Interior prepared a management plan for MNRR and the USACE prepared a general design memorandum to expand on the conceptual program identified in the management plan.

The 1980 Management Plan was only partially implemented due to federally listed species occurring on the property and constraints due to federal acts. A GMP was developed in 1999 to present the overall approaches to land protection, resource management, interpretation, recreational development, and visitor use. The GMP was developed to set forth the general direction for managing MNRR for 10 to 15 years (2000–2015).

Bow Creek Recreation area was acquired February 24, 2004. The acquisition of Bow Creek Recreation Area began in 2004 when the NPS purchased the property north of Bow Creek and completed the transaction in 2008 with the acquisition of the southern portion. All lands were acquired from willing sellers. This floodplain and bluff top property totals approximately 205 acres and is located along Bow Creek and the Missouri River in Cedar County about 2 miles northeast of Wynot, Nebraska at river mile 787.6 (figures 1 and 2).

Mulberry Bend was acquired on May 3, 2005 as part of mitigation for construction of the Vermillion-Newcastle Bridge that was completed in 2001 by the Nebraska Department of Roads. Mulberry Bend, an approximate 31-acre bluff-top property is located on Nebraska Highway 15 just south of Vermillion, South Dakota (figures 1 and 3).

Green Island was acquired on March 20, 2014 as mitigation for the Discovery Bridge in Yankton. Green Island is approximately 60 acres and is located just upstream of the Discovery Bridge. The site is located at river mile 806.5 and includes the island, side channel, and a small portion of the Nebraska shoreline (figures 1 and 4).

The 1999 GMP did not include management plans for the three properties since they were acquired after finalizing the document. Since acquisition of the properties, some minimal improvements have occurred. Bow Creek Recreation Area contains a primitive parking area and an interpretive sign. Mulberry Bend includes a paved parking lot, interpretive signs, and a short paved trail that leads to two scenic overlooks of the Missouri River. In addition, a 0.75-mile unpaved loop trail leads to two more viewpoints. This unpaved trail was opened in September 2014. Green Island includes an interpretive sign, but no formal parking area is available; access to the site is mostly by river.

PREVIOUS PLANNING

Previous planning for the PMP included a site visit and meeting to discuss the goals and objectives of the plan and current conditions at each site. The Project Team also conducted an alternatives development meeting, where the team discussed each of the alternative elements and came up with the proposed suite of alternatives described in the *Alternatives* section. When preparing the project alternatives, the team took into account NPS Management Policies, conditions of the river, and the public's thoughts and comments received during public scoping.

SCOPING

Internal scoping defines issues, alternatives, and data needs for the potential action. On September 30, 2014, MNRR initiated a formal project kick-off meeting and site visit with the interdisciplinary team. At this meeting, the team defined project issues and project elements. In addition, the team visited each of the three properties to observe the current resources and opportunities available at each site.

External scoping, the process used to gather public input, was conducted in accordance with NPS guidelines for implementing NEPA and NHPA. NPS released a project scoping newsletter on November 22, 2014 describing the purpose, need, and objectives of the PMP (appendix A). The public scoping period lasted a total of 33 days. During this time, the public was invited to identify any issues or concerns they have with the proposed project so the NPS could appropriately consider them in this EA. Information on how the public could submit comments, and dates, times, and locations of the public meetings were also included. Public comments were accepted through December 24, 2014.

During the comment period, three public meetings were held between December 2, 2014 and December 4, 2014. Meetings were held at the Sacred Heart Church Hall in Wynot, Nebraska (Tuesday, December 2), Yankton Fire Department in Yankton, South Dakota (Wednesday, December 3), and W.H. Over Museum in Vermillion, South Dakota (Thursday, December 4). Meetings on Tuesday and Thursday ran from 5:00 p.m. through 7:00 p.m. and the meeting on Wednesday ran from 3:30 p.m. through 7:00 p.m. The meetings were open house style. Attendees were encouraged to talk with park staff regarding recreational activities they would like to see at the three MNRR properties.

A total of 29 correspondences were received during this period. The majority of comments received were supportive of the development of the PMP. Commenters also made suggestions for each of the properties pertaining to hiking, camping, river access, interpretation, biking, hunting, and non-motorized watercraft. Comments pertaining to park resources were also received. There are concerns that as development occurs the potential for nonpoint source pollution, fire, erosion, and the loss of native plant species may increase. Commenters felt that the PMP should address resource

management, including habitat development for threatened and endangered species, ways to prevent or reduce the spread of invasive plant and animal species, and preserving the native flora and fauna of the area.

Scoping also includes consultation with any interested agency, or any agency with jurisdiction by law to obtain early input. Scoping letters were mailed to local, state, and federal agencies requesting consultation and comments regarding the proposed project. Agency consultation letters were sent to the following agencies and tribes on November 24, 2014:

- United States Fish and Wildlife Service (USFWS)
- USACE
- United States Environmental Protection Agency (USEPA)
- Veterans Administration
- Natural Resource Conservation Service
- Bureau of Reclamation
- South Dakota Department of the Environment and Natural Resources
- South Dakota Department of Game, Fish, and Parks (SDGFP)
- Nebraska Department of Environmental Quality
- Nebraska Department of Natural Resources (DNR)
- Nebraska Game and Parks Commission
- Nebraska State Historical Society
- Yankton Sioux Tribe
- Santee Sioux Tribe
- Ponca Tribe of Nebraska.

In addition, congressional letters were sent to 11 elected officials in Nebraska and South Dakota. Responses were received from the Nebraska State Historical Society, South Dakota DGFP, Nebraska DNR, and the Ponca Tribe of Nebraska. Copies of the consultation letters and responses are located in appendix B.

ISSUES

Issues can be defined as the relationships between the proposed action and the human, physical, and natural environment (NPS 2001). Issues are used to define which environmental resources may experience either negative or beneficial consequences from an action. They do not predict the degree or intensity of potential consequences that might result from an action. Issues are usually problems caused by the no action alternative or other alternatives, but may be other questions, concerns, or problems.

Issues identified during internal scoping included the presence of wetlands within Green Island and Bow Creek Recreation Area that should be avoided from development. In addition, locations of cultural resources including archeological sites need to be determined and avoided. After receiving information from the public, outside agencies, and other sources, additional issues were identified for this project. There are concerns that as development occurs the potential for nonpoint source pollution, fire, erosion, and the loss of native plant species may increase. In addition, hunting and motorized vehicles can cause noise pollution and physical damage to land, and disrupt the natural beauty of the area and the ecosystem.

DERIVATION OF IMPACT TOPICS

Impact topics were used to define and focus the discussion of resources that could be affected by the alternatives, and are the focus in the evaluation of the potential environmental consequences of the alternatives. Potential impact topics were identified based on legislative requirements, executive orders (EOs), topics in DO #12 and Handbook, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001), NPS Management Policies (NPS 2006), guidance from NPS, input from other agencies, public concerns, and resource information specific to the recreational river. The interdisciplinary team discussed each resource topic and how the proposed project would either benefit or adversely impact the resource. A brief rationale for the selection of each impact topic is given below as well as rationale for dismissing specific topics from further consideration. In general, if negligible impacts would result from the proposed project, the impact topic was dismissed from further analysis.

IMPACT TOPICS INCLUDED IN THIS DOCUMENT

The following impact topics have the potential to be affected by the proposed action and are evaluated in detail in this EA.

Hydrology and Water Quality – Hydrology of Bow Creek Recreation Area and Green Island would be altered due to the restoration of the backwaters. To eliminate the potential for impacts to water quality during construction activities, best management practices (BMPs) to control soil erosion and sedimentation would be implemented, and the NPS would acquire all necessary permits for construction activities.

Floodplains – Green Island and Bow Creek Recreation Area lie within the 100-year floodplain. NPS DO #77-2, *Floodplain Management and Procedural Manual #77-2* provide NPS policies and procedures for complying with EO 11988, “Floodplain Management.” If the preferred alternative in an EA would result in adverse impacts on a regulatory floodplain, a Statement of Findings (SOF) documenting compliance with DO #77-2 and its implementation procedures is required to be completed. Because the proposed construction lies within the 100-year floodplain, an SOF for floodplains is required and is located in appendix C.

Wetlands – EO 11990, “Protection of Wetlands,” directs all federal agencies to avoid to the maximum extent possible the long- and short-term adverse impacts associated with the occupancy, destruction, or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Based on NPS DO #77-1, *Wetland Protection and Procedural Manual #77-1*, if a preferred alternative would have adverse impacts on wetlands, an SOF must be prepared that documents the rationale for choosing an alternative that would have adverse impacts on wetlands.

Wetland delineation surveys were conducted at the three properties in May 2015. During the survey, 11.73 acres wetlands were identified at Bow Creek Recreation Area and 0.01 acre was identified at Green Island. No wetlands were identified at Mulberry Bend. Wetlands at Green Island would not be impacted. Less than 0.02 acres of wetlands within Bow Creek Recreation Area would be impacted from the construction of a boardwalk. This falls under the excepted action 4.2.1.a. for Boardwalks, according to the Procedural Manual #77-1: Wetland Protection; therefore, a Wetland Statement of Findings or the associated public review process is not required. Wetland BMPs as outlined in Procedural Manual #77-1 would be followed.

Archeological Resources – Pursuant to Section 5.3.5 of the NPS *Management Policies* 2006, archeological resources will be protected against human agents of destruction and deterioration

whenever practicable (NPS 2006). Archeologists from the NPS Midwest Archeological Center (MWAC) carried out an archeological survey at all three properties from 21 to 30 April 2015. Archeological resources were discovered at Mulberry Bend. Adverse impacts to both known and unknown archeological resources has the potential to occur.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

A summary of impact topics dismissed from analysis is provided below, along with the rationale for the dismissal.

Air Quality – MNRR is subject to federal, Nebraska, and South Dakota air regulations. National ambient air quality standards have been established by USEPA. Current standards are set for sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, particulate matter equal to or less than 10 microns in size, fine particulate matter equal to or less than 2.5 microns in size, and lead. All of Nebraska and South Dakota are currently in attainment for all criteria air pollutants (USEPA 2015). The proposed project would contribute trace amounts of criteria air pollutants during construction activities, resulting in overall negligible impacts; therefore, this topic was dismissed.

Soundscape – Section 4.9 of NPS *Management Policies* 2006 states that the NPS, “will preserve, to the greatest extent possible, the natural soundscapes of the park, including both biological and physical sounds. Natural sounds are intrinsic elements of the environment that are vital to the functioning of ecosystems and can be used to determine the diversity and interactions of species within communities. Soundscapes are often associated with parks and are considered important components of natural wildlife interactions, as well as visitor experience” (NPS 2006). Additionally, NPS *Management Policies* 2006 and DO #47, *Sound Preservation and Noise Management*, provide guidance for operational policies that help protect natural soundscapes in NPS park units. A soundscape is the human perception of acoustic resources present in a park unit’s acoustical environment. Acoustic resources often include natural sounds (water, wildlife, wind, etc.), cultural and historic sounds (battle reenactments, tribal ceremonies, etc.), and non-natural human-caused sounds (vehicles, boats, etc.). Impacts to soundscapes at the park were analyzed using information collected from park staff members and other materials. None of the alternatives (including the no action alternative) would result in greater than negligible impacts from construction and maintenance activities and increased development of the site. Changes in the soundscape would not result in impacts beyond what visitors would expect to experience at the three sites. As a result, soundscape was dismissed as a resource from further analysis.

Scenic Resources – One of the significance statements for MNRR is that the river valley provides scenic vistas of a variety of natural landscapes such as bottomlands, cottonwood forests, wooded draws, forested hills, sand dunes, high-bank islands, wetlands, and chalkrock bluffs. Mulberry Bend contains four areas where visitors can experience the scenic vistas of the Missouri River and its associated floodplains. Scenic resources are also available at Green Island and Bow Creek Recreation Area. Beneficial impacts to the scenic vistas at each of the three sites would occur. A scenic overlook would be constructed in the Bluffs Area at Bow Creek Recreation Area and the vistas at Mulberry Bend would be maintained or expanded. Since adverse impacts are not expected to this resource, scenic resources was dismissed as a resource from further analysis.

Soils/Geology – The geology within MNRR is comprised of sedimentary formations (Petsch 1946). During the Cretaceous period, the Western Interior Seaway infiltrated the center of the United States, including Nebraska and South Dakota, depositing marine sediments consisting of chinks, clays, and sandstones. In the final stage of deposition, glacial advances brought in gravels, sand, and unconsolidated erratics (Petsch 1946). Potential impacts on soil resources were assessed based on the

extent of disturbance to soils, including natural undisturbed soils, the potential for soil erosion resulting from disturbance, and limitations associated with the soils. Under the alternatives, including the no action alternative, soil compaction and an alternation of soil chemistry would occur from recreational use and management activities. However, impacts would be isolated and negligible under the alternatives, with no significant impacts to soils or geology. As a result, soils/geology was dismissed from further analysis.

Vegetation –The historic vegetation within the MNRR was comprised of grassland (63 percent), deciduous forests (25 percent), shrubs (11 percent), and a mix of marsh, open woodland, and orchard (1 percent) (Dixon et al. 2010). Today, willow/cottonwood floodplain forest and elm/oak woodlands are the two major plant communities present within the MNRR. Sandbars and floodplains in MNRR contain a mix of annual weeds, short-lived grasses, sedges, and seedling willow and cottonwood (NPS 2011). Impacts to vegetation within the three sites were analyzed, and potential impacts were determined based on the anticipated extent of vegetation removal needed for project construction. Impacts to vegetation from the proposed alternatives (including the no action alternative) included adverse impacts from site development and construction, as well as beneficial impacts from invasive species management. Overall, vegetation would be minimally affected by the alternatives, and vegetation was dismissed from further analysis.

Wildlife – Section 4.4.1 of the NPS Management Policies 2006 states that NPS “will minimize human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them” (NPS 2006). Wildlife is abundant along MNRR. The varied river habitat and island complexes provide ideal feeding, nesting, and breeding areas for many species of birds, mammals, herptiles, and fish (NPS 2015). Impacts on wildlife were analyzed using existing NPS data on the project area. Vegetation management under the alternatives would have beneficial impacts on wildlife and habitat. While site development would have adverse impacts on wildlife in the project area under some alternatives, these impacts would be negligible. As a result, this resource was dismissed from further analysis.

Special Status Species – Special status species are those that have been identified by the USFWS, South Dakota DGFP, or Nebraska Game and Parks Commission as needing special protection. Section 4.4.2.3 of the NPS *Management Policies* 2006 states that NPS “will fully meet its obligations under the NPS Organic Act and the Endangered Species Act (ESA) to both proactively conserve listed species and prevent detrimental effects on these species” (NPS 2006). The ESA of 1973, as amended, requires impacts on all federally listed threatened or endangered species be considered in planning for federal actions. NPS policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. In Nebraska, state status is the legal protection status of a species as determined by the Nebraska Nongame and Endangered Species Conservation Act, Nebraska revised statutes of 1943, Chapter 37, Article 8, which defines special state species. In South Dakota, Title 34A, Environmental Protection Chapter 34A-8, Endangered and Threatened Species, provides the definitions and regulations related to endangered and threatened species in the state. Nineteen listed species known in the vicinity of the project area were analyzed. Federally listed aquatic species potentially occurring at Bow Creek Recreation Area and Green Island include the Higgins eye (*Lampilis higginsii*), scaleshell mussel (*Leptodea leptodon*), pallid sturgeon (*Scaphirhynchus albus*), and Topeka shiner (*Notropis topeka*). Federally listed terrestrial species occurring at Bow Creek Recreation Area and Green Island include the piping plover (*Charadrius melodius*) and interior least tern (*Sterna antillarum*). Nesting has occurred on the sandbar adjacent to Bow Creek Recreation Area and nesting is possible on the beach at Green Island; however, it has not been documented. Federally listed terrestrial species potentially occurring at all three sites include the northern long-eared bat (*Myotis septentrionalis*), whooping crane (*Grus americana*), and western prairie fringed orchid (*Platanthera praeclara*). While these

listed species have the potential to be present in the project area, the proposed project would have no adverse impact or negligible impacts on any of these species under all the alternatives (including the no action alternative). Beneficial impacts to terrestrial state and federally listed species would occur from vegetation management and an increase in the value of habitat would occur. These negligible and beneficial impacts would correspond to a “may affect, not likely to adversely affect” impact under section 7 of the ESA for the federally listed species. As a result, special status species was dismissed from further analysis.

Historic Structures and Districts – Park resources classified as historic structures may be listed as buildings, structures, districts, or objects in the National Register of Historic Places (NRHP). Historic structures also may be included in the NRHP as contributing elements of historic districts, either as components of developed areas or as landscape features. During the cultural resources survey completed in April 2015, no historic resources were documented at Bow Creek Recreation Area, Mulberry Bend, or Green Island. There would be no adverse effect to historic structures and districts.

Cultural Landscapes –NPS defines cultural landscapes as geographic areas associated with historic events, activities, or people that reflect that park’s history, development patterns, and the relationship between people and the park. No cultural landscapes have been designated within the three properties. Therefore, this topic was dismissed.

Ethnographic Resources – Ethnographic resources are defined as the natural and cultural materials, features, and places that are linked by a subject community to the traditional practices, values, beliefs, history, and/or ethnic identity of that community. Native Americans from some tribes have long been associated with the areas along the Missouri River. During scoping for this project, government-to-government coordination was undertaken with the Native American tribes traditionally associated with the area now encompassed by MNRR (appendix B). Copies of this EA will be forwarded to each associated tribe for review and comment upon request. If subsequent issues or concerns are identified, further consultations would be undertaken. Because there are no known ethnographic resources on MNRR lands, and no issues or concerns were raised by associated tribes during scoping, ethnographic resources was dismissed as an impact topic.

Museum Collections – Pursuant to Section 5.3.5 of the NPS Management Policies 2006, NPS will “collect, protect, preserve, provide access to, and use objects, specimens, and archival and manuscript collections (henceforth referred to collectively as “collections,” or individually as “items”) in the disciplines of archeology, ethnography, history, biology, geology, and paleontology to aid understanding among park visitors, and to advance knowledge in the humanities and sciences” (NPS 2006). Pottery fragments collected during test excavations at Mulberry Bend in April 2015 are now accessioned (MWAC-1634 and MNRR-8) and stored at Midwest Archeological Center. Since the museum collection is not located within the vicinity of the three properties, this topic was dismissed from further analysis.

Wild and Scenic Rivers – In 1968, Congress passed the Wild and Scenic Rivers Act. The act “declared to be the policy of the United States that certain selected rivers of the Nation, which with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.” Under the Wild and Scenic Rivers Act, designated rivers are classified as wild, scenic, or recreational. In 1978 and 1991, Congress used the Wild and Scenic Rivers Act to designate portions of the Missouri River (the 59 Mile District and the 39 Mile District, respectively), and two of its tributaries in Nebraska (Niobrara River and Verdigre Creek), as components of the national wild and scenic river system.

Outstandingly remarkable values (ORVs) are defined by the Wild and Scenic Rivers Act as the characteristics that make a river worthy of special protection. Thus, the foundation for wild and scenic river management is a clearly defined set of ORVs. The Interagency Wild and Scenic Rivers Coordinating Council has issued criteria for identifying and defining these values. The criteria guidance states that:

- An ORV must be river related or dependent. This means that a value must be located in the river or on its immediate shoreline (generally within 0.25 mile on either side of the river).
- Contribute substantially to the functioning of the river ecosystem.
- Owe its location or existence to the presence of the river.
- An ORV must be rare, unique, or exemplary at a comparative regional or national scale. Such a value would be one that is a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary.

Based on these criteria and a careful analysis of the designated reaches of the Missouri and Niobrara rivers, and Verdigre Creek, NPS has determined that several ORVs are present on MNRR. The analysis concluded that MNRR contains the following ORVs: cultural, ecological, fish and wildlife, geological, recreational, and scenic. The 59-Mile District of MNRR has been divided into eight separate segments. Green Island is located in Segment 5, Gavins Point Dam to Rush Island (river mile 811-804). Bow Creek Recreation Area is located within Segment 6, Rush Island to Myron Grove (river mile 804-787). Mulberry Bend is located within Segment 7, Myron Grove to Kate Sweeny Bend (river mile 787-767). An evaluation process for each ORV was then used to determine which river segments contain the different ORVs. Green Island contains cultural, recreational, and scenic values. Both Bow Creek Recreation Area and Mulberry Bend contain cultural, ecological, fish and wildlife, geological, recreational, and scenic values (NPS 2012a). The proposed development of the sites would not adversely impact resources to the point where the ORVs identified would be taken away. In fact, in most cases beneficial impacts to the resource would show even more support that the ORVs are present for each of the applicable segments in MNRR. Because the ORVs identified for each site would continue to exist and there would be no impact to the wild and scenic river, this resource topic was dismissed from further analysis.

Socioeconomics– Socioeconomics includes an evaluation of the potential impacts of the alternatives on the social and economic elements of the surrounding communities. Impacts were analyzed by considering the effect of the existing conditions and the proposed development of the properties on the overall socioeconomic conditions in the area. Socioeconomic conditions were evaluated and the impacts of each alternative were analyzed in terms of their direct and indirect effects on social and economic values. Values of the social environment mainly include quality of life, while economic values include direct and indirect economic benefits or losses to local communities. Although the likely increase in visitors to MNRR would provide some economic benefit to the surrounding communities, this impact would be negligible in the scope of the local economy. As a result, socioeconomics was dismissed from further analysis.

Health and Safety– Safety is a top priority at MNRR, and safety concerns include trip and slip hazards, sharp objects in beach areas, contact with venomous or potentially hazardous species, biting insects, poisonous plants, and other hazards. Weather can present another safety hazard at MNRR. Recreational activities along the Missouri River present safety concerns for visitors including navigation difficulties, high flows associated with flood conditions and rapidly changing conditions, and hazards such as holes, submerged rocks, and snags. MNRR does not have any visitor safety

information related to the three properties as no incidents have been reported to date. The park had only one reported employee accident in the last five years, a slip/trip/fall which occurred in 2014. The analysis of human health and safety was determined by examining the potential effects of construction activities and operation on the health and safety of MNRR visitors and staff. The addition of development, including campsites, within the floodplain presents a potential safety concern for visitors during flood events. However, this impact would be effectively mitigated through an Emergency Action plan that would include warnings and closures of campsites when flood conditions were present. In addition, trail improvements and better separation of hunting and camping uses would result in beneficial health and safety impacts. As a result, this topic was dismissed from further analysis.

Visitor Use and Experience – The NPS *Management Policies* 2006 states that “[t]he fundamental purpose of all parks also includes providing for the enjoyment of park resources and values by the people of the United States” (NPS 2006). The proposed alternatives were developed with the intention of improving recreational opportunities and amenities for visitors at the MNRR. Although some adverse impacts to visitor use and experience may occur during the construction period, beneficial impacts to MNRR visitors would occur because of the new recreational opportunities available following the development of the three properties. As a result, this topic was dismissed from further analysis.

Environmental Justice – EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires federal agencies to make achieving environmental justice part of its mission. Specifically, each agency must identify and address “disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations.” The intent is to prevent minority and low-income populations from being disproportionately affected by adverse human health and environmental impacts of federal actions. The minority population is defined as the nonwhite and multiracial population of a given area and includes African American, Asian, American Indian, Native Alaskan, Native Hawaiian, Pacific Islander, persons reporting some other race, and persons reporting two or more races. The standards of analysis for environmental justice require that these populations are present in the vicinity of the project, and that the potential for disproportionate effects to these populations is present. None of the alternatives (including the no action alternative) would result in disproportionate impacts on minority populations; therefore, this topic was dismissed from further analysis.

Climate Change – Climate change refers to the changes in average climatic conditions (such as mean temperature, precipitation, and wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports provide evidence that climate change is occurring as a result of rising greenhouse gas (GHG) emissions and could accelerate in the coming decades. Although climate change occurs globally, it manifests differently on a more regional scale, depending on local and regional factors. General changes that are anticipated through climate change include hotter, drier summers; warmer winters; warming of waterbodies; higher ocean levels; an increase in the severity of wildfires; greater flooding and heavier precipitation events; a degradation of air quality; and an increase in drought conditions. Climate change is a far-reaching long-term issue, and may affect MNRR, including resources, visitors, and management. Although some of the impacts of climate change are considered known or likely, many potential impacts are not known. Much depends on the rate at which the temperature would continue to rise and whether global emissions of greenhouse gases can be reduced or mitigated. Construction activities associated with the proposed alternative elements would contribute to increased GHG emissions, but emissions would be short term during the construction period. It is not possible to meaningfully link GHG emissions of such individual project actions to quantitative effects on regional or global climatic patterns. Any effects on

climate change would not be discernible at a regional scale. Therefore, climate change was dismissed from further evaluation.

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ALTERNATIVES

NEPA requires federal agencies to fully evaluate and consider a range of reasonable alternatives that address the purpose of and need for action. Alternatives under consideration must include a no action alternative in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14). Action alternatives may originate from the proponent agency, local government officials, members of the public at public meetings, or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies.

The alternatives carried forward for detailed analysis meet the management objectives of the national recreational river, while also meeting the overall purpose of and need for the project. Alternatives and actions that were considered but are not technically or economically feasible, do not meet the purpose of and need for the project, create unnecessary or excessive adverse impacts to resources, and/or conflict with the overall management of the national recreational river or its resources were dismissed from detailed analysis. These alternatives or alternative elements and their reasons for dismissal are discussed at the end of this chapter.

This section describes the alternatives selected for detailed analysis. For each site, a table presents the details of the elements of the alternatives followed by a short summary of the alternative. The alternative elements have been discussed by the following categories: Resource Management, Property Development, Visitor Activities, Site Access, and Park Operations. Alternatives include the No Action Alternative, Low Management/Development, Moderate Management/Development, and High Management/Development.

BOW CREEK RECREATION AREA

No Action Alternative (Alternative A)

Regulations promulgated by the CEQ require NPS to consider the no action alternative. The no action alternative serves as a baseline against which to compare the impacts of other alternatives under consideration.

Table 1 includes details of each alternative element under the no action alternative. Under the no action alternative, current resource management of Bow Creek Recreation Area would continue to include exotic species control through the Exotic Plant Management Plan (EPMP), spraying/mowing/cutting of exotic species and weeds, and prescribed burns for grassland management as described in MNRR *Fire Management Plan* (NPS 2009). Cultural resources would continue to be managed per CFR 2.1, *Preservation of Natural, Cultural, and Archeological Resources*. Currently a parking lot is located on lower Bow Creek. A directional and orientation interpretive sign is located within the parking lot along with a trash receptacle (figure 5). Another property identification and orientation sign is located near the confluence with Bow Creek. Upper Bow Creek is accessible via water. The following activities currently occur at the site: primitive, non-regulated camping; hunting; dog walking on a 6-foot leash; bike riding on park roads and parking area; and canoeing/kayaking with no designated landing area. The recreational activities currently available to visitors at the site would continue to be used by visitors.

MNRR has an annual operational budget of \$847,048, and staff include seven permanent, full-time positions and approximately 5 to 10 temporary employees, which varies by year and is contingent upon discretionary and special project funding availability. There are also a number of volunteers that help with various tasks including administration, resource management, interpretation, and other park

operations. In 2014, 131 volunteers logged 1,154 hours at MNRR. Under the no action alternative, no changes would be made to staffing at MNRR.

Table 1. Bow Creek Recreation Area Alternatives

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--|---|--|--|---|
| Resource Management | | | | |
| Cottonwood Regeneration and Native Species Restoration | <ul style="list-style-type: none"> There are no current cottonwood regeneration practices Exotic species control through Exotic Plant Management Plan (EPMP) | <ul style="list-style-type: none"> The northwest corner of the site would be mowed, treated with herbicide, and planted with locally collected native species. | <ul style="list-style-type: none"> The northwest corner of the site would be mowed, treated with herbicide, and planted with locally collected native species and cottonwood cuttings or seedlings. Shallow disking would occur to disturb soils to encourage cottonwood growth. | <ul style="list-style-type: none"> Same as alternative C |
| Backwater Restoration | <ul style="list-style-type: none"> No backwater restoration | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> The backwater would be restored in the riverine wetland area on the east side of the site. |
| Invasive Species Control | <ul style="list-style-type: none"> Invasive species/noxious weed control includes the use of herbicides and some mowing/cutting as needed according to the EPMP | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Grassland Management | <ul style="list-style-type: none"> Prescribed fires occur according to the Fire Management Plan (FMP). | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Cultural Resource Management | <ul style="list-style-type: none"> Continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>. | <ul style="list-style-type: none"> Identify and protect cultural resources as needed | <ul style="list-style-type: none"> Same as alternative B | <ul style="list-style-type: none"> Same as alternative B |
| Property Development | | | | |
| Signage | <ul style="list-style-type: none"> One combined directional and orientation sign is located in the parking lot One informational sign is located on the river near the confluence of Bow Creek. | <ul style="list-style-type: none"> One kiosk to include informational panels about the unique natural and cultural resources of the property as well as basic orienting information would be installed in the parking lot. The current property identification sign on the river near the confluence of Bow Creek would remain in place. | <ul style="list-style-type: none"> One kiosk to include informational panels about the unique natural and cultural resources of the property as well as basic orienting information would be installed in the parking lot. Campsite locational/directional markers would be installed. Small plant identification signs would be installed. The current property identification sign on the river would be removed and a new sign installed at the Riverside Campground area. One property identification sign would be installed on the river at the Bluff Face Campground. Three waysides to be installed along the trail. | <ul style="list-style-type: none"> Same as alternative C Directional markers would be located on the bluffs as needed and an interpretive sign at the bluffs overlook would be installed. Two additional interpretive waysides would be added to the backwater spur trail. |
| Trails | <ul style="list-style-type: none"> No trails occur at the site. | <ul style="list-style-type: none"> Mowed trail system would be placed through the northern portion of the property to create two loops. This trail would be in compliance with Americans with Disabilities Act (ADA) standards as much as feasible. Boardwalks would be constructed in sensitive areas (e.g., wetlands). | <ul style="list-style-type: none"> Same as alternative B. A portion of the mowed trail system from the parking lot to Riverside Campground would be hardened using gravel or crushed limestone. Backwater spur trail would be constructed from the main trail leading to the wetland area. This spur trail would be primitive. A mowed/primitive trail leading to the Bluff Face campground would be constructed. | <ul style="list-style-type: none"> Same as Alternative C A primitive trail would be constructed on the bluff portion of site. |

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|---------------------------|--|--|---|---|
| Campground | <ul style="list-style-type: none"> Primitive, non-regulated camping occurs. | <ul style="list-style-type: none"> Primitive camping in non-designated areas would be permitted Memorial Day through Labor Day | <ul style="list-style-type: none"> Primitive camping in designated (12'x12') sites would be permitted. A gravel loop road with non-electric campsites would be located off of the parking lot. Each campsite within the Prairie Campground would include a picnic table. This campground would be open year round as weather permits. Hike-in campsites would be established along the river on the north side of the site. The Riverside Campground would be open Memorial Day through Labor Day A designated primitive campsite would be established in Bluff Face area which would be accessible by boat. The Bluff Face Campground would be open Memorial Day through Labor Day. All campsites would require a permit and potential associated recreational fee in accordance with NPS guidelines and future approval as a fee use area. | <ul style="list-style-type: none"> A gravel loop road with electric campsites would be located off of the parking lot. Each campsite within the Prairie Campground would include a picnic table, concrete pads, and electrical hookups. This campground would be open year round as weather permits. Primitive campsites would be established along the river on the north side of the site. The Riverside Campground would be open Memorial Day through Labor Day Primitive campsite(s) would be established in upland bluff area which would be accessible by boat. The Bluff Face Campground would be open Memorial Day through Labor Day. All campsites would require a permit and potential associated recreational fee in accordance with NPS guidelines and future approval as a fee use area. |
| Campfires | <ul style="list-style-type: none"> No campfires allowed | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Metal fire rings may be installed at designated campsites. County burn bans would be enforced as needed. | <ul style="list-style-type: none"> Same as alternative C |
| Picnic Area | <ul style="list-style-type: none"> No picnic areas | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Picnic tables would be provided at each campsite in the Prairie Campground (near parking lot) area only. | <ul style="list-style-type: none"> Same as alternative C |
| Restroom Facility | <ul style="list-style-type: none"> No restroom facility | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Vault toilets (male/female) would be installed in the parking lot. A portable toilet would be located at the Riverside Campground. | <ul style="list-style-type: none"> A comfort station, which would include restrooms, running water, and electricity, would be constructed within the parking lot. A portable toilet or vault toilet would be installed at the Riverside Campground. |
| Trash Receptacles | <ul style="list-style-type: none"> One trash receptacle is located in the parking lot. | <ul style="list-style-type: none"> A recycling receptacle would be installed adjacent to the trash receptacle in the parking lot. | <ul style="list-style-type: none"> Same as alternative B A trash and recycling receptacle would be installed at each campground restroom. There would be no trash/recycle receptacles within the Bluff Face Campground. | <ul style="list-style-type: none"> Same as alternative C |
| Potable water | <ul style="list-style-type: none"> No potable water is available. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Well installed for potable water |
| Visitor Activities | | | | |
| Dog Walking | <ul style="list-style-type: none"> 36 CFR 2.15 – Dog walking on a 6-foot leash or less is permitted. Dog walking off-leash would be permitted in support of hunting activities. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|-------------------------|--|--|---|--|
| Hunting | <ul style="list-style-type: none"> Hunting, including upland game, turkey, waterfowl, and deer, is permitted in accordance with applicable State regulations and seasons. Portable hunting stands/duck blinds are allowed on site for a maximum of 24 hours and they must include the owner contact information visible from the ground. | <ul style="list-style-type: none"> Hunting, including upland game, turkey, waterfowl, and deer, is permitted Labor Day through Memorial Day in accordance with applicable State regulations and seasons. Portable hunting stands/duck blinds are allowed on site for 24 hours and they must include the owner contact information visible from the ground. | <ul style="list-style-type: none"> Same as alternative B | <ul style="list-style-type: none"> Same as alternative B |
| Horseback Riding | <ul style="list-style-type: none"> No Horseback riding permitted. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Bike Riding | <ul style="list-style-type: none"> Bike riding is permitted on park roads and within the parking lot. No bike riding on trails. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Off-Road Vehicles | <ul style="list-style-type: none"> No off-road vehicles are permitted on the site. Off-road vehicles are used for administrative park access only. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Canoe/Kayak | <ul style="list-style-type: none"> Canoe/kayak access is available; however, there are no designated landing areas. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A landing site for canoe/kayaks would be improved and/or developed. | <ul style="list-style-type: none"> Same as alternative C. A road that leads from the parking lot to the river would be constructed for greater access to canoe/kayak access point and campground. |
| Site Access | | | | |
| Site Access/Parking Lot | <ul style="list-style-type: none"> A parking lot is located on lower Bow Creek. Upper Bow Creek is accessible by water only. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A primitive road that leads from the parking lot to the river would be constructed. This road would be semi-permeable (gravel) and would be approximately 8 to 10 feet wide. |
| Staffing | <ul style="list-style-type: none"> No change to park staff | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> An Operation of the National Park System (ONPS) base increase justification request would be submitted in the future. If granted, one full-time employee would be added for facilities management. An additional two seasonal employees would be hired during the summer months, pending funding availability. | <ul style="list-style-type: none"> An ONPS base increase justification request would be submitted in the future. If granted, one full-time employee would be added for facilities management. An additional three seasonal employees would be hired during the summer months, pending funding availability. |
| Fees | <ul style="list-style-type: none"> No fees | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Camping fees may be considered in accordance with NPS guidelines and approval as a fee use area. | <ul style="list-style-type: none"> Same as alternative C |

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Low Management/Development (Alternative B)

Table 1 includes details on each alternative element under alternative B at Bow Creek Recreation Area. Figure 6 includes the proposed location for some of the actions described. For resource management, alternative B would be the same as alternative A with the addition of mowing the northwest corner of the site and planting with local native species (figure 6). Property development would be the same as alternative A with the addition of the installation of a kiosk and recycling receptacle in the parking area, construction of trail system with two loops (figure 6), and restricting primitive camping in non-designated areas from Memorial Day through Labor Day. Visitor activities and site access would also be the same as alternative A, except hunting would only be permitted from Labor Day through Memorial Day. Portable hunting stands/duck blinds would only be allowed for 24 hours. Alternative B would benefit visitors by providing some increased resources, including informational signage, but the site would largely remain in a primitively developed state. Similarly to the no action alternative, no changes to current staffing at the park would occur under alternative B.

Moderate Management/Development (Preferred Alternative C)

Table 1 includes details on each alternative element under alternative C at Bow Creek Recreation Area. Figure 7 includes the proposed location for some of the actions described. For resource management, alternative C would be the same as alternative B with the addition of shallow disking to encourage cottonwood regeneration and growth (figure 7). Property development under alternative C would include the addition of designated camping areas along a gravel loop road (Prairie Campground), Missouri River (Riverside Campground), and the upland area (Bluff Face Area) (figure 7). Metal fire rings at each campsite may be installed in the future and picnic tables would be installed within the Prairie Campground. Fees may be issued in the future for camping. A portion of the mowed trail system described under alternative B would be hardened using gravel or limestone (figure 7). Two vault toilets would be installed in the parking lot, and portable toilets and trash receptacles would be installed within the Riverside Campground. A primitive trail would be constructed from the Missouri River up to the Bluff Face Campground. In addition to the kiosk described under alternative B, additional signage including campsites location/direction markers, plant identification signs, property signs, and five wayside exhibits would be installed throughout Bow Creek Recreation Area. Visitor activities and site access would be the same as alternative B except a designated landing area would be developed for canoes and kayaks. Overall, the preferred alternative would increase recreational activities, site access and facilities, and chances for visitors to learn about resources at the site, increasing the visitor experience at the site.

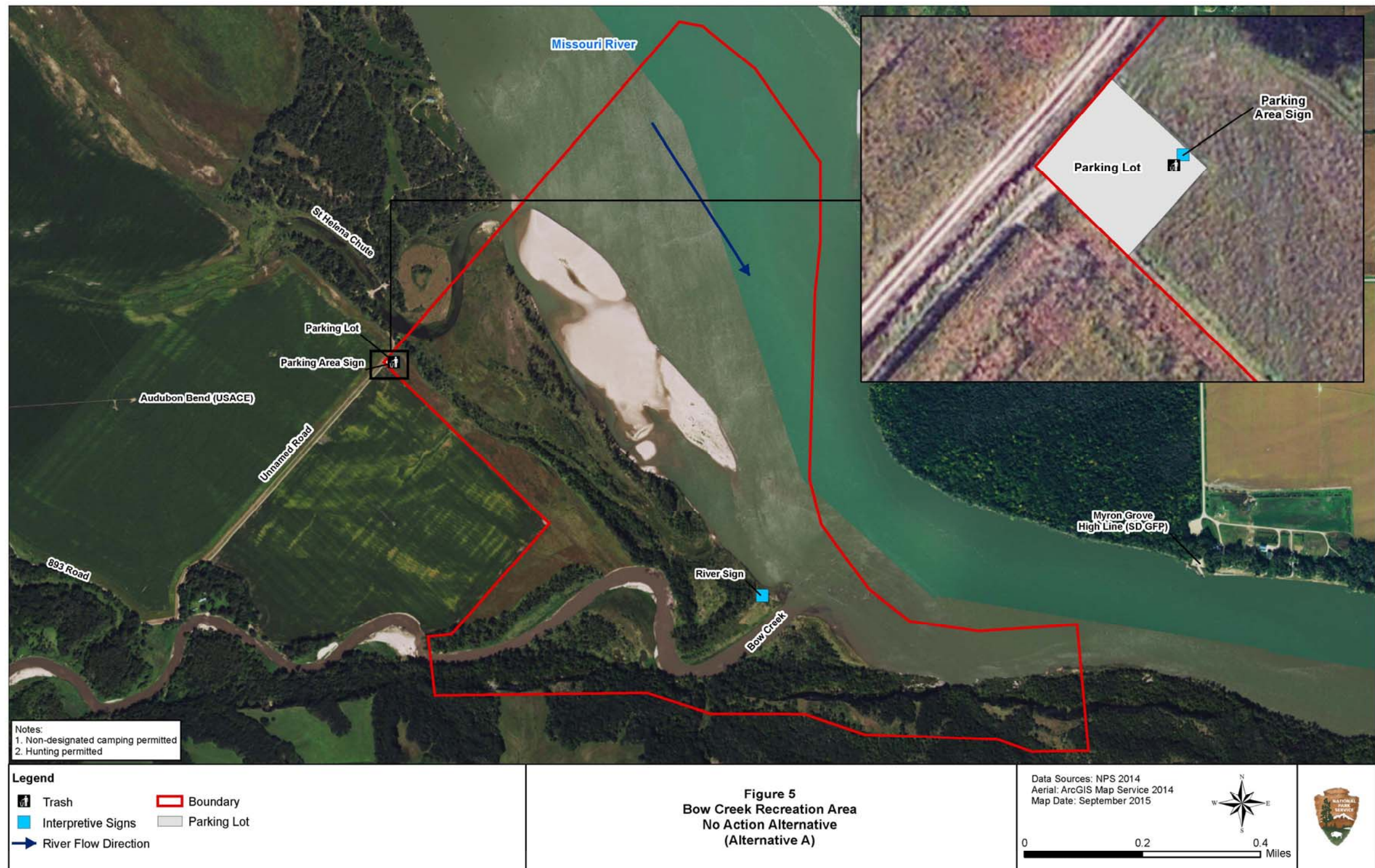
Under alternative C, an Operation of the National Park System (ONPS) base increase justification request would be submitted, which, if approved, would allow for the addition of one full-time employee for facilities management to assist with the additional park operation responsibilities associated with increased visitation and maintenance under the alternative. In addition, alternative C would include the hiring of two seasonal employees during the summer months, pending availability of funds. Seasonal staff would help address short-term staffing needs associated with construction and maintenance.

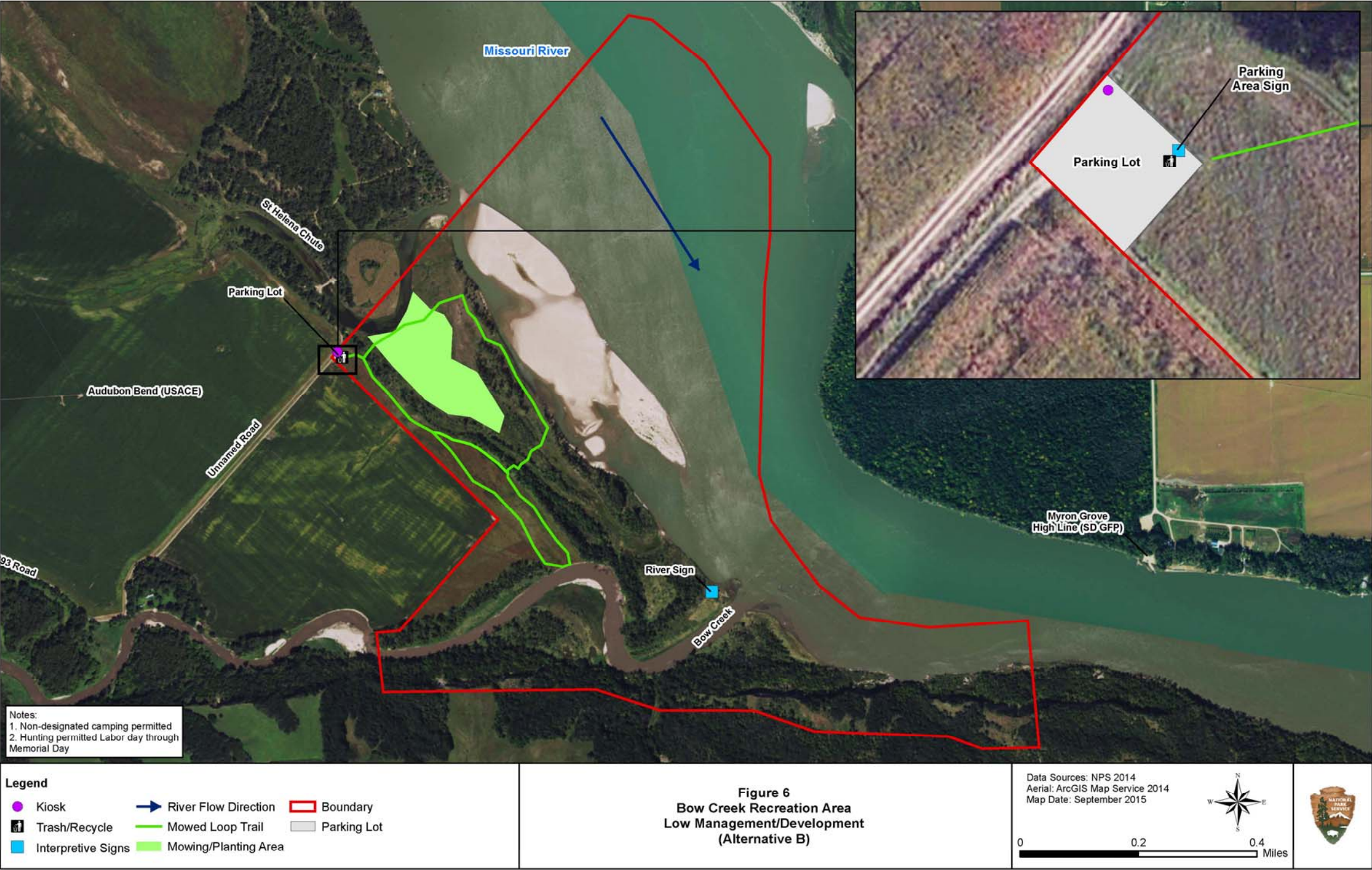
High Management/Development (Alternative D)

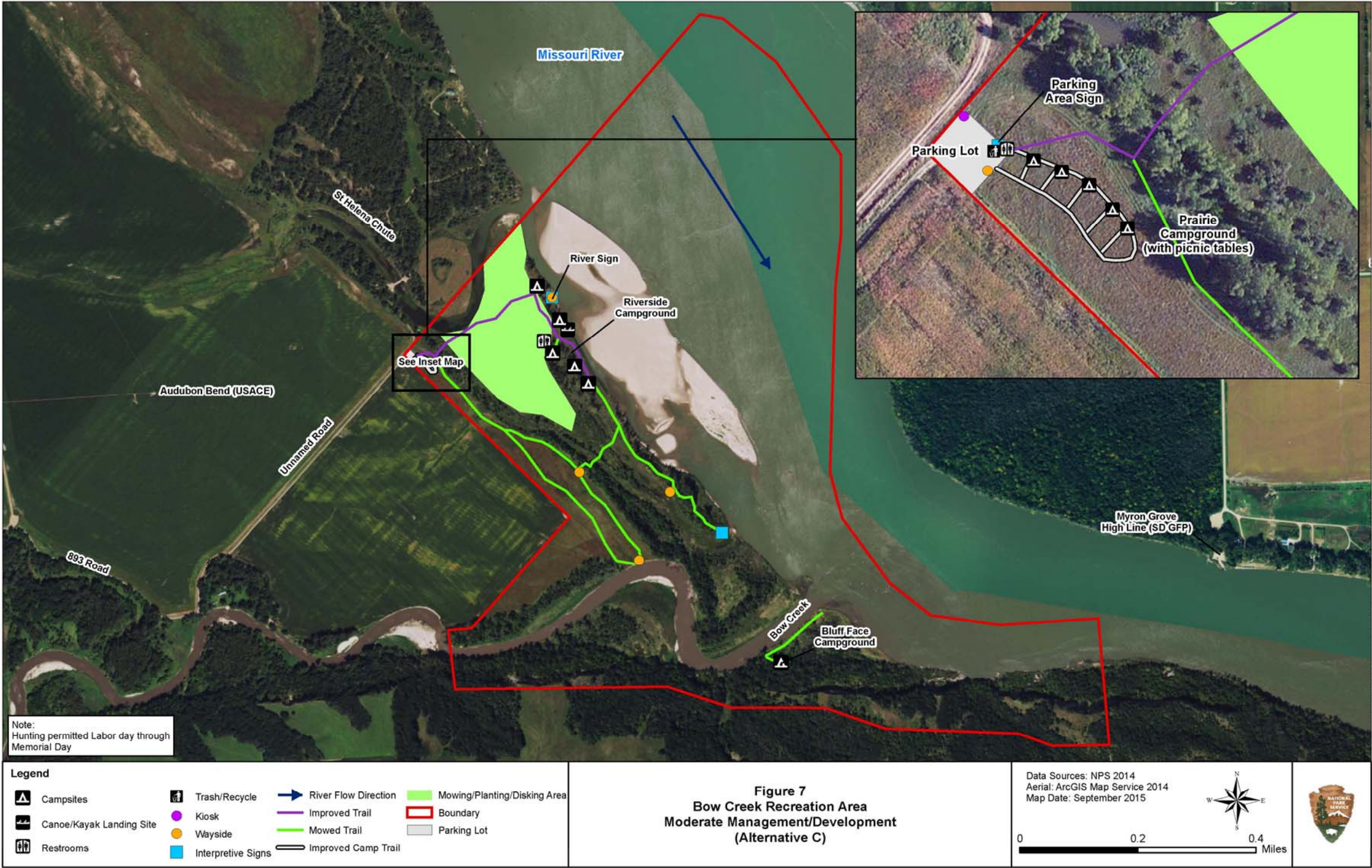
Table 1 includes details on each alternative element under alternative D at Bow Creek Recreation Area. Figure 8 includes the proposed location for some of the actions described. Property development under alternative D would be similar to alternative C. An additional primitive trail would be established on the bluffs portion of the site that would lead from the campground to a wayside exhibit. The Prairie Campground would include five campsites with concrete pads and electrical hookups and picnic tables. Instead of installing a vault toilet within the parking lot, a comfort station, which would include restrooms, sinks with running water, and electricity would be installed. Additional directional and interpretive signage would be installed within the Bluffs Area. Site access would be improved by

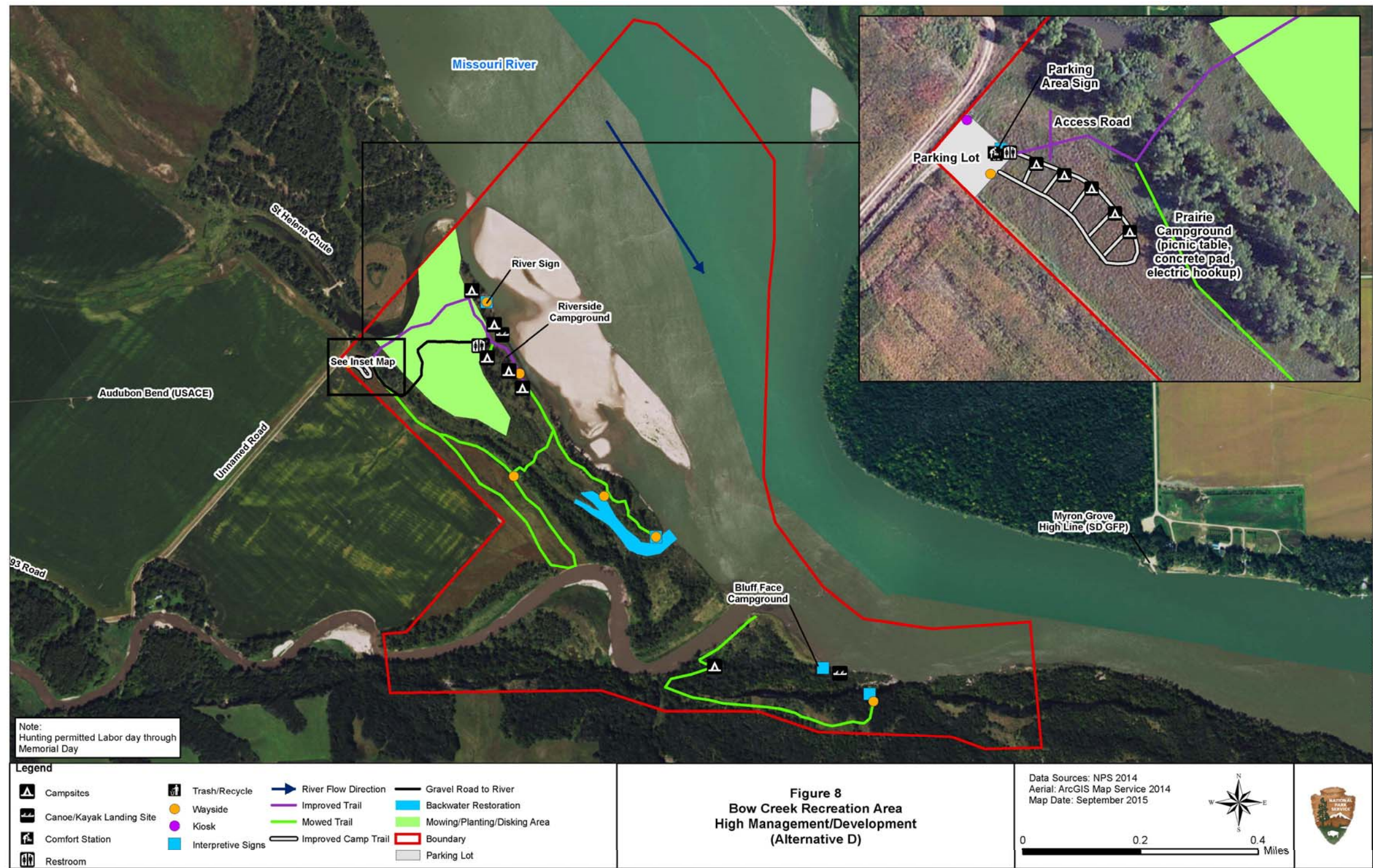
constructing a gravel road from the parking lot to the river. Site development under this alternative would increase opportunities for visitors to recreate at the site, would increase facilities available to visitors, and would provide diverse experiences for visitors to interact with the site.

Similarly to alternative C, alternative D would include an ONPS base increase justification request for one full-time employee in facilities maintenance to assist with increased visitation and maintenance at the park. Three seasonal employees would be hired during the summer months, pending funding availability, to meet short-term staff needs related to construction and maintenance.









MULBERRY BEND

No Action Alternative (Alternative A)

Table 2 includes details of each alternative element under the no action alternative. Figure 9 includes the location for some of the current features described. Under the no action alternative, current resource management of Mulberry Bend Area would continue to include weekly mowing during the growing season, use of herbicides and cutting on invasive/noxious weed species, cutting red cedars, burning/chipping cedar piles, performing broadcast burns, and cutting trees every three years to maintain the vista points. Cultural resources would continue to be monitored for damage. Currently Mulberry Bend includes a parking area with trash can and recycling receptacles, an entrance sign, an interpretive sign, and a picnic table. A paved trail extends from the parking lot to two vista points. Directional signs are located along the trail and interpretive signs are located at the vista points. A dirt backcountry trail extends from the main vista through the forested area to two additional vista locations (figure 9). The following activities currently occur at the site: hiking, dog walking on a 6-foot leash, and bike riding on park roads and a parking area. The Mulberry Bend site is closed in the winter after the first snowfall and through the spring. Overall, no changes to existing visitor resources would occur under the no action alternative, and the site would remain largely undeveloped.

The annual operational budget of MNRR and staffing is noted above under the no action alternative for Bow Creek. Under the no action alternative, no changes would be made to staffing at MNRR.

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Table 2. Mulberry Bend Alternatives

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|---|--|--|---|---|
| Resource Management | | | | |
| Vegetation Maintenance (mowing) | <ul style="list-style-type: none"> During the growing season, weekly mowing occurs along the edges of the sidewalks, driveway, and picnic table area. The width of mowing is approximately 2 feet on either side of the driveways and sidewalks. Remove hazard trees. Maintain vegetation along trails by trimming brush. | <ul style="list-style-type: none"> During the growing season, weekly mowing along the edges of the sidewalks, driveway, picnic table area, parking lot “island,” and any new features proposed. The width of mowing is approximately 2 feet on either side of driveways and sidewalks. Remove hazard trees. Maintain vegetation along trails by trimming brush. | <ul style="list-style-type: none"> Same as alternative B | <ul style="list-style-type: none"> Same as alternative B |
| Invasive Species Control | <ul style="list-style-type: none"> Invasive species/noxious weed control includes the use of herbicides on perennials including leafy spurge, buckthorn, and Canada thistle. Mechanical cutting of biennials including musk thistle, plumeless thistle, mullein, and sweet clover. Mechanical cutting/herbicide use to control hemp. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Oak Savannah and Prairie Restoration | <ul style="list-style-type: none"> Perform a broadcast burn throughout the entire site to control eastern red cedar, green ash, and hackberry every 2 to 5 years. A total of 12 fire personnel, 2 all-terrain vehicles, and a fire truck are needed to implement burns. Cut and chip eastern red cedars. If trees cannot be chipped, they would be burned. No cutting would occur within the archeology site on the west side of the highway | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|-----------------------------|--|--|--|---|
| Maintain Vista | <ul style="list-style-type: none"> Every three years, trees are selectively cut to maximize the views from the two vistas along the paved trail. A minimal number of trees are removed and trees are typically nonnative and/or undesirable species including green ash, hackberry, white mulberry, and Siberian elm. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A Additional trees at the two vistas located along the paved trail would be cleared to increase the viewshed every other year. Oak trees would remain in place due to the oak savannah restoration. At vista 1, 3 mulberry, 5 eastern red cedar, 6 Siberian elm, 8 green ash, and 3 hackberry would be proposed for cutting. At vista 2, 3 elm, 3 hackberry, and 3 mulberry would be cleared. At the observation point above vista 2, 5 elm would be cleared to enhance the downstream view. Trees would be cut at the two vistas located on the backcountry trail to increase the viewshed every other year. Current trees would be monitored at vista 3 for view encroachment and 8 hackberry trees would be cleared at vista 4. | <ul style="list-style-type: none"> Same as alternative C All tree species, including oak trees, would be cleared every other year so that the entire viewshed is available. Between vista 1 and 2 on the paved trail, river viewing lanes would be created by cutting select trees. <ul style="list-style-type: none"> Between staircase 2 and 3: clear a lane looking upstream by cutting 3 green ash, 3 mulberry, 1 hackberry, and 1 oak. Between staircase 3 and 4, clear a lane looking downstream by clearing 2 mulberry 1 green ash. Between staircase 4 and 5, clear 2 elms and 1 green ash to view downstream. |
| Cultural | <ul style="list-style-type: none"> Cultural resources, including archeological sites are monitored for damage and protected as necessary | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Property Development | | | | |
| Signage | <ul style="list-style-type: none"> A wooden entrance sign is located at the intersection of the highway and property access road. This sign is repainted as needed when fading occurs. Interpretive signs are located in the parking lot and at each of the vistas (vistas 1 and 2) along the paved trail. Directional signs are located along the primitive trail. | <ul style="list-style-type: none"> Same as alternative A Small signs would be installed within the parking lot “island” identifying native plant species. Small signs would be installed along the trails identifying native plant species. Current signs would be maintained. | <ul style="list-style-type: none"> Same as alternative B Replace current information sign near the parking lot. Replace the primitive trail head sign located at paved trail overlook (vista 2) depicting the unique natural resources and historical context of the property and primitive trail. Two waysides discussing natural river processes/river change would be installed at vista 3 on the primitive trail One wayside discussing forest character would be installed near the amphitheater | <ul style="list-style-type: none"> Same as alternative C Interpretive signs along the existing primitive, non-paved backcountry trail would be installed. New signage would be installed as needed for new trails or any new features proposed. A wayside exhibit explaining the prairie habitat would be installed within the picnic area on west side of the site. A wayside exhibit would be installed at vista 4. Small signs would be installed on the west side of the site identifying native prairie species. |

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--|--|--|---|---|
| Trails | <ul style="list-style-type: none"> A paved trail begins in the parking lot and leads to two main vistas (vista 1 and 2). A backcountry dirt trail extends from the second vista through the forest and includes two additional vistas. | <ul style="list-style-type: none"> Same as alternative A. | <ul style="list-style-type: none"> Same as alternative A The existing paved trail would be maintained and the first section (0.05 mile) of dirt back country trail from vista 2 may be reconfigured. The backcountry trail would be maintained in its primitive state; however, semi-permeable surface material such as gravel or crushed limestone would be added if needed. A wooden staircase would be installed at the beginning of the backcountry trail to reduce steepness. This is an approximate 10-foot section. Gravel steps or a wooden stair case would be installed along the spur trail, which extends from vista 2. An observation point would be constructed at the top of the stairs with the same material as the steps (e.g., gravel). A boardwalk on the backcountry trail would be added when necessary to prevent erosion or to protect resources. | <ul style="list-style-type: none"> Same as alternative C Install a rock observation platform located at the northern edge of the spur trail extending from vista 2. The observation platform would be made of similar materials as vistas 1 and 2. A wooden platform would be installed at vista 3 on the backcountry trail. On the west side of the site, a mowed loop trail would be installed off of the picnic area within the prairie habitat. |
| Campground | <ul style="list-style-type: none"> No camping is permitted. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Campfires | <ul style="list-style-type: none"> No campfires are permitted. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Picnic Area/Shelter | <ul style="list-style-type: none"> One picnic table is located by the parking area. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Install a picnic shelter over the picnic table located by the parking area on the east side of the site. The picnic shelter would be approximately 10 feet by 20 feet and additional picnic tables may be added. Install a bench at the end of the east spur of the backcountry trail at vista 3. | <ul style="list-style-type: none"> Same as alternative C Install wooden observation deck at vista 3. Install approximately 4 to 6 picnic tables under one large picnic shelter on west side of site in the prairie restoration area. |
| Restroom Facility | <ul style="list-style-type: none"> No restroom facilities are located at the site. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Concrete vault toilet would be installed within the “island” at the east side of parking area. | <ul style="list-style-type: none"> Same as alternative C Concrete vault toilet would be installed within the parking area on the west side of the site. |
| Trash Receptacles | <ul style="list-style-type: none"> One trash receptacle and one recycling receptacle are located near the parking area. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A trash and recycling receptacle would be installed next to the picnic table in the east side of the site. | <ul style="list-style-type: none"> Same as alternative C A trash and recycling receptacle would be installed at vista 3 near the new bench. A trash and recycling receptacle would be installed on the west side of the site in the picnic area. |
| Potable Water/Drinking Fountain | <ul style="list-style-type: none"> No drinking fountain. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A well water pump would be installed on the east and west side of the site. |

| Alternative Element | Alternative A No Action | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--|--|---|--|--|
| Amphitheater | <ul style="list-style-type: none"> No amphitheater | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A primitive amphitheater would be installed using wood/native materials approximately 0.2 mile from the backcountry trailhead. The amphitheater would be used for ranger-led programs. | <ul style="list-style-type: none"> Same as alternative C |
| Dog Walking | <ul style="list-style-type: none"> 36 CFR 2.15 – Dog walking on a 6-foot leash or less are permitted. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Hunting | <ul style="list-style-type: none"> No hunting is permitted | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Bike Riding | <ul style="list-style-type: none"> Bike riding is permitted on park roads and within the parking lot. Bike riding is not permitted on the paved or backcountry trails. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Off-Road Vehicles | <ul style="list-style-type: none"> No off-road vehicles are permitted on the site. Off-road vehicles are used for administrative park access only. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Site Access | | | | |
| West Side Site Access/Parking Lot | <ul style="list-style-type: none"> There are no access roads or parking lots located on the west side of the site. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A gravel road would be constructed on the west side of the site leading to a small parking area next to the new picnic shelter, common area, and restroom. |
| East Side Site Access/Parking Lot | <ul style="list-style-type: none"> The site can be accessed via Nebraska Highway 15. A vehicle parking lot is located on the east side of the site. The parking lot is chipped/sealed as necessary. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Park Operations | | | | |
| Staffing | <ul style="list-style-type: none"> No change to park staff | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> One full-time employee would be added for facilities management An Operation of the National Park System (ONPS) base increase justification request would be submitted in the future. An additional two seasonal employees would be hired during the summer months. | <ul style="list-style-type: none"> One full-time employee would be added for facilities management An ONPS base increase justification request would be submitted in the future. An additional three seasonal employees would be hired during the summer months. |
| Winter Maintenance | <ul style="list-style-type: none"> The overlook gate is closed when winter conditions (e.g., snow and ice) create unsafe conditions for visitors. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> The site would be open year round. Parking areas and paved trails would be cleared of snow and ice throughout the winter. Primitive trails would not be maintained. |

Low Management/Development (Alternative B)

Table 2 includes details on each alternative element under alternative B at Mulberry Bend. Figure 10 includes the proposed location for some of the actions described. For resource management, alternative B would be the same as alternative A with the addition of mowing the perimeter of the parking lot island and any new features as needed, removing hazard trees, and maintaining vegetation along the trails (figure 10). Property development would be the same as current conditions with the exception of adding native plant signs in the parking lot island and along the trails. Current signs would also be maintained on an as needed basis. Visitor activities and site access would also be the same as alternative A. Site development under Alternative B would include minor improvements to recreational opportunities, but conditions would remain largely the same as current conditions. Similarly to the no action alternative, no changes to current staffing at the park would occur under alternative B.

Moderate Management/Development (Preferred Alternative C)

Table 2 includes details on each alternative element under alternative C at Mulberry Bend. Figure 11 includes the proposed location for some of the actions described. For resource management, alternative C would be the same as alternative B with the addition of cutting/clearing larger trees for oak savannah and prairie restoration and to increase the four vista's viewsheds. Property development would be the same as alternative B with the addition of replacing the backcountry trailhead sign at vista 2, replacing the current trailhead sign and interpretive sign in the parking area. The current paved trail and backcountry trail would be maintained and gravel/limestone would be added to portions of the backcountry trail as needed. A wooden staircase would be installed at the beginning of the backcountry trail and along the spur trail from vista 2 (figure 11). Boardwalks would be added to the trail as needed in the future. A picnic shelter for the current picnic table, trash/recycling receptacles, and a vault toilet would be installed in the parking lot. A primitive amphitheater used for ranger led programs would also be constructed 0.2 mile from the backcountry trailhead. A bench would be installed at the end of the east spur of the backcountry trail at vista 3. Visitor activities and site access would be the same as alternatives A and B. The improved trail access and interpretive signage, and development of a primitive amphitheater, picnic shelter, and vault toilet would allow for greater visitor education, facilities, and access at the site, improving visitor use and experience at the site.

Under alternative C, an ONPS base increase justification request would be submitted, which would allow for the addition of one full-time employee for facilities management to assist with the additional park operation responsibilities associated with increased visitation and maintenance under the alternative. In addition, alternative C would include the hiring of two seasonal employees during the summer months, pending availability of funds. Seasonal staff would help address short-term staffing needs associated with construction and maintenance.

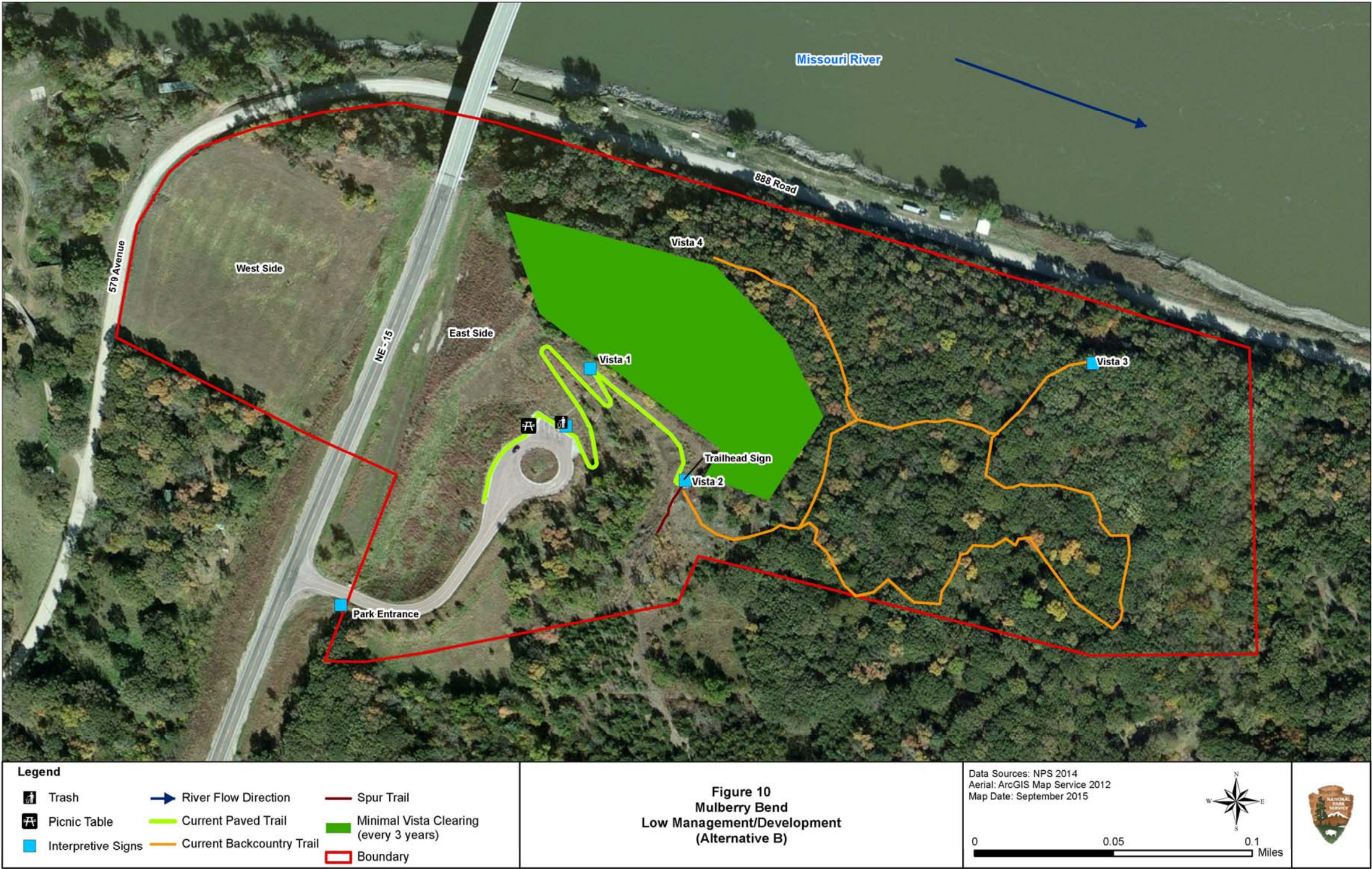
High Management/Development (Alternative D)

Table 2 includes details on each alternative element under alternative D at Mulberry Bend. Figure 12 includes the proposed location for some of the actions described. For resource management, alternative D would be the same as alternative C with the addition of clearing additional native and non-native trees, including oak trees, to increase the viewshed at the four vistas. Property development would be similar to alternative C with the addition of some new elements. Interpretive signs would be installed along the existing trails and for new trails proposed. A new wayside exhibit would be installed at the picnic shelter in the parking lot. A rock observation platform would be installed at the top of the ridge along the spur trail near vista 2 and a wooden platform with a wood bench and trash/recycling receptacle would be installed at vista 3 on the backcountry trail (figure 12). Access to Mulberry Bend would be expanded to the west side of the site by constructing a gravel road which would lead to a parking lot, picnic shelter area, trash/recycling receptacles, and restroom. The west side of the site would also include a mowed loop trail and new signs explaining the prairie plants

(figure 12). A water well pump to provide drinking water would be installed on both the east and west side of the site. Under alternative D, Mulberry Bend would be open year round. Under alternative D, site development would provide an improved recreational experience for visitors, including trail and signage improvements, and the addition of picnic tables, overlooks, restrooms, and access roads.

Similarly to alternative C, alternative D would include an ONPS base increase justification request for one full-time employee in facilities maintenance to assist with increased visitation and maintenance at the park. Three seasonal employees would be hired during the summer months, pending funding availability, to meet short-term staff needs related to construction and maintenance.









GREEN ISLAND

No Action Alternative (Alternative A)

Table 3 includes details of each alternative element under the no action alternative. Figure 13 includes the location for some of the current features described. Under the no action alternative, current resource management of Green Island would continue to include the use of herbicides on invasive/noxious weed species and cutting red cedars. Cultural resources including the historic pilings and buffalo bones would continue to be preserved under CFR 2.1, *Preservation of Natural, Cultural, and Archeological Resources*. Currently Green Island includes access by boat from the Missouri River and by foot via the City of Yankton Meridian Bridge parking area. There is no designated parking area on the land side of the site. Three informative signs are located on the island and one informative sign is located on the land side of the site (figure 13). Primitive, non-regulated camping does occasionally occur at the site and campfires do sometimes occur, as there is no defined regulation. In addition, dog walking on a 6-foot leash is also permitted. Recreational opportunities and facilities currently available at the site would continue to be available to visitors.

The annual operational budget of MNRR and staffing is noted above under the no action alternative for Bow Creek. Under the no action alternative, no changes would be made to staffing at MNRR.

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Table 3. Green Island Alternatives

| Alternative Element | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|---------------------------------|--|--|--|--|
| Resource Management | | | | |
| Invasive Species Control | <ul style="list-style-type: none"> Invasive species/noxious weed control includes the use of herbicides on perennials and mowing/cutting biennials. Eastern red cedars are controlled by cutting. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Cultural Resources | <ul style="list-style-type: none"> Historic pilings and scattered buffalo bones are located on the site. Continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Protective fencing would be placed around the historic pilings. Fence would be either a post and cable fence or split rail fence. | <ul style="list-style-type: none"> Same as alternative C |
| Property Development | | | | |
| Signage | <ul style="list-style-type: none"> There are three Green Island signs on the island and one sign located on the land side of the site. The signs identify the property, show current allowed uses, and show the river mile. Standard NPS boundary marker signs are located along the fence on the land side of the site. | <ul style="list-style-type: none"> One interpretive panel would be installed on the island's north beach area and the current informational sign on the land side would be replaced. | <ul style="list-style-type: none"> Same as alternative B Campsite markers, vegetation identification signs, and one wayside interpretive sign would be installed on the island Three interpretive signs would be installed on the land side of the site. | <ul style="list-style-type: none"> Same as alternative C |
| Trails | <ul style="list-style-type: none"> There is no developed trail system. | <ul style="list-style-type: none"> A trail would be located on the land side of the site and on the island. The trail would have a sand substrate; therefore, no additional substrate work would be needed. A board walk would be constructed in sensitive areas as needed. If possible, the trails would meet Americans with Disabilities Act (ADA) standards. | <ul style="list-style-type: none"> A trail would be located on land side of the site and on the island. The trail would have a semi-impervious surface (gravel or crushed limestone). A board walk would be constructed in sensitive areas as needed. If possible, the trails would meet ADA standards. Spur trails would lead from the main loop trail to campsites and restroom as appropriate on the island. Two benches would be installed along trail on the land side of the site. | <ul style="list-style-type: none"> Same as alternative C |
| Campground | <ul style="list-style-type: none"> Primitive, non-regulated tent camping occurs. | <ul style="list-style-type: none"> Primitive tent camping in non-designated areas would be permitted. | <ul style="list-style-type: none"> Primitive tent camping would be permitted within 5 to 15 designated sites on the island. All campsites would require a permit and potential recreational fee in accordance with NPS guidelines and future approval as a fee use area. | <ul style="list-style-type: none"> Primitive tent camping would be permitted within 5 to 20 designated sites on the island. All campsites would require a permit and potential recreational fee in accordance with NPS guidelines and future approval as a fee use area. |
| Campfires | <ul style="list-style-type: none"> Some campfires do occur on the island as there is no set campfire regulation. | <ul style="list-style-type: none"> No campfires would be permitted. | <ul style="list-style-type: none"> Metal fire rings may be installed in future, based on permit conditions. No open campfires would be permitted on the beach or at campsites. Two charcoal grills would be installed on the beach. County burn bans would be enforced as needed. | <ul style="list-style-type: none"> Charcoal grills or metal fire rings would be provided at each campsite. County burn bans would be enforced as needed. No open campfires would be permitted on the beach or at campsites. Two charcoal grills would be installed on the beach and at each campsite. |

| Alternative Element | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--------------------------------|--|---|---|---|
| Restroom Facility | <ul style="list-style-type: none"> No restroom facilities available. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> One portable restroom would be placed on the island seasonally. Portable restrooms would potentially be contracted. MNRR would consider work with partners to have a restroom by the Meridian Bridge parking area or other nearby area. | <ul style="list-style-type: none"> Two vault toilets (or similar technology) would be installed near each campground area on the island. |
| Trash Receptacles | <ul style="list-style-type: none"> No trash receptacles are located on Green Island. Pack-in, pack-out practices are implemented. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A trash /recycle receptacle would be installed next to the restroom on the island A trash/recycle receptacle would be installed on the beach near charcoal grills. A trash/recycle receptacle would be installed at the trailhead on the land side of the site. | <ul style="list-style-type: none"> Same as alternative C |
| Visitor Activities | | | | |
| Dog Walking | <ul style="list-style-type: none"> 36 CFR 2.15 – Dog walking on a 6-foot leash or less are permitted. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Hunting | <ul style="list-style-type: none"> No hunting permitted. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Bike Riding | <ul style="list-style-type: none"> As bicycle riding is only permitted on park roads and parking lots, no bike riding is allowed due to lack of such roadways. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Off-Road Vehicles | <ul style="list-style-type: none"> No off-road vehicles are permitted on the site. Off-road vehicles are used for administrative park access only. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A |
| Site Access | | | | |
| Parking Lot | <ul style="list-style-type: none"> No parking lots are available at the site. Access is permitted by boat and from the City of Yankton Meridian Bridge parking area (old Highway 81). | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> MNRR would explore a partner opportunities for a parking area on nearby partner property. |
| Bridge Access | <ul style="list-style-type: none"> There is no bridge connecting the land side of the site to the island. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A “land” bridge that would connect the land side of the site to the island would be reconstructed from the sediment derived from the proposed backwater restoration. |
| Reconfiguring Backwater | <ul style="list-style-type: none"> There is no backwater at the site. Previously restored (2008) backwater naturally converted to the present-day side channel during the 2011 flood event. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> The backwater at the site would be restored by deepening the water level and using the excavated material to build a land bridge. |
| Canoe/Kayak Access | <ul style="list-style-type: none"> No designed area for landing canoes and kayaks on the island. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> A gently sloped beach/island bank would provide canoe and kayak access to the island’s south shore. | <ul style="list-style-type: none"> Same as alternative C |
| Park Operations | | | | |
| Staffing | <ul style="list-style-type: none"> No change to park staff. | <ul style="list-style-type: none"> Same as alternative A | <ul style="list-style-type: none"> One full-time employee would be added for facilities management An Operation of the National Park System (ONPS) base increase justification request would be submitted in the future. An additional two seasonal employees would be hired during the summer months. | <ul style="list-style-type: none"> One full-time employee would be added for facilities management. An ONPS base increase justification request would be submitted in the future. An additional three seasonal employees would be hired during the summer months. |

Low Management/Development (Alternative B)

Table 3 includes details on each alternative element under alternative B at Green Island. Figure 14 includes the proposed location for some of the actions described. For resource management, alternative B would be the same as alternative A. Property development would be the same as current conditions with the addition of a trail with soil substrate on the land side and island portion of the site. A total of four interpretive signs would be located along the island and land trails. Primitive regulated tent camping in non-designated areas would be allowed; however, no campfires would be permitted. Current signs would also be maintained on an as-needed basis. Visitor activities and site access would also be the same as alternative A. While site improvements would provide some additional resources to visitors, the site would largely remain in a primitive state and would offer only limited resources to visitors. Similarly to the no action alternative, no changes to current staffing at the park would occur under alternative B.

Moderate Management/Development (Preferred Alternative C)

Table 3 includes details on each alternative element under alternative C at Green Island. Figure 15 includes the proposed location for some of the actions described. For resource management, alternative C would be the same as alternative B with the addition of installing protective fencing around the historic pilings to discourage resource damage while encouraging viewing. Property development would increase under alternative C. The trail proposed under alternative B on the land and island portion of the site would have a gravel or limestone substrate and include two benches. Primitive tent camping would be allowed within designated sites on the island (figure 15). Two charcoal grills would also be installed on the beach. One portable toilet would be placed on the island side of the site near the campgrounds and NPS would work with the City of Yankton to have a restroom within the Meridian Bridge parking lot. Trash/recycling receptacles would be installed near the restroom on the island, on the beach, and at the trailhead on the land side of the site (figure 15). New signage would include park informational signs at the beach and bathrooms, campsite markers, vegetation identification signs, and one wayside sign on the island. One site identification sign and three interpretive signs would be installed on the land side of the site. Site access would be the same as alternative A and B with the addition of developing up to two landing sites for canoes and kayaks (figure 15). Site development under the preferred alternative would increase recreational activities, site access and facilities, and chances for visitors to learn about resources at the site, improving the visitor resources and experience at the site.

Under alternative C, an ONPS base increase justification request would be submitted, which, if approved, would allow for the addition of one full-time employee for facilities management to assist with the additional park operation responsibilities associated with increased visitation and maintenance under the alternative. In addition, alternative C would include the hiring of two seasonal employees during the summer months, pending availability of funds. Seasonal staff would help address short-term staffing needs associated with construction and maintenance.

High Management/Development (Alternative D)

Table 3 includes details on each alternative element under alternative D at Green Island. Figure 16 includes the proposed location for some of the actions described. For resource management, alternative D would be the same as alternative C. Property development would be similar to alternative C with the addition of some new elements. Additional primitive designated campsites would be developed under alternative D. Each campsite would include a metal fire ring, and two vault toilets would be installed within a central location of the campsites. Site access would be the same as alternative C. In addition, NPS would work with partners to construct a parking area on their land near the land side of the site. Overall, alternative D would improve visitor use and experience through the development of the site and increased amenities, which would provide additional opportunities for learning and recreation at the site.

Similarly to alternative C, alternative D would include an ONPS base increase justification request for one full-time employee in facilities maintenance to assist with increased visitation and maintenance at the park. Three seasonal employees would be hired during the summer months, pending funding availability, to meet short-term staff needs related to construction and maintenance.









MITIGATION MEASURES OF THE ACTION ALTERNATIVES

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of all action alternatives. The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended results. Mitigation, according to NEPA regulations (40 CFR 1508.20) includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree of magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

The following are mitigation measures that would be implemented to minimize impacts on specific resources:

Water Quality

- Semi-impervious surfaces such as gravel and limestone would be used when improving trails or roadways within the sites. These materials would reduce runoff into nearby waterways.
- A turbidity curtain would be used during the restoration of backwaters at Bow Creek Recreation Area and Green Island. The curtain would trap sediments from entering the water column to reduce impacts to water quality.

Floodplain

- An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Wetlands

- A boardwalk would be constructed at Bow Creek Recreation Area where the proposed trail meets Wetland 2.
- To minimize shade impacts, the boardwalk would be placed at an elevation above the vegetation surface at least equal to the width of the boardwalk.
- Invasive species control is proposed within wetland areas to improve wetland functions and values. Invasive plant species can decrease native plant diversity and disrupt ecosystems. The NPS has a mandate to preserve native species diversity and natural ecosystems.

Archeological Resources

- Inventory and documentation of archeology in all treatment areas would be completed. Archeology would be protected from compression and disturbance.
- All activities would cease if new archeological sites are discovered during development of the three project sites. Activities would be suspended until NPS cultural resources staff could determine the significance of the resource(s).

BMPs are also required and implemented specifically for protecting water quality. During construction, BMPs would include the use of fencing to prevent and control soil erosion and sedimentation. In addition an erosion and sediment control plan would be prepared and approved before the start of construction activities. These BMPs would reduce impacts to water quality.

ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED

Several alternatives or alternative elements were identified during the design and scoping processes. Some of these were determined to be unreasonable, or much less desirable than similar options included in the analysis, and were therefore not carried forward for analysis in this EA. Alternatives considered but dismissed for all sites (Bow Creek Recreation Area, Mulberry Bend, and Green Island) include the following:

- *Horseback Riding* – Trails at the properties are relatively short for horseback riding. At Mulberry Bend, the property is too small and is developed with concrete trails with steps, which is not conducive for horseback riding. At Green Island, there is no parking area available for horse trailers. In addition, NPS policy 36 CFR 2.16, *Horses and Pack Animals*, prohibits the use of horses or pack animals outside of trails, routes, or areas designated for their use.
- *Bike Riding* – Bike riding is allowed in park parking lots and roads as stated in 36 CFR 4.30, *Bicycles*, but would not be permitted on any trails at the sites. Trails at the property are relatively short for bike riding. Trails are not wide enough to allow safe use for multiple user types. At Mulberry Bend, there are seven flights of stairs on the current trail system. At Green Island, the substrate for the trails would be sand, which is not conducive for bike riding.
- *Off-Road Vehicles* – Off-road vehicles would not be permitted at the sites. Trails at the property are relatively short. Trails are relatively narrow and would not allow safe use for multiple user types. Off-road vehicles also have a high potential to cause resource damage (vegetation) and damage to the landscape (erosion). In addition, off-road vehicles would create additional noise in the area. At Mulberry Bend, there are seven flights of stairs on the current trail system.
- *Haying* – Haying is a vegetation management technique that would only be a viable and safe option in two relatively small prairie areas within the three properties. Both of these prairies are conducive to prescribed fire or the use of other mechanical or herbicide treatments to achieve desired conditions.
- *Grazing* – Grazing for vegetation management is generally discouraged on NPS-owned lands when other practices can achieve the same goals. Techniques such as prescribed fire and control of invasive species proposed in this plan would achieve the desired condition

The following alternatives were considered but dismissed for Bow Creek Recreation Area:

- *Restore Backwater* – Restoring the backwater located on the north side of the site was considered but dismissed. Restoring the backwater would give easier boater access to the main river from the parking lot; however, a portion of the area is not located on park-owned property. Therefore, this element was dismissed.

The following alternatives were considered but dismissed for Mulberry Bend:

- *Hunting* – Hunting would not be permitted at Mulberry Bend for safety issues. Mulberry Bend receives high visitor traffic on trails, and hunting could cause visitor use conflicts. Management of hunting on the site would be difficult. There are other public hunting areas in close proximity to Mulberry Bend. The prohibition of hunting at this site would be completed through the use of the Superintendent's Compendium, which allows park superintendents the discretion to allow or disallow specific activities in response to park needs under 36 CFR 1.5(a).
- *Flagpole* – The placement of a United States flag at the top of the main vista is not feasible. Currently there is no power at the site for a light for the flag. In addition, staff would not be available to raise and lower the flag each day as it is a 30 minute drive from park headquarters in Yankton to Mulberry Bend.
- *Trails* – MNRR explored extending the existing backcountry trail westward and uphill to create a full loop trail. This element was dismissed due to the steepness of the terrain. Due to the terrain, a trail would be difficult to traverse and not be sustainable without significant development.
- *Amphitheatre* – MNRR considered constructing an amphitheater on the west side of the site. The amphitheater would have concrete pads, walls, and seating for up to 50 people. This element was dismissed from further analysis due to archeological resources located on the west side of the site.

The following alternatives were considered but dismissed for Green Island:

- *Camping* – MNRR explored the option of developing two designated tent camping sites on the land side of the site; however, it was confirmed the land portion of the site is too small in size for developing properly spaced campsites.
- *Restrooms* – MNRR considered placing a vault toilet on the land side of the Green Island site. This element was dismissed when it was determined that the site was too small for designated campsites. Without the use of the site for camping, vault toilets would not be needed.
- *Hunting* – Hunting would not be permitted at Green Island. There are safety concerns with allowing hunting in an area with high visitor use, and close proximity to homes and development.
- *Site Access* – The construction of a bridge to connect the land side of the site to Green Island was considered but dismissed. This element was dismissed due to the high cost associated with construction and for the potential of impacts to wetland areas. The presence of two Missouri River bridges in the immediate vicinity also influenced this decision.

THE ENVIRONMENTALLY PREFERABLE ALTERNATIVE

In accordance with DO #12, the NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. The environmentally preferable alternative is defined in 43 CFR 46.30 as the alternative that “causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources.”

After completing the environmental analysis, the NPS identified alternative C as the environmentally preferable alternative in this EA because it best meets the definition established by the CEQ, and provides protection of natural, cultural, and historical resources. Alternative C provides safe, recreational and educational opportunities at the three sites for future generations. Alternative C best protects natural resources by increasing invasive species management techniques at the sites; restoring oak savannah and prairies at Mulberry Bend; and by restoring cottonwoods and native species at Bow Creek Recreation Area. Alternative C would provide additional protection to cultural resources through avoiding areas where resources occur and by placing fences around resources so they are not damaged. Alternative C achieves a balance between protecting resources at each site while allowing appropriate recreation opportunities for the public.

The no action alternative includes minimal recreational and education opportunities at each site. Resource management includes invasive species control but no further habitat restoration. Cultural resources are maintained by no additional protection. Alternative B is similar to the no action alternative, as the minimal recreation opportunities and minimal resource protection is proposed. Alternative D offers the most recreational opportunities to the public; however, some natural resources such as the oak savannah at Mulberry Bend would be adversely impacted. Under this alternative, in order to increase the viewshed at all four vistas, large oak trees would be removed from the site. In addition, archeological resources at Mulberry Bend would be adversely impacted due to the development of the west side of this site

ALTERNATIVES COMPARISON TABLE

Table 4 compares and contrasts each alternative, including the degree to which each alternative accomplishes the purpose and fulfills the need and objectives for the project. The purpose of this project is to develop a management plan that identifies actions for recreational site development, resource management, interpretation/education, and establish management policies on certain issues such as access, hunting, and camping. The following objectives have been identified for this project:

- Involve the public in determining management opportunities for MNRR properties.
- Provide a wide range of public recreational opportunities and experiences for various users.
- Preserve and enhance natural and cultural resources at MNRR properties.
- Encourage a connection between people and the properties’ natural and cultural resources.

Table 4. Comparative Summary of Alternatives

| Project Objectives | Alternatives | | | |
|---|--|---|---|---|
| | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
| Involve Public in Determining Management Opportunities | Does not meet project objective. The public is currently not involved in determining management of the properties. | Fully meets project objective. The public was invited to identify issues and concerns regarding the management of the properties. The public would also have the opportunity to submit comments on this EA. | Fully meets project objective. The public was invited to identify issues and concerns regarding the management of the properties. The public would also have the opportunity to submit comments on this EA. | Fully meets project objective. The public was invited to identify issues and concerns regarding the management of the properties. The public would also have the opportunity to submit comments on this EA. |

| Project Objectives | Alternatives | | | |
|---|--|--|--|---|
| | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
| Provide a Wide Range of Recreational Opportunities and Experiences | Slightly meets project objective. The sites currently have minimal development. Entrance signs have been installed at each of the three sites. Green Island and Bow Creek Recreation Area do not have established trail systems and camping occurs, but is unregulated. Access to Green Island is primarily by boat. Mulberry Bend is the only site with established hiking trails and interpretive signs. | Moderately meets project objective. At Bow Creek Recreation Area a loop trail would be constructed and an interpretive kiosk would be added. Non-regulated camping, hunting, and canoe/kayaking access would still be available; however, hunting would be limited by season and no designated canoe/kayak landing areas would be established. At Mulberry Bend, additional signage would be added identifying native plant species. At Green Island, a trail with interpretive panels would be constructed on both the land side of the site as well as the island. | Fully meets project objective. At Bow Creek Recreation Area, three campgrounds would be established, portions of the mowed trail system would be hardened, primitive trail to the Bluff Face Campground would be constructed, restrooms would be installed, and additional interpretive signs would be installed throughout the site. Seasonal hunting would be allowed and designated canoe/kayak landing sites would be established. At Mulberry Bend, the viewsheds at two vistas would be improved, an amphitheater would be established, trails would be upgraded with some staircases, and new observation platforms, additional signage, restrooms, and picnic shelter would be installed. At Green Island, interpretive signs would be placed throughout the site, designated campsites would be established, charcoal grills would be provided at the campsite and on the | Fully meets project objectives. Those actions described under alternative C would occur in addition to the following elements. At Bow Creek Recreation Area, a trail would be established from the Bluff Face Campground to a wayside exhibit, a comfort station would be installed, and an additional park road would be constructed. At Mulberry Bend, the viewsheds at four vistas would be improved, and additional observation platforms would be constructed. On the west side of the site a road, parking lot, trail, picnic area, and restroom would be established. At Green Island, additional campsites would be established, metal fire rings would be available at each campsite, and additional restrooms would be installed. |

| Project Objectives | Alternatives | | | |
|---|--|--|--|---|
| | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
| Provide a Wide Range of Recreational Opportunities and Experiences (continued) | | Camping would continue in non-designated areas and access would continue to be primarily by boat. | beach area, and restrooms would be available. | |
| Preserve and Enhance Natural and Cultural Resources | Moderately meets the project objective. At each site, the park currently conducts invasive species control and cultural resource management. At Bow Creek Recreation Area, some burning occurs for grassland management. At Mulberry Bend, oak savannah and prairie restoration efforts occur. | Moderately meets project objective. Invasive species control techniques would remain the same as alternative A. At Bow Creek, cottonwood regeneration techniques including mowing and planting would be implemented. | Fully meets project objective. Invasive species control techniques would remain the same as alternatives A and B. At Bow Creek, additional cottonwood regeneration techniques including mowing, planting, and disking would be implemented. At Mulberry Bend, additional trees would be removed for the oak savannah and prairie restoration. At Green Island, fencing would be installed to protect cultural resources. | Moderately meets project objective. Invasive species control techniques would remain the same as alternatives A and B. At Bow Creek, cottonwood regeneration techniques including mowing, planting, and disking would be implemented. At Green Island, fencing would be installed to protect cultural resources. At Mulberry Bend, oak trees would be removed to increase the viewshed at the vistas. This would not support the oak savannah and prairie restoration at the site. A road, trail, parking area, and picnic area would be established on the west side of the site where both known and unknown archeological resources occur. |

| Project Objectives | Alternatives | | | |
|---|--|--|---|---|
| | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
| Encourage a Connection Between People and the Natural and Cultural Resources | Slightly meets the project objective. Minimal visitor opportunities are available at each site. In addition, minimal interpretive signs are available explaining the natural and cultural resources of the area. | Moderately meets project objective. Additional recreation opportunities would be available including hiking, and camping; however, interpretive displays would be minimal. | Fully meets project objective. Additional recreational opportunities would be available including hiking and camping. Additional kiosk, wayside exhibits, boating, and interpretive displays would be added throughout the site describing the properties and their unique resources. | Fully meets project objective. Additional recreational opportunities would be available including hiking, and camping. Additional kiosk, wayside exhibits, and interpretive displays would be added throughout the site describing the properties and their unique resources. |

SUMMARY OF ENVIRONMENTAL CONSEQUENCES/IMPACT COMPARISON MATRIX

Table 5 includes a summary of each alternative's potential effects by impact topic.

Table 5. Summary of Environmental Consequences

| Resource | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--------------------------------|---|--|--|--|
| Hydrology/Water Quality | <p><u>Bow Creek</u>: No impacts to water quality are likely at the site; if a spill occurs, potential short-term adverse impacts would result to water quality.</p> <p><u>Mulberry Bend</u>: There are no surface water features within the Mulberry Bend site; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: No impacts to water quality are likely at the site. Temporary adverse impacts to water quality could occur from the use of herbicides during vegetation management.</p> | <p><u>Bow Creek</u>: Long-term beneficial impacts to water quality would occur from the increase of vegetation in the floodplain. Vegetation management could have adverse impacts from misuse of herbicides and an increase in turbidity from construction activities could also occur. Practices are in place to limit misuse of herbicides (PUPS).</p> <p><u>Mulberry Bend</u>: There are no surface water features within the Mulberry Bend site; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Temporary adverse indirect impacts to water quality could occur from vegetation management and site development, including an increase in chemicals and turbidity.</p> | <p><u>Bow Creek</u>: Long-term beneficial impacts to water quality would occur from the increase of vegetation in the floodplain. Site development, vegetation management, and future site use could have indirect impacts to water quality, including temporary increases in turbidity, changes due to the increase of chemicals and also trash.</p> <p><u>Mulberry Bend</u>: There are no surface water features within the Mulberry Bend site; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Temporary adverse indirect impacts to water quality would occur from vegetation management, site development, and recreational uses. Impacts would include increases in turbidity and chemicals.</p> | <p><u>Bow Creek</u>: Long-term beneficial impacts would occur from the restoration of the backwater and from the increase of vegetation in the floodplain. Vegetation management and site development could have temporary adverse impacts to water quality.</p> <p><u>Mulberry Bend</u>: There are no surface water features within the Mulberry Bend site; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Indirect adverse impacts to water quality would occur from vegetation maintenance and site development. Impacts would occur from increase in chemicals and turbidity. Short-term adverse impacts would occur from dredging, but long-term beneficial impacts to water quality would occur following construction.</p> |

| Resource | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--------------------|--|--|---|---|
| Floodplains | <p>Bow Creek: No impact to the functionality and value of the 100-year floodplain would occur from development at the site. Adverse impacts from recreation within the floodplain.</p> <p><u>Mulberry Bend</u>: Mulberry Bend is not located within the 100-year floodplain; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: No impact to floodplains would occur; the four signs located on the site would not impede the function and value of the floodplain.</p> | <p>Bow Creek: Long-term beneficial impacts to the function and value of the floodplain would occur from additional vegetation in the floodplain associated with slowing runoff and reducing flood velocities.</p> <p><u>Mulberry Bend</u>: Mulberry Bend is not located within the 100-year floodplain; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: No impact to floodplains would occur from the construction of the trails and interpretive sign installation.</p> | <p>Bow Creek: Long-term beneficial impacts to the function of value of the 100-year floodplain would occur from an increase in vegetation that would slow runoff and decrease flood velocities. Development within the floodplain would create negligible impacts to the floodplain function and values, but impacts would be small and localized.</p> <p><u>Mulberry Bend</u>: Mulberry Bend is not located within the 100-year floodplain; therefore this resource is not analyzed.</p> <p><u>Green Island</u>: Negligible impact to the floodplain would occur from the development of Green Island.</p> | <p>Bow Creek: Long-term beneficial impacts to the floodplain would occur from the increase of vegetation and from restoration of the backwater. Development of the site would create negligible impacts to the floodplain.</p> <p><u>Mulberry Bend</u>: Mulberry Bend is not located within the 100-year floodplain; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Adverse impacts to the floodplain would occur from vault toilet construction, which would impede flood waters. Long-term beneficial impacts from the restoration of the backwater.</p> |

| Resource | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|-----------------|---|---|--|--|
| Wetlands | <p><u>Bow Creek</u>: Long-term beneficial impact would occur from the control of invasive species, increasing native species diversity.</p> <p><u>Mulberry Bend</u>: No wetlands are located within Mulberry Bend; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Beneficial impacts would occur from the removal of invasive species at the site and an increase in biodiversity.</p> | <p><u>Bow Creek</u>: Beneficial impacts would occur from invasive species management and native species restoration. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of a boardwalk over the wetland.</p> <p><u>Mulberry Bend</u>: No wetlands are located within Mulberry Bend; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Long-term beneficial impacts would occur from invasive species removal and an increase in biodiversity in wetlands.</p> | <p><u>Bow Creek</u>: Beneficial impacts would occur from invasive species management and the enhancement of the buffer along St. Helena Chute. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of a boardwalk over the wetland. No impacts would occur from the construction of the Bluffs Trail near Wetland 5A and 5B.</p> <p><u>Mulberry Bend</u>: No wetlands are located within Mulberry Bend; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Long-term beneficial impacts would occur from invasive species removal and an increase in biodiversity in wetlands.</p> | <p><u>Bow Creek</u>: Beneficial impacts to wetlands would occur from the removal of invasive species, enhancement of the buffer along the St. Helena Chute, and from the backwater restoration. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of a boardwalk over the wetland. No impacts would occur from the construction of the Bluffs Trail at Wetland 5A and 5B.</p> <p><u>Mulberry Bend</u>: No wetlands are located within Mulberry Bend; therefore, this resource is not analyzed.</p> <p><u>Green Island</u>: Beneficial impacts would occur from invasive species control and backwater restoration. The function and value of the riverine wetland would improve from an increase in native vegetation within the wetlands, restoring the natural hydrology of the system, and ecological benefits to flora and fauna.</p> |

| Resource | Alternative A No Action Alternative | Alternative B Low Management/Development | Preferred Alternative C Moderate Management/Development | Alternative D High Management/Development |
|--------------------------------|--|---|---|---|
| Archeological Resources | <p><u>Bow Creek</u>: No additional direct or adverse impacts to the archeological resources would occur because no campsites, trails, or development would occur. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Mulberry Bend</u>: No additional direct or adverse impacts to the archeological resources as no development would result. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Green Island</u>: No additional direct or adverse impacts to the archeological resources would occur because no campsites, trails, or development would result. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> | <p><u>Bow Creek</u>: The proposed campsite locations would have no effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Mulberry Bend</u>: The proposed developments would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Green Island</u>: The proposed developments could have an adverse effect on historic properties, and mitigation measures would be required. Prior to project implementation, an archeological mitigation program would need to be developed and MNRR would consult with the State Historic Preservation Officer (SHPO) and Native American tribes for their concurrence on appropriate mitigation. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> | <p><u>Bow Creek</u>: The proposed campsite locations would have no effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Mulberry Bend</u>: The proposed developments would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Green Island</u>: The proposed developments would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> | <p><u>Bow Creek</u>: The proposed campsite locations and mowed trail into the bluffs would have no effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Mulberry Bend</u>: The proposed developments would have an adverse effect on historic properties, and mitigation measures would be required. Prior to project implementation, an archeological mitigation program would need to be developed and MNRR would consult with the SHPO and Native American tribes for their concurrence on appropriate mitigation. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> <p><u>Green Island</u>: The proposed developments would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, <i>Preservation of Natural, Cultural and Archeological Resources</i>.</p> |

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AFFECTED ENVIRONMENT

This *Affected Environment* chapter describes the existing resources within the proposed project area. The descriptions, data, and analyses focus on the specific conditions or consequences that may result from implementing the preferred alternative as required by NPS DO #12 and Handbook, *Conservation, Planning, Environmental Impact Analysis, and Decision-making*, which sets forth the policy and procedures by which NPS will comply with NEPA (NPS 2001).

A description of existing environmental conditions provides a better understanding of planning issues, and establishes a benchmark by which the magnitude of environmental effects of the preferred alternative and the no action alternative can be compared. The information in this chapter is organized by the same environmental topics used to organize the impact analysis in the *Environmental Consequences* chapter.

Affected Environment addresses the topics that were not dismissed from further consideration, as described in the *Purpose and Need* chapter, for the project area. The resources analyzed in this chapter are those found within the property boundaries of the project area, or resources adjacent to the project area that would be directly affected by one of the alternatives.

HYDROLOGY/WATER QUALITY

Missouri River

The Missouri River travels over 2,300 miles from Three Forks, Montana to St. Louis, Missouri where it joins the Mississippi River. USACE operates a system of six dams and reservoirs on the Missouri River to serve the multiple purposes authorized by Congress in the Flood Control Act of 1944. USACE is authorized to use the system for irrigation, water supply, and water quality in addition to operating the system for flood control, navigation, hydropower, recreation, and fish and wildlife.

MNRR includes two districts on the Missouri River, the 59-Mile District and the 39-Mile District. The 59-mile district was designated in 1978 and includes the segment from Gavins Point Dam, South Dakota downstream to Ponca State Park, Nebraska. The 59-Mile District is one of the last representative parts of the un-dammed, un-channelized, middle Missouri River. It features a section of the river meandering in an older, wider, river valley not found on the other un-dammed, un-channelized, Missouri River sections. Bow Creek Recreation Area, Mulberry Bend, and Green Island are located within the 59-mile District. The 39-mile District was designated in 1991 and includes the 39-mile reach from the headwaters of Lewis and Clark Lake to the Ft. Randall Dam, 20 miles of the lower Niobrara River, and the last eight miles of Verdigre Creek before its confluence with Niobrara River.

Water quality in MNRR is a complex issue with many parameters of interest. To address water quality on the main stem of the Missouri River, including the reservoirs and river reaches, USACE began monitoring efforts in 1967. Additionally, the United States Geological Survey (USGS) monitors water quality on tributaries flowing into the river. Beginning in 2008, USACE initiated an effort to develop a more coordinated monitoring program along the river. Monitoring is conducted to detect water quality problems; determine compliance with federal, state, and local water quality standards; and assess how water quality impacts ecosystem recovery efforts.

Water quality management within the 59-Mile District is under the jurisdiction of both South Dakota and Nebraska. Nebraska has designated this segment of the river as a Class A State Resource Water that infers Tier 3 protection under the state's water quality standards and the Federal Clean Water Act's (CWA) anti-degradation provisions (USACE 2011). This means that no new or increased discharges to the Missouri River or its tributaries are permitted. However, some limited activities that

would result in temporary or short-term changes to the water quality are permitted. In general, the quality of water along the 59-Mile District gradually deteriorates as it flows downstream from the Gavins Point Dam due to inflows from tributaries and point and non-point sources. Typically water temperature, nutrient levels, and biological oxygen demands increase.

Dissolved oxygen, pH, specific conductance, water temperature, and an estimate of flow are core water quality parameters required by the NPS Water Resources Division for long-term monitoring in NPS Inventory and Monitoring Network park units (NPS 2002a). Natural resource managers at MNRR are also interested in the presence and concentration of nutrients, fecal coliform bacteria, turbidity, and chemicals associated with agriculture in park waterways, as well as the natural variability of the Missouri River's velocity. While the Missouri River is the primary waterbody in the unit, several other tributaries exist within MNRR's boundary or have a significant influence on water quality entering the Missouri River. In 2002, water quality data were collected along the Missouri River within the 59-Mile District. A total of nine monitoring locations were established on the Missouri, James, and Vermillion rivers as part of the study to monitor water temperature, dissolved oxygen, pH, conductivity, turbidity, total suspended solids, total organic carbon, total phosphorus, total Kjeldahl nitrogen, total ammonia, nitrate/nitrite nitrogen, chlorophyll a, atrazine, alachlor, and metolachlor. The overall water quality of the 59-Mile District was good. All the water quality parameters monitored in the 59-Mile District during the study met the appropriate state water quality standards adopted pursuant to the Federal CWA. Significant longitudinal variation through the reach was observed for the monitored parameters of conductivity, dissolved oxygen, secchi depth, turbidity, total suspended solids, and total phosphorus. The longitudinal variation of all these parameters, except dissolved oxygen, appears to be largely attributed to the inflows of the James and Vermillion rivers as you move downstream (USACE 2002).

Temperature is greatly affected by dam operations on the Missouri River. Two major dams directly affect the MNRR, the Fort Randall Dam, which is a bottom discharge dam that releases colder water into the 39-mile segment; and Gavins Point Dam, a top discharge dam, which releases warmer water into the 59-mile segment of MNRR. These temperature changes greatly alter the aquatic environment of MNRR. Coldwater pollution is known to have a detrimental effect on aquatic species such as native fish by disrupting spawning cycles (Weeks et al. 2005), and insects by changing emergence cues, egg hatching, diapause and maturation (Petts 1984, as cited in Weeks et al. 2005). Water temperatures in the Missouri River in MNRR are consistently different by several degrees Celsius above and below the dams, variation that appears to be greater than natural variability in the river. Due to the concern of low water temperatures on life stages of many aquatic organisms in the river, the condition of this measure is of significant concern with a stable trend.

Water quality data for each of the project sites is limited and described below.

Bow Creek Recreation Area

Surface water features at Bow Creek Recreation Area include the mainstem Missouri River, Bow Creek located on the southern portion of the site, and St. Helena Chute located on the northwestern portion of the site. A USGS gauge is located upstream of Bow Creek Recreation Area on Bow Creek. Water quality data include gage height, water temperature, conductivity, dissolved oxygen, and pH. Water quality data were collected from April 2015 through July 2015. Table 6 presents the minimum and maximum conditions for each month.

Table 6. Monthly Water Quality Data at Bow Creek Recreation Area, May 2015 – July 2015

| Month | Temperature Degree Celsius | | Conductivity µS/cm | | Dissolved Oxygen mg/L | | pH | |
|--------------|-------------------------------|------|-----------------------|------|--------------------------|------|-----|-----|
| | Min | Max | Min | Max | Min | Max | Min | Max |
| April | 4.1 | 22.0 | 995 | 1270 | 8.0 | 11.4 | 8.0 | 8.3 |
| May | 7.0 | 26.7 | 821 | 1150 | 7.1 | 11.3 | 8.0 | 8.4 |
| June | 13.7 | 30.3 | 779 | 1160 | 6.8 | 9.8 | 7.9 | 8.3 |
| July | 17.1 | 35.9 | 284 | 968 | 4.9 | 9.6 | 7.7 | 8.3 |

Source: USGS 2015.

USEPA considers dissolved oxygen levels greater than or equal to 4 milligrams per liter to be protective of freshwater aquatic life (USEPA 1986). All dissolved oxygen measurements taken in 2015 were within reasonable limits to support aquatic wildlife. The USEPA criterion for pH that supports freshwater aquatic life and sustains wildlife is between 6.5 and 9.0 standard units (USEPA 2002). All recorded measurements at Bow Creek Recreation Area were within these limits.

Mulberry Bend

There are no surface water features located within the Mulberry Bend project area.

Green Island

Surface water features at Green Island include the mainstem Missouri River, the Missouri River side channel, and Beaver Creek, located on the western portion of the site. In 2014, water quality data were collected for the Missouri River side channel and Beaver Creek. Water quality, including conductivity, salinity, dissolved oxygen, temperature, and pH was measured one time per month from May through August at approximately three sites on Beaver Creek and ten sites within the Missouri River side channel. Not all sites were sampled each month. Table 7 includes the average water quality measurements for Beaver Creek and Missouri River side channel from May through August 2014. pH levels at Green Island from May through August 2014 exceeded the USEPA criterion for pH (between 6.5 and 9.0) that supports freshwater aquatic life and sustains wildlife (USEPA 2002). All dissolved oxygen measurements taken in 2014 were within reasonable limits to support aquatic wildlife.

Table 7. Green Island Water Quality Measurements, May – August 2014

| Month | Conductivity µS/cm | Salinity ppt | pH | Dissolved Oxygen ppm | Total Dissolved Solids g/L | Temperature °C |
|------------------------------------|-----------------------|-----------------|--------|-------------------------|-------------------------------|-------------------|
| Beaver Creek | | | | | | |
| May | 0.954 | 0.4 | 9.43 | 12.286 | 0.595 | 27.9 |
| June | 0.8345 | 0.5 | 9.18 | 14.67 | 0.563 | 19.65 |
| July | 1.0215 | 0.6 | 9.865 | 15.695 | 0.688 | 19.85 |
| August | 0.979 | 0.6 | 9.715 | 16.67 | 0.669 | 17.45 |
| Missouri River Side Channel | | | | | | |
| May | 0.7481 | 0.4 | 9.742 | n/a | 0.95 | 20.9 |
| June | 0.7546 | 0.425 | 9.35 | 7.695 | 0.509 | 20.25 |
| July | 0.839 | 0.4 | 9.849 | 14.576 | 0.55 | 24.6 |
| August | 0.843 | 0.4 | 10.148 | 14.903 | 0.5527 | 23.15 |

Due to the 303(d) listing of several tributaries to the Missouri River near MNRR for contamination with fecal coliform bacteria and repeated observations that exceed bathing water screening criteria, the condition of this measure is of significant concern and may be monitored in the future.

FLOODPLAINS

EO 11988, “Floodplain Management,” issued May 24, 1977, directs all federal agencies to avoid both long- and short-term adverse effects associated with occupancy, modification, and development in the 100-year floodplain, when possible. Floodplains are defined in this order as “the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a 1 percent greater chance of flooding in any given year.” Flooding in the 100-year floodplain is expected to occur once every 100 years, on average.

All federal agencies are required to avoid building in a 100-year floodplain unless no other practical alternative exists. NPS has adopted guidelines pursuant to EO 11998 stating that NPS policy is to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. The guidelines also require that, where practicable alternatives exist, Class I actions be avoided within a 100-year floodplain. Class I actions include the location or construction of administration, residential, warehouse, and maintenance buildings, non-excepted parking lots, or other man-made features that by their nature entice or require individuals to occupy the site.

Federal Emergency Management Agency (FEMA) floodplain maps are currently not available for the three properties. During agency consultation in December 2014, a response was received from Nebraska DNR that included the estimated floodplain boundaries for each site.

Bow Creek Recreation Area

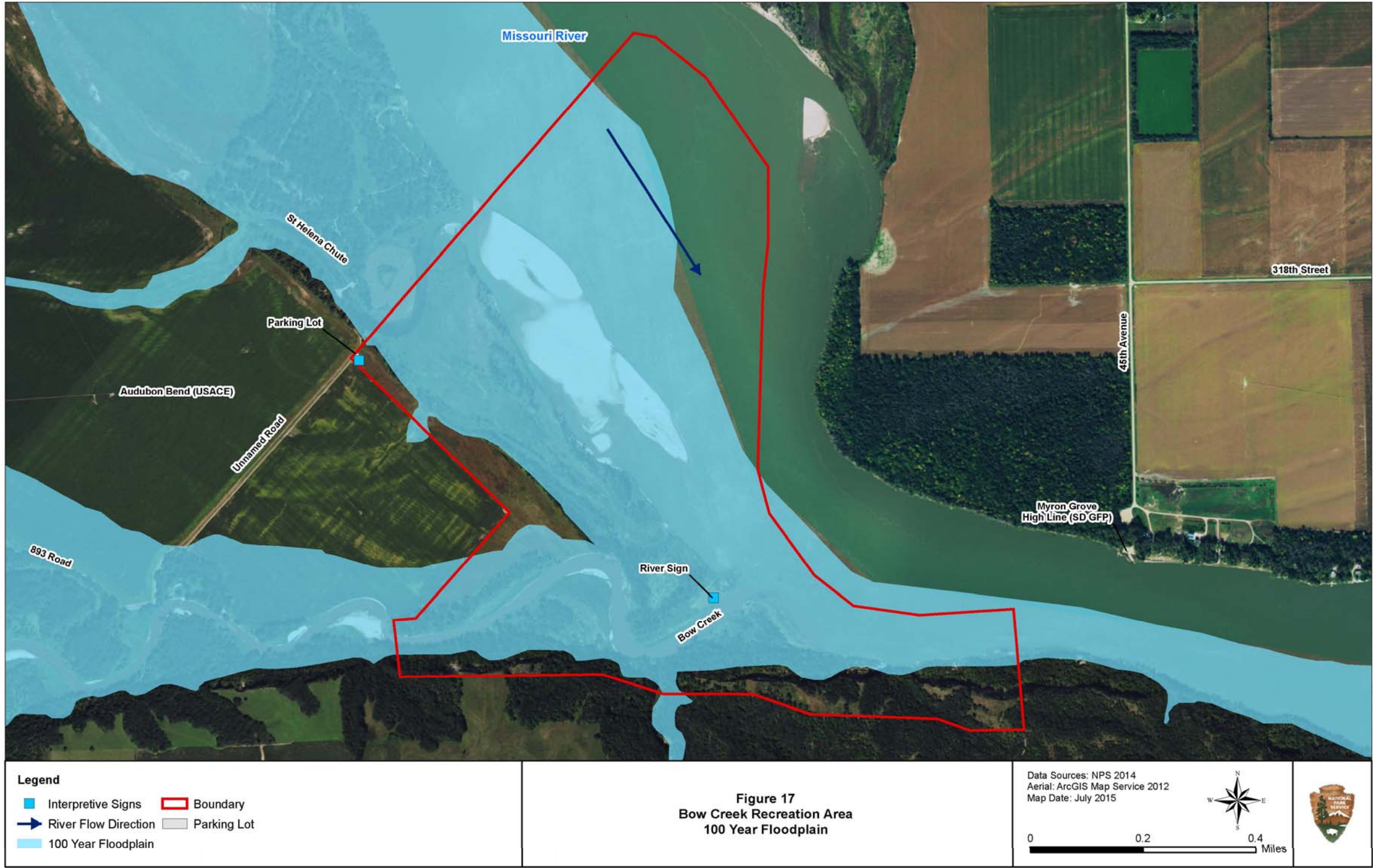
Bow Creek Recreation Area is almost completely within the 100-year floodplain (figure 17). A small area of forested habitat along the southern boundary of the property is located outside the 100-year floodplain. In addition, a grassland area located southwest of the existing parking lot is also outside the flood zone.

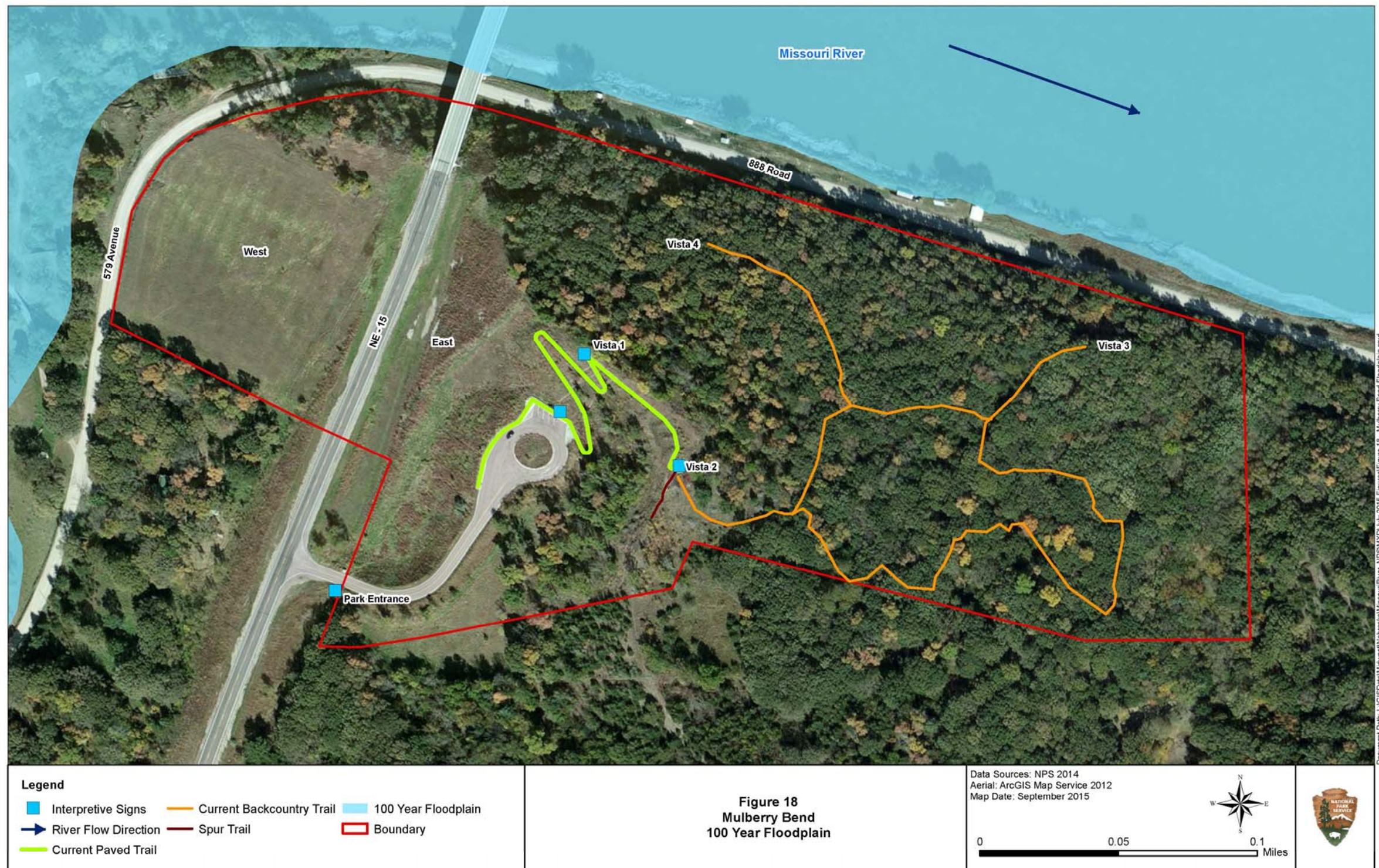
Mulberry Bend

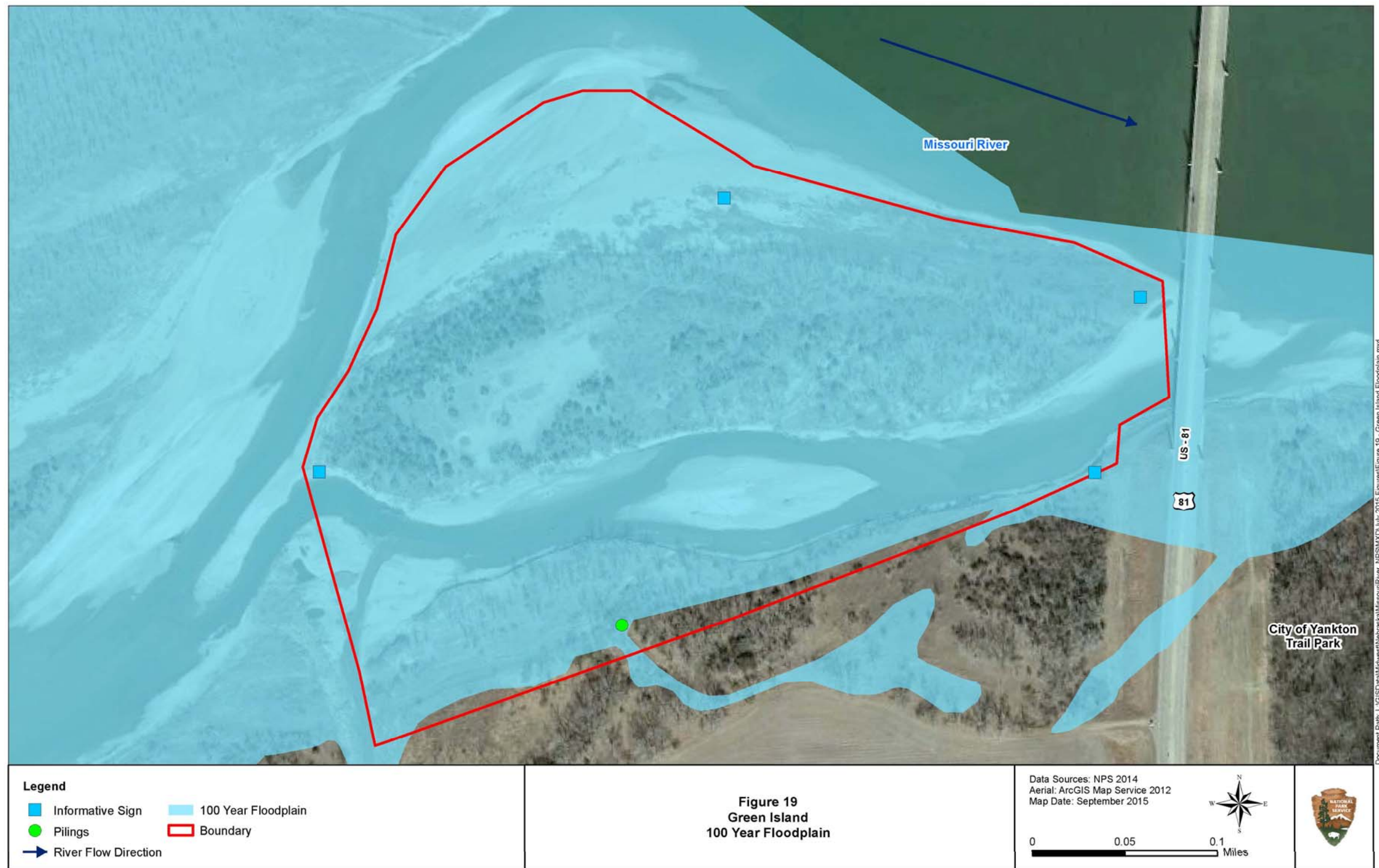
Mulberry Bend is not located within the 100-year floodplain (figure 18).

Green Island

Green Island is also almost completely encompassed by the 100-year floodplain. A small portion of the land side of the property is located outside of the floodplain boundary, this is located along the southern boundary line (figure 19).







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WETLANDS

Section 404 of the CWA and a number of state laws and provisions regulate activities in wetlands. EO 11990, “Protection of Wetlands,” directs all federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation. Consistent with EO 11990 and DO #77-1, *Wetland Protection*, NPS adopted a goal of “no net loss of wetlands” (NPS 2002b). DO #77-1 states that for new actions where impacts on wetlands cannot be avoided, proposals must include plans for compensatory mitigation that restores wetlands on NPS lands, where possible, at a minimum acreage ratio of 1:1.

For the purpose of implementing EO 11990, an area in an NPS unit that is classified as a wetland according to the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* is subject to DO #77-1 (with the exception of deep water habitats, which are not subject to DO #77-1) (Cowardin et al. 1979). The Cowardin wetland definition encompasses more aquatic habitat types than the definition and delineation manual used by USACE for identifying wetlands subject to Section 404 of the CWA. The 1987 *Corps of Engineers Wetlands Delineation Manual* requires that three parameters (hydrophytic vegetation, hydric soil, wetland hydrology) must all be present in order for an area to be considered a wetland (USACE 1987). The Cowardin wetland definition includes such wetlands, but also adds some areas that, though lacking vegetation and/or soils due to natural physical or chemical factors such as wave action or high salinity, are still saturated or shallow inundated environments that support aquatic life (e.g., unvegetated stream shallows, mudflats, and rocky shores). This document presents wetlands as defined by Cowardin et al. (1979) and consistent with DO #77-1. Under the Cowardin definition, a wetland must have one or more of the following three attributes:

1. At least periodically, the land supports predominantly hydrophytes (wetland vegetation).
2. The substrate is predominantly undrained hydric soil.
3. The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

The National Wetlands Inventory (NWI) of the USFWS produces information on the characteristics, extent, and status of the nation’s wetlands and deepwater habitats. The USFWS definition of wetlands is similar to the NPS definition of wetlands in that only one of three parameters (hydric soils, hydrophytic vegetation, and hydrology) is required to characterize an area as a wetland, based upon the Cowardin Classification of Wetlands (Cowardin et al. 1979). The USFWS’s objective of mapping wetlands and deepwater habitats is to produce “reconnaissance-level information on the location, type and size of these resources” (USFWS/NWI 2014). NWI maps are prepared by the USFWS from the analysis of high altitude imagery, and wetlands are identified based on vegetation, visible hydrology, and geography.

Site-Specific Field Survey – A wetland delineation was conducted at the three properties from 4 through 8 May 2015. The *USACE Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* was used as the primary methodology for making wetland determinations in the field. A total of five palustrine wetlands encompassing 11.74 acres of land were identified and delineated within the three properties (table 8). These observed wetland habitats were a combination of palustrine, emergent, persistent habitats (PEM1) and broad-leaf deciduous forest (PFO1) habitats. All of the identified and mapped palustrine wetland systems met both USACE criteria and the Cowardin et al. (1979) definitions of wetland habitat. A description of each wetland is presented below.

Table 8. Palustrine Wetlands Delineated in the Project Area

| Delineated Feature | Resource/Cowardin Classification* | Size (acres) | Location |
|---------------------------|--|---------------------|---------------------------|
| Wetland 1 | PEM2E | 0.10 acre | Bow Creek Recreation Area |
| Wetland 2 | PEM2A | 3.47 acres | Bow Creek Recreation Area |
| Wetland 3 | PUB2H | 0.01 acre | Green Island |
| Wetland 4 | PEM2E | 1.35 acres | Bow Creek Recreation Area |
| Wetland 5 | PEM2C/PFO1C | 6.81 acres | Bow Creek Recreation Area |

PEM2A = Palustrine, emergent wetland, non-persistent, temporarily flooded

PEM2C = Palustrine, emergent wetland, non-persistent, seasonally flooded

PEM2E = Palustrine, emergent wetland, non-persistent, seasonally flooded/saturated

PFO1C = Palustrine, forested, broad-leaved deciduous, seasonally flooded

PUB2H = Palustrine, unconsolidated bottom, sand, permanently flooded

A total of three riverine wetland systems totaling 249.81 acres were also identified and mapped at Bow Creek Recreation Area and Green Island. The waterway systems are all riverine, unconsolidated bottom, permanently flooded (R2UBH) sites with predominately sandy substrates. The exact boundaries of these riverine systems change on an annual basis due to the dynamic fluvial environment and sandy nature of the river bed and banks.

Bow Creek Recreation Area

Wetland 1 (Size – 0.10 acre): Wetland 1 is likely an old oxbow channel associated with the St. Helena Chute (figure 20). The habitat exhibits palustrine, emergent, non-persistent, seasonally flooded/saturated Cowardin Class wetland (PEM2E) characteristics. Given the direct surface water connectivity of this wetland to the St. Helena Chute and its low topographic position within the Missouri River floodplain, this area likely receives the bulk of its hydrology from frequent flooding and surface water exchanges with the St. Helena Chute. At two sample points within Wetland 1, rice cutgrass (*Leersia oryzoides*) covered 67.5 percent of the first sample point, and Kentucky blue grass (*Poa pratensis*) covered 87.5 percent of the second sample point. Overall, the dominant plant species observed throughout Wetland 1 were rice cutgrass and reed canarygrass (*Phalaris arundinacea*). Other plant species that were observed within this wetland but did not exhibit relative abundances great enough to qualify as dominant species via the 50/20 rule included: wool-grass (*Scirpus cyperinus*), American water plantain (*Alisma subcordatum*), needle spikerush (*Eleocharis acicularis*), and purple loosestrife (*Lythrum salicaria*). Extensive beaver activity, including one active dam along St. Helena Chute was observed within this location. This activity appeared to assist in driving the hydrology within Wetland 1 and the emergent marsh located within the St. Helena Chute riverine prism.

Wetland 2 (Size – 3.47 acres): Wetland 2 consists of the former St. Helena Chute channel and backwater area for the Missouri River (figure 20). This former riverine system has since had its direct surface water connection with the Missouri River removed due to the deposition of large sand deposits at its confluence; however, it still resides within the 100-year floodplain of the river. The emergent wetland system exhibited characteristics of a palustrine, emergent, non-persistent, temporarily flooded Cowardin Class wetland (PEM2A). Two sample points within this wetland were surveyed for vegetative cover. The first sample point had 67.5 percent softstem bulrush (*Schoenoplectus tabernaemontani*), while the second sample point was made up of 87.5 percent Kentucky blue grass. The dominant plant species observed within the emergent portions of Wetland 2 were softstem bulrush, rice cutgrass, and needle spikerush.

Wetland 4 (Size – 1.35 acres): Wetland 4 is an emergent marsh habitat completely encompassed by the St. Helena Chute (figure 20). This emergent system floods/is saturated seasonally due to flood flows from the St. Helena Chute and backwater flooding from the Missouri River. The dominant plant species observed within this feature were needle spikerush and reed canarygrass. This wetland habitat likely exhibits annual changes in its level of inundation and plant community type given its geomorphic position within the landscape. One sample point was surveyed for vegetative cover and consisted of 98.5 percent needle spikerush.

Wetland 5 (Total Size – 6.81 acres): Wetland 5 is comprised of two wetland community types, a 5.06-acre palustrine, forested, broad-leaved deciduous, seasonally flooded system (PFO1C) and a 1.75-acre palustrine, emergent, non-persistent, seasonally flooded system (PEM2C). The PFO and PEM components of Wetland 5 are situated several feet above the water surface elevation of Bow Creek Recreation Area. The eroding bluffs located south of Wetland 5 have contributed clay materials to the site and created a floodplain habitat that does not promote rapid drainage of storm/floodwaters, thus supporting wetland conditions at this location despite the deeply incised nature of Bow Creek at this location, which has likely lowered the local groundwater table within the adjacent floodplains. The dominant herbaceous plant species observed within the PEM and PFO portions of this wetland was reed canarygrass. Dominant woody plants within the PFO cell of Wetland 5 included peachleaf willow (*Salix amygdaloides*), green ash (*Fraxinus pennsylvanica*), and roughleaf dogwood (*Cornus drummondii*). Two sampling points consisted of 67.5 percent Emory's sedge and 87.5 percent reed canarygrass.

Riverine Wetlands (Total Size – 234.07 acres): Three riverine wetlands are located within Bow Creek Recreation Area. All of the riverine wetlands were characterized as riverine, unconsolidated bottom, permanently flooded (R2UBH) sites with predominately sandy substrates. The riverine wetlands include 222.07 acres of the Missouri River, which runs through the northeastern portion of the site; 10.6 acres of Bow Creek, which is located on the southern portion of the site; and 1.4 acres of the St. Helena Chute, which is located on the northwestern portion of the site.

Mulberry Bend

The Mulberry Bend property is situated on a high elevation bluff overlooking the Missouri River. No palustrine or riverine wetland habitats were observed within the limits of study provided by park staff.

Green Island

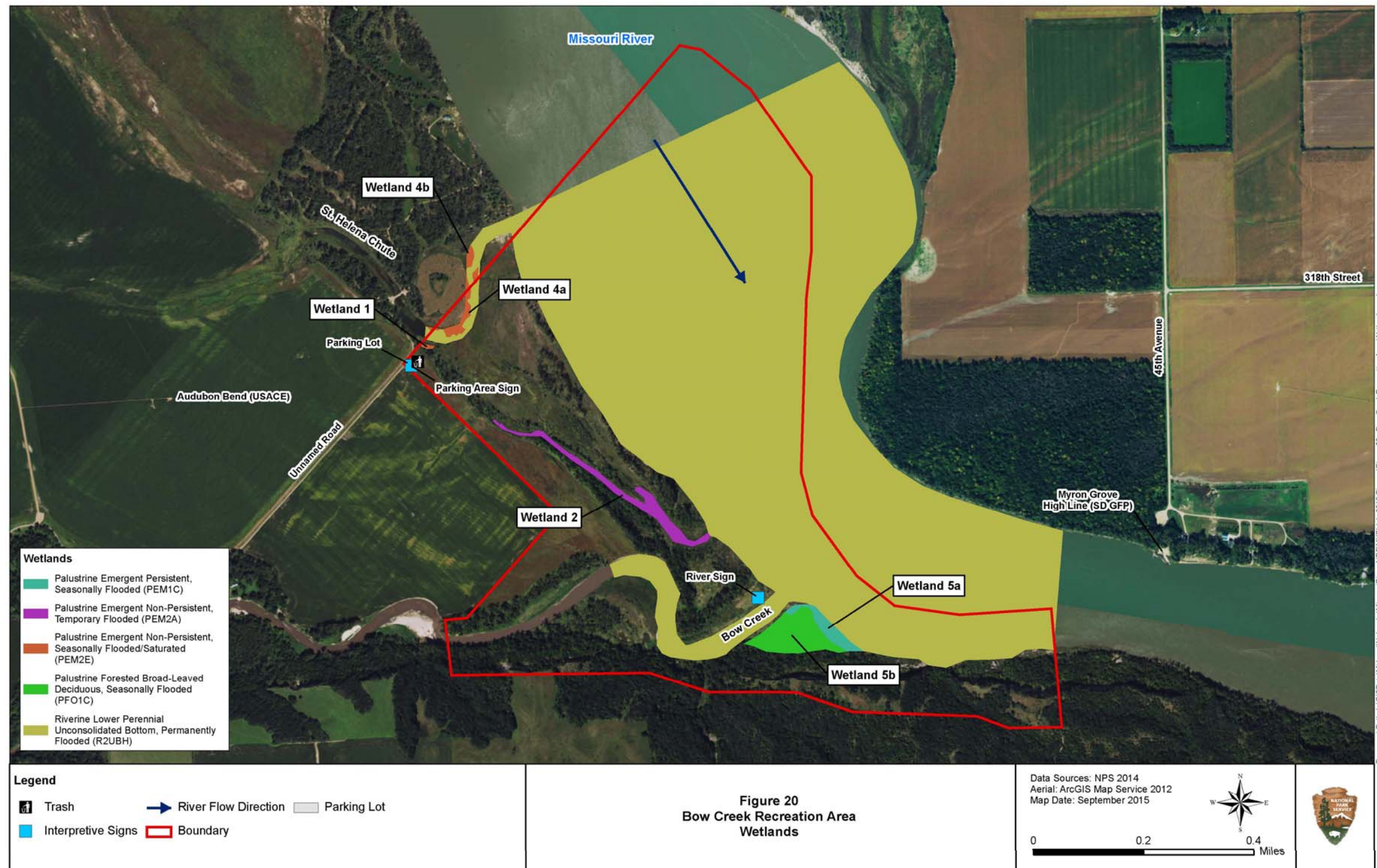
The majority of the habitats observed on Green Island and the NPS floodplain lands along the right bank of the Missouri River could be best described as an elevated floodplain terrace with observed river base flows several feet below the land surface elevation. The Missouri River and its principal tributary at this location (Beaver Creek) are both severely incised. Water surface elevations for both the Missouri River and Beaver Creek have dropped as a consequence of the incision. It is highly probable that a concurrent lowering of the seasonal groundwater table within Green Island and the adjacent floodplain has also occurred.

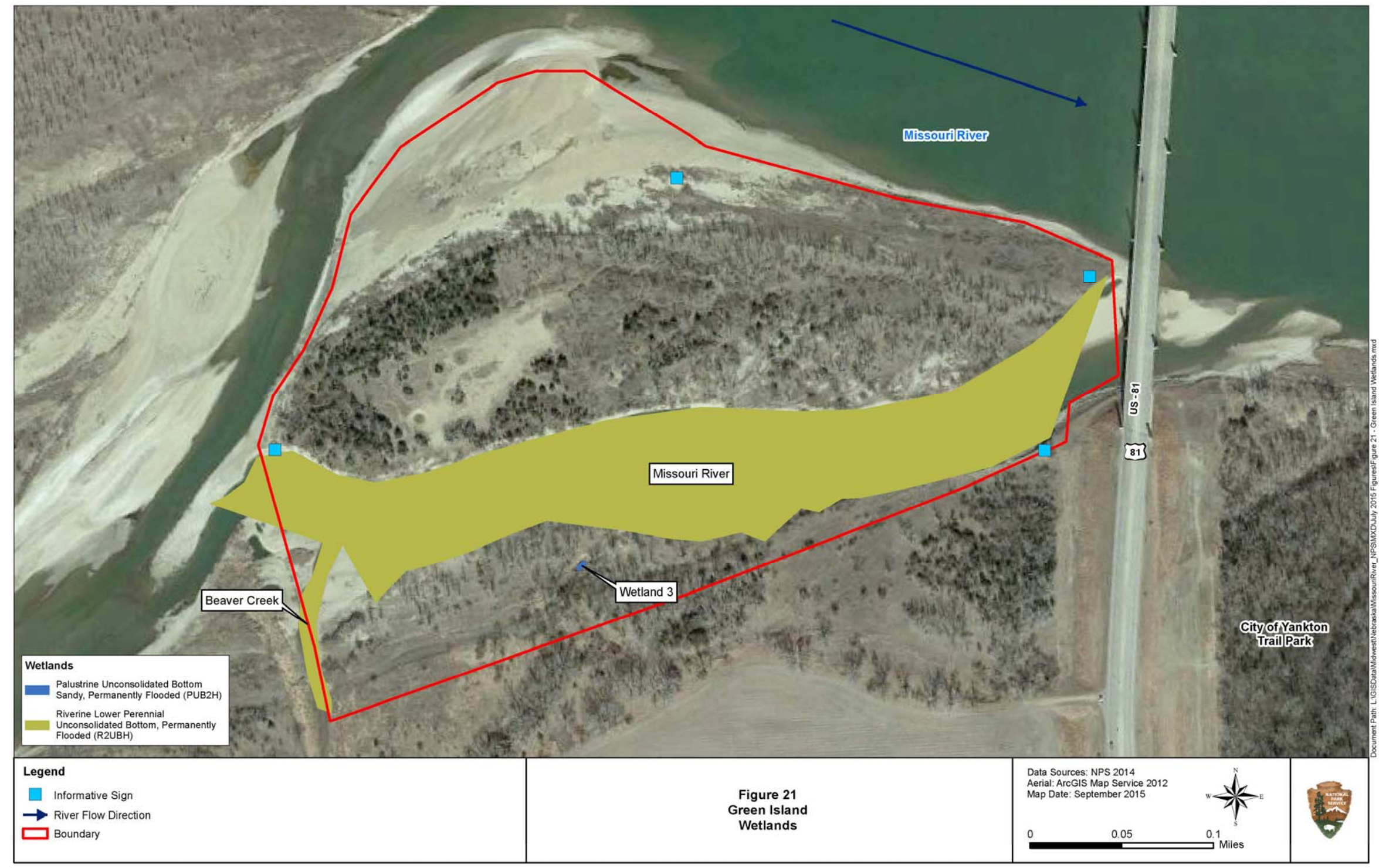
This new hydrologic condition has likely driven groundwater levels at this location to the point where it very rarely (if ever) saturates the upper part of the surface soils with sufficient frequency to drive wetland hydrology. As a consequence, only one small palustrine feature was identified and mapped within this area of the river.

Wetland 3 (Size – 0.01 acre): Wetland 3 is a palustrine, unconsolidated bottom, sand, permanently flooded habitat (PUB2H) (figure 21). This habitat is likely an old flood scour pool and possessed very little aquatic or emergent plant life within the delineated polygon at the time of the investigation. Two sample points within Wetland 3 were surveyed for vegetative cover. The first sample point was nearly barren, while the second consisted of 98.5 percent cuman ragweed (*Ambrosia psilostachya*).

Vegetative cover is sparse throughout this wetland with the most abundant plants overall being rice cutgrass and softstem bulrush.

Riverine Wetlands (Total Size – 15.74 acres): Two riverine wetlands are located within Green Island. Both riverine wetlands were characterized as riverine, unconsolidated bottom, permanently flooded (R2UBH) sites with predominately sandy substrates. The riverine wetlands include 15.41 acres of the Missouri River, which runs between the island and the land side portion of the site, and 0.33 acre of Beaver Creek, which is located on the western portion of the site.





ARCHEOLOGICAL RESOURCES

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic uses, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups. Cultural resources are defined as follows:

- Historic properties, as defined by the NHPA
- Cultural items, as defined by the Native American Graves Protection and Repatriation Act
- Archeological resources, as defined by the Archaeological Resources Protection Act
- Sacred sites, as defined in EO 13007, *Indian Sacred Sites*, to which access is afforded under the American Indian Religious Freedom Act
- Collections and associated records, as defined in 36 CFR 79.

The term “historic properties” refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties need not be formally listed on the NRHP in order to warrant protection.

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 USC §470) and its implementing regulations (36 CFR 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties; assessing the effects of federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Officer (SHPO).

Cultural resources within the MNRR require consideration in planning and resource management. Important cultural resources include the archeological sites, ethnic settlements and farms, sunken steamboats, and landscape features noted by Lewis and Clark (e.g., Spirit Mound and Old Baldy) along what is now the Lewis and Clark National Historic Trail (NPS 2009). Cultural resources identified within the Bow Creek, Mulberry Bend, and Green Island planning areas include historic and prehistoric archeological sites and are discussed below.

The Missouri River was a principle highway and commerce route from the times of the Paleo-Indians (the earliest inhabitants of North America) through later tribes such as the Mandan, Sioux, Omaha, and Ponca. The importance of the river as a travel route continued through European American westward migration and trade, including the Lewis and Clark Expedition and the fur trade and steamboat eras (NPS 2012a). A more comprehensive summary of the cultural history associated with the MNRR is found in the 1999 MNRR GMP. The significant pre-historic and historic sites along the river provide unique educational and interpretive opportunities (NPS 2012a).

A cultural resource survey was conducted for the proposed impacts at the Bow Creek Recreation Area, Mulberry Bend, and Green Island in 2015 (Barnett 2015). No additional archeological work was recommended for the proposed developments at Green Island, Bow Creek, and the portion of Mulberry Bend east of the highway. The following summarizes the results of the survey within each planning area.

Bow Creek Recreation Area

A cultural resource survey was conducted at Bow Creek Recreation Area in 2015 (Barnett 2015). The survey of Bow Creek Recreation Area included shovel tests. All shovel tests were negative and historic aerial images of Bow Creek from the mid-twentieth century show that the entire landform is quite new and, therefore, cannot contain historic cultural deposits anywhere near the surface. The results of the survey noted that no additional archeological work was necessary for the proposed developments in the Bow Creek area (Barnett 2015).

The cultural resource inventory on the north side of Bow Creek identified three clusters of car dumps that are presumed to be greater than 50 years of age, a pile of concrete, and the mangled remnants of an old freezer. The freezer and the concrete pile are likely not historic. The piles of historic cars may be historic, but could be removed if they are considered safety hazards. If they are not safety hazards, they may be left in place and designated Local Resource Types (LRT – possible sites). If the park wants to remove the cars because of safety concerns, archeological monitoring will be necessary during the removal because they are somewhat embedded and located along the creek, which creates the potential for the existence of prehistoric archeological materials in these locations (Barnett 2015).

Mulberry Bend

A cultural resource survey was conducted at Mulberry Bend in 2015 (Barnett 2015). The survey of Mulberry Bend included shovel tests. All of the shovel tests on the eastern side of the Mulberry Bend development area were negative. No additional archeological work is recommended at Mulberry Bend on the east side as pertains to the proposed development plans (Barnett 2015).

One site (25DX124) is located within the western portion of the project area. This prehistoric site was recorded by MWAC Archeologist Steve DeVore in 2010. Additional shovel tests were excavated to further investigate the site. Positive shovel tests revealed lithic debitage, pottery fragments, animal bone fragments, and one convergent scraper. As a result, no additional shovel tests were excavated as it was likely that positive shovel tests would continue as several earth lodge depressions are located on top of the bluff. These earth lodge are habitation sites identified as Central Plains Tradition, St. Helena phase. The site was recorded in 1994 and has been recommended as eligible to the NRHP by the Nebraska State Historical Society (Bozell and Ludwickson 1994).

Green Island

A cultural resource survey was conducted at Green Island in 2015 (Barnett 2015). The survey of Green Island included shovel tests around the pilings at site 25CD91. The site consists of a series of wooden pilings, which are remnants of bank stabilization constructed by German prisoners of war during World War II and represent early efforts to control the river (NPS 2012a). All of the shovel tests were negative. All of the Green Island survey area is within accretion land, making further archeological work unnecessary for the proposed future campground and trail developments (Barnett 2015).

ENVIRONMENTAL CONSEQUENCES

This *Environmental Consequences* chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this EA. This chapter also includes the methods used to analyze impacts and the analysis methods used for determining cumulative impacts. As required by CEQ regulations implementing NEPA, a summary of the environmental consequences for each alternative is provided in table 5, which can be found in the *Alternatives* chapter. The resource topics presented in this chapter, and the organization of the topics, correspond to the resource discussions contained in the *Affected Environment* chapter.

GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS BY RESOURCE

In accordance with the CEQ regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16) and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Mitigating measures for adverse impacts are described, where appropriate. Because these may vary for each resource, these methodologies are described under each impact topic. Overall, these impact analyses and conclusions were based on the review of existing literature and studies, information provided by onsite experts and other government agencies, the results of site-specific surveys (wetlands, vegetation, and cultural resources), best professional judgment, and MNRR staff insight.

GEOGRAPHIC AREA EVALUATED FOR IMPACTS

MNRR comprises two free-flowing reaches of the Missouri River separated by the Lewis and Clark Lake. The 59-Mile District is the eastern portion and extends from Gavins Point Dam to Ponca, Nebraska. This reach is known for the river's historic, dynamic character in its islands, shallow bars, chutes, and snags. The 39-Mile District is the western portion, which extends from Fort Randall Dam to Running Water, South Dakota. This reach is known for the river's natural landscapes. This reach also includes 20 miles of the lower Niobrara River and 8 miles of Verdigre Creek. Bow Creek Recreation Area, Mulberry Bend, and Green Island are all located within the 59-Mile District. Unless otherwise stated, the analysis evaluates impacts to each resource within the site boundaries.

DURATION AND TYPE OF IMPACTS

Impacts are discussed by type, as follows (the terms "impact" and "effect" are used interchangeably throughout this document):

- *Beneficial*: An impact that would result in a positive change to the resource when compared to the existing conditions.
- *Adverse*: An impact that causes an unfavorable result to the resource when compared to the existing conditions.
- *Direct*: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).
- *Indirect*: Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8).

CUMULATIVE IMPACTS ANALYSIS METHOD

The CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are 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 nonfederal) or person undertakes such other actions” (40 CFR 1508.7). As stated in the CEQ handbook, *Considering Cumulative Effects* (CEQ 1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected, and should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the no action alternative.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects and plans at the recreational river and, if applicable, the surrounding area.

The analysis of cumulative impacts was accomplished using four steps:

- *Step 1 – Identify Resources Affected* – Fully identify resources addressed in the *Affected Environment* and *Environmental Consequences* that are affected by any of the alternatives.
- *Step 2 – Set Boundaries* – Identify an appropriate spatial and temporal boundary for each resource.
- *Step 3 – Identify Cumulative Action Scenario* – Determine which past, present, and reasonably foreseeable future actions to include with each resource. Past, present, and reasonably foreseeable future actions are described below.
- *Step 4 – Cumulative Impact Analysis* – Summarize impacts of these other actions (x) plus impacts of the proposed action (y), to arrive at the total cumulative impact (z). This analysis is included for each resource in the *Environmental Consequences* section of this document.

The following projects were identified within the vicinity of the project area and were considered in the cumulative impact analysis for each resource:

- Bow Creek Recreation Area Previous Site Development – Following acquisition of the Bow Creek Recreation Area in February 2004, MNRR constructed a gravel access road to the existing parking area. Within the parking area, MNRR installed an informational sign and trash can. A second informational sign was installed along the river at the mouth of Bow Creek. General maintenance of the area occurs and includes mowing, trash removal, and repairing the road as needed.
- Bow Creek Recreation Area Previous Vegetation Management – Since the acquisition of the Bow Creek Recreation Area, MNRR staff have monitored and managed vegetation throughout the site. Staff control noxious weeds by applying herbicides to invasive species and weeds. Mowing is also used for weed control. Approximately 10 acres of eastern red cedars have been removed by cutting and pile burning. Three broadcast prescribed burns have been performed since 2009. The first burn was conducted in the scrub shrub area along the river from the westernmost property boundary to the mouth of Bow Creek. The prairie area adjacent to the parking area was burned in both 2012 and 2014.

- Mulberry Bend Previous Site Development – Since the acquisition of Mulberry Bend in 2005, MNRR has installed eight informational/interpretive signs throughout the site. A trash can and picnic table were installed in the parking area. MNRR constructed a fence along the established concrete trail that leads to vistas 1 and 2. Select trees were cleared from the two vistas so that visitors could view the river. A backcountry dirt trail was constructed that extends from vista 2. The backcountry trail leads to two additional vista points. General maintenance of the area occurs and includes mowing, trash removal, and repairing the road as needed.
- Mulberry Bend Previous Vegetation Management – Since the acquisition of Mulberry Bend, MNRR staff have monitored and managed vegetation throughout the site. Staff control noxious weeds by applying herbicides to invasive species and weeds. Approximately 1 acre of eastern red cedars have been removed by cutting, chipping, and pile burning. Staff have also performed restoration planting along 5 acres of the site west of the highway. Glyphosate, an herbicide that kills weeds, was applied and then the area was re-seeded with local native plant species. Weeds in this area are frequently mowed.
- Green Island Previous Site Development – Since the acquisition of Green Island in 2014, MNRR has repaired the fence along the property and installed a total of four informational signs as well as boundary markers along some perimeters of the property. Three of the informational signs are located on the island and one sign is located on the land side of the site.
- Green Island Previous Vegetation Management – Since the acquisition of Green Island, MNRR has managed vegetation at the site. Approximately 3 acres of eastern red cedars have been cleared by cutting and chipping. Invasive species removal, including removal of Russian olive and buckthorn throughout the property, was conducted by the Conservation Corps of Minnesota and Iowa and the NPS Exotic Plant Management Team under the supervision of MNRR staff.
- Audubon Bend Development and Vegetation Management – Audubon Bend is located about 2.5 miles north of Wynot, Nebraska along the right descending bank of the Missouri River between river miles 794.0 and 790.0, adjacent to Bow Creek Recreation Area. Audubon Bend, owned by USACE, consists of approximately 2,370 acres with 4.5 miles of river frontage. In 2013, USACE developed a conceptual site plan for the restoration of habitat and recreation features at the site. Approximately 1,900 acres of cultivated farmland would be planted into native prairie grassland, cottonwood forest habitat, and other habitat types. This process will occur in a phased approach, converting portions of cropland each year to wildlife habitat. As of 2013, a total of 245 acres of native grassland and 10 acres of hardwood forest have been established. Additionally, approximately 30 acres of natural cottonwood regeneration has established along the riverfront due to the floods of 2011 (USACE 2013). USACE has removed some of the farmland from production and replanted the fields with native grassland species on a yearly basis. USACE has also performed noxious weed control and invasive species removal, targeting species including eastern red cedar, Siberian elm, white mulberry, phragmites, leafy spurge, and thistles. Access to the site is being improved by constructing a new road to the interior of the property, constructing a parking area, and installing informational signs (USACE 2012).
- North Alabama Bend – North Alabama Bend is a USACE-owned property located approximately 2 miles southwest of Vermillion and 3 miles north of Mulberry Bend. This property consists of approximately 550 acres of natural terrain with approximately 1 mile of

riverfront area. Habitat includes forests, grasslands, and a mixture of trees and grassland meadows. This property has been primarily used for hunting in the past (USACE 2013). Since USACE acquired the land, an informational sign has been installed. Vegetation management, including noxious weed control, two prescribed burns, and invasive species removal for eastern red cedar and Russian olive, has occurred.

- Mulberry Bend Wildlife Management Area – The Nebraska Game and Parks Commission is planning to rehabilitate the existing Mulberry Bend boat ramp, which is located adjacent to the Mulberry Bend Overlook, during the winter of 2015 and 2016. The facility would include a new boat launch ramp, dock, handicap loading area, and a restroom.
- City of Yankton Trail – The City of Yankton maintains the trail system that extends from Yankton to the Nebraska side of the Missouri River via the historic Meridian Bridge and to Green Island under the new Discovery (Highway 81) Bridge.

ASSESSING IMPACTS USING CEQ CRITERIA

The impacts of the alternatives are assessed using the CEQ definition of “significantly” (1508.27), which requires consideration of both context and intensity:

- a) Context – This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short-term and long-term effects are relevant.
- b) Intensity – This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:
 - 1) Impacts may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect would be beneficial.
 - 2) The degree to which the proposed action affects public health or safety.
 - 3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetland, wild and scenic rivers, or ecologically critical areas.
 - 4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.
 - 5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
 - 6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
 - 7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

- 8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (National Register) or may cause loss or destruction of significant scientific, cultural, or historical resources.
- 9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
- 10) Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

For each impact topic analyzed, an assessment of the potential significance of the impacts according to context and intensity is provided in the “Conclusion” section that follows the discussion of the impacts. Context includes both overall context and resource-specific context. Overall context is presented above in the “General Methodology for Establishing Impact Thresholds and Measuring Effects by Resource” section because it is based on purpose and significance of MNRR and applies across all resource topics. Resource-specific context is presented in the “Methodology and Assumptions” section under each resource topic, as applicable, and applies across all alternatives. Intensity of the impacts is presented using the applicable factors from the list in (b) above. Intensity factors that do not apply to a given resource topic and/or alternative are not discussed.

HYDROLOGY/WATER QUALITY

Methodology and Assumptions

Potential impacts on water resources are assessed based on the extent of disturbance to water quality. Water quality impacts were determined based on the ability of surface water to sustain wildlife. Water quality can be determined by measuring the physical, chemical, and biological indicators that can be affected by both natural and anthropogenic processes. Other considerations in assessing the magnitude of water quality impacts are the impacts on resources that are dependent on a certain quality or condition of water. In general and in this document, turbidity is caused by suspended matter or impurities, including clay and silt that interfere with the clarity of the water; therefore, turbidity can be correlated with sediment transport and can affect water quality. Generally, if turbidity is decreased through reduced sediment transport, water clarity (and thus water quality) can be improved.

Bow Creek Recreation Area

No Action Alternative (Alternative A)

Surface water features at Bow Creek Recreation Area include the mainstem Missouri River, Bow Creek, and St. Helena Chute. It is likely that no impacts to water quality currently occur at Bow Creek Recreation Area. There is a slight potential that chemicals related to herbicides may enter the waterways during the treatment of invasive species at the site or through runoff during storm events. Park staff use extreme caution when applying herbicides in areas adjacent to the waterways. If any contamination occurs through a spill or through runoff, impacts would be short term and adverse.

Cumulative Impacts: Previous development at the Bow Creek Recreation Area included the construction of a gravel access road and installation of a sign close to the Missouri River at the mouth of Bow Creek. The construction of these features had the potential to impact water quality; however, it is unlikely. If erosion or sedimentation occurred during these activities, turbidity within nearby surface water features would increase temporarily. Vegetation management throughout the site using

herbicides, mowing, and burning has also occurred. Impacts to water quality could occur if chemicals entered the waterways; however, this is unlikely. The Audubon Bend property lies adjacent to both Bow Creek and St. Helena Chute. Development of the site had potential to impact the turbidity of the water and invasive species management had the potential to impact water quality through the addition of chemicals into the waterbodies. However, it is unlikely that this occurred. When the potential short-term adverse impacts to water quality under alternative A are combined with impacts from past, present, and future projects, cumulative impacts would continue to have the potential of being adverse.

Conclusion: It is likely that no impacts to water quality occur at the site; however, if a spill occurs, potential short-term adverse impacts would result to water quality. Cumulative impacts have the potential to be short term and adverse also. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

No direct impacts to water quality would occur under alternative B; however, there is potential for indirect impacts to occur during development of the site or vegetation maintenance near the existing waterways at the site. The northwest corner of the site that borders the Missouri River and St. Helena Chute would be mowed and planted with native species. There is potential that during planting, erosion could occur and a temporary increase in turbidity could occur. However, in the long term, beneficial impacts to water quality would occur by increasing vegetation within the floodplain. Vegetation in a floodplain slows surface runoff during storm events and reduces the sediment load entering the waterway. As described under the no action alternative, there is a potential for water quality impacts if herbicides or fuel enter the nearby waterways. The northern portion of the proposed mowed trail system runs adjacent to the Missouri River. Potential for indirect water quality impacts may occur if erosion or sedimentation occurs. Overall, any changes in water quality would be adverse, but temporary. BMPs including fencing and a sediment and erosion control plan would be implemented if needed to reduce the risk of impacts.

Following development of the site, impacts to water quality have the potential to occur if visitors recreate along the banks of the waterways and cause additional erosion. In addition, water quality damage could occur if trash is not disposed of properly. These impacts would adversely impact water quality, but indirectly.

Cumulative Impacts: As described under the no action alternative, cumulative impacts on water quality have the slight potential to occur from past construction activities and vegetation management at Bow Creek Recreation Area and from the development and management of the Audubon Bend site. When the short-term adverse impacts and long-term beneficial impacts to water quality under alternative B are combined with impacts from past, present, and future projects, cumulative impacts would be negligible.

Conclusion: Long-term beneficial impacts to water quality would occur from the increase in vegetation within the floodplain. Potential adverse impacts could result from misuse of herbicides and fuels, and from an increase in turbidity due to erosion and sedimentation from construction activities. Cumulative impacts would be negligible. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

The preferred alternative would include disking of the northwest corner of the site to encourage cottonwood growth. Disking would cause further disturbance to the soil, which has a greater potential to enter the Missouri River or St. Helena Chute and increase turbidity. However, long-term beneficial impacts to water quality would occur from the increase in vegetation within the floodplain as described under alternative B. Indirect impacts to water quality from invasive species control would be

the same as alternative B. Additional site development near the Missouri River, Bow Creek, and St. Helena Chute would occur under the preferred alternative. The following development has the potential to create temporary, indirect adverse impacts to water quality due to the potential for erosion and sedimentation: construction of the Riverside Campground, installation of campsite markers, installation of informational signs at the Riverside Campground and the Bluffs Area, hardening of a portion of the mowed trail system near the Riverside Campground, construction of a primitive trail leading to the Bluff Face Campground and construction of the backwater spur trail. Use of gravel or limestone would be used when hardening a portion of the mowed trail system. This would reduce the amount of runoff into adjacent waterways. If impacts were to occur, an increase in turbidity would be expected in the short term. Additional BMPs as described under alternative B would be implemented as needed.

Impacts associated with the increased use of the site would be the same as alternative B, indirect, adverse, and temporary.

Cumulative Impacts: As described under the no action alternative, cumulative impacts on water quality have the slight potential to occur from past construction activities and vegetation management at Bow Creek Recreation Area and from the development and management of the Audubon Bend site. When the short-term adverse impacts and long-term beneficial impacts to water quality under alternative B are combined with impacts from past, present, and future projects, cumulative impacts would be negligible.

Conclusion: The addition of vegetation within the floodplain would increase the quality of water creating long-term beneficial impacts. Indirect impacts to water quality have the potential to occur during the development of the site, vegetation management, and due to the increased use of the site. Indirect impacts would include temporary increases in turbidity from erosion and sedimentation and changes in water quality due to the increase of chemicals and also trash. Cumulative impacts would be negligible. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Impacts from invasive species control, native species restoration, and cottonwood regeneration would be the same as alternative C. Long-term beneficial impacts to water quality would result from the increase in vegetation within the floodplain. Changes in water quality could indirectly occur from the use of herbicides and fuel and from the potential for erosion and sedimentation. Impacts related to the development of the sites as discussed under alternative C would also occur. Construction related activities that are proposed to occur in areas adjacent to the surface water features at Bow Creek Recreation Area could potentially cause an increase in turbidity due to erosion and sedimentation. Additional site development is proposed under alternative D that would create direct impacts to water quality. The backwater located northwest of Bow Creek would be restored by removing sediments and deepening the emergent wetland area. Excavation of soils from the wetland area would create temporary adverse impacts by increasing turbidity. A turbidity curtain would be used to trap sediment from entering the water column to reduce impacts to water quality. However, there are long-term beneficial impacts to water quality from restoring backwaters along large river systems.

Impacts associated with the increased use of the site would be the same as alternative B, indirect, adverse, and temporary.

Cumulative Impacts: As described under the no action alternative, cumulative impacts on water quality have the slight potential to occur from past construction activities and vegetation management at Bow Creek Recreation Area and from the development and management of the Audubon Bend site.

When the overall long-term beneficial impacts to water quality under alternative D are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Temporary adverse impacts to water quality could potentially occur during vegetation management activities and site development. Long-term beneficial impacts would result from the restoration of the backwater at Bow Creek Recreation Area and from the increase of vegetation within the floodplain. This benefit would include an increase in water clarity along the Missouri River. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Mulberry Bend

There are no surface water features within the Mulberry Bend site; therefore, this resource is not analyzed.

Green Island

No Action Alternative (Alternative A)

Surface water features within the Green Island site include the Missouri River side channel and Beaver Creek. It is likely that no impacts to water quality currently occur at the site; however, there is potential for impacts. Under the no action alternative, potential impacts to water quality would occur from vegetation management activities. Invasive species control includes the use of herbicides on perennials and mowing/cutting of biennials. There is a potential that during application of herbicide near waterways at the site that some could enter the water, impacting water quality. In addition, it is possible that chemicals could enter the waterways during storm events from runoff. Impacts would be adverse, but temporary.

Cumulative Impacts: Previous development of the Green Island site included the installation of four informational signs throughout the property. Three of the signs are located adjacent to the Missouri River side channel. Potential increase in turbidity could have occurred during installation due to erosion and sedimentation; however, impacts would be negligible. Vegetation management including the removal of 3 acres of eastern red cedars and treatment of other invasive species has occurred. Impacts from these activities would also be adverse and temporary due to the chance of water contamination. When the potential short-term adverse impacts to water quality under alternative A are combined with impacts from past, present, and future projects, cumulative impacts would continue to have the potential to be adverse.

Conclusion: It is likely that no impact to water quality at Green Island currently occurs. Potential for temporary adverse impacts to water quality could occur during vegetation management activities from the use of herbicides. Cumulative impacts would be short term and adverse. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

No direct impacts to water quality would occur under alternative B. Indirect impacts would be associated with vegetation management as described under the no action alternative. Alternative B would include the construction of a trail on the land side of the site and on the island. Portions of both trails run adjacent to the Missouri River side channel. During construction, opportunity for sediment to enter in the waterway exists, increasing turbidity. Similar indirect impacts have the potential to occur during the installation of the interpretive panel on the north beach area adjacent to the Missouri River. BMPs including fencing and a sediment and erosion control plan would be implemented if needed to reduce the risk of impacts.

Following development of the site, impacts to water quality have the potential to occur if visitors recreate along the banks of the waterways and cause additional erosion. In addition, water quality damage could occur if trash is not disposed of properly. These impacts would adversely impact water quality, but indirectly.

Cumulative Impacts: As described under the no action alternative, cumulative impacts on water quality have the slight potential to occur from past construction activities and vegetation management at Green Island. When the short-term adverse impacts to water quality under alternative B are combined with impacts from past, present, and future projects, cumulative impacts would continue to have the potential of being adverse.

Conclusion: Indirect impacts to water quality from vegetation management, installation of signs, and construction of the two trails have the potential to occur. Impacts would be adverse and temporary and would include increase in chemicals and turbidity. Cumulative impacts would be short term and adverse. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

Under the preferred alternative, indirect impacts associated with vegetation management would be the same as those described under alternative B. Indirect impacts to water quality from the development of the site would be similar to those described under alternative B. Other proposed developments near waterways include the installation of two wayside exhibits and benches along the trail on the land side of the site adjacent to the Missouri River side channel and sloping of the bank of the side channel to provide boating access to the site. Impacts associated with this would be indirect and likely to not occur; however, there is the chance of some changes in turbidity due to soils entering the waterway. BMPs as described under alternative B would be implemented if needed.

Following development of the site, impacts to water quality have the potential to occur if visitors recreate along the banks of the waterways and cause additional erosion. In addition, water quality damage could occur if trash is not disposed of properly. These impacts would adversely impact water quality, but indirectly.

Cumulative Impacts: As described under the no action alternative, cumulative impacts on water quality have the slight potential to occur from past construction activities and vegetation management at Green Island. When the short-term adverse impacts to water quality under alternative C are combined with impacts from past, present, and future projects, cumulative impacts would continue to have the potential of being adverse.

Conclusion: Indirect impacts to water quality would occur from vegetation management, development of the site, and recreational uses of area adjacent to the waterbodies. Impacts would be adverse and temporary and would include increases in turbidity and chemicals. Cumulative impacts would be short term and adverse. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Impacts to water quality associated with vegetation management and development of the site would be the same as the preferred alternative. Temporary indirect impacts would occur due to the use of herbicides and earth-moving activities adjacent to the waterways. BMPs described under alternative B would be implemented as needed. Alternative D would include the restoration of the backwater. The previously restored backwater naturally converted to the present-day Missouri River side channel during the 2011 flood events. The backwater would be restored by dredging to deepen the water level and use the excavated soil to build a land bridge that would connect the island to the land portion of

the site. Direct adverse impacts to water quality, specifically turbidity, would occur during the dredging of the backwater. Impacts would be short term and minimized by using a turbidity curtain, which would trap sediments and reduce the risk of impacts to turbidity. Although short-term impacts would occur, the restoration of the backwater would create long-term beneficial impacts to water quality.

Impacts associated with the increased use of the site would be the same as alternative C, indirect, adverse, and temporary.

Cumulative Impacts: As described under the no action alternative, cumulative impacts on water quality have the potential to occur from past construction activities and vegetation management at Green Island. When the overall long-term beneficial impacts to water quality under alternative D are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Indirect adverse impacts to water quality would occur during vegetation maintenance and during the development of the site in areas adjacent to the Missouri River side channel and Beaver Creek. Impacts would occur from increase in chemicals entering the water and from an increase in turbidity. The restoration of the backwater would create short-term adverse impacts during dredging; however, long-term beneficial impacts to water quality would occur following construction. Cumulative impacts would also be beneficial. Impacts would not meet the significance criteria.

FLOODPLAINS

Methodology and Assumptions

In accordance with DO #77-2, *Floodplain Management*, NPS policy is to preserve floodplain values and avoid impacts associated with modification of the floodplain. The location of the 100-year floodplain was analyzed using FEMA flood insurance rate mapping. To determine impacts the scope of the proposed projects within the floodplain was considered and the area of proposed ground disturbance in the floodplain was determined. Predictions of short-term and long-term impacts were based on an assessment of floodplain functions and values, professional judgment, and similar projects. A SOF has been prepared for this project and can be found in appendix C of this EA.

Bow Creek Recreation Area

No Action Alternative (Alternative A)

Bow Creek Recreation Area is almost completely within the 100-year floodplain (figure 17). The current parking lot is located outside of the 100-year floodplain. The informational sign located on the Missouri River near the confluence of Bow Creek is located within the floodplain. This sign does not impede the function and value of the floodplain. Hiking, camping, hunting, fishing, and boating currently occur within Bow Creek Recreation Area. These activities do occur within the 100-year floodplain and present a risk to safety of visitors during flood events. Impacts would be adverse because MNRR currently does not have an Emergency Action Plan.

Cumulative Impacts: Previous development of Bow Creek Recreation Area included the construction of a gravel access road that is mostly located outside of the 100-year floodplain. Because the substrate of the road is semi-permeable, there would be no impact to the functionality of the floodplain. The development of the Audubon Bend site is also located outside of the 100-year floodplain. Although the past, present, and future projects in the area would not have impacts to the floodplain, cumulative impacts would be adverse due to recreational activities occurring within the floodplain.

Conclusion: No impacts to the functionality and value of the 100-year floodplain are associated with the information sign along the Missouri River at Bow Creek Recreation Area. Cumulative impacts would be adverse. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

Under alternative B, vegetation management would include mowing and planting the northwestern portion of the site with locally collected native species within the 100-year floodplain. Long-term beneficial impacts to the functionality and value of the floodplain would occur. Runoff during storm events that flows over a barren floodplain has the potential to carry large amounts of sediment or debris into the Missouri River. Vegetating the floodplain slows the surface runoff and causes most of the sediment load to remain on the floodplain. In addition, during flood events, vegetation within the floodplain can reduce flood velocities and flood peaks, ultimately reducing sedimentation and erosion. Alternative B would also include the construction of a mowed trail system in the northern portion of the property that is located within the 100-year floodplain. Because the trail would be permeable, construction of the trail would not impede the function and value of the floodplain. As described under the no action alternative, the informational sign along the Missouri River would remain in place; however, it would not impede floodplain functionality.

Hiking, camping, hunting, fishing, and boating would be allowed within the Bow Creek Recreation Area. These activities would occur within the 100-year floodplain and would present a risk to safety of visitors during flood events. An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Cumulative Impacts: As described under the no action alternative, there would be no impacts on floodplains from past construction at Bow Creek Recreation Area and Audubon Bend. When the overall long-term beneficial impacts to floodplains under alternative B are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Impacts to the function and value of the floodplain would be long term and beneficial. The additional vegetation planted within the site would increase the function of the floodplain by slowing runoff and reducing flood velocities. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

Long-term, beneficial impacts to floodplains would occur from the mowing and planting within the northwest corner of the site. This area would also be disked to encourage cottonwood development. Beneficial impacts would include those described under alternative B. Development of Bow Creek Recreation Area within the 100-year floodplain would include the installation of campsite markers, plant identification signs, wayside signs along the mowed trail system, informational signs at the Riverside Campground and Bluff Face Campground, and the construction of a primitive trail leading from the Missouri River to the Bluff Face Campground. The addition of the signs within the floodplain would not impact the function and value of the floodplain since the signs would not obstruct the waterway. The Riverside Campground and Bluff Face Campground would be established within the 100-year floodplain under the preferred alternative. Impacts to floodplains would be negligible. Some vegetation would be removed in order to create 12x12 designated camping sites. This may lessen the functionality of the floodplain during storm events; however, the impact would not be perceivable due to the small size of the sites. A portable restroom would be installed within the Riverside Campground. The portable restroom would not impact the floodplain since it could be easily removed during a flood event. Trash/recycling receptacles would be installed near the Riverside Campground portable toilet and have the potential to impede flood waters and reduce the functionality

of the floodplain. However, impacts would likely be negligible due to the small size of the impacted area.

Hiking, camping, hunting, fishing, and boating would be allowed within the Bow Creek Recreation Area. These activities would occur within the 100-year floodplain and would present a risk to safety of visitors during flood events. An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Cumulative Impacts: As described under the no action alternative, there would be no impacts on floodplains from past construction at Bow Creek Recreation Area and Audubon Bend. When the overall long-term beneficial impacts to floodplains under alternative C are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Overall, long-term beneficial impacts to the functions and value of the 100-year floodplain would occur due to the mowing, planting, and disking of the northwest corner of the site. An increase in vegetation would slow runoff and decrease flood velocities. Development within the floodplain would create negligible impacts to the floodplain function and values. Impacts would be small and localized. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Long-term, beneficial impacts to the floodplain from mowing, planting, and disking within the northwest corner of the site would be the same as those described under the preferred alternative. Alternative D would also include the restoration of the backwater just northwest of Bow Creek. Restoring the backwater would increase the functionality and value of the floodplain. The backwater would be dredged to deepen the channel so that it would hold more water. Impacts from development within the 100-year floodplain would be the same as those described under the preferred alternative. Additional development within the floodplain under alternative D includes the installation of additional waysides along the Backwater Spur trail, hardening a portion of the mowed trail system, construction of a semi-pervious road from the parking lot to the Riverside Campground, and extending the Bluffs Trail from the campground to a wayside exhibit at an overlook. These actions would not impact the floodplain. Both the Loop trail and road would be constructed of a semi-impervious gravel and the Bluffs Trail would be primitive; this would continue to reduce the rate of runoff.

Hiking, camping, hunting, fishing, and boating would be allowed within the Bow Creek Recreation Area. These activities would occur within the 100-year floodplain and would present a risk to safety of visitors during flood events. An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Cumulative Impacts: As described under the no action alternative, there would be no impacts on floodplains from past construction at Bow Creek Recreation Area and Audubon Bend. When the overall long-term beneficial impacts to floodplains under alternative D are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Long-term beneficial impact to the floodplain would occur from the increase of vegetation within the northwest corner of the site and from the restoration of the backwater. Development of the site would create negligible impacts to the floodplain. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Mulberry Bend

Mulberry Bend is not located within the 100-year floodplain; therefore, this resource is not analyzed.

Green Island

No Action Alternative (Alternative A)

Green Island is almost completely within the 100-year floodplain (figure 19). Four informational signs are located throughout the site. These signs do not impact the function and value of the 100-year floodplain. The signs would not impede waters during a storm event.

Cumulative Impacts: Previous development within Green Island includes the installation of the four signs discussed under the no action alternative. No impact to the floodplain is associated with these signs. There would be no cumulative impacts.

Conclusion: There would be no impact to floodplains under the no action alternative. The four signs located on the site would not impede the function and value of the floodplain. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

Under alternative B, primitive trails would be constructed on both the island and land side of the site. The trails would be located within the 100-year floodplain. The substrate of the trails would be sand, which is permeable; therefore, the trail would not impact the function and value of the floodplain. One interpretive sign would be installed within the beach area. No impacts to the floodplain would occur since the sign would not impede waters during a flood event.

Hiking, camping, fishing, and boating would be allowed within Green Island. These activities would occur within the 100-year floodplain and would present a risk to safety of visitors during flood events. An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Cumulative Impacts: There would be no cumulative impacts under alternative B since past, present, and future projects would have no impact to the floodplain and alternative B would also have no impact.

Conclusion: The construction of the trails and installation of the interpretive sign would have no impact to floodplains. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

Development of the site within the floodplain under the preferred alternative includes installing protective fencing around the historic pilings, campsite markers, vegetation identification signs, two benches, and four wayside interpretive signs. Waysides and smaller signs would not impact the floodplain; however, the fence surrounding the historic pilings has the potential to impede flow events. Under the preferred alternative, the trails would be constructed of gravel or limestone. No impacts to the floodplain would occur since this surface is semi-impermeable substrate and the floodplain would still remain functional. Designated primitive campsites would be established throughout the site. Campsites would require the removal of vegetation within localized areas. Impacts from construction of campsites would have negligible impacts to the floodplain. This may lessen the functionality of the floodplain during storm events; however, the impact would not be perceivable due to the small size of

the sites. A portable restroom would be installed near the campground. The portable restroom would not impact the floodplain since it could be easily removed prior to a flood event. If in the event the portable restroom could not be removed, negligible impacts may occur. Trash/recycling receptacles would be installed near the campground portable toilet and on the beach. These have the potential to impede flood waters and reduce the functionality of the floodplain. However, impacts would likely be negligible due to the small size of the impacted area.

Hiking, camping, fishing, and boating would be allowed within Green Island. These activities would occur within the 100-year floodplain and would present a risk to safety of visitors during flood events. An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Cumulative Impacts: As described under the no action alternative, there would be no impact from past actions at Green Island. When the negligible impacts to floodplain under alternative C are combined with impacts from past, present, and future projects, cumulative impacts would be negligible.

Conclusion: Overall impacts to the floodplain from the development of Green Island would be negligible. In some instances, the floodplain would be impeded during storm events. Cumulative impacts would be negligible. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

There would be no impacts to the floodplain from the establishment of trails and signs as discussed under the preferred alternative. Alternative D includes the construction of two vault toilets within the floodplain. Impacts to the floodplain would be long term and adverse. The vault toilets would impede flood waters and change the function and value of the floodplain. Alternative D would also include the restoration of the backwater and creation of the land bridge from the excavated material. The area would be restored back to its original conditions prior to the 2011 flood event. The backwater would be deepened to hold more water and this would increase the function and value of the floodplain creating long-term beneficial impacts.

Hiking, camping, fishing, and boating would be allowed within Green Island. These activities would occur within the 100-year floodplain and would present a risk to safety of visitors during flood events. An Emergency Action Plan would be developed by MNRR that would include evacuation plans in the event of an emergency.

Cumulative Impacts: As described under the no action alternative, there would be no impact from past actions at Green Island. When the beneficial impacts to the floodplain under alternative C are combined with impacts from past, present, and future projects, cumulative impacts would be long term and beneficial.

Conclusion: The construction of two vault toilets would create adverse impacts to the floodplain by impeding flood waters. However, long-term beneficial impacts to the floodplain would occur due to the restoration of the backwater. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

WETLANDS

Methodology and Assumptions

The NPS has adopted a policy of “no net loss” of wetlands. EO 11990, “Protection of Wetlands,” states that federal agencies are to avoid to the extent possible long-term and short-term impacts

associated with the destruction and modification of wetlands, and to avoid direct and indirect support of new construction in wetlands whenever practical alternatives exist. The USACE regulates development in wetland areas pursuant to Section 404 of the CWA (33 CFR, 320-330).

NPS DO #77-1, *Wetland Protection* (2002) and *Procedural Manual* (2012) provide NPS policies and procedures for complying with EO 11990, as follows:

Actions proposed by NPS that have the potential to have adverse impacts on wetlands are addressed in an EA. If the preferred alternative in an EA would result in adverse impacts on wetlands a *Statement of Findings* documenting compliance with DO #77-1 (NPS 2002b) and PM #77-1 (NPS 2012b) would be completed. Actions that may be accepted from the *Statement of Findings* requirement are identified in the *Procedural Manual*.

Impact analysis and the conclusions for possible impacts on wetlands were based on review of existing literature and studies, information provided by MNR staff and other agencies, and onsite investigation. Locations of wetlands were overlain with the alternatives to determine impacts on wetlands.

Bow Creek Recreation Area

No Action Alternative (Alternative A)

In May 2015 wetlands were delineated at Bow Creek Recreation Area. A total of 11.73 acres of emergent/forested wetlands were identified. A total of 234.07 acres of riverine wetlands were also delineated, which included the Missouri River, Bow Creek, and the St. Helena Chute. Under the no action alternative, long-term beneficial impacts to wetlands would occur. Invasive species control throughout the site currently includes the use of herbicides and some mowing and cutting as needed. Invasive species within wetland systems reduce biodiversity of native species. Mowing and cutting reduces seed germination and the correct use of herbicides can completely remove invasive plants. Removal of invasive species from the wetland areas would increase diversity of native wetland plant species creating beneficial impacts to the wetland system.

Cumulative Impacts: Previous development at Bow Creek Recreation Area did not occur within the wetland areas. Vegetation management including the control of invasive species and removal of eastern red cedars would benefit species diversity within wetland areas. When the beneficial impacts to wetlands under the no action alternative are combined with impacts from past, present, and future projects, cumulative impacts would be long term and beneficial.

Conclusion: The control of invasive species throughout the site, specifically in wetland areas would increase native species diversity, creating long-term beneficial impacts to wetlands. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

Alternative B would include the control of invasive species throughout the site, benefiting species diversity within the wetland areas as described under the no action alternative. Alternative B also includes native species restoration within the northwest corner of the site. The proposed area for restoration is immediately adjacent to St. Helena Chute, a riverine wetland. Mowing and planting this area with locally collected native species would provide and enhance the buffer along the riverine wetland. Impacts from this action would be beneficial. The only development within the site that would occur within a wetland is the construction of the mowed trail system in the northern portion of the site. This trail would cross 0.02 acre of Wetland 2, a palustrine, emergent wetland. To avoid having visitors walk through the sensitive wetland area, NPS would construct a small boardwalk over

the affected area. It may be necessary to place small support structures for the boardwalk within the wetland creating adverse impacts to less than 0.02 acres of Wetland 2.

Cumulative Impacts: As described under the no action alternative, there would be beneficial impacts to wetlands from past actions at Bow Creek Recreation Area. Less than 0.02 acres of Wetland 2 would be adversely impacted from the boardwalk. When the beneficial and adverse impacts to wetlands under alternative B are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Beneficial impacts to wetlands would occur from invasive species management and native species restoration. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of a boardwalk over the wetland along the mowed trail. Some support structures may be placed within the wetland. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

Impacts to wetlands would be the same as alternative B. Vegetation management and invasive species control would benefit wetland areas by increasing native species diversity and by providing/enhancing the buffer along St. Helena Chute. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of the boardwalk support structures within the wetland. Figure 22 shows the location of wetlands in reference to the proposed site development for the preferred alternative. The placement of support structures falls under the excepted action 4.2.1.a. for Boardwalks, according to the *Procedural Manual #77-1: Wetland Protection*. This proposed wetland impact, as an excepted action, does not require a Wetland Statement of Findings or the associated public review process. To minimize shade impacts, the boardwalk would be placed at an elevation above the vegetation surface at least equal to the width of the boardwalk. Alternative C also includes the construction of a primitive trail that would lead from the Missouri River to the Bluff Face Campground. The trail would be located outside of Wetland 5A and 5B to avoid additional wetland impacts (Figure 22).

Cumulative Impacts: As described under the no action alternative, there would be beneficial impacts to wetlands from past actions at Bow Creek Recreation Area. Less than 0.02 acres of Wetland 2 would be adversely impacted from the boardwalk. When the beneficial and adverse impacts to wetlands under alternative C are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Beneficial impacts to wetlands at Bow Creek would occur. Species diversity would increase from invasive species management and the buffer along St. Helena Chute would be enhanced. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of a boardwalk over the wetland along the mowed trail. Some support structures may be placed within the wetland. Placing support structures within Wetland 2 would be considered an excepted action, and does not require a Wetland Statement of Findings. No impacts would occur to Wetlands 5A and 5B due to the Bluffs Trail. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

As discussed under alternatives B and C, native species restoration and invasive species control would benefit wetlands throughout the site by increasing species diversity and providing a buffer along St. Helena Chute. Less than 0.02 acres of Wetland 2 would be impacted from the placement of the boardwalk support structures within the wetland. No impacts to Wetland 5A and 5B would occur

from the construction of the Bluffs Trail. Additional beneficial impacts to wetlands would occur from restoring the backwater associated with a portion of Wetland 2. Wetland 2 is currently a palustrine, emergent, non-persistent, temporary flooded (PEM2A) wetland. Restoring the backwater would include dredging and removing the sediment to deepen the water within 1.98 acres of Wetland 2. The palustrine wetland would be converted to a riverine system. This would restore more of the natural hydrology and connectivity with the Missouri River, increasing the morphological diversity and enhancing the ecological value of the river. Backwaters provide important habitat for a range of aquatic flora and fauna, including invertebrates, macrophytes, and fish, which would ultimately increase the functionality and value of Wetland 2.

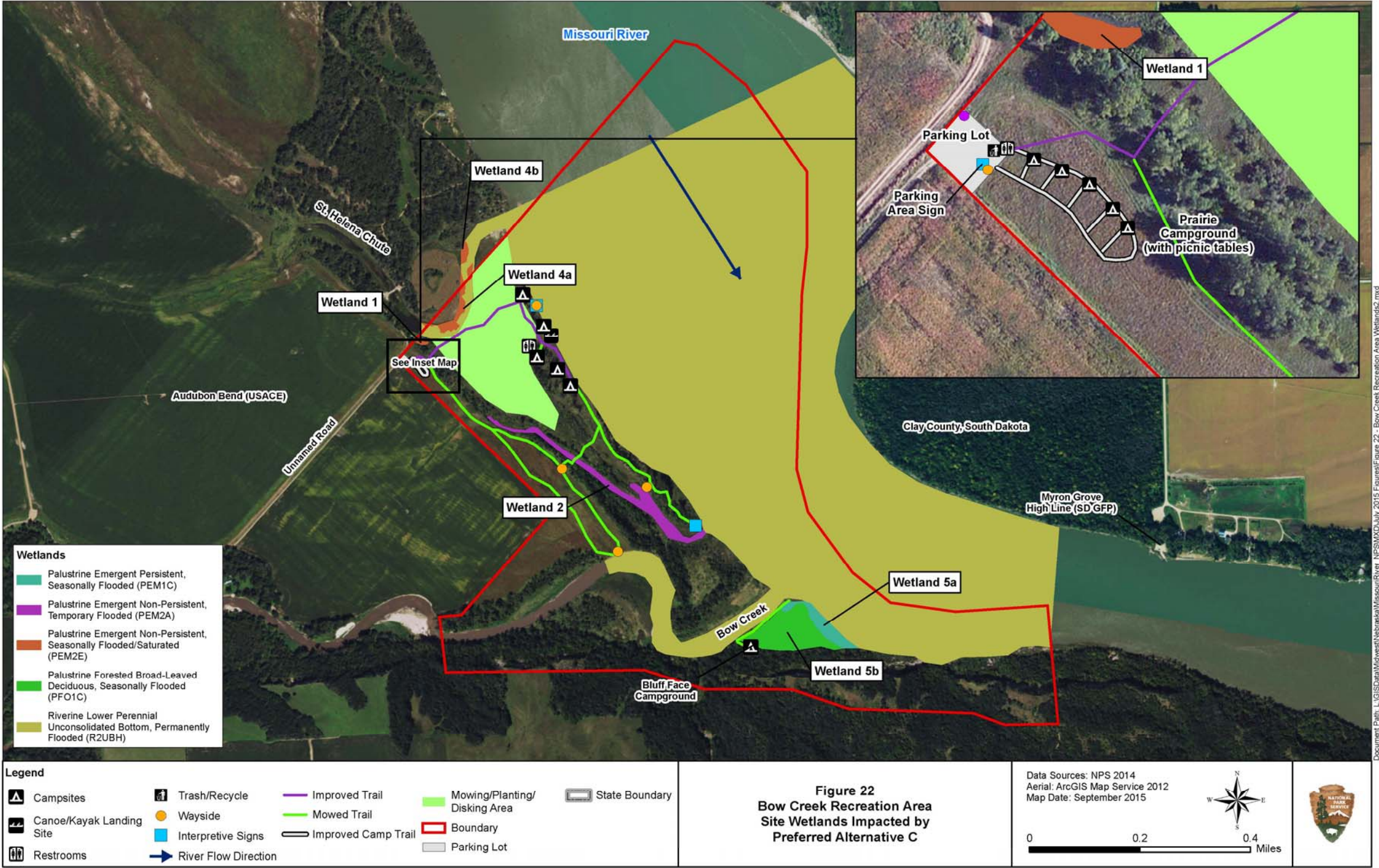
Cumulative Impacts: As described under the no action alternative, there would be beneficial impacts to wetlands from past actions at Bow Creek Recreation Area. Less than 0.02 acres of Wetland 2 would be adversely impacted from the boardwalk. When the beneficial and adverse impacts to wetlands under alternative D are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Beneficial impacts to wetlands would occur from the removal of invasive species, enhancement of the buffer along the St. Helena Chute, and from the backwater restoration. The function and value of Wetland 2 would increase from the restoration, creating the most beneficial impacts to wetlands. Less than 0.02 acres of Wetland 2 would be adversely impacted from the placement of boardwalk support structures within the wetland. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Mulberry Bend

No wetlands are located within Mulberry Bend; therefore, this resource is not analyzed.

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Green Island

No Action Alternative (Alternative A)

In May 2015 wetlands were delineated at Green Island. A total of 0.01 acre of palustrine wetlands was identified. Two riverine wetlands were also delineated, 15.41 acres of the Missouri River side channel and 0.33 acre of Beaver Creek. Current invasive species management includes the use of herbicides on perennials and mowing/cutting biennials. Eastern red cedars are also controlled by cutting. The management of invasive species within the wetland areas would increase biodiversity within the area. Mowing and cutting reduces seedling establishment and the correct use of herbicides can completely remove invasive plants. Removal of invasive species from the wetland areas would increase diversity of native wetland plant species creating beneficial impacts to the wetland system.

Cumulative Impacts: Previous vegetation management including the control of invasive species and removal of eastern red cedars would benefit species diversity within wetland areas. When the beneficial impacts to wetlands under the no action alternative are combined with impacts from past, present, and future projects, cumulative impacts would be long term and beneficial.

Conclusion: Beneficial impacts to wetlands would occur from the removal of invasive species throughout the site including the wetland areas. An increase in biodiversity would occur. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

Impacts to wetlands would be the same as the no action alternative. Long-term beneficial impacts to wetlands would occur from an increase in biodiversity. Control of invasive species throughout the site would eliminate invasives within and adjacent to wetlands, increasing native plant diversity. None of the development proposed at the site would be located in wetlands.

Cumulative Impacts: As described under the no action alternative, there would be beneficial impacts to wetlands from past actions at Green Island. When the beneficial impacts to wetlands under alternative B are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Impacts to wetlands would be long term and beneficial. The removal of invasive species would increase biodiversity within the wetlands. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

Impacts to wetlands would be the same as alternative B, long term and beneficial from the removal of invasive species. None of the development proposed under alternative B would be located within the wetlands. Figure 23 shows the location of wetlands in reference to the proposed site development for the preferred alternative.

Cumulative Impacts: As described under the no action alternative, there would be beneficial impacts to wetlands from past actions at Green Island. When the beneficial impacts to wetlands under alternative C are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

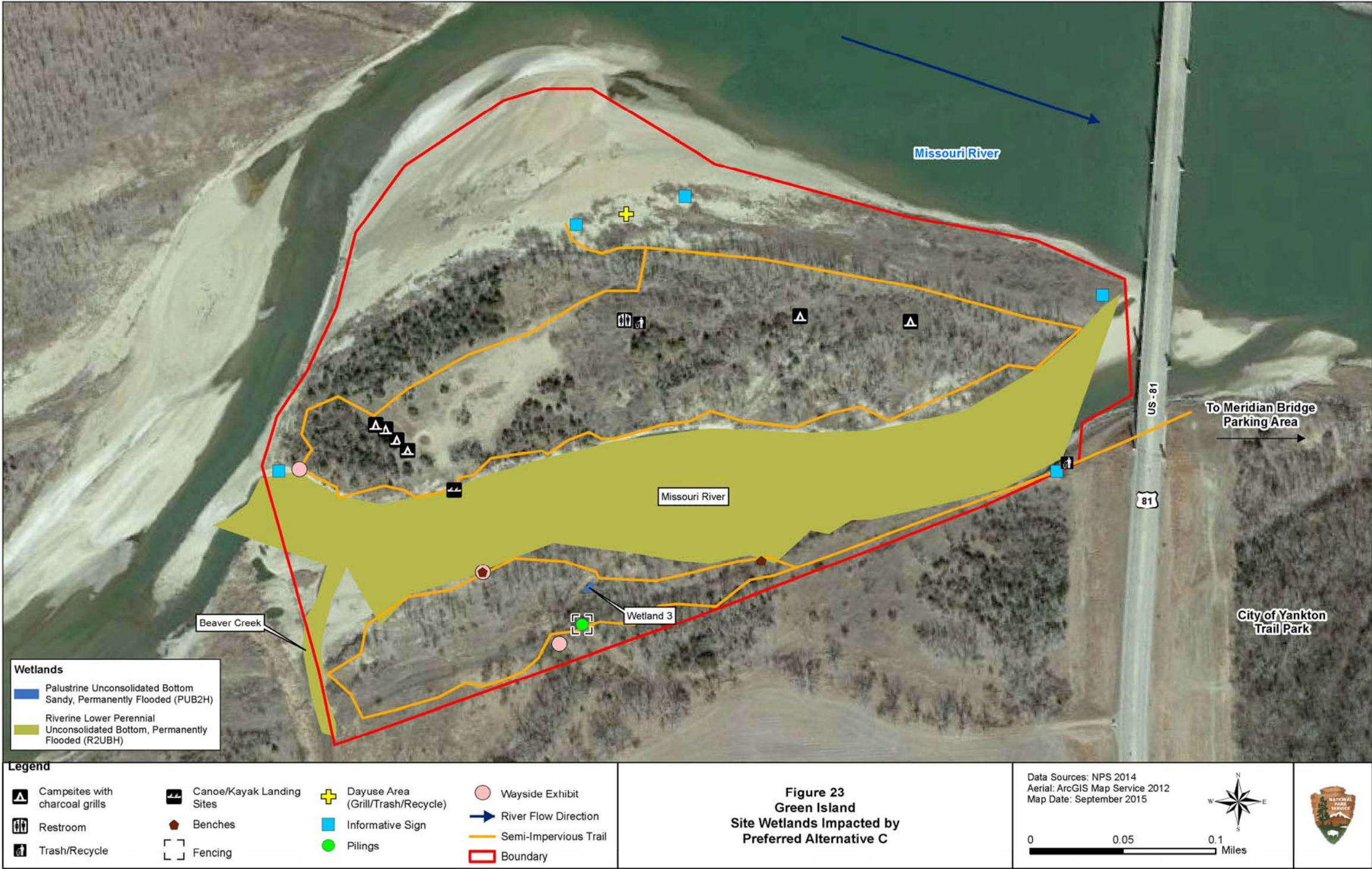
Conclusion: Impacts to wetlands would be long term and beneficial. The removal of invasive species would increase biodiversity with the wetlands. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Long-term, beneficial impacts to wetlands from invasive species management would occur as described above. Alternative D includes the restoration of the backwater that was converted to the current Missouri River side channel during the 2011 flood event. The backwater would be restored by deepening the water and using the excavated material to build a land bridge to connect the island to the land side of the site. A total of 9.31 acres of the riverine wetland (Missouri River side channel) would be restored to a backwater. A total of 0.93 acre of the riverine wetland would be filled in order to create the land bridge. Although filling a portion of the wetland would create adverse impacts by reducing the size of the wetland, overall beneficial impacts would occur. Restoring the backwater would restore the original and natural hydrology of the site, increasing the morphological diversity and enhancing the ecological value of the Missouri River. Backwaters provide important habitat for a range of aquatic flora and fauna, including invertebrates, macrophytes, and fish, which would ultimately increase the functionality and value of the riverine wetland. No other proposed developments under alternative D would be located within wetlands.

Cumulative Impacts: As described under the no action alternative, there would be beneficial impacts to wetlands from past actions at Green Island. When the beneficial impacts to wetlands under alternative D are combined with impacts from past, present, and future projects, cumulative impacts would be beneficial.

Conclusion: Overall beneficial impacts to wetlands would occur from the control of invasive species and the backwater restoration. The function and value of the riverine wetland (Missouri River side channel) would improve because of the increase of native vegetation within the wetlands and because of restoring the natural hydrology of the system and ecological benefits to flora and fauna. Cumulative impacts would be beneficial. Impacts would not meet the significance criteria.



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ARCHEOLOGICAL RESOURCES

Methodology and Assumptions

The analyses of effects on cultural resources that are presented in this section respond to the requirements of both NEPA and Section 106 of the NHPA. In accordance with the Advisory Council's regulations implementing Section 106 (36 CFR Part 800, *Protection of Historic Properties*), impacts on archeological resources were identified and evaluated by (1) determining the Area of Potential Effects (APE); (2) identifying archeological resources present in the APE that are either listed in or eligible to be listed in the NRHP; (3) applying the criteria of adverse effect on affected archeological resources; and (4) considering ways to avoid, minimize, or mitigate adverse effects from the undertaking.

Under the implementing regulations for Section 106, a determination of either *adverse effect* or *no adverse effect* must also be made for affected archeological resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of an archeological resource that qualifies it for inclusion in the NRHP (by diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the undertaking that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5). A determination of *no adverse effect* means that the effect would not diminish the characteristics of the archeological resource that qualify it for inclusion in the NRHP to a level that its eligibility evaluation is affected. A finding of *no effect* on historic properties can result from the absence of any listed or eligible resources within the APE, or that an undertaking's impacts are negligible.

An archeological survey was performed at each of the three properties in April 2015 (Barnett 2015).

Bow Creek Recreation Area

No Action Alternative (Alternative A)

Under the no action alternative, no additional development would occur. Cultural resources, as described in the *Affected Environment* section of this document, would not be impacted if the no action alternative were selected. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Bow Creek Recreation Area would not result in cumulative impacts as no changes would result from the no action alternative.

Conclusion: The no action alternative would result in no additional direct or adverse impacts to the archeological resources because no campsites, trails, or development would occur. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

No cultural resources listed or eligible for listing on the NRHP are within the project area; under alternative B, the proposed primitive camping, mowed trail system, and signage would have no effect on historic properties. Cultural resources would not be impacted if alternative B were implemented. Consultation with the SHPO and Native American tribes for their concurrence with a "no historic properties affected" determination will occur during the public review period. Continued adherence to

CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

The three clusters of car dumps, which are presumed to be greater than 50 years of age, may be historic, but could be removed if they are considered safety hazards. If they are not safety hazards, they may be left in place and designated Local Resource Types (LRT – possible sites). If the park wants to remove the cars because of safety concerns, archeological monitoring would be necessary during the removal because they are somewhat embedded and located along the creek, which creates the potential for the existence of prehistoric archeological materials in these locations (Barnett 2015).

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Bow Creek Recreation Area would not result in cumulative impacts induced by changes under alternative B.

Conclusion: The proposed primitive camping, mowed trail system, and signage associated with alternative B would have no effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

No cultural resources listed or eligible for listing on the NRHP are within the project areas; under the preferred alternative, the proposed campsite locations, mowed and developed trails, signage and restroom facilities would have no effect on historic properties. Cultural resources would not be impacted if the preferred alternative were implemented. Consultation with the SHPO and Native American tribes for their concurrence with a “no historic properties affected” determination will occur during the public review period. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources* would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

The three clusters of car dumps, which are presumed to be greater than 50 years of age, may be historic, but could be removed if they are considered safety hazards. If they are not safety hazards, they may be left in place and designated Local Resource Types (LRT – possible sites). If the park wants to remove the cars because of safety concerns, archeological monitoring would be necessary during the removal because they are somewhat embedded and located along the creek, which creates the potential for the existence of prehistoric archeological materials in these locations (Barnett 2015).

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Bow Creek Recreation Area would not result in cumulative impacts induced by changes under alternative C.

Conclusion: The proposed campsite locations and mowed trail into the bluffs associated with alternative C would have no effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Impacts to cultural resources would be the same as described for alternative C. No cultural resources listed or eligible for listing on the NRHP are within the project areas. Prior to project implementation, MNRR would consult with the SHPO and Native American tribes for their concurrence with a no historic properties affected determination. Continued adherence to CFR 2.1, *Preservation of Natural,*

Cultural and Archeological Resources, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

The three clusters of car dumps may be historic, but could be removed if they are considered safety hazards. If they are not safety hazards, they may be left in place and designated Local Resource Types (LRT – possible sites). If the park wants to remove the cars because of safety concerns, archeological monitoring will be necessary during the removal because they are somewhat embedded and located along the creek, which creates the potential for the existence of prehistoric archeological materials in these locations (Barnett 2015).

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Bow Creek Recreation Area would not result in cumulative impacts induced by changes under alternative D.

Conclusion: The proposed campsite locations and mowed trail into the bluffs associated with alternative D would have no effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Mulberry Bend

No Action Alternative (Alternative A)

Under the no action alternative, no additional development would occur and cultural resources would not be impacted. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

Cumulative Impacts: The previous site development, vegetation management that has occurred within Mulberry Bend and the nearby boat ramp (owned by the Nebraska Game and Parks Commission), would not result in cumulative impacts as no changes would result from the no action alternative.

Conclusion: The no action alternative would result in no direct or adverse impacts to the archeological resources because no development would occur. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

One cultural resource (25DX124) eligible for listing on the NRHP is located within the western portion of the project area; however, under alternative B, all proposed developments would occur on the east side of the project area and would have no adverse effect on historic properties. Site 25DX124 would not be impacted if alternative B were implemented, and would be avoided by project design. Consultation with the SHPO and Native American tribes for their concurrence with a “no adverse effect” determination will occur during the public review period. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

Cumulative Impacts: The previous site development, vegetation management, and boat ramp (owned by the Nebraska Game and Parks Commission) that have occurred within Mulberry Bend would not result in cumulative impacts induced by changes under alternative B.

Conclusion: The proposed developments associated with alternative B would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Moderate Management/Development (Preferred Alternative C)

Impacts: Impacts to cultural resources would be the same as described for alternative B. One cultural resource (25DX124) eligible for listing on the NRHP is located within the western portion of the project area; however, under alternative C, all proposed developments would occur on the east side of the project area and would have no adverse effect on historic properties. Site 25DX124 would not be impacted if alternative C were implemented, and would be avoided by project design. Consultation with the SHPO and Native American tribes for their concurrence with a “no adverse effect” determination will occur during the public review period. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

Cumulative Impacts: The previous site development, vegetation management, and boat ramp (owned by the Nebraska Game and Parks Commission) that have occurred within Mulberry Bend would not result in cumulative impacts induced by changes under alternative C.

Conclusion: The proposed developments associated with alternative C would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Impacts: One cultural resource (25DX124) eligible for listing on the NRHP is located within the western portion of the project area. Under alternative D, proposed developments within the western portion of the project area would include a trail system, gravel access road with associated parking area, construction of a picnic area, restrooms, and construction of a water well. The proposed development would result in an adverse effect to this historic property as a result of ground disturbance and increased use and visitation within the area. Prior to project implementation, an archeological mitigation program would need to be developed and MNRR would consult with the SHPO and Native American tribes for their concurrence on appropriate mitigation. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential cumulative degradation of cultural resources.

Cumulative Impacts: The previous site development, vegetation management, and boat ramp (owned by the Nebraska Game and Parks Commission) that have occurred within Mulberry Bend would not result in cumulative impacts induced by changes under alternative D.

Conclusion: The proposed developments associated with alternative D would have an adverse effect on historic properties, and mitigation measures would be required. Prior to project implementation, an archeological mitigation program would need to be developed and MNRR would consult with the SHPO and Native American tribes for their concurrence on appropriate mitigation. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would meet significance criterion 8, the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

Green Island

No Action Alternative (Alternative A)

Under the no action alternative, no additional development would occur and cultural resources, including the historic pilings, would not be impacted. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential degradation of cultural resources.

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Green Island area would not result in cumulative impacts as no changes would result from the no action alternative.

Conclusion: The no action alternative would result in no additional direct or adverse impacts to the archeological resources because no campsites, trails, or development would result. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

Low Management/Development (Alternative B)

One cultural resource (25CD91 – historic pilings) eligible for listing on the NRHP is located within the project area. Under alternative B, trail development would occur in the vicinity of the historic pilings and could result in an adverse effect to this historic property as this could exacerbate the erosion of the bases of the individual pilings, creating instability and posing a safety threat to visitors. Prior to project implementation, an archeological mitigation program would be developed and MNRR would consult with the SHPO and Native American tribes for their concurrence on appropriate mitigation. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential degradation of cultural resources.

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Green Island area would not result in cumulative impacts induced by changes under alternative B.

Conclusion: The proposed developments associated with alternative B could have an adverse effect on historic properties, and mitigation measures would be required. Prior to project implementation, an archeological mitigation program would need to be developed and MNRR would consult with the SHPO and Native American tribes for their concurrence on appropriate mitigation. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet significance criterion 8, the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

Moderate Management/Development (Preferred Alternative C)

One cultural resource (25CD91 – historic pilings) eligible for listing on the NRHP is located within the project area. Under alternative C, trail development would occur in the vicinity of the historic pilings; however, protective fencing around the pilings is proposed to prevent increased erosion and impacts to the historic property. Proposed development as a result of alternative C would have no adverse effect on historic properties. Consultation with the SHPO and Native American tribes for their concurrence with a “no adverse effect” determination will occur during the public review period. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential degradation of cultural resources.

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Green Island area would not result in cumulative impacts induced by changes under alternative C.

Conclusion: The proposed developments associated with alternative C would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

High Management/Development (Alternative D)

Impacts to cultural resources would be the same as described for alternative C. One cultural resource (25CD91 – historic pilings) eligible for listing on the NRHP is located within the project area. Under alternative D, trail development would occur in the vicinity of the historic pilings; however, protective fencing around the pilings is proposed to prevent increased erosion and impacts to the historic property. Proposed development as a result of alternative D would have no adverse effect on historic properties. Consultation with the SHPO and Native American tribes for their concurrence with a “no adverse effect” determination will occur during the public review period. Continued adherence to CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*, would serve to minimize or eliminate any potential degradation of cultural resources.

Cumulative Impacts: The previous site development and vegetation management that has occurred within the Green Island area would not result in cumulative impacts induced by changes under alternative D.

Conclusion: The proposed developments associated with alternative D would have no adverse effect on historic properties. MNRR would continue to follow CFR 2.1, *Preservation of Natural, Cultural and Archeological Resources*. There would be no cumulative impacts. Impacts would not meet the significance criteria.

CONSULTATION AND COORDINATION

Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the environmental document. Among other tasks, scoping determines important issues and eliminates issues determined to be not important, allocates assignments among the interdisciplinary team members and/or participating agencies, identifies related projects and associated documents, identifies other permits, surveys, consultations, etc. required by other agencies, and creates a schedule that allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. Scoping includes consultation with any interested agency, or any agency with jurisdiction by law or expertise to obtain early input and permits needed for implementation. Scoping also includes coordination with the public regarding the proposed project. All public involvement documents are included in appendix A, and all agency consultation and coordination documents are included in appendix B.

AGENCY CONSULTATION

External scoping refers to the interdisciplinary process used to define issues, alternatives, and data needs. Consultation letters were mailed to local, state, and federal agencies on November 24, 2014 requesting consultation and comments regarding the proposed project at MNRR. In addition, congressional letters were sent to 11 elected officials in Nebraska and South Dakota. Appendix B contains a list of agencies that received the consultation letter and a copy of the consultation letter. Responses were received from several agencies. Responses were received from the Nebraska State Historical Society, South Dakota DGFP, Nebraska DNR, and the Ponca Tribe of Nebraska. Copies of the consultation letters and responses are located in appendix B.

SPECIAL STATUS SPECIES CONSULTATION

In accordance with federal and state requirements for special status species, consultation letters were mailed to state and federal agencies on November 24, 2014, including the USFWS, South Dakota Department of the Environment and Natural Resources, South Dakota DGFP, Nebraska DNR, and Nebraska Game and Parks Commission (appendix B). Information about the proposed project was included in the consultation letter. A response was received from Nebraska DNR on December 22, 2014 and from South Dakota DGFP on December 23, 2014. Nebraska DNR did not identify any concerns related to special status species. South Dakota DGFP indicated that interior least tern and piping plover colonies do occur within the properties and they identified a bald eagle nest located within Nebraska. South Dakota DGFP requested that MNRR not destroy any natural features that support these species when developing the sites.

SECTION 106 CONSULTATION

Agency consultation was initiated with the Nebraska State Historical Society, Yankton Sioux Tribe, Santee Sioux Tribe, and Ponca Tribe of Nebraska to comply with Section 106 of the NHPA. Section 106 of the NHPA (36 CFR, Part 800) requires federal agencies to take into account the effects of their undertakings on historic properties, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. A letter was mailed to the SHPO and three tribes on November 24, 2014 requesting consultation and comments on the proposed project (appendix B). A response was received from the SHPO on December 8, 2014 indicating that archeological resources have been identified at Mulberry Bend. They also stated that Bow Creek Recreation Area has not been surveyed for archeological resources and Green Island does not contain any historic resources. A response was also received from the Ponca Tribe of Nebraska on December 9, 2014 indicating that the tribe would prefer to see development of the properties limited to primitive camping, trails, and

wildlife viewing. They also requested that a Cultural Resource Survey be completed for each of the properties. Copies of the letters are included in appendix B. A letter was mailed to the Nebraska State Historical Society SHPO, South Dakota SHPO, Yankton Sioux Tribe, Santee Sioux Tribe of Nebraska, and Ponca Tribe of Nebraska on June 12, 2015 that included the trip report summarizing the archeological investigations conducted by the NPS MWAC at each of the three properties.

The SHPO and tribes will have the opportunity to comment on this EA during the public review period. In addition to the EA, a second letter requesting the concurrence of No Adverse Effect will be sent to the SHPO to complete the consultation process.

PUBLIC INVOLVEMENT

External scoping is the process used to gather public input. For this project, a scoping newsletter was mailed on November 22, 2014 to individuals, organizations, stakeholders, and agencies in order to notify the public that an environmental assessment is being completed for this proposed project. The newsletter was also available to the public at the park's headquarters. A press release announcing the project and newsletter was released to the following media outlets:

Newspaper

- Cedar County News
- Sioux City Journal
- Crofton Journal
- Leader-Courier (Elk Point, South Dakota)
- Yankton Press & Dakotan
- Yankton County Observer
- Dakota Dunes/North Sioux City Times
- Vermillion Plain Talk.

Radio

- KYNT/KK93
- SDPB
- WNAX/The Wolf
- Culhane Communications.

Television

- KSFY
- KMEG-14
- KTIV
- KCAU
- KELO
- KDLT.

The newsletter provided the purpose, need, and objectives of the PMP; a description of the NEPA process, and a description of the public scoping process. The public had the opportunity to comment on the proposed project for a total of 33 days (November 22, 2014 through December 24, 2014) using the NPS Planning, Environment, and Public Comment (PEPC) website or by sending a written comment to MNRR. During the comment period, three public meetings were held between December 2, 2014 and December 4, 2014. Meetings were held at the Sacred Heart Church Hall in Wynot, Nebraska (Tuesday, December 2); Yankton Fire Department in Yankton, South Dakota (Wednesday, December 3); and W.H. Over Museum in Vermillion, South Dakota (Thursday,

December 4). Meetings on Tuesday and Thursday ran from 5:00 p.m. through 7:00 p.m. and the meeting on Wednesday ran from 3:30 p.m. through 7:00 p.m. The meetings were open house style. Attendees were encouraged to talk with park staff regarding recreational activities they would like to see at the three MNRR properties. Twenty-nine comments were received during the comment period on the scoping newsletter. The newsletter is included in appendix A.

This EA will be distributed to agencies for public and agency review and comment for a period of at least 30 days; comments received will be addressed in an errata sheet to be attached to the Finding of No Significant impact (FONSI), assuming there are no issues that may lead to significant impacts from the preferred alternative. Following the completion of the EA and response to comments, the FONSI will be signed and dated by the NPS Midwest Regional Director.

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APPENDIX A

Public Involvement

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Environmental Assessment for the Property Management Plan

Missouri National Recreational River

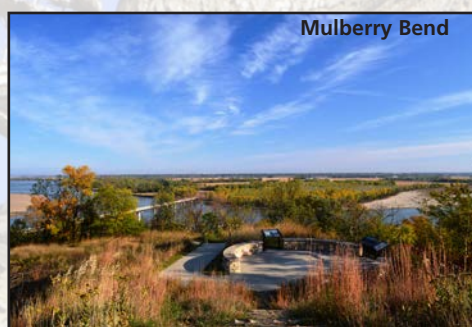
National Park Service
U.S. Department of the Interior



Purpose and Need for the Property Management Plan

Missouri National Recreational River (MNRR) has proposed to develop a Property Management Plan (PMP) for the following MNRR properties: Green Island (60 acres), Bow Creek Recreation Area (205 acres), and Mulberry Bend (31 acres). The purpose of this plan is to decide how the National Park Service (NPS) can best fulfill MNRR's purpose and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The management plan will identify actions for recreational site development, resource management, interpretation/education and establish management policy on certain issues, such as access, hunting, and camping.

MNRR's General Management Plan (GMP) was completed in 1998 and these properties were acquired after the GMP was written. A management plan for the three properties is necessary for the park to carry out the NPS mission and the congressional mandates found in the Wild and Scenic Rivers Act – the enabling legislation of the MNRR. The Wild and Scenic Rivers Act identifies Administration Policy for designated rivers to protect and enhance the values for which it became a component of the national wild and scenic river system. It also identifies that “[m]anagement plans for any such component may establish varying degrees of intensity for its protection and development based on the special attributes of the area.” A management plan is needed to fulfill the intent of the Congressional designation of MNRR.



Objectives of the PMP

The objectives of the Property Management Plan are to:

- Involve the public in determining management opportunities for MNRR properties.
- Provide a wide range of public recreational opportunities and experiences for various users.
- Preserve and enhance natural and cultural resources at MNRR properties.
- Encourage a connection between people and the properties' natural and cultural resources.

NEPA Process

The National Park Service must follow the National Environmental Policy Act of 1969 (NEPA) to ensure consideration of environmental, cultural, and human issues. The environmental effects resulting from the proposed PMP will be evaluated in an Environmental Assessment (EA). The analysis will consider wetlands, wildlife, vegetation, special-status species, cultural resources, socioeconomics, visitor use and experience, and park operations. By comparing the proposed action alternative with the no-action alternative, and identifying mitigation measures that would minimize adverse effects, the EA will involve stakeholders in the decision-making process.



UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
MISSOURI NATIONAL RECREATIONAL RIVER
508 EAST 2ND STREET
YANKTON, SD 57078

Place
Stamp
Here

Missouri National Recreational River South Dakota and Nebraska

November 2014

National Park Service
U.S. Department of the Interior



Public Scoping for Property Management Plan Open for Public Comment

The National Park Service announces a 30-day public scoping period for the Property Management Plan (PMP). During this period, the public is invited to identify issues or concerns they might have with the proposed project so that the NPS can appropriately consider them in the Environmental Assessment (EA). Public comments will be accepted through December 24, 2014. Once the EA is developed it will be made available for public review for a 30-day period. You may provide comments in any of the following ways:

- Attend any of the public open house meetings and fill out a comment sheet.
- Comment online at <http://parkplanning.nps.gov/mnrrpropertyplan>.
- Mail comments to Superintendent,
Missouri National Recreational River, 508 East 2nd Street,
Yankton, SD 57078.

Comments will not be accepted by fax, email, or in any other way than specified above. Your comment, including your address, email, or other personal identifying information, may be made publically available in the EA or online, even if requested to be private.

Public Meetings

Tuesday, December 2

5:00 p.m. - 7:00 p.m.
Sacred Heart Church Hall
807 Emerson Avenue
Wynot, Nebraska

Wednesday, December 3

3:30 p.m. - 7:00 p.m.
Yankton Fire Department
201 West 23rd Street
Yankton, South Dakota

Thursday, December 4

5:00 p.m. - 7:00 p.m.
W.H. Over Museum
1110 University Street
Vermillion, South Dakota

National Park Service
U.S. Department of the Interior



Missouri National Recreational River

MISSOURI NATIONAL RECREATIONAL RIVER PROPERTY MANAGEMENT PLAN

FINAL PUBLIC SCOPING COMMENT SUMMARY REPORT



JANUARY 2015

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|------------|---|
| DGFP | Department of Game, Fish, and Parks |
| DNR | Department of Natural Resources |
| GMP | General Management Plan |
| MNRR | Missouri National Recreational River |
| NEPA | National Environmental Policy Act of 1969 |
| NPS | National Park Service |
| PEPC | Planning, Environment, and Public Comment |
| PMP | Property Management Plan |
| THPO | Tribal Historic Preservation Officer |

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INTRODUCTION AND GUIDE

Introduction

Missouri National Recreational River (MNRR) has proposed to develop a Property Management Plan (PMP) for the following MNRR properties: Green Island (60 acres), Bow Creek Recreation Area (205 acres), and Mulberry Bend (31 acres). The purpose of this plan is to decide how the National Park Service (NPS) can best fulfill MNRR's purpose and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The management plan will identify actions for recreational site development, resource management, interpretation/education and establish management policy on certain issues, such as access, hunting, and camping.

MNRR's General Management Plan (GMP) was completed in 1998 and these properties were acquired after the GMP was written. A management plan for the three properties is necessary for the park to carry out the NPS mission and the congressional mandates found in the Wild and Scenic Rivers Act – the enabling legislation of the MNRR. The Wild and Scenic Rivers Act identifies Administration Policy for designated rivers to protect and enhance the values for which it became a component of the national wild and scenic river system. It also identifies that “[m]anagement plans for any such component may establish varying degrees of intensity for its protection and development based on the special attributes of the area.” A management plan is needed to fulfill the intent of the Congressional designation of MNRR.

Public Comment Process Summary

On November 22, 2014, the NPS released the PMP public scoping newsletter for review and comment for a 30-day public comment period. The scoping newsletter presented the purpose, need, and objectives of the PMP. Information on how the public could submit comments and dates, times, and locations of the public meetings was also included. Public comments were accepted through December 24, 2014.

Comments on the PMP public scoping newsletter could be submitted by any of the following methods:

- Online through the NPS Planning, Environment, and Public Comment (PEPC) website
- In person at the public meetings
- By mailing or delivering comments to the MNRR Superintendent.

Public Meetings

During the comment period, three public meetings were held between December 2, 2014 and December 4, 2014. Meetings were held at the Sacred Heart Church Hall in Wynot, Nebraska (Tuesday, December 2), Yankton Fire Department in Yankton, South Dakota (Wednesday, December 3), and W.H. Over Museum in Vermillion, South Dakota (Thursday, December 4). Meetings on Tuesday and Thursday ran from 5:00 pm through 7:00 pm and the meeting on Wednesday ran from 3:30 pm through 7:00 pm. The meetings were open house style. Attendees were encouraged to talk with park staff regarding recreational activities they would like to see at the three MNRR properties.

Public scoping comments from the three public meetings on the MNRR properties are summarized below by meeting location. This summary represents some of the general comments presented by the public during discussions with park staff; this summary is not meant to be comprehensive. The public was encouraged to submit written comments at the meetings on a comment sheet, mail written comments to

the park, or submit comments online. The summary of public comments is presented by location since many of the comments are directed at the MNRR properties located closest to the meeting location. Most of the attendees were aware of the public meetings due to the newsletter/brochure mailings, some due to the advertisements in local newspapers.

Tuesday, December 2

Wynot, Nebraska

There were 7 attendees at the Wynot scoping meeting. The public would like to see the development of campsites, commenters noted this type of recreation is needed in the Wynot area. Other commenters wanted the park to be more user-friendly including vehicle access to the river. The public was also interested in seeing a boat dock/ramp at Bow Creek. There was a comment that hunting should continue to be allowed at these properties; access to free hunting on park lands is a benefit to hunters. There was also a discussion of whether or not hunters can leave personal property related to hunting (e.g., hunting blinds) on park lands.

Wednesday, December 3

Yankton, South Dakota

There were 10 attendees at the Yankton scoping meeting. Two members of the Ponca Tribe of Nebraska including the Tribal Historic Preservation Officer (THPO) attended. The public would like to see vehicle access to Green Island or at least vehicle access closer to the island. There were several comments that were in opposition. There was a comment requesting no hunting and no motorized vehicles on the island whereas another commenter would like to see free range activities for ATVs. Also, it was requested that the park manage the areas so that the public can visit the site to go bird watching. Another commenter would like to see the park maintain the beach area on Green Island.

Thursday, December 4

Vermillion, South Dakota

There were 20 attendees at the Vermillion scoping meeting. The public would like to see primitive camping and trails. There was a comment requesting non-motorized bike trails. Another commenter would like the properties managed to provide refuge for wildlife species. A commenter suggested camping and access to support canoeing and kayaking from Ponca to Yankton, also to support Ecotourism. One commenter would like the park to trim the trees at the lookout so that visitors can have a better view of the river.

Public Scoping Comments Received

The NPS received 29 pieces of correspondence from five states during the comment period. The majority of the correspondence were submitted by South Dakota (19) and Nebraska (5) residents. A total of 21 correspondence were entered directly online via the PEPC website and eight correspondence were submitted via the NPS comment form distributed at the NPS public meetings.

All correspondence were carefully read and analyzed. A summary of the comments received is below.

In general, commenters were supportive of the development of the PMP. The following recommendations were suggested for all properties – Green Island, Bow Creek Recreation Area, and Mulberry Bend:

- Continue traditional uses of the properties including hunting, fishing, hiking, swimming, paddling, and power boating.
- Hiking – Develop primitive hiking trails. Some hiking trails could have wild forgeable food sources, which could be planted if necessary.
- Camping – More campgrounds are needed throughout the sites. Campsites should include some type of pit/vault toilet and shower. Primitive campsites with river access should be developed to allow canoers and kayakers overnight accommodations. One commenter noted that campsites should not be accessible by vehicles for security of the boaters' canoes/kayaks and gear.
- River Access – More river access is needed for non-motorized watercraft. The installation of a non-motorized boat ramp near the Newcastle Bridge on the South Dakota side of the river was recommended. Fishing access should be developed where appropriate. Connecting the river with more backwater areas would enhance fishing opportunities.
- Interpretation – The sites should include interpretation and educational components to increase visitors' awareness of the area's cultural and natural resources.
- Biking – Bicycle trails should be separated from the riverside trails. Cross country bicycle paths should be developed from the existing parking areas to the river.
- Hunting - Some commenters would like to see hunting and trapping continue at each site, while others would like to see hunting banned. One commenter stated that guns should not be allowed outside a case unless hunting.
- Non-Motorized Watercraft – The river should be developed into a world class canoeing and kayaking venue. The nearby communities would benefit from the economic development opportunities.
- No motorized vehicles other than NPS maintenance vehicles should be allowed on any of the properties.
- Development of the properties should be limited to primitive camping, primitive trails, and bird/wildlife watching.

Specific recommendations for each property were also suggested.

Green Island

- Green Island should be left natural with no development of any kind.
- No hunting or motorized vehicles should be permitted on Green Island. Motorized vehicles cause physical damage to the land as well as cause noise pollution. Hunting disrupts the natural beauty of the area and the ecosystem. One commenter stated that if hunting is permitted, temporary duck blinds should not be allowed.
- Some commenters stated that access to Green Island should be from the river and from land while others feel that access should only be by river. An access fee should not be required for the site.
- Campgrounds should be developed to allow island/wilderness camping opportunities.
- The area should be a day use area only.

- Reconnect Green Island to the Nebraska shoreline like it was prior to the 2011 flood. Use of the trails below the Meridian Bridge is currently high; therefore, use of Green Island would increase if the area was reconnected and developed into a trail.
- Provide labeling of trees and plants to inform users of the natural resources at Green Island.
- Overnight parking should be established.
- Maintain a usable beach space by removing and maintain the tree line along the shoreline.

Bow Creek Recreation Area

- Camping – Camping should remain primitive; however, a few designated/marked camping sites with fire grates and vault toilet (men and women) should be installed. Campgrounds for paddlers should be available. One commenter stated that camping should not be allowed.
- Two hiking trails with river views should be developed. Mushroom hunting should be allowed along the trails.
- A new boat ramp at the mouth of Bow Creek is not needed because a South Dakota boat ramp is located 1 mile east and a Nebraska boat ramp is located 2 miles east.
- Do not allow recreational vehicles, jet skis, off road vehicles, water tubers, or water skiers in the area.
- Development of the area would be expensive and destroy the natural beauty and charm of the area.
- A flag pole should be installed at the main landing.
- Marked roadways from Wynot to the Bow Creek Recreation Area parking lot should be installed.

Mulberry Bend

- Trees/brush should be trimmed or cleared so visitors can see the river from the top of the overlook.
- In the parking lot, enhance the “island” with native vegetation.
- Install a flag pole at the top of the viewing platform.
- Install an interpretation sign that gives the mileage to other points on the Missouri River.
- Allow bow hunting and muzzleloader hunting.

Comments pertaining to park resources were also received. There are concerns that as development occurs the potential for nonpoint source pollution, fire, erosion, and the loss of native plant species may increase. The PMP should address resource management, including habitat development for threatened and endangered species. Ways to prevent or reduce the spread of invasive plant and animal species should also be included. The native flora and fauna of the area should be preserved.

Agency Consultation

Agency consultation letters were sent to the following agencies and tribes on November 24, 2014:

- | | |
|--|---|
| • U.S. Fish and Wildlife Service | • Natural Resource Conservation Service |
| • U.S. Army Corps of Engineers | • Bureau of Reclamation |
| • U.S. Environmental Protection Agency | • South Dakota Department of the |
| • Veterans Administration | Environment and Natural Resources |

- South Dakota Department of Game, Fish, and Parks (DGFP)
- Nebraska Department of Environmental Quality
- Nebraska Department of Natural Resources (DNR)
- Nebraska Game and Parks Commission
- Nebraska State Historical Society
- Yankton Sioux Tribe
- Santee Sioux Tribe
- Ponca Tribe of Nebraska

In addition, congressional letters were sent to 11 elected officials in Nebraska and South Dakota.

The following is a summary of agency responses received to date.

Nebraska State Historical Society

A response was received from the Nebraska State Historical Society on December 8, 2014. The letter indicated that Mulberry Bend is the only site that has currently identified archeological resources. A survey has not been completed at Bow Creek Recreation Area. The Green Island site does not contain any recorded historic resources and no survey for unrecorded cultural resources would be required unless Native American Tribes have an interest in Traditional Cultural Properties potentially affected by the project. If during project construction, unsuspected archeological remains may be uncovered, the Nebraska State Historical Society should be notified immediately.

Ponca Tribe of Nebraska

The Ponca Tribe of Nebraska submitted comments on the proposed project via PEPC on December 9, 2014. The THPO is concerned about the loss of cultural items/sites during development of the three sites. Cultural resource surveys would need to be completed prior to any development. The cultural resource survey should include the Area of Potential Effect of development, old sites, and new sites. This survey should be endorsed by an Archeological Firm. The survey report would need to be shared with the Native American Tribes that requested consultation for this project. A Cultural Resources Management Plan would also need to be developed for any unanticipated discovery of sites.

South Dakota Department of Game, Fish, and Parks

A response was received from the South Dakota DGFP on December 15, 2014. South Dakota DGFP supports the multi-use philosophy in managing the three properties under jurisdiction of the NPS. South Dakota DGFP recommends that fishing and hunting access be considered at these properties and current hunting seasons and practices remain as is. Rare species including the interior least tern (*Sterna antillarum athalassos*) and piping plover (*Charadrius melodus*) are found within the area. In addition, a bald eagle nest is located in Nebraska. NPS should not destroy the natural features that support these species when making changes to the sites.

At Green Island, South Dakota DGFP recommends converting the chute to a backwater to enhance the diversity of the system and to provide a niche for species that utilize still water. During the flood of 2011 the backwater converted to a chute and since then there has been a decrease in usage by fish and turtles. Backwaters provide important spawning and nursery habitat to many fish species and also attract fish

species desirable to anglers. A trail should be created to allow safe foot access to the area that currently exists as the island.

South Dakota DGFP recommends preserving the Bow Creek Recreation Area in its natural state. The lowland portion of this property is heavily utilized by fish when flows are high. Hunting should remain and remote camping should also be considered at this site.

South Dakota DGFP supports the continued maintenance of the overlook site and development of a hiking trail in the interest of public education and connection to the river at Mulberry Bend.

Nebraska Department of Natural Resources

A response was received from the Nebraska DNR on December 22, 2014. Nebraska DNR reviewed the proposed project for potential impacts to surface water rights, registered groundwater wells, and floodplain management. Nebraska DNR records indicated that surface water appropriation A18234 is appurtenant to the Bow Creek Recreation Area. If details of the surface water right are permanently modified by the project, appropriate modification requests would need to be provided to the Nebraska DNR. There are no public supply wells within 1,000 feet of the project sites. Bow Creek Recreation Area and Green Island are located within the floodplain. Floodplain regulations should be followed in these areas. If a new structure is proposed within the floodplain, a floodplain development permit would need to be obtained.

APPENDIX B

Agency Consultation

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IN REPLY REFER TO:
(1.A.2)

United States Department of the Interior

NATIONAL PARK SERVICE
Missouri National Recreational River
508 E. 2nd Street
Yankton, South Dakota 57078

November 24, 2014

Mr. Luke Wallace
US Army Corps of Engineers
Omaha District
1616 Capitol Avenue, Ste. 9000
Omaha, Nebraska 68102

Subject: Request for Information for the Environmental Assessment for the Property Management Plan, National Park Service, Missouri National Recreational River, South Dakota and Nebraska

Dear Mr. Wallace:

The National Park Service (NPS) is initiating an Environmental Assessment (EA), in accordance with NPS regulations for compliance with the National Environmental Policy Act (NEPA), for evaluating the environmental effects associated with a Property Management Plan at Missouri National Recreational River (MNRR). The EA will document direct, indirect, and cumulative impacts associated with the actions proposed in the Property Management Plan.

MNRR acquired property subsequent to the park's 1999 General Management Plan. MNRR is developing a Property Management Plan for three properties under NPS ownership – Green Island, Cedar County (60 acres); Mulberry Bend, Dixon County (31 acres); and Bow Creek Recreation Area, Cedar County (205 acres) (see attached maps). All of these properties are located in Nebraska and are adjacent to the Missouri River. The MNRR properties' boundary extends into the Missouri River.

The purpose of this plan is to decide how the NPS can best fulfill MNRR's purpose, and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The management plan will identify actions for recreational site development, resource management, interpretation/education and establish management policy on certain issues, such as access, hunting, and camping.

The NPS is requesting that you respond in writing concerning any resources that may experience potential effects from the proposed project relative to the interests of your agency. Please provide any comments or information within 30 days of receipt of this letter to: Lisa Yager, Missouri National Recreational River, 508 East 2nd Street, Yankton, South Dakota 57078.



Lisa Yager, Biologist, is also the contact for the project at the park and can be reached at 605-665-0209 or Lisa_Yager@nps.gov. Please contact Ms. Yager directly if you have any questions or concerns.

Sincerely,

Richard A. Clark
Superintendent

List of Agencies and Officials Contacted

Mr. Luke Wallace
US Army Corps of Engineers
Omaha District
1616 Capitol Avenue, Ste. 9000
Omaha, Nebraska 68102

Mr. John Hilgert
Director
Nebraska Department of Veterans Affairs
PO Box 95083
Lincoln, Nebraska 68509-5083

Mr. Larry Shepard
U.S. Environmental protection Agency
Region 7
11201 Renner Blvd.
Lenexa, KS 66219

Mr. Scott Larson
U.S. Fish and Wildlife Service
420 South Garfield Avenue
Pierre, SD 57501

Ms. Eliza Hines
U.S. Fish and Wildlife Service
203 W. 2nd Street
Grand Island, NE 68801

Mr. Craig Derickson
State Conservationist
Natural Resource Conservation Service
Nebraska State Office
100 Centennial Mall North, Room 152
Lincoln, Nebraska 68508

Mr. David Rosenkranz
Area Manager
Great Plains Region
Dakotas Area Office
PO Box 1017
Bismark, ND 58502-1017

Mr. Steven M. Pirner, P.E.
Department of Secretary
South Dakota Department of Environmental and
Natural Resources
Joe Foss Building
523 E. Capital Avenue
Pierre, SD 57501

Ms. Leslie Murphy
Senior Biologist
South Dakota Game, Fish, and Parks
523 East Capitol Avenue
Pierre, SD 57501

Mr. Pat Rice
Acting Director
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, NE 68509-8922

Mr. Brian Dunnigan
Director
Nebraska Department of Natural Resources
301 Centennial Mall South
Lincoln, NE 68509-4676

Mr. James Douglas
2200 North 33rd Street
PO Box 30370
Lincoln, Nebraska 68503-0370

Mr. Tim Johnson
136 Hart Senate Office Building
Washington, DC 20510

Mr. John Thune
United States Senate SR-493
Washington, DC 20510

Mr. Mike Johanns
1 Russel Courtyard
Washington, DC 20510

Ms. Kristie Noem
226 Cannon House Office Building
Washington, DC 20515

Mr. Adrian Smith
503 Cannon House Office Building
Washington, DC 20515

Mr. Jeff Fortenberry
1517 Longworth House Office Building
Washington, DC 20515

Mr. Dennis Daugaard
Governor
Office of the Governor
500 East Capitol Avenue
Pierre, SD 57501

Mr. Dave Heineman
Governor
Office of the Governor
PO Box 94848
Lincoln, NE 68509

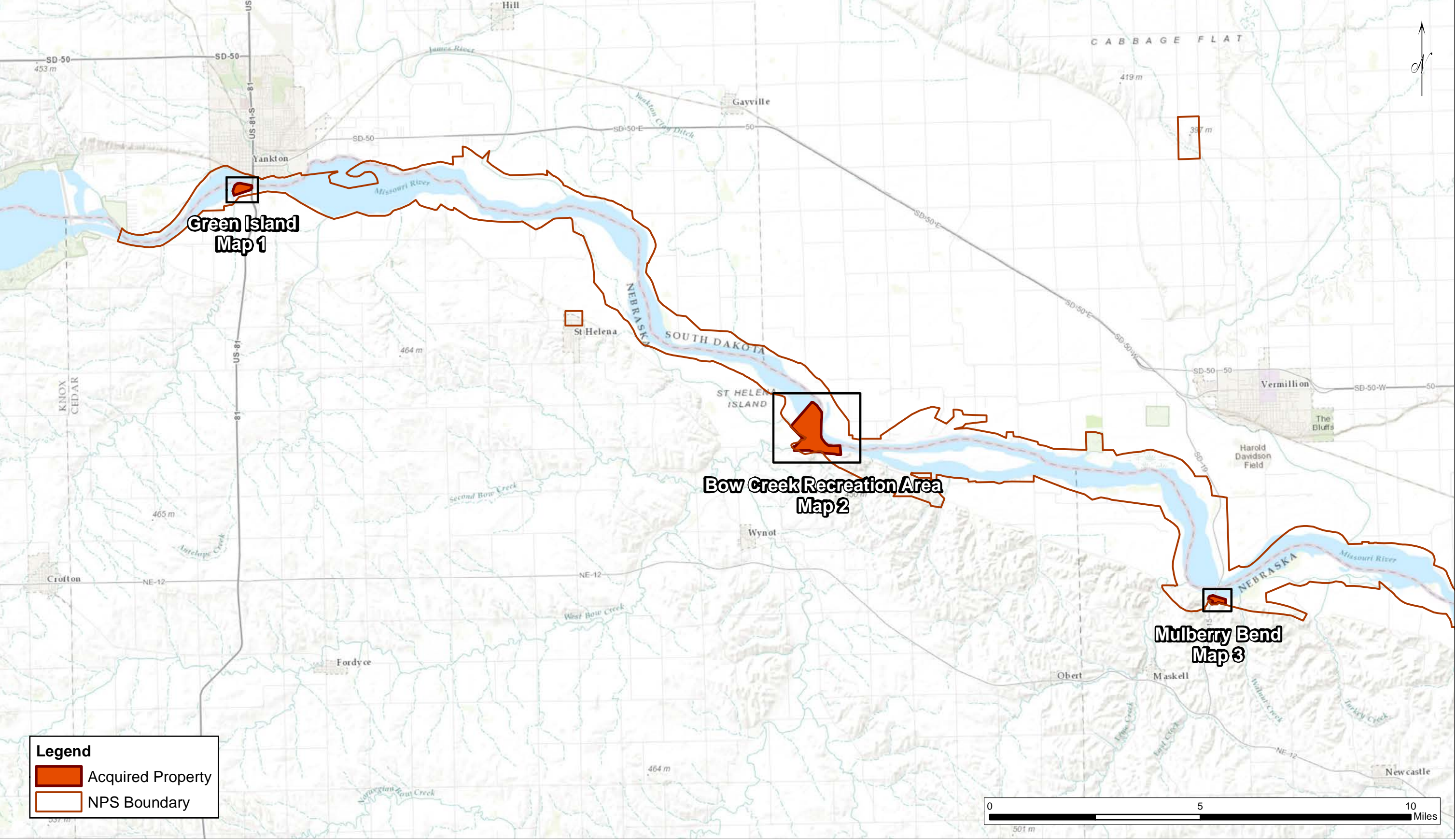
Ms. Amy Nelson
City Manager
PO Box 176
410 Walnut Street
Yankton, SD 57078

Mr. John Prescott
City Manager
City Hall
25 Center Street
Vermillion, SD 57069

Missouri National Recreational River

Green Island, Bow Creek Recreation Area, Mulberry Bend

National Park Service
U.S. Department of the Interior



Missouri National Recreational River

Green Island - Map 1

National Park Service
U.S. Department of the Interior



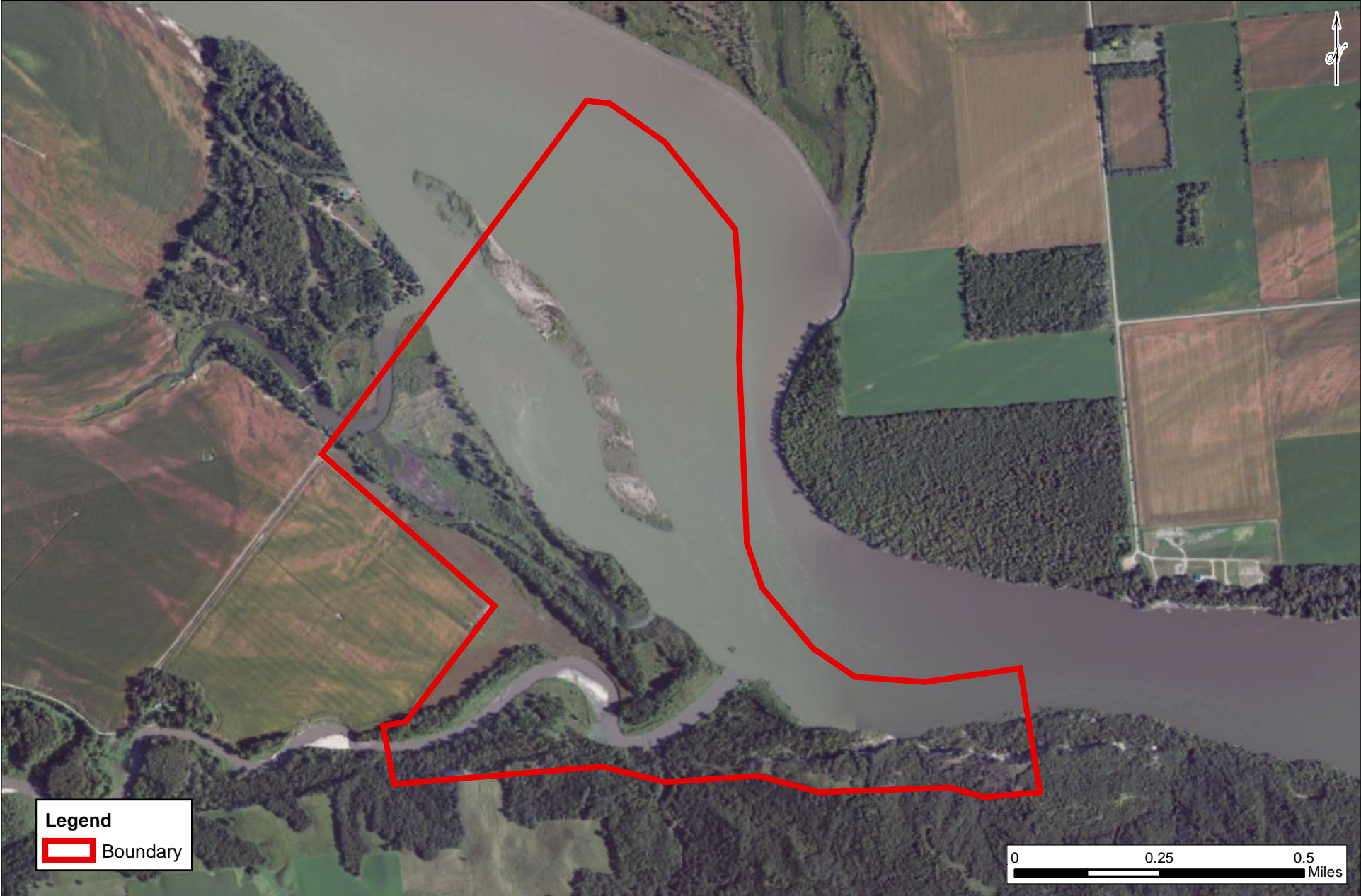
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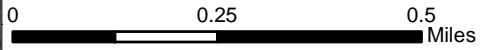
Missouri National Recreational River

Bow Creek Recreation Area - Map 2

National Park Service
U.S. Department of the Interior



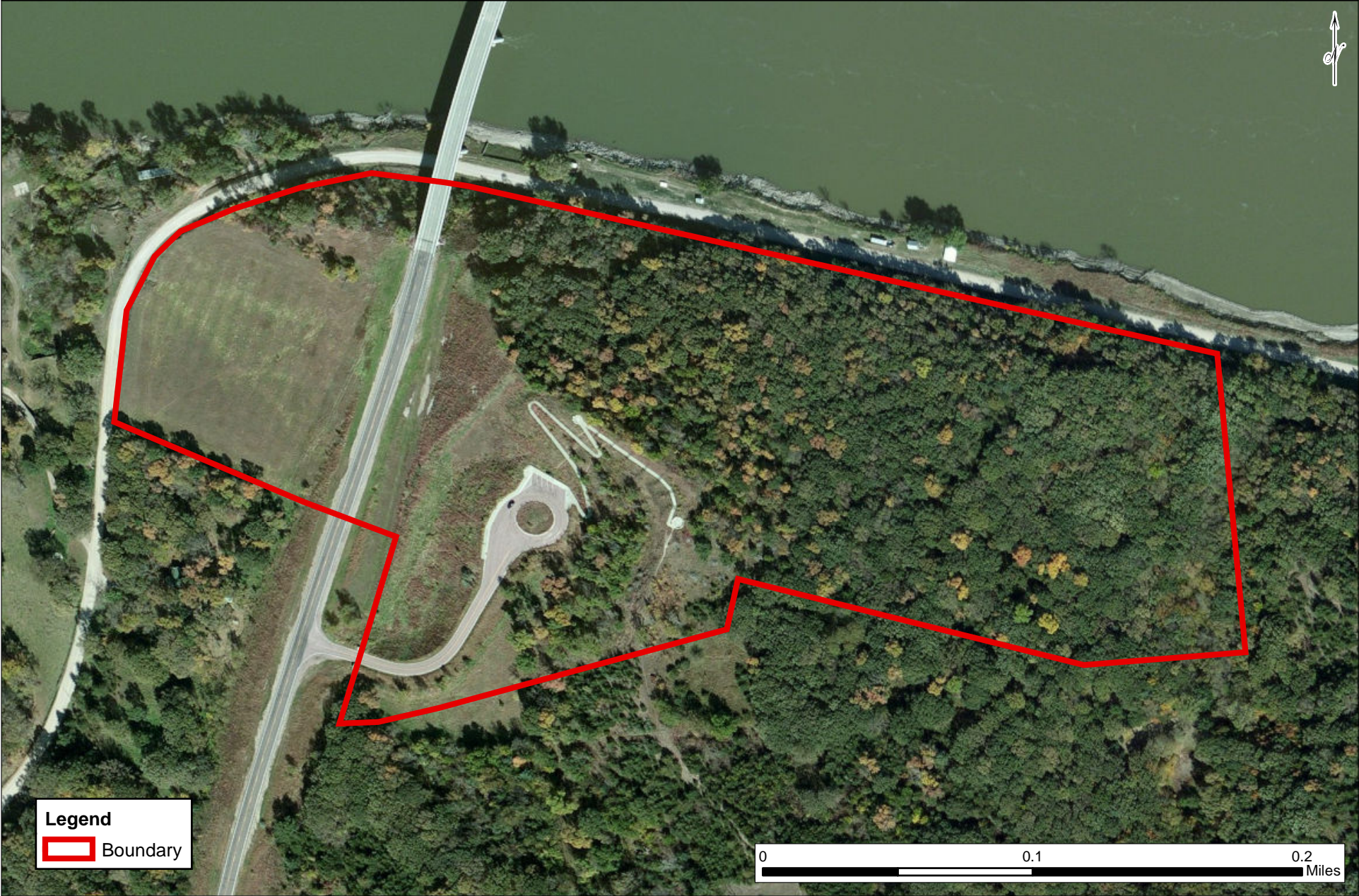
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Missouri National Recreational River

Mulberry Bend - Map 3

National Park Service
U.S. Department of the Interior



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IN REPLY REFER TO:
(1.A.2)

United States Department of the Interior

NATIONAL PARK SERVICE
Missouri National Recreational River
508 E. 2nd Street
Yankton, South Dakota 57078

November 24, 2014

Mr. Michael Smith
Director
Nebraska State Historical Society
State Historical Preservation Office
PO Box 82554
Lincoln, Nebraska 68501

Subject: Request for Information for the Environmental Assessment for the Property Management Plan, National Park Service, Missouri National Recreational River, South Dakota and Nebraska and Notification of Intent to Use NEPA to meet NHPA Section 106 Obligations

Dear Mr. Smith:

The National Park Service (NPS) is initiating an Environmental Assessment (EA), in accordance with NPS regulations for compliance with the National Environmental Policy Act (NEPA), for evaluating the environmental impacts associated with a Property Management Plan at Missouri National Recreational River (MNRR). The EA will document direct, indirect, and cumulative impacts associated with the actions proposed in the Property Management Plan.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 CFR Part 800, we are providing information for your review regarding the above-referenced project. In addition, the process and documentation required for the preparation of the EA will be used to comply with Section 106 of the NHPA. In accordance with section 800.8(c) of the Advisory Council on Historic Preservation's regulations (36 Code of Federal Regulations (CFR) Part 800), I am notifying your office in advance of the park's intention to use the EA to meet its obligations under Section 106 of NHPA.

MNRR acquired property subsequent to the park's 1999 General Management Plan. MNRR is developing a Property Management Plan for three properties under NPS ownership – Green Island, Cedar County (60 acres); Mulberry Bend, Dixon County (31 acres); and Bow Creek Recreation Area, Cedar County (205 acres) (see attached maps). All of these properties are located in Nebraska and are adjacent to the Missouri River. The MNRR properties' boundary extends into the Missouri River.

The purpose of this plan is to decide how NPS can best fulfill MNRR's purpose, and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The management plan will identify actions for recreational site development, resource



management, interpretation/education and establish management policy on certain issues, such as access, hunting, and camping.

The NPS is requesting that you respond in writing concerning any resources that may experience potential impacts from the proposed project relative to the interests of your agency. Please provide any comments or information within 30 days of receipt of this letter to: Lisa Yager, Missouri National Recreational River, 508 East 2nd Street, Yankton, South Dakota 57078. Lisa Yager, Biologist, is also the contact for the project at the park and can be reached at 605-665-0209 or Lisa.Yager@nps.gov. Please contact Ms. Yager directly if you have any questions or concerns.

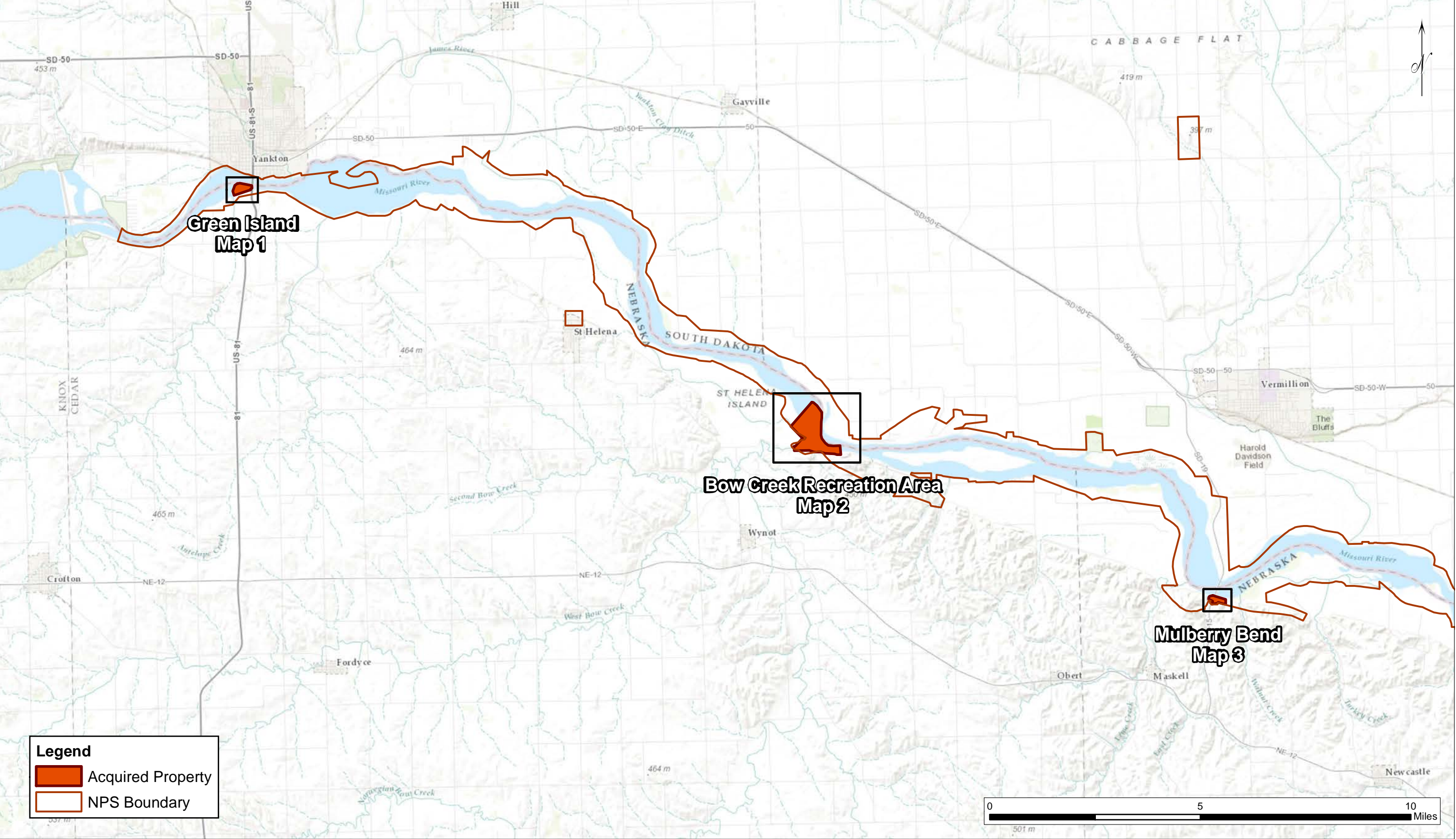
Sincerely,

Richard A. Clark
Superintendent

Missouri National Recreational River

Green Island, Bow Creek Recreation Area, Mulberry Bend

National Park Service
U.S. Department of the Interior



Missouri National Recreational River

Green Island - Map 1

National Park Service
U.S. Department of the Interior



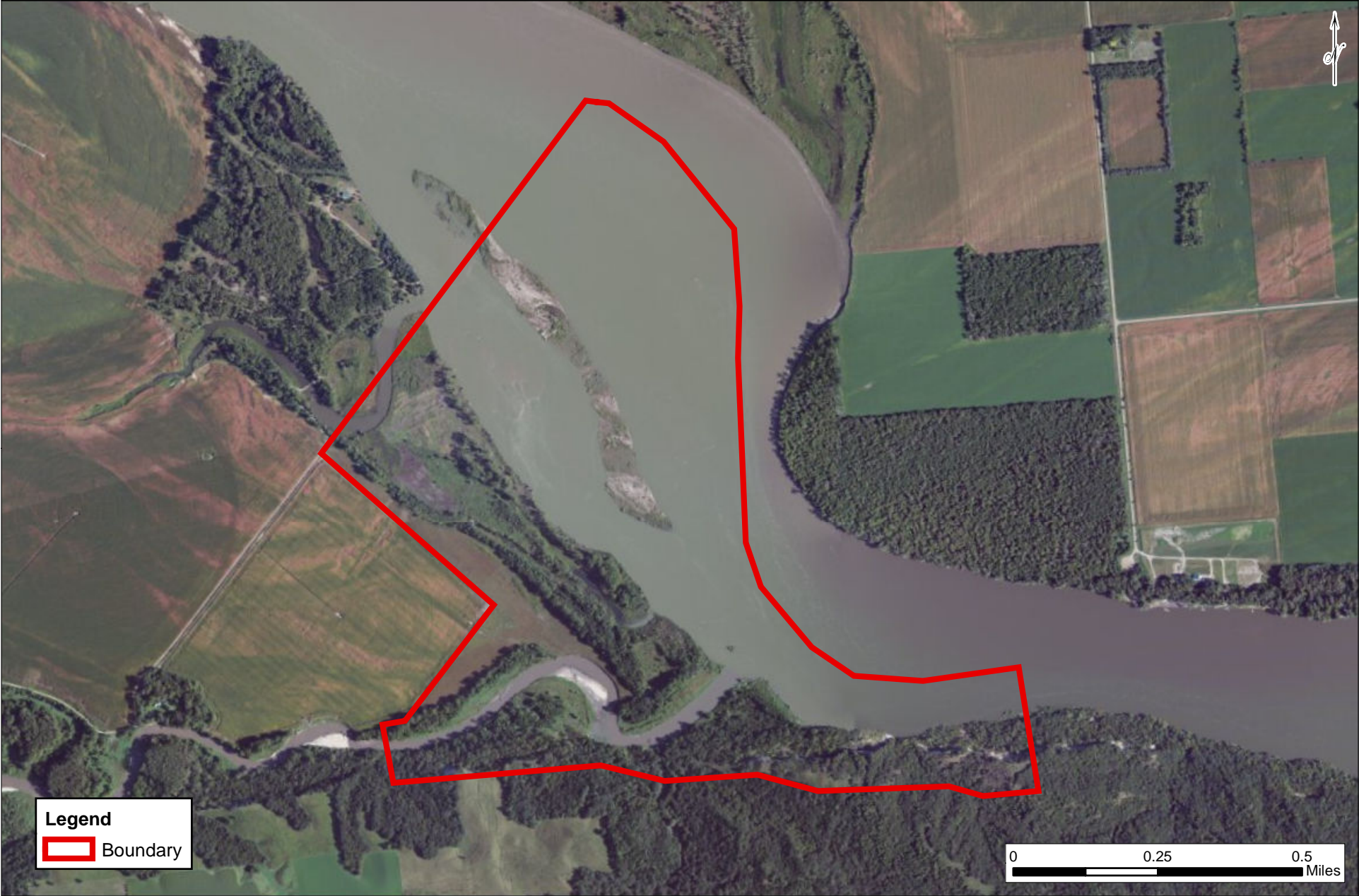
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Missouri National Recreational River

Bow Creek Recreation Area - Map 2

National Park Service
U.S. Department of the Interior

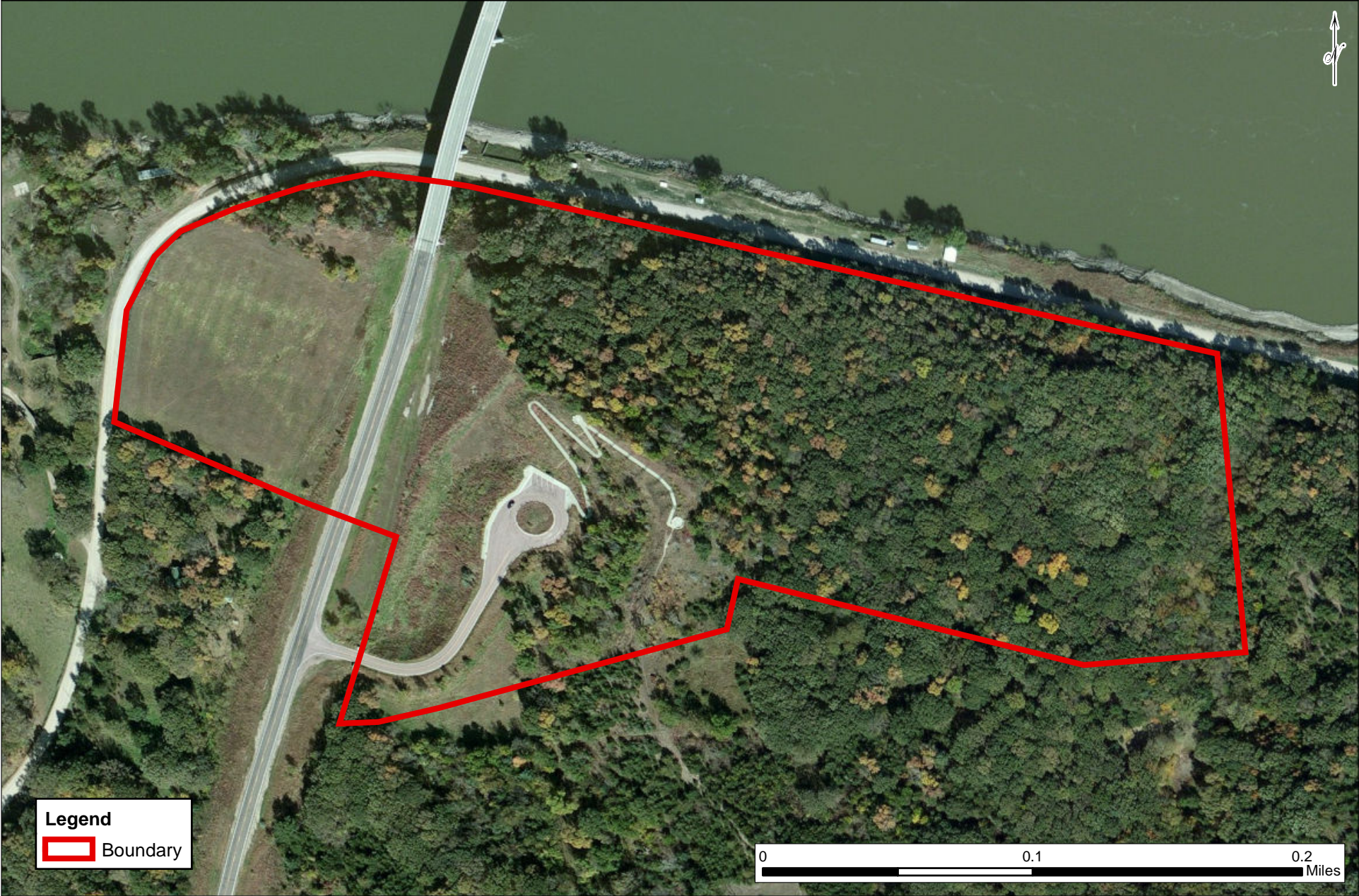


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Missouri National Recreational River
Mulberry Bend - Map 3

National Park Service
U.S. Department of the Interior





IN REPLY REFER TO:
(1.A.2)

United States Department of the Interior

NATIONAL PARK SERVICE
Missouri National Recreational River
508 E. 2nd Street
Yankton, South Dakota 57078

November 24, 2014

Mr. Bobby Cournoyer
Tribal Chairman
Yankton Sioux Tribe
PO Box 1153
Wagner, SD 57380

Subject: Request for Information for the Environmental Assessment for the Property Management Plan, National Park Service, Missouri National Recreational River, South Dakota and Nebraska and Notification of Intent to Use NEPA to meet NHPA Section 106 Obligations

Dear Mr. Cournoyer:

The National Park Service (NPS) is initiating an Environmental Assessment (EA), in accordance with NPS regulations for compliance with the National Environmental Policy Act (NEPA), for evaluating the environmental effects associated with a Property Management Plan at Missouri National Recreational River (MNRR). The EA will document direct, indirect, and cumulative effects associated with the actions proposed in the Property Management Plan.

MNRR acquired property subsequent to the park's 1999 General Management Plan. MNRR is developing a Property Management Plan for three properties under NPS ownership – Green Island, Cedar County (60 acres); Mulberry Bend, Dixon County (31 acres); and Bow Creek Recreation Area, Cedar County (205 acres) (see attached maps). All of these properties are located in Nebraska and are adjacent to the Missouri River. The MNRR properties' boundary extends into the Missouri River.

The purpose of this plan is to decide how NPS can best fulfill MNRR's purpose, and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The management plan will identify actions for recreational site development, resource management, interpretation/education and establish management policy on certain issues, such as access, hunting, and camping.

The NPS invites your participation in the planning process. In order for potential environmental effects of the project to be fully evaluated and considered, the NPS is requesting that you respond in writing concerning any beneficial or adverse effects relative to the interests of your tribal government. In addition, the process and documentation required for the preparation of the EA will be used to comply with Section 106 of the National Historic Preservation Act (NHPA). In accordance with section 800.8(c) of the Advisory Council on Historic Preservation's



regulations (36 CFR Part 800), I am notifying your office in advance of the park's intention to use the EA to meet its obligations under Section 106 of NHPA.

Federal regulations for the implementation of Section 106 of the NHPA of 1966, as amended, require consultation with federally recognized Native American tribes (36 CFR 800.2) on a government-to-government basis, as specified in Executive Order 13175. MNRR administrators are committed to honoring in good faith its full obligations and responsibilities toward the sovereign, federally recognized Indian tribes under all United States laws, regulations, and policies. As part of government to government relations and my responsibility to "make a reasonable and good faith effort to identify Indian tribes...that shall be consulted in the 106 process," I invite you to consult with the park regarding the proposed Property Management Plan.

If you wish to consult with MNRR regarding the proposed project, please provide any comments or information within 30 days of receipt of this letter to: Lisa Yager, Missouri National Recreational River, 508 East 2nd Street, Yankton, South Dakota 57078. Lisa Yager, Biologist, is also the contact for the project at the park and can be reached at 605-665-0209 or Lisa_Yager@nps.gov. Please contact Ms. Yager directly if you have any questions or concerns.

Thank you for your attention to this request. We are looking forward to your reply and to establishing a continuing relationship with your tribal government.

Sincerely,

Richard A. Clark
Superintendent

Nebraska SHPO and List of Tribes Contacted

Mr. Michael Smith
Director
Nebraska State Historical Society
State Historical Preservation Office
PO Box 82554
Lincoln, Nebraska 68501

Mr. Bobby Cournoyer
Tribal Chairman
Yankton Sioux Tribe
PO Box 1153 Wagner, SD 57380

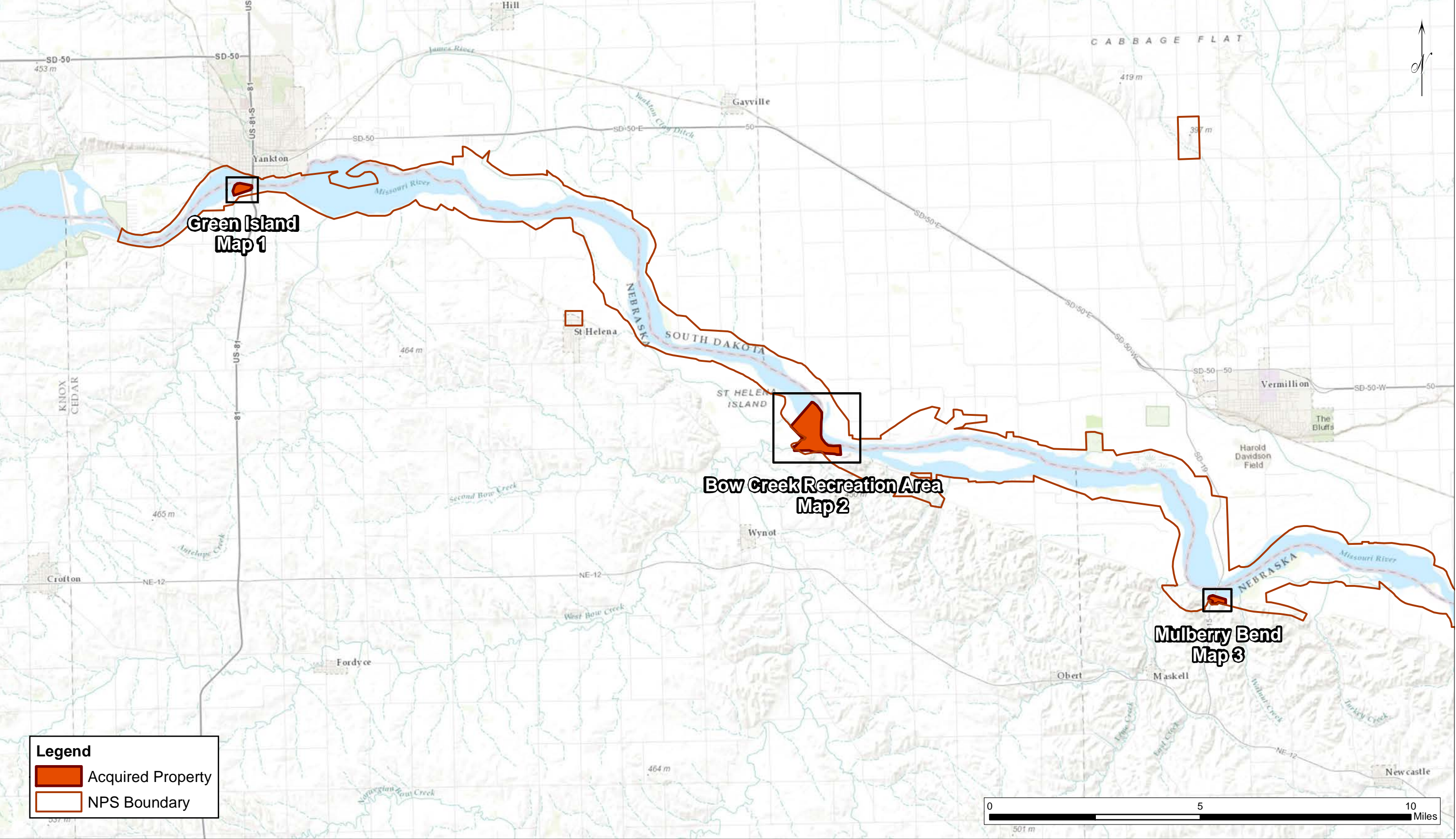
Mr. Roger Trudell
Tribal Chairman
Santee Sioux Tribe of Nebraska
425 Frazier Ave. N. Ste 2
Niobrara, NE 68760

Ms. Julia Sage
Environmental Manager
Ponca Tribe of Nebraska
2521 Spruce Avenue Niobrara, NE 68760

Missouri National Recreational River

Green Island, Bow Creek Recreation Area, Mulberry Bend

National Park Service
U.S. Department of the Interior



Missouri National Recreational River

Green Island - Map 1

National Park Service
U.S. Department of the Interior



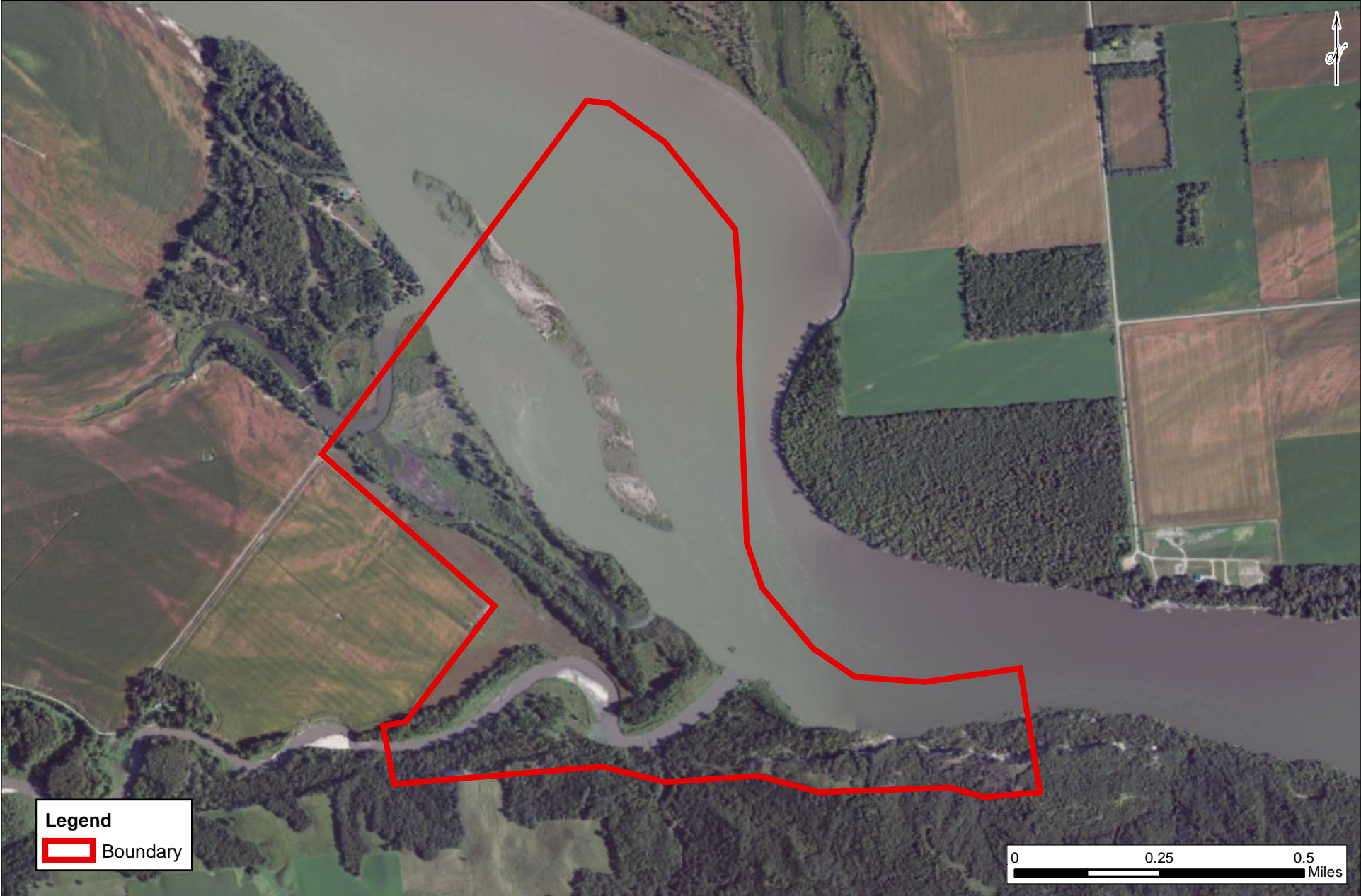
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Missouri National Recreational River

Bow Creek Recreation Area - Map 2

National Park Service
U.S. Department of the Interior

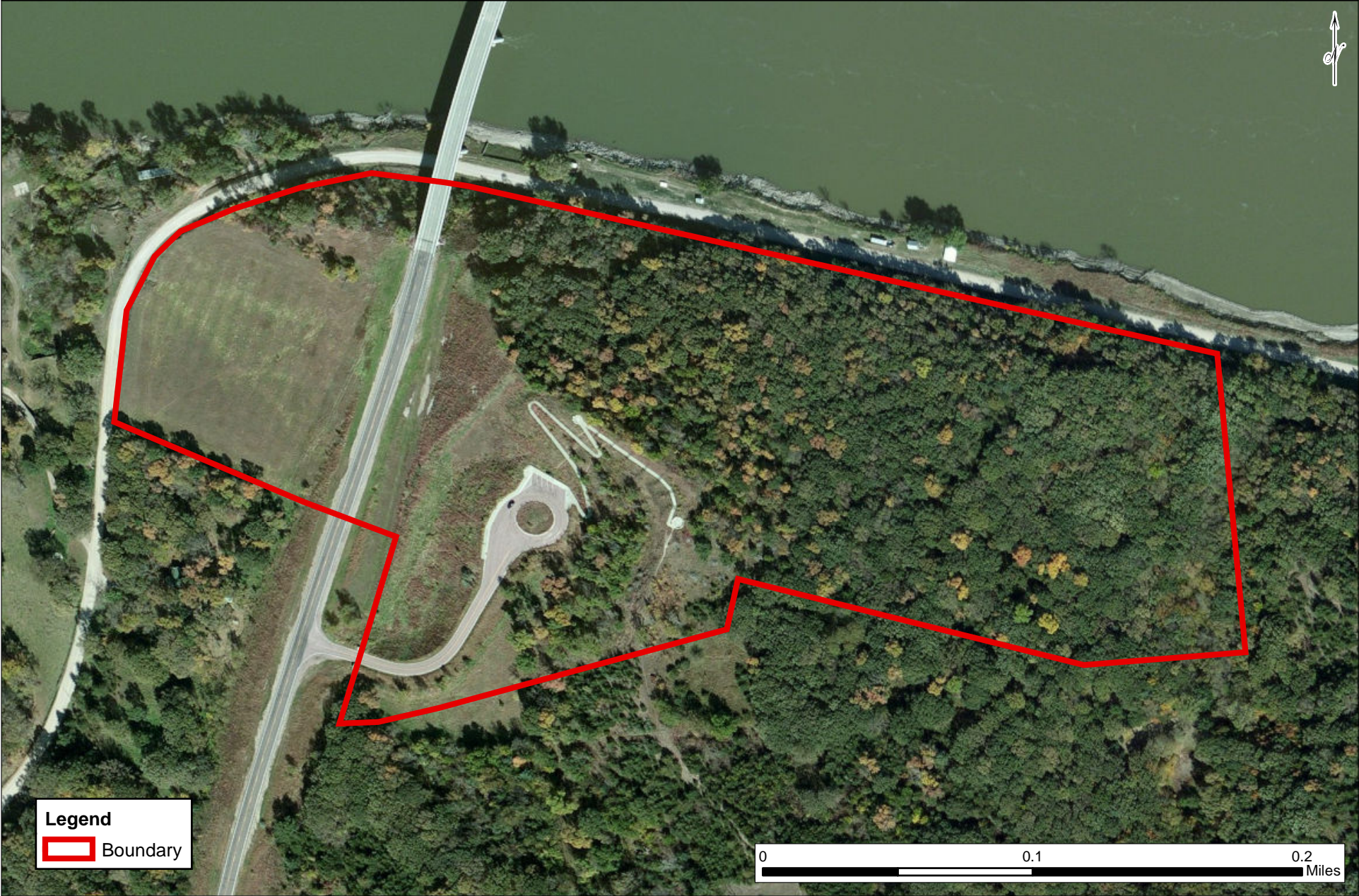


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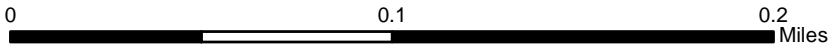
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Missouri National Recreational River
Mulberry Bend - Map 3

National Park Service
U.S. Department of the Interior



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United States Department of the Interior

NATIONAL PARK SERVICE
Missouri National Recreational River
508 E. 2nd Street
Yankton, South Dakota 57078

IN REPLY REFER TO:
1.A.2 (MNRR)

June 12, 2015

Nebraska State Historical Society
State Historic Preservation Office
1500 R Street
P.O. Box 82554
Lincoln, NE 68501-2554

Dear Nebraska State Historical Society,

In accordance with the provisions of the 2008 Nationwide Programmatic Agreement (PA) between the National Park Service, the Advisory Council on Historic Preservation (ACHP), the National Conference of State Historic Preservation Officers (NCSHPO), federally recognized Indian tribes, and Native Hawaiian organizations, we are providing the enclosed trip report summarizing recent (April 2015) archeological investigations conducted by the National Park Service (NPS), Midwest Archeology Center on behalf of the Missouri National Recreational River (MNRR).

The archeological investigations were completed as part of a Multiple Property Management Plan Environmental Assessment (EA), being developed for the NPS-MNRR. Initial scoping for the project was completed in December of 2014. The investigation results will influence the proposed alternatives within the Draft EA, which is scheduled to be released to the public in October 2015.

If you have comments or questions about this trip report or the MNRR Multiple Property Management Plan EA, please contact Park Section 106 Coordinator Dugan Smith at (605) 665-0209, Extension 28 or Biologist Lisa Yager at (605)-665-0209, Extension 24. Thank you for your time and attention to this matter.

Sincerely,

Richard A. Clark
Superintendent

Enclosure

CC:

Nebraska State Historical Society
State Historic Preservation Office
1500 R Street
P.O. Box 82554
Lincoln, NE 68501-2554

Perry Little, THPO
Yankton Sioux Tribe
PO Box 1153
Wagner, SD 57380

Rick Thomas, Director
Tribal Historic Preservation Office
Santee Sioux Tribe of Nebraska
203 His Red Nation Ave.
Niobrara, Nebraska 68760

Randy Teboe, THPO
Ponca Tribal of Nebraska
P.O. Box 288
Niobrara, Nebraska 68760

Jay Vogt, SHPO
State Historic Preservation Office
900 Governors Drive
Pierre, SD 57501

Jeannette Matkowski, Scientist
EA Engineering, Science, and Technology, Inc.,
225 Schilling Circle, Suite 400
Hunt Valley, MD 21031



8 December 2014

Lisa Yager
Missouri National Recreational River
508 East 2nd Street
Yankton, SD 57078

Re: Property Management Plan
Missouri National Recreational River
Cedar and Dixon Cos., NE
H.P. #1412-003-01

Dear Ms. Yager:

A review of our files indicates that of the referenced project sites only the Mulberry Bend location has currently identified archaeological resources. The Bow Creek Recreation Area has not been surveyed for archaeological resources. The Green Island site does not contain recorded historic resources and it is our opinion that no survey for unrecorded cultural resources will be required. This review does not constitute the opinions of any Native American Tribes that may have an interest in Traditional Cultural Properties potentially affected by this project.

There is, however, always the possibility that previously unsuspected archaeological remains may be uncovered during the process of project construction. We therefore request that this office be notified immediately under such circumstances so that an evaluation of the remains may be made, along with recommendations for future action.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Steinacher".

Terry Steinacher
H.P. Archaeologist

Concurrence:

A handwritten signature in black ink, appearing to read "L. Robert Puschendorf".

L. Robert Puschendorf
Deputy NeSHPO

1500 R Street
PO Box 82554
Lincoln, NE 68501-2554
p: (800) 833-6747
(402) 471-3270
f: (402) 471-3100
www.nebraskahistory.org



Project Review

DATE: December 22, 2014
TO: Lisa Yager, Missouri National Recreational River
FROM: Mitch Paine, NDNR
SUBJECT: NPS Property Management Plan Project

As requested, the Nebraska Department of Natural Resources (NDNR) has reviewed the proposed project for potential impacts to surface water rights, registered groundwater wells, and floodplain management, and has listed the comments below:

Surface Water Rights

NDNR records indicate that surface water appropriation A18234 is appurtenant to the proposed project location in Bow Creek Recreation Area, please see the enclosed figure. If the details of the surface water right are permanently modified in some way by the project, appropriate modification requests will need to be provided to the Department for review. If you have any questions about surface water appropriations, please contact Beth Eckles at 402.471.0591 or reference the surface water links below.

Surface water general information: <http://dnr.nebraska.gov/swr>

Surface water rights data: <http://dnr.nebraska.gov/surface-water-rights>

Surface water rights forms: <http://dnr.nebraska.gov/swr/surface-water-forms>

Notice of change of ownership: <http://dnr.nebraska.gov/swr/notice-of-change-of-ownership-water-resources-update-notice>

Relinquishment by landowner: <http://dnr.nebraska.gov/swr/relinquishment-of-surface-water-appropriation-by-landowner>

District Contacts: <http://dnr.nebraska.gov/irrigation-and-reclamation-districts-and-water-delivery-companies-july-2013>.

Groundwater Wells

According to NDNR records, there are no public supply wells within the 1,000 foot spacing for the proposed project area and no other registered wells within the proposed project area.

Groundwater general information: <http://dnr.nebraska.gov/gwr>

Groundwater well data: <http://dnrdata.dnr.nebraska.gov/wells/Menu.aspx>

Groundwater forms: <http://dnr.nebraska.gov/gwr/forms>

Local NRD Information: <http://nrdnet.org/find-your-nrd.php>

Floodplain Management

The proposed projects of Bow Creek Recreation Area and Green Island are located within an unregulated (1% annual chance) flood awareness area, please see the attached figure. Flood awareness areas are identified on NDNR Work Maps, which are created to provide floodplain administrators with the best available information. NDNR Work Maps are also created with the intent of becoming regulated floodplains; therefore it is recommended that all floodplain regulations be followed in these areas. However, it is the municipality's authority to reject or adopt unregulated floodplains into their floodplain ordinances. Any new structure will need to comply with local floodplain regulations, which may include obtaining a floodplain development permit. Cedar and Dixon Counties do not currently have an identified floodplain administrator for their jurisdiction, but it would be advisable to contact the county offices and discuss potential floodplain implications. If you have any questions concerning floodplain management and permitting, please contact NDNR.

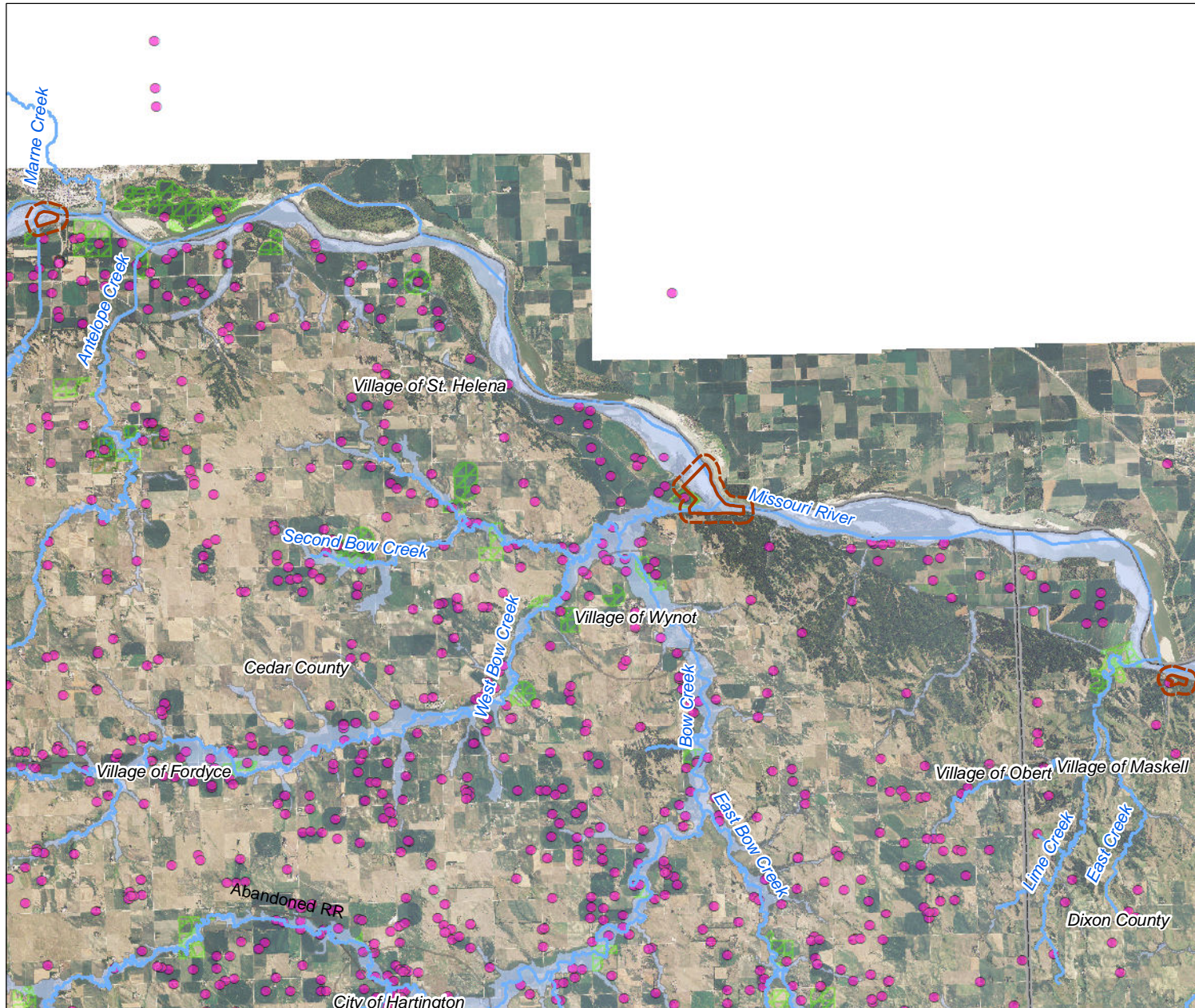
If you have any questions about this review, please feel free to contact me at 402.471.9252 or mitch.paine@nebraska.gov.

Enclosure (4)

Cc: Beth Eckles, NDNR

NPS Property Management Plan

Cedar and Dixon Counties, Nebraska
December 22, 2014



Legend

Registered Wells

- Wells in Use

Surface Water

- Irrigation
- Supplemental Irrigation
- Domestic
- Other

Effective Flood Zones

- 1% Annual Flood Chance
- Floodway
- 0.2% Annual Flood Chance
- X Protected by Levee
- 1 PCT Future Condition

Paper Map - Effective Flood Zones

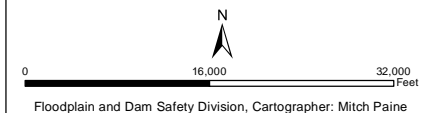
- 1% Annual Flood Chance

NDNR Work Maps

- 1% Annual Flood Chance

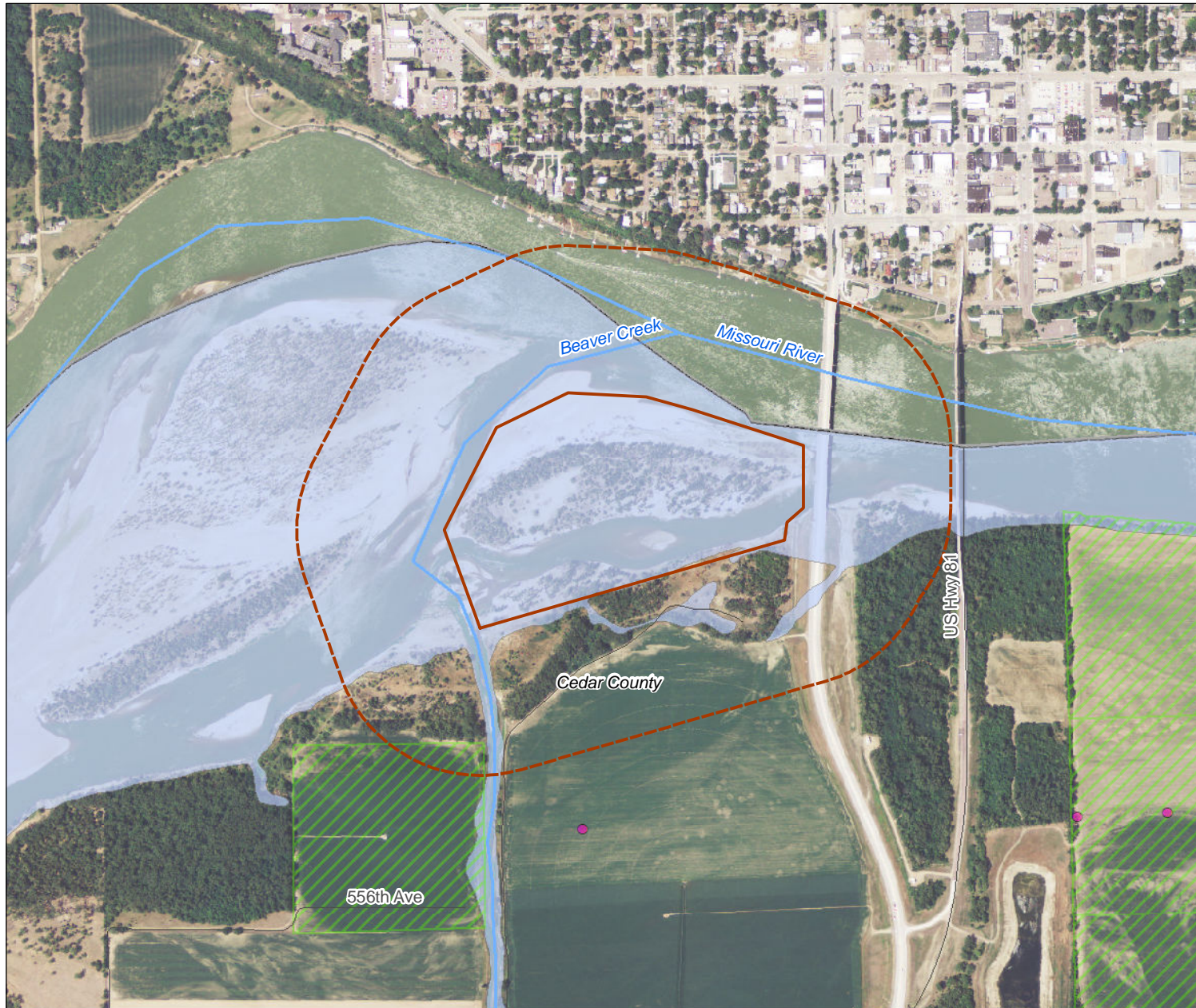
Other

- Approximate Project Area
- 1,000 ft PWS Spacing
- Major Stream
- Road
- Political Area



Green Island

Cedar and Dixon Counties, Nebraska
December 22, 2014



Legend

Registered Wells

- Wells in Use

Surface Water

- Irrigation
- Supplemental Irrigation
- Domestic
- Other

Effective Flood Zones

- 1% Annual Flood Chance
- Floodway
- 0.2% Annual Flood Chance
- X Protected by Levee
- 1 PCT Future Condition

Paper Map - Effective Flood Zones

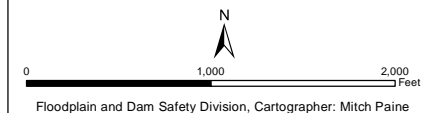
- 1% Annual Flood Chance

NDNR Work Maps

- 1% Annual Flood Chance

Other

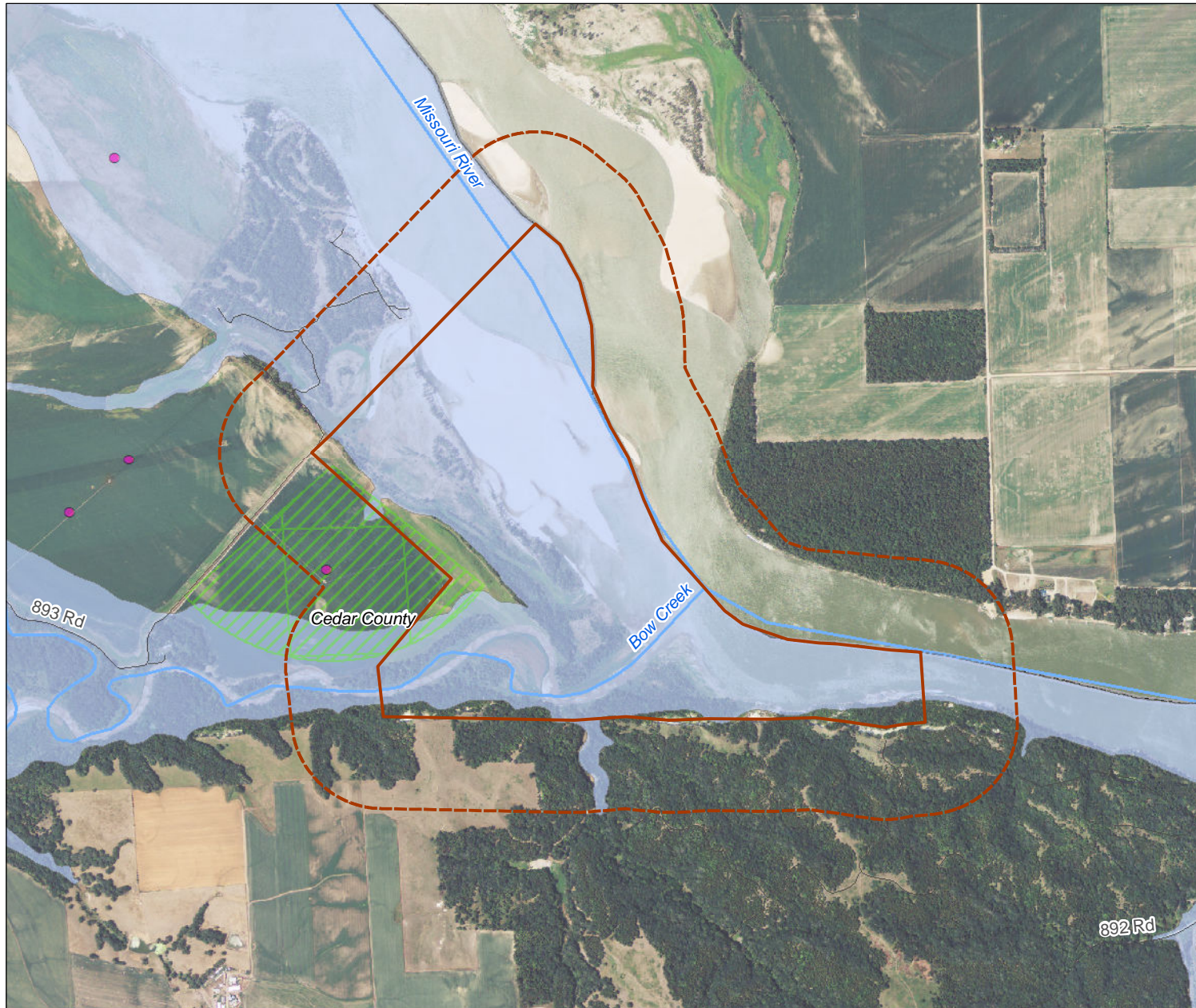
- Approximate Project Area
- 1,000 ft PWS Spacing
- Major Stream
- Road
- Political Area



Bow Creek Recreation Area

Cedar and Dixon Counties, Nebraska

December 22, 2014



Legend

Registered Wells

- Wells in Use

Surface Water

- Irrigation
- Supplemental Irrigation
- Domestic
- Other

Effective Flood Zones

- 1% Annual Flood Chance
- Floodway
- 0.2% Annual Flood Chance
- X Protected by Levee
- 1 PCT Future Condition

Paper Map - Effective Flood Zones

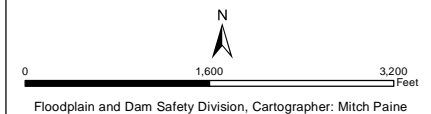
- 1% Annual Flood Chance

NDNR Work Maps

- 1% Annual Flood Chance

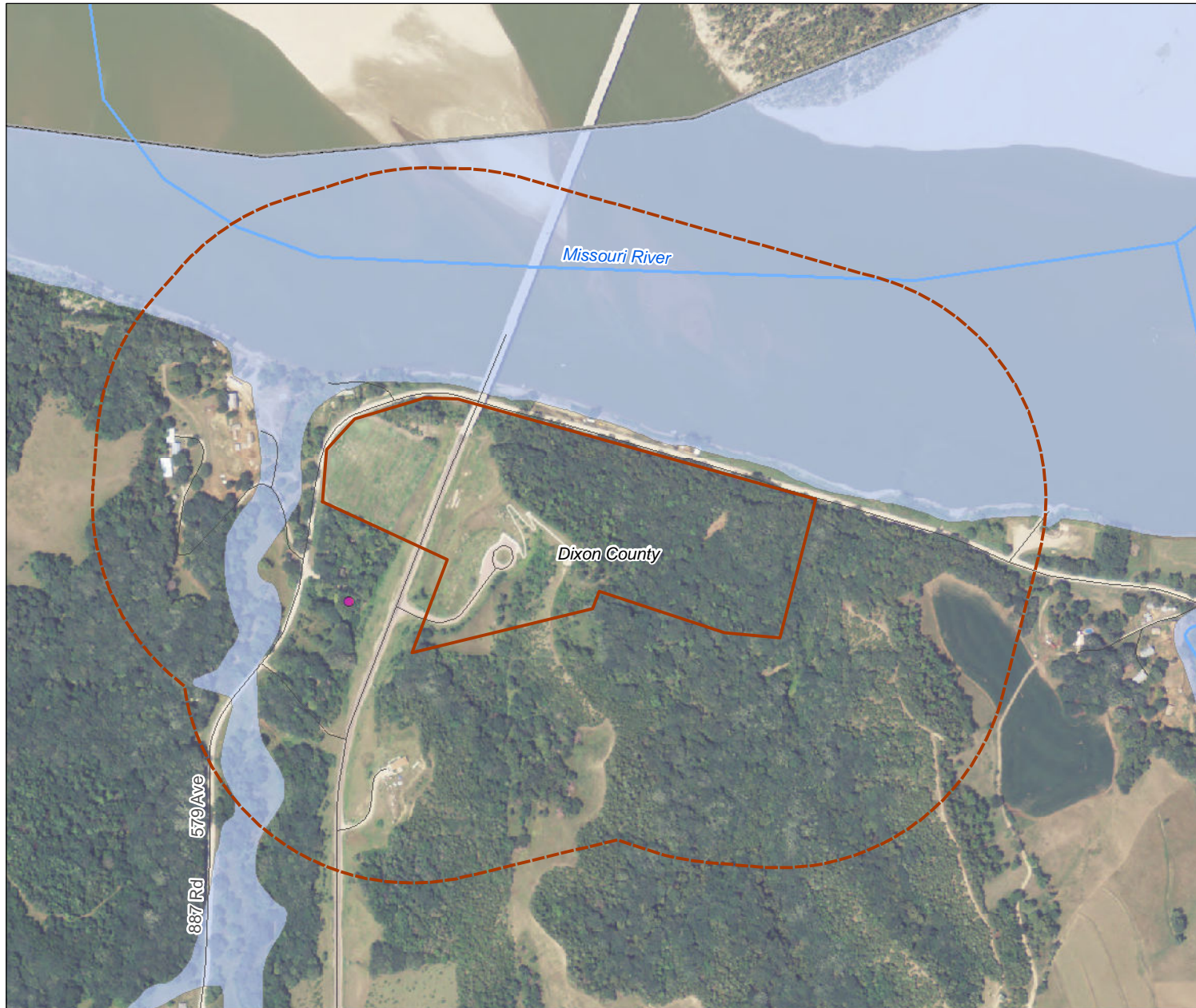
Other

- Approximate Project Area
- 1,000 ft PWS Spacing
- Major Stream
- Road
- Political Area



Mulberry Bend

Cedar and Dixon Counties, Nebraska
December 22, 2014



Legend

Registered Wells

- Wells in Use

Surface Water

- Irrigation
- Supplemental Irrigation
- Domestic
- Other

Effective Flood Zones

- 1% Annual Flood Chance
- Floodway
- 0.2% Annual Flood Chance
- X Protected by Levee
- 1 PCT Future Condition

Paper Map - Effective Flood Zones

- 1% Annual Flood Chance

NDNR Work Maps

- 1% Annual Flood Chance

Other

- Approximate Project Area
- 1,000 ft PWS Spacing
- Major Stream
- Road
- Political Area





DEPARTMENT OF GAME, FISH, AND PARKS

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

RECEIVED

DEC 23 2014

MNRR

December 15, 2014

Lisa Yager
Missouri National Recreational River
508 East 2nd Street
Yankton, SD 57078

Dear Lisa,

Thank you for contacting Governor Dugaard and requesting input on any resources that could potentially be affected by future management plans for the three properties you have acquired in the Missouri River below Gavins Point Dam. Governor Dugaard has requested the Department of Game Fish and Parks provide the National Parks Service (NPS) with information on how potential management of these properties may affect fish and wildlife and outdoor recreation opportunities.

South Dakota Department of Game, Fish, and Parks supports a multi-use philosophy in managing the three NPS properties located in the 59-mile reach of the Missouri National Recreational River. Each property has excellent ecological value as well as great potential for use in bringing the public to the river. We recommend that fishing and hunting access be considered at these properties and desire that management designations for these properties not affect any current hunting seasons or practices.

We have conducted a review of the South Dakota Natural Heritage Database. The majority of rare species records in this area are interior least tern and piping plover colonies, which we assume you are aware of. We also found a record of a bald eagle nest located in Nebraska. We trust that the NPS will avoid destroying natural features that support these species when making any changes to the sites.

Green Island Site

We recommend that conversion from a chute to a backwater be considered. In contrast to chutes, backwater habitats are in relatively short supply on this reach of the river. Such non-flowing habitats enhance the diversity of the system, providing a niche for those species that utilize still water.

The Green Island site existed as a backwater until high flows during the flood of 2011 converted it to a chute. Fisheries sampling done prior to and after the change shows a substantial decrease in usage by both fish and turtles as flowing water replaced still. In addition to providing important spawning and nursery habitat for many species of fish, backwater habitats also attract fish species desirable to anglers. Crappie, bass, northern pike, and bluegill were all commonly captured in this area prior to its change to a chute. All of those species are relatively easy to catch by "casual" anglers, making such areas appealing to those with children or lacking high-tech gear.

Given this property's close location to a population center, it has excellent potential for use by anglers. Furthermore, conversion to a backwater would involve creating an earthen path that would allow safe foot-access to the area that currently exists as an island. This would open a large area to those wanting to explore the river bottom ecosystem and would lend itself well to a trail network and possibly even remote camping.

Bow Creek Site

As was evident in fish sampling results during the flood of 2011, the lowland portion of this property can be heavily utilized by fish when flows are high. Such floodplain areas are a critical part of the river ecosystem, providing an input of energy when the river tops its banks. Therefore, we recommend that this property be preserved in a natural state.

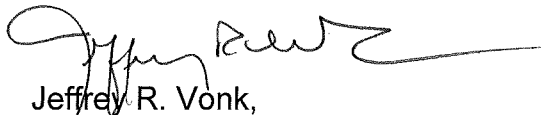
The habitat conditions and remoteness of this site also seem to lend very well to hunting access. We recommend that aspect of use be continued. Remote camping could be an excellent use of this area as well.

Mulberry Bend Site

This is one of a very small number of locations where the public can view a large span of this unique reach of river. We support the continued maintenance of the overlook site and development of a hiking trail in the interest of public education and connection to the river.

South Dakota Game, Fish, and Parks appreciates the opportunity to provide comments on potential uses of these areas prior to development of the management plans. Please contact us again if we can provide any information to aid in your development of the management plans or if you require additional information or comment as a part of generating the Environmental Assessment.

Sincerely,



Jeffrey R. Vonk,
Department Secretary

JV:da

cc: Governor Daaugard, DENR Steve Pirner

APPENDIX C

Statement of Findings: Floodplains

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STATEMENT OF FINDINGS
South Dakota and Nebraska

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STATEMENT OF FINDINGS

FOR

EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)

Property Management Plan

Missouri National Recreational River

Recommended:

Richard A. Clark
Superintendent

Date

*Certification of
Technical Adequacy and
Servicewide Consistency:*

Forrest Harvey
Chief, Water Resources Division

Date

Approved:

Cameron Sholly
Regional Director

Date

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ACRONYMS AND ABBREVIATIONS

| | |
|-------------|--------------------------------------|
| DO | Director's Order |
| EO | Executive Order |
| GMP | General Management Plan |
| MNRR | Missouri National Recreational River |
| NPS | National Park Service |
| PM | Procedural Manual |
| PMP | Property Management Plan |
| SOF | Statement of Findings |
| USACE | U.S. Army Corps of Engineers |

EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)

Property Management Plan

Missouri National Recreational River South Dakota and Nebraska

The main purpose of this project is to develop the Bow Creek Recreation Area and Green Island for recreational site development, resource management, and interpretation/education to support Missouri National Recreational River (MNRR) purposes and significance. Boating on the Missouri River is a popular recreational activity. Development of campgrounds and trails would allow boaters to stop and explore the MNRR sites.

1. INTRODUCTION

Pursuant to Executive Order (EO) 11988: *Floodplain Management*, Director's Order (DO) #77-2: *Floodplain Management* (National Park Service [NPS] 2003), and Procedural Manual (PM) #77-2: *Floodplain Management* (NPS no date), the NPS has evaluated flooding hazards related to the development of three properties (Bow Creek Recreation Area, Mulberry Bend, and Green Island) at MNRR. This Statement of Findings (SOF) describes the preferred alternative, project site, floodplain determination, use of floodplain, investigation of alternatives, flood risks, and mitigation for the continued use of facilities within the floodplain.

2. PREFERRED ALTERNATIVE

NPS is proposing to develop a Property Management Plan (PMP) for the following MNRR properties: Green Island (60 acres), Bow Creek Recreation Area (205 acres), and Mulberry Bend (31 acres) (figure 1). The purpose of this plan is to decide how the NPS can best fulfill MNRR's purpose and protect its resources unimpaired for the enjoyment of present and future generations at the three properties. The PMP will identify actions for recreational site development, resource management, and interpretation/education, and establish management policy on certain issues, such as access, hunting, hiking, and camping.

MNRR's General Management Plan (GMP) was completed in 1998 and these properties were acquired after the GMP was written. A management plan for the three properties is necessary for the park to carry out the NPS mission and the congressional mandates found in the Wild and Scenic Rivers Act – the enabling legislation of the MNRR. The Wild and Scenic Rivers Act identified Administration Policy for designated rivers to protect and enhance the values for which it became a component of the national wild and scenic river system. It also identifies that “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.” A management plan is needed to fulfill the intent of the Congressional designation of MNRR.

Bow Creek Recreation area was acquired February 24, 2004. The acquisition of Bow Creek Recreation Area began in 2004 when the NPS purchased the property north of Bow Creek and completed the transaction in 2008 with the acquisition of the southern portion. All lands were acquired from willing sellers. This floodplain and bluff top property totals approximately 205 acres and is located along Bow Creek and the Missouri River in Cedar County about 2 miles northeast of Wynot, Nebraska at river mile 787.6 (figure 2).

Mulberry Bend was acquired on May 3, 2005 as part of mitigation for construction of the Vermillion-Newcastle Bridge that was completed in 2001 by the Nebraska Department of Roads. Mulberry Bend, an approximate 31-acre bluff-top property is located on Nebraska Highway 15 just south of Vermillion, South Dakota. Mulberry Bend does not occur within the 100-year floodplain; therefore, this site is not included in this SOF.

Green Island was acquired on March 20, 2014 as mitigation for the Discovery Bridge in Yankton. Green Island is approximately 60 acres and is located just upstream of the Discovery Bridge. The site is located at river mile 806.5 and includes the island, side channel, and a small portion of the Nebraska shoreline (figure 3).

The preferred alternative includes moderate development/management at each site. A summary of site developments for each of the sites is presented below.

Bow Creek Recreation Area

Vegetation management at Bow Creek Recreation Area would include mowing and planting the northwest corner of the site with locally collected native species and cottonwood cuttings. Shallow disking would also occur to disrupt soils and to encourage cottonwood growth. Invasive species and noxious weed control would include the use of herbicides and some mowing/cutting as needed according to the Exotic Plant Management Plan. Grassland management would include the implementation of the Fire Management Plan. Cultural resources management would include following CFR 2.1 Preservation of Natural, Cultural, and Archaeological Resources.

Property development would include establishing campgrounds, installing signs, and constructing trails, picnic areas, restrooms, and trash receptacles. Locations of these features are shown on figure 2. Primitive camping would be established in designated (12-foot by 12-foot) sites at three separate campgrounds. The Prairie Campground would be located off of the parking lot and would include a gravel loop road with non-electric sites. Each campground would include a picnic table and would be open year round. Hike-in campsites would be established along the river on the north side of the site. The Riverside Campground would be open Memorial Day through Labor Day. A designated primitive campground would be established in the bluff face area which would be accessible by boat. The Bluff Face Campground would also be open Memorial Day through Labor Day. Metal fire rings would be installed at designated campsites and county burn bans would be enforced as needed.

One kiosk to include informational panels about the unique natural and cultural features as well as the basic orienting information would be installed in the parking lot. Small signs including campsite locational/directional markers and small plant identification signs would be installed. The current riverward property identification sign would be removed and a new sign would be installed at the Riverview Campground. One property identification sign would be installed on the river at the Bluff Face Campground and three wayside exhibits would be installed along trails.

A mowed trail system consisting of two loops would be placed through the northern portion of the property. A portion of the mowed loop trail from the parking lot to Riverside Campground would be hardened using gravel or crushed limestone. A backwater spur trail would be constructed from the main trail leading to the wetland area. This spur trail would be primitive. A primitive trail would be placed within the Bluffs Area leading from the Missouri River to the Bluff Face Campground.

Vault toilets would be installed at the parking lot. A recycling receptacle would also be installed adjacent to the trash receptacle in the parking lot. A portable toilet would be located at the Riverside Campground. Trash and recycling receptacles would be installed next to the portable toilet.

Visitor activities allowed at Bow Creek Recreation Area would include dog walking, hunting, hiking, bike riding, boating, and camping. Hiking would be allowed throughout the site on designated trail. Dog walking would follow 36 CFR 2.15; dog walking on a 6-foot leash or less would be permitted. Hunting, including upland game, turkey, waterfowl, and deer, would be allowed Labor Day through Memorial Day in accordance with state regulations and seasons. Bike riding would only be permitted on park roads and within the parking lot. Camping would be permitted within designated camping areas only. Canoeing/kayaking would be permitted within the Missouri River. A landing site for canoes/kayaks would be improved and/or developed.

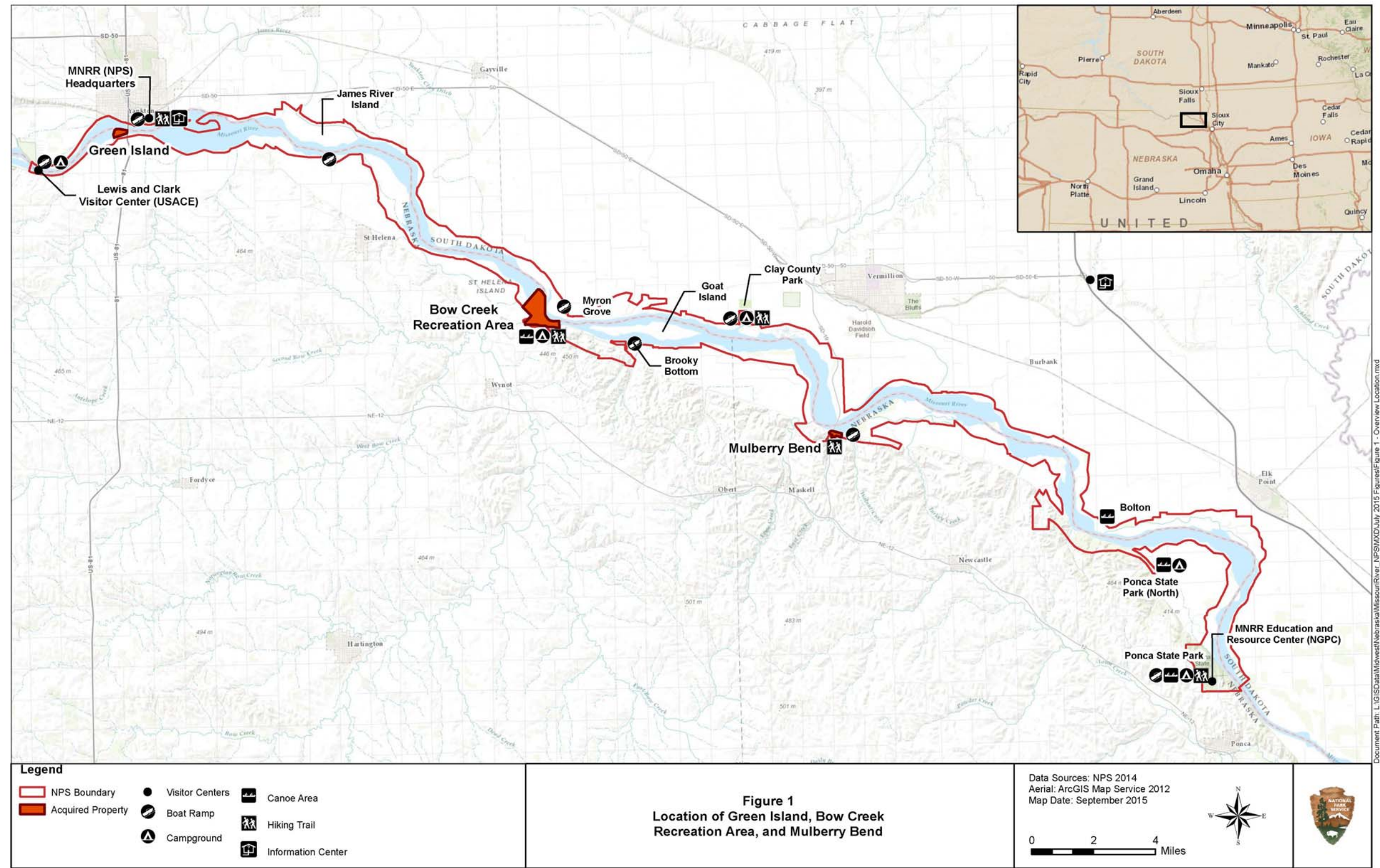
Green Island

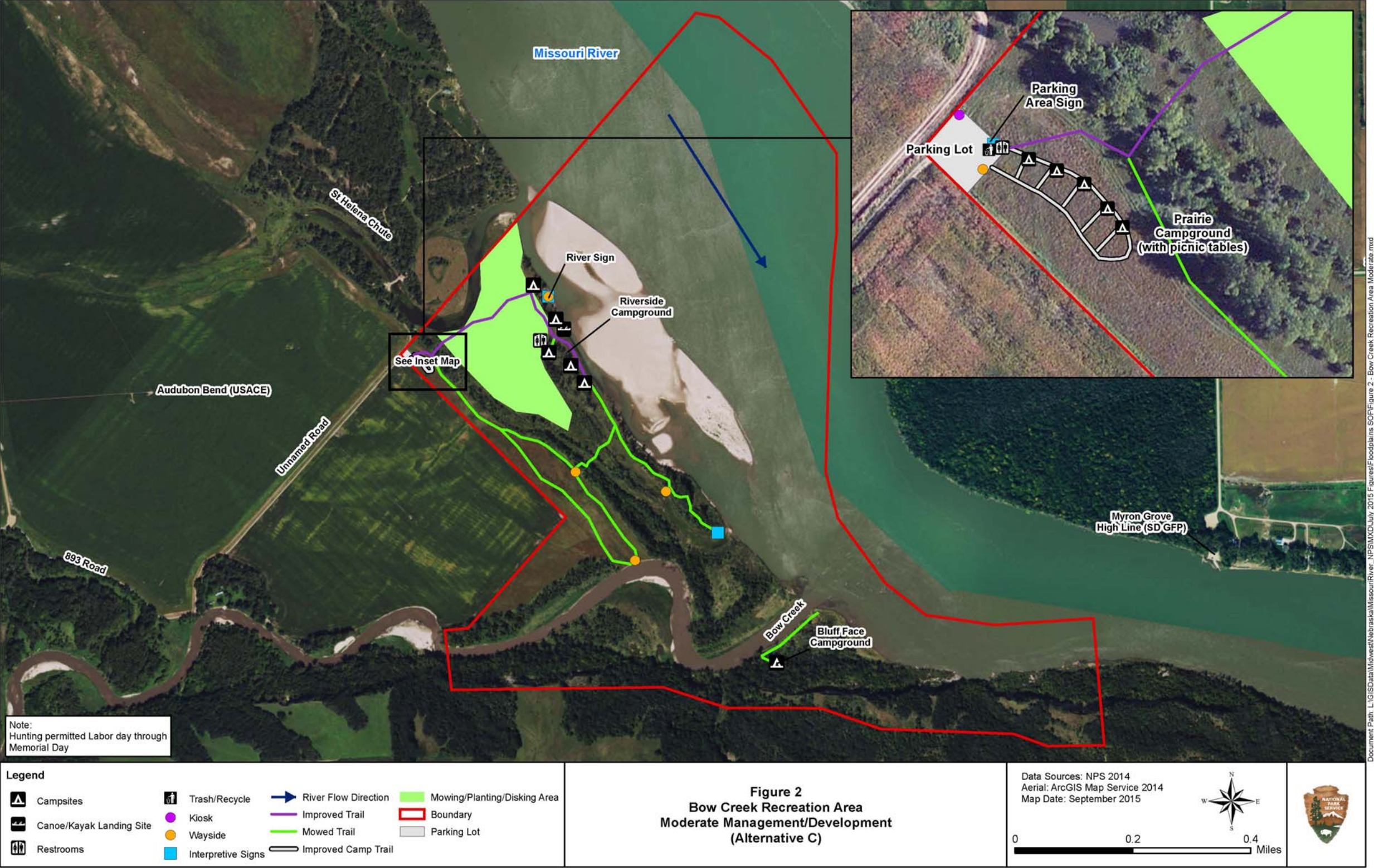
Vegetation management at Green Island would include invasive/noxious weed control using herbicides on perennials and mowing/cutting on biennials. Eastern red cedars (*Juniperus virginiana*) would be controlled by cutting. Historic pilings and buffalo bones are located at Green Island. To manage this cultural resource, fencing would be placed around the historic pilings. The fence would either be post and cable fence or a split rail fence.

Site development includes the establishment of 5 to 15 primitive designated campsites on the island. Metal fire rings may be installed in the future at each campsite. Two charcoal grills would be installed on the beach area of the island. A trail would be located on the land side of the site and on the island. The trail would have a semi-impervious surface (gravel or crushed limestone) and a boardwalk would be used in sensitive areas as needed. One interpretive panel would be installed on the island's north beach area and the current informational sign on land would be replaced. Campsite markers, vegetation identification signs, and one wayside interpretive sign would be placed on the island. Three interpretive signs would be installed along the trail on the land side of the site. One portable restroom would be placed on the island seasonally and a trash/recycling receptacle would be placed next to the restroom and on the beach near the charcoal grill. An additional trash/recycling receptacle would be placed at the trailhead on the land side of the site. Location of features is shown on figure 3.

Visitor activities at Green Island would include hiking, camping, dog walking, and boating. Hiking would be permitted on designated trails and camping would be allowed within designated campsites. Dog walking would follow 36 CFR 2.15; dog walking on a 6-foot leash or less would be permitted. Canoeing/kayaking would be permitted within the Missouri River and Missouri River side channel. A gently sloped riverbank would allow for easy access to the island for canoes and kayaks.

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3. DESCRIPTION OF FLOODPLAINS WITHIN PROJECT AREA

The 1 percent annual flood (100-year flood), also known as the base flood, is the flood that has a 1 percent change of being equaled or exceeded in any given year.

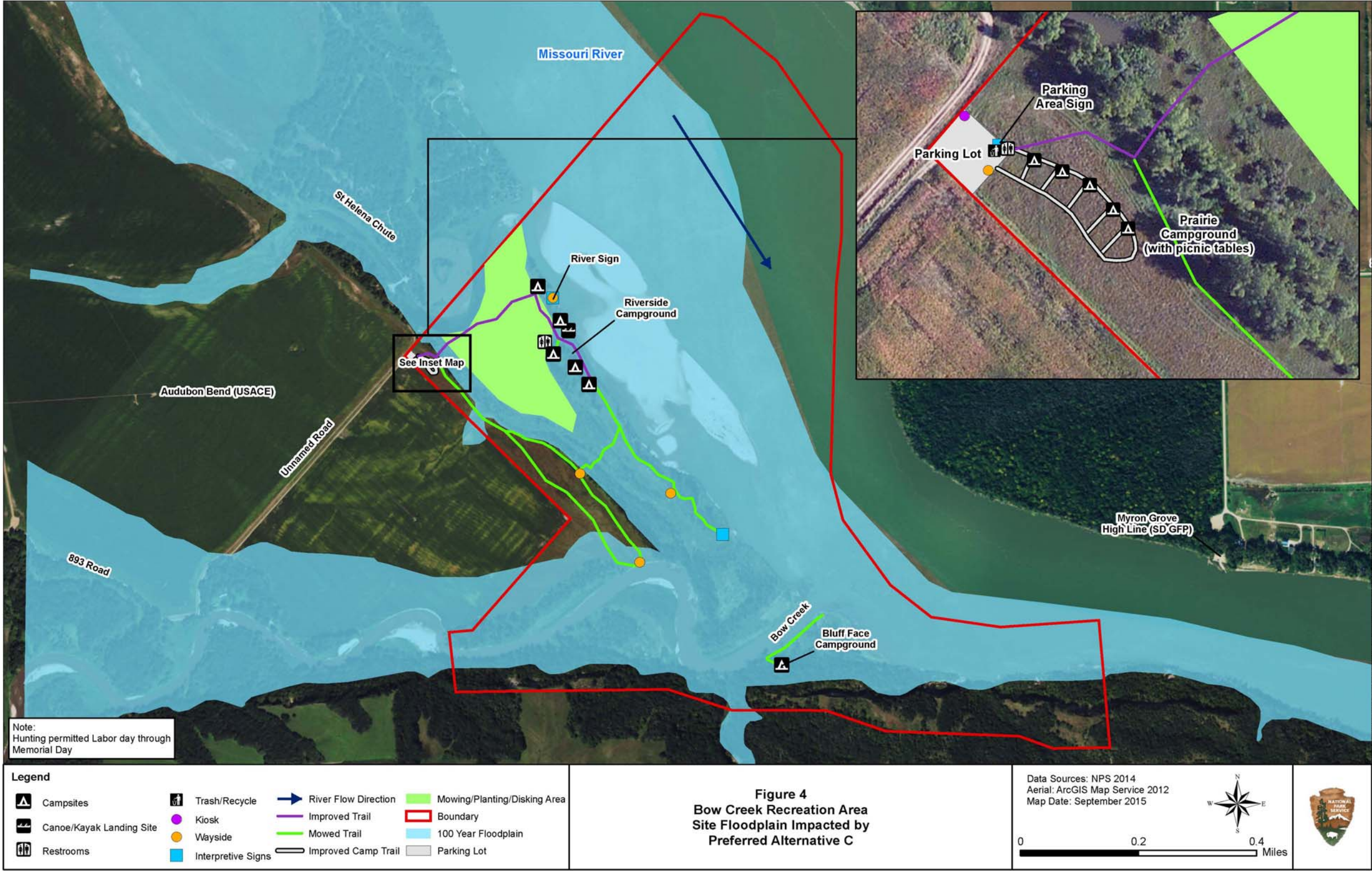
Bow Creek Recreation Area

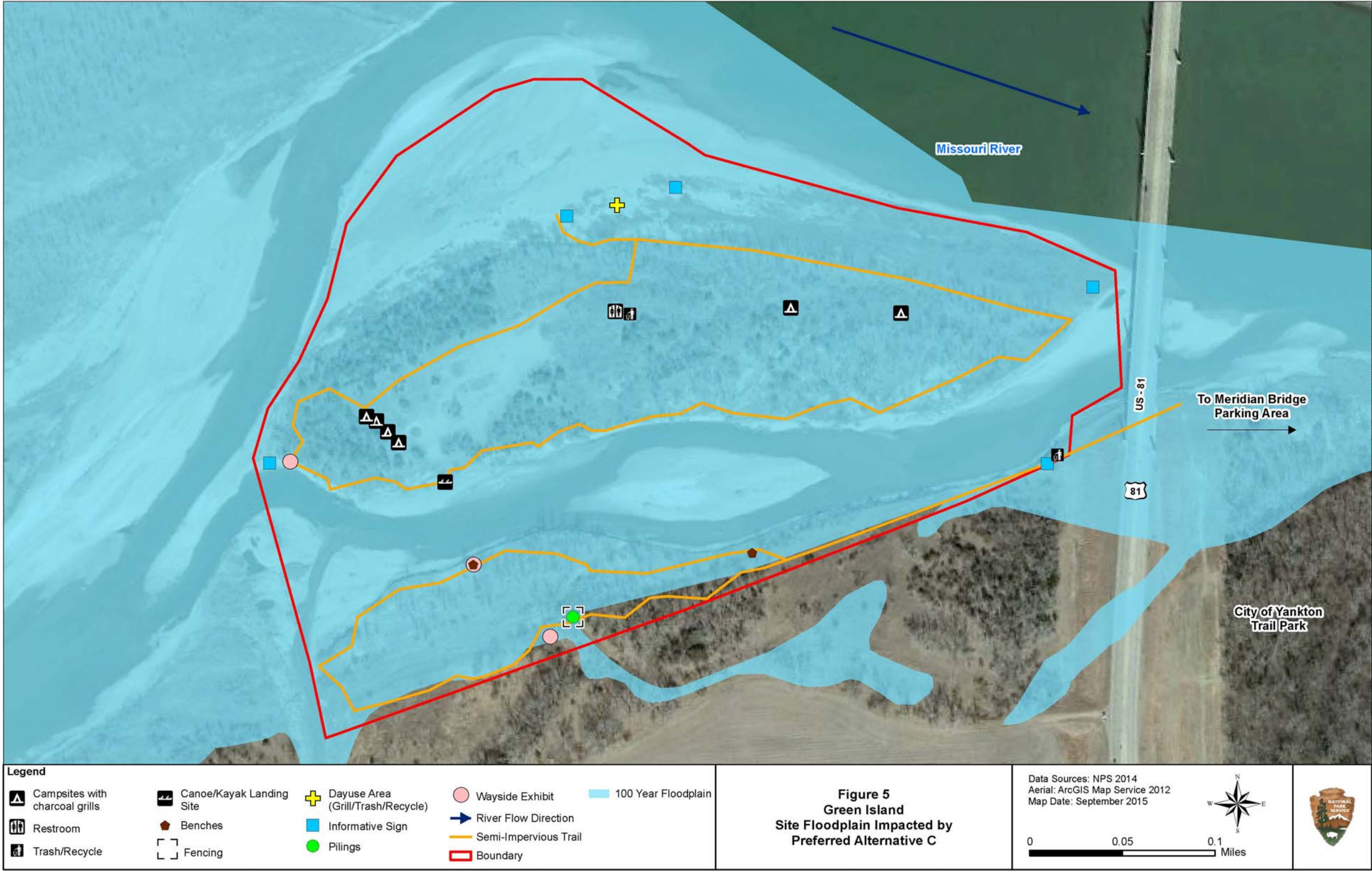
Most of Bow Creek Recreation Area is within the 100-year floodplain (figure 4). A small area of forested habitat along the southern boundary of the property is located outside the 100-year floodplain. In addition, a grassland area located southwest of the existing parking lot is also outside the flood zone.

Green Island

Green Island is also almost completely encompassed by the 100-year floodplain. A small portion of the land side of the property is located outside of the floodplain boundary; this is located along the southern boundary line (figure 5).

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4. JUSTIFICATION FOR USE OF THE FLOODPLAINS

MNRR was established by two acts of Congress which amended the Wild and Scenic Rivers Act of 1968. The first act (1978) created the 59-mile reach (also referred to as the Gavins Point Segment) from Gavins Point Dam to Ponca State Park, Nebraska. The second act (1991) established a 39-mile reach (also referred to as the Fort Randall Segment) from Fort Randall Dam to Running Water, South Dakota, 20 miles of the lower Niobrara River, and 8 miles of Verdigre Creek (NPS 2012). Bow Creek Recreation Area and Green Island are located within the 59-mile reach of MNRR.

Two of the purposes of MNRR are to:

- Preserve the significant recreational, fish and wildlife, and historic and cultural resources of the Missouri River corridor; and
- Provide for a level of recreation and recreational access that does not adversely impact the river's significant natural and cultural resources.

The recreational significance of MNRR is:

- The 59-mile river corridor provides high-quality outdoor recreation, including high-quality fishing, hunting, trapping, and boating. Opportunities for birdwatching and other wildlife observation abound.
- The 59-mile Missouri River segment supports recreation on a large, relatively natural river.
- The river valley provides scenic vistas of a variety of natural landscapes such as bottomlands, cottonwood forests, wooded draws, forested hills, sand dunes, high-bank islands, wetlands, and chalkrock bluffs

5. INVESTIGATION OF ALTERNATIVES

Investigation of alternate sites was not possible for this project. The project area is located in a large floodplain with no alternate sites available that would allow construction outside of the 100-year regulatory floodplain. Alternative analysis for this project focused on the amount of development for each alternative.

Bow Creek Recreation Area

No Action Alternative (Alternative A) – Under the no action alternative, current resource management of Bow Creek Recreation Area would continue to include exotic species control through the Exotic Plant Management Plan, spraying/mowing/cutting of exotic species and weeds, and prescribed burns for grassland management. Cultural resources would continue to be managed per CFR 2.1 Preservation of Natural, Cultural, and Archeological Resources. Currently a parking lot is located on lower Bow Creek. A directional and orientation interpretive sign is located within the parking lot along with a trash receptacle. Upper Bow Creek is accessible via water. The following activities currently occur at the site: primitive, non-regulated camping; hunting; dog walking on a 6-foot leash; bike riding on park roads and parking area; and canoeing/kayaking with no designated landing area.

Low Management/Development (Alternative B) – For resource management, alternative B would be the same as alternative A with the addition of mowing the northwest corner of the site and planting with local native species. Property development would be the same as alternative A with the addition of the installation of a kiosk and recycling receptacle in the parking area, construction of a loop trail with a boardwalk over sensitive areas, and restricting primitive camping in non-designated areas from Memorial

Day through Labor Day. Visitor activities and site access would also be the same as alternative A, except hunting would only be permitted from Labor Day through Memorial Day and portable hunting stands/duck blinds would only be allowed for 24 hours.

High Management/Development (Alternative D) – For resource management, alternative D would be the same as the preferred alternative with the addition of restoring a backwater on the site. Property development under alternative D would be similar to the preferred alternative. The primitive trail in the bluffs portion of the site would be extended from the campground to the wayside exhibit located at an overlook. The Prairie Campground would include five campsites with concrete pads and electrical hookups and picnic tables. Instead of installing a vault toilet within the parking lot, a comfort station, which would include restrooms and sinks with running water, would be installed. Additional directional and interpretive signage would be installed within the bluffs area. Site access would be improved by constructing a gravel road from the parking lot to the river.

Green Island

No Action Alternative (Alternative A) – Under the no action alternative, current resource management of Green Island would continue to include the use of herbicides on invasive/weed species and cutting red cedars. Cultural resources including the historic pilings and buffalo bones would continue to be preserved under CFR 2.1 Preservation of Natural, Cultural, and Archeological Resources. Currently Green Island includes access by boat from the Missouri River and by foot via the City of Yankton Meridian Bridge parking area. There is no designated parking area on the land side of the site. Three informative signs are located on the island and one informative sign is located on the land side of the site. Primitive, non-regulated camping does occur at the site and campfires do sometimes occur, as there is no defined regulation. In addition dog walking on a 6-foot leash is also permitted.

Low Management/Development (Alternative B) – For resource management, alternative B would be the same as alternative A. Property development would be the same as current conditions with the addition of a trail with sand substrate on the land side and island portion of the site. A total of four interpretive signs would be located along the island and land trails. Primitive regulated tent camping in non-designated areas would be allowed; however, no campfires would be permitted. Current signs would also be maintained on an as-needed basis. Visitor activities and site access would also be the same as alternative A.

High Management/Development (Alternative D) – For resource management, alternative D would be the same as the preferred alternative with the addition of restoring the backwater. Property development would be similar to the preferred alternative with the addition of some new elements. Additional primitive designated campsites would be developed under alternative D. Each campsite would include a charcoal grill or metal fire ring, and two vault toilets would be installed within a central location of the campsites. Site access would be similar to the preferred alternative except alternative D would include the construction of a land bridge to connect the land portion of the site to the island. In addition, NPS would work with the City of Yankton and the Nebraska Department of Roads to construct a parking area on their land near the land side of the site.

6. PROPOSED IMPACTS TO FLOODPLAIN AND FLOOD RISK OF THE PROPOSED PROJECT AREA

Floodplain zones, as mapped by the Federal Emergency Management Agency (FEMA), are located within the proposed project area boundary. NPS has adopted guidelines pursuant to EO 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. The entire project area is found within the floodplain.

However, the project is not anticipated to result in any changes to the floodplain. Campgrounds and associated sanitary facilities are subject to the requirements of DO #77-2 and PM #77-2.

Hiking, camping, fishing, and boating would be allowed within the Bow Creek Recreation Area and Green Island. Hunting would also be permitted at Bow Creek Recreation Area. These activities would occur within the 100-year floodplain and a flood risk would impact the safety of visitors. However, the risk to humans from flooding would be very low where flooding is predictable and is likely to happen over a period of hours or days. During a flood, it is possible that the site would become inundated with water, making it impossible to be onsite. Gavins Point Dam, owned and operated by the United States Army Corps of Engineers (USACE), is located upstream of Bow Creek Recreation Area and Green Island. Release of water from the dam controls the flow of the Missouri River downstream of Gavins Point Dam. If high releases are necessary and may inundate the properties, NPS would evacuate each site and remove the portable toilets from the sites.

The placement of the proposed improvements at each site including signs, establishing campgrounds and trails, and installing toilets, trash receptacles, and picnic tables at each site would not impact the value and function of the floodplain. The placement of these small structures in the floodplain would not impede waters from entering into the floodplain.

7. MITIGATION MEASURES

As described above, dam operation controls the flow of water from the Gavins Point Dam to Ponca State Park. To reduce the risk of flood hazards, MNRR would prepare an Emergency Action Plan. This plan would detail how to manage flood risks at each site. NPS would then notify all visitors of the flood and evacuate the area. All portable toilets would also be removed from the site. The sites would be closed until flooding subsides and the area is deemed safe for recreational use.

8 SUMMARY

There is no practicable alternative to the development of Bow Creek Recreation Area and Green Island. Both of these sites are completely located within the 100-year floodplain. MNRR visitors come to the park for a Missouri River experience including hiking, boating, and camping within the river's floodplain. During a flood, it is possible that the site would become inundated with water, making it impossible to be onsite. The USACE operates the flow of water within the Missouri River. To minimize flood safety risks, MNRR would prepare an Emergency Action Plan that would outline the steps proposed to evacuate all visitors from the sites during a flood event. NPS would ensure all visitors are offsite, portable toilets are removed, and that the site would remain closed until safe conditions resume.

9. REFERENCES

National Park Service (NPS)

- 2012. *Missouri National Recreational River, Outstandingly Remarkable Values*. U.S. Department of the Interior.
- 2003 *Director's Order #77-2: Floodplain Management*. September 8.
- no date *Procedural Manual #77-2: Floodplain Management*.

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