



UPPER NISQUALLY RIVER LEVEE RETROFIT FINDING OF NO SIGNIFICANT IMPACT

February 2019

This Finding of No Significant Impact (FONSI) documents the decision of the National Park Service (NPS) to select Alternative B, Install Deflectors, as described and analyzed in the Upper Nisqually River Levee Retrofit Environmental Assessment (EA). Two other alternatives were also described and analyzed in the EA: Alternative A, No Action, and Alternative C, Engineered Log Jams (ELJ), an alternative that evaluated installation of engineered log jams in addition to the flow deflector structures. This FONSI documents the NPS determination that no significant impacts on the quality of the human environment will occur from implementation of this course of action.

Under the selected alternative, the NPS will authorize Pierce County Planning and Public Works Department (Pierce County) to retrofit the upper Nisqually levee with 13 rock deflectors within the park boundary. The County will also install 15 deflectors downstream of the park. Approximately half of the deflectors, seven within the park, would be augmented with large wood.

This FONSI, its appendices, and the EA constitute the record of the environmental impact analysis and decision-making process, as required by NEPA. The FONSI is available on the NPS Planning, Environment, and Public Comment (PEPC) website at <https://parkplanning.nps.gov/nisquallylevee>.

PURPOSE AND NEED

The original levee was constructed in the 1930s to protect the Nisqually Entrance of the park. In 1961, Pierce County obtained a right-of-way permit to construct and operate a mile-long levee from river mile (RM) 64.5 upstream to RM 65.4. The upper half of the levee is located within the park. The county levee was constructed to protect the historic Nisqually Entrance, the Nisqually to Paradise Road, and Sunshine Point Campground within the park, and the small residential community and businesses located west of the park boundary. In November 2006, historic flooding heavily damaged the levee and the Nisqually to Paradise Road, and destroyed the Sunshine Point Campground. Prior to and since that time, smaller floods have periodically damaged the levee. Pierce County and the Army Corps of Engineers have repaired the levee four times since November 2006. Repairs during 2011 and 2017 installed large toe rock along the total length of the levee, increasing its robustness.

The Nisqually to Paradise Road provides year-round access to Longmire and the Paradise Area of Mount Rainier National Park. Annual visitation to Paradise typically exceeds about one million people.

The purpose of Pierce County's proposal to retrofit the levee, as identified by the County, is to reduce erosive flows on the levee face and toe in order to preserve the structure and to reduce overall maintenance frequency and costs. The NPS evaluated the proposal and considered whether authorization to retrofit the levee with deflectors would conflict with the purpose, significance, and fundamental resources and values of Mount Rainier National Park as described in the 2002 General Management Plan. In light of this legal requirement and the need to protect and preserve the Park's natural and cultural resources, infrastructure, and visitor access, the NPS identified the following objectives:

- Understand, characterize, and analyze the environmental impacts of the proposed action to fully inform a decision as to whether to amend the ROW permit and grant authorization to install deflectors to the levee;
- Give consideration to the proposed project's potential impacts to Park resources and values;
- Give consideration consistent with NPS Management Policies to the potential benefit of installing the deflectors;
- Give consideration to the existing levee, alternatives to the proposed action, cumulative impacts, and future needs for Mount Rainier National Park.

DESCRIPTION OF THE SELECTED ALTERNATIVE

The NPS selects Alternative B for implementation. The NPS will grant permission to Pierce County to install a series of 13 large wood-augmented self-ballasting flow deflector structures along the face of the existing levee within the park. The county will also install 15 deflectors downstream of the park boundary.

Elements of the selected alternative

- Each deflector will consist of large 10- to 15-ton jetty rock excavated down approximately 15 feet in front of the levee toe to match the elevation of the existing levee toe. From the toe of the existing levee the triangular deflector structure will slope upwards toward the face, at an approximate 2:1 angle, built from a combination of jetty rock and immediate facing rock. The top of each deflector will project above the 100-year water surface approximately 1-2 feet.
- Large wood will be integrated into approximately half of the deflectors, mostly within the park and along the easternmost segment of the levee.
- Wood that is unembedded may be retrieved from the tops of gravel bars in the project area to minimize impacts to the Nisqually River. The availability of unembedded large wood will depend on whether previous storms have transported wood into the project area. If not enough large wood with rootwads is available for construction of deflectors containing wood, logs with rootwads will be obtained from outside of the park.
- The deflectors will disturb a total area of about 21,490 square feet, and require excavation of approximately 3,396 cubic feet. The same volume would be placed above the ordinary high water mark. The deflectors will add approximately 6,792 cubic yards of rock fill to the Nisqually River floodplain.
- Construction within and downstream of the park will require one or two diversions, depending on the river's configuration at the time of construction. The diversions will

likely occur within park waters. Diversion construction is anticipated to take less than one-half of a day, and fish removal and transport will take one to two days, depending on river configuration and extent of the reach to be dewatered.

- Work will occur during the July 16-September 30, 2019 fish window (a work period when risks to fish are minimized), and may extend into October in consultation with the park if it becomes necessary. Work will be completed prior to the fall rainy season. Staging may occur earlier if possible; otherwise large rock will be delivered as it is needed to minimize handling of large boulders. The county will begin construction downstream of the park and work upstream, toward the east end of the levee.
- Excess sediment will be placed on the existing levee to facilitate plantings, which will occur one to three years following construction.

The project will implement a number of resource protection measures and best management practices to minimize the degree or severity of adverse effects on cultural landscapes, aquatic resources, special status species and habitat, soils, vegetation, air and water quality, wildlife, soundscapes, and visitor experience and safety (see list of protection measures in Attachment A).

OTHER ALTERNATIVES EVALUATED IN THE EA

Alternative A, No Action

Under the No Action alternative, the operation and maintenance of the levee would continue. Pierce County's ROW permit on NPS land would not be amended to include the construction or maintenance of the proposed retrofitted structures. Pierce County maintenance operations along the existing levee structure would include repair of damage as it occurs. Future repair activities may occur more frequently than would occur under the Action Alternatives. Future repair activities may or may not require diversions and in-channel work, depending on the nature and extent of the damage and the configuration of the river.

Alternative C, Engineered Log Jams

In response to internal and external scoping, the NPS evaluated an alternative design that would install engineered log jams (ELJs) at Sunshine Point on the east end of the project. ELJs would be constructed in addition to the deflectors, and would potentially improve floodplain roughness and habitat complexity to a greater extent than under Alternative B alone. The total volume excavated for log jams would be approximately 2,000 cubic yards (cy) each and 14,000 cy total, and occupy an area of approximately 30,800 ft². The typical ELJ design consists mostly of wood, but may require rock ballast depending on design. A decision to install ELJs would require updated modeling and design to identify structures appropriate to the configuration of the river and floodplain during the time of construction. This option may be considered at a future date.

PRELIMINARY ALTERNATIVES AND ACTIONS CONSIDERED BUT DISMISSED

Under the National Environmental Policy Act, alternatives may be eliminated from detailed study for the following reasons: technical or economic infeasibility; inability to meet project objectives or resolve need for the project; duplication of other less environmentally damaging alternatives; conflicts with an up-to-date valid plan, statement of purpose and significance, or other policy

that would require a major change in that plan or policy to implement; or environmental impacts are too great.

Pierce County considered several alternatives in an analysis prior to proposing the deflector design to the NPS. The NPS concurred with the county's determination that the following alternatives be considered, but dismissed, for reasons specified below.

Setback levee. This alternative would involve setting back the existing levee northward to run parallel with State Route 706. The Nisqually River valley at this location forms a large alluvial fan. Valley widths at the project location average 3000 linear feet wide from valley wall to valley wall. To construct a setback levee would require building a levee parallel to State Route 706 for almost 6.5 miles until it could be terminated into higher ground. Within the setback area is the Nisqually Park subdivision and many other private properties that would need to be acquired to construct the new levee alignment.

Approximately 228 properties would be affected by this alternative. Entire parcels or portions of each property would need to be acquired to construct the setback levee. The cost of acquiring property and to construct a new levee alignment would be significant. There would be additional costs to remove structures, utilities, drain lines, septic systems, etc. Pierce County evaluated purchasing the Nisqually Park Subdivision in 2011 as part of updating the Rivers Flood Hazard Management Plan and estimated the acquisition cost alone would be approximately ten million dollars. Setting back the levee is outside the scope of this project.

In-channel engineered log jams. This alternative was originally presented to the NPS as an option that would involve the construction of 13 engineered log jam structures in the river channel, located 200-300 feet away from the levee to split and deflect the flows and promote sediment deposition behind each log jam. Each ELJ structure would consist of multiple logs, slash, and concrete dolos to anchor the log members in place. Scour depth in this reach of the Nisqually River was estimated to be 15-20 feet, and would have required the excavation of approximately 90,000 cubic yards to construct 13 log jams. This alternative would have only treated approximately 10-20% of the revetment/levee, not meeting the purpose of the project, which is to treat the entire levee length.

The NPS proposed installation of seven logjams in the Sunshine Point area in 2009. As with Pierce County's original proposal, a stand-alone project including seven logjams would not meet the purpose and need of the project, which is to treat the entire levee length. For this reason, seven log jams are not proposed as a standalone alternative.

Engineered log jams in place of deflectors. This alternative would construct 28 dolo-timber engineered log jam structures along the current levee. Each ELJ structure would consist of multiple logs, slash, and concrete dolos to anchor the log members in place. The county determined that the design would need to be anchored to the levee with vertical piles to withstand repeated high flows. While this alternative would have met the purpose and need of protecting the entire length of the levee, installation of the piles into the existing levee would structurally alter the levee and disqualify it from the USACE PL84-99 levee design requirements and opportunity for cost sharing. This alternative would also have exceeded the Pierce County's budget for the project.

Revetment Retrofit with Wood/Log Crib Structures (entire length). This alternative would construct a continuous wood/log crib revetment upon the existing levee face. The log/crib structures would be ballasted against movement using boulders and vertical piles. As with other proposals that would structurally alter the levee, it would be disqualified from inclusion in the USACE cost share program. Without a physical connection to the levee the wood/log crib structure would likely not withstand repeated high flows, based on Pierce County's assessment.

DECISION REACHED AND RATIONALE

The NPS selected Alternative B, Install Deflectors. The selected alternative will authorize Pierce County to install deflectors along the Upper Nisqually Levee within Mount Rainier National Park. Based on the design characteristics listed below, the selected alternative fulfills Pierce County's purpose and need to reduce erosive flows along the levee face and toe to preserve the structure and reduce overall maintenance frequency and costs. Furthermore, the selected alternative meets PL84-99 levee design requirements enabling the opportunity for cost sharing with the U.S. Army Corps of Engineers.

- Each deflector will be self-ballasting and designed to withstand 100-year flow events. The increased bank length and roughness provided by the deflectors will reduce the water velocity, reducing destructive flows adjacent to the levee and subsequent recurring damage to the levee.
- The deflectors will push the flow away from the toe of the levee and move the thalweg approximately 30 feet toward the center of the Nisqually River floodplain.
- The deflectors will be built along the face of the existing levee without structurally impacting the design of the existing levee, to meet standards for rehabilitation funding assistance for non-federal flood control projects under Public Law 84-99.

The NPS has determined that the selected action will not conflict with the purpose, significance, and fundamental resources and values of Mount Rainier National Park. In addition, because the long-term intent of the project is to reduce the frequency of damage to the levee and concomitant repairs, and because the effects of construction will not have significant adverse effects on resources, the selected alternative aligns with NPS objectives to protect and preserve the park's natural and cultural resources, infrastructure, and visitor access.

WHY THE SELECTED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 Code of Federal Regulations (CFR) § 1508.27, significance is determined by examining the following criteria:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

Implementation of the selected action will result in both beneficial and adverse impacts, and long-term and short-term impacts; however no significant adverse or beneficial effects were identified in the environmental analysis.

2. The degree to which the selected action affects public health or safety.

Construction of the deflectors will not measurably affect public health or safety. By design, the deflectors will not affect the integrity of the levee or reduce the levee's flood control capability. Once installed, the deflectors are expected to reduce the frequency of damage to the levee from high-water events by reducing erosive flows adjacent to the levee.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

No prime farmlands, wetlands, or wild and scenic rivers will be affected by the selected action. The selected action will have no adverse effect on the Mount Rainier National Historic Landmark District.

Although construction-related activities will have localized adverse effects on hydrology, water quality, aquatic habitat, and noise impacts on the marbled murrelet and northern spotted owl, the effects will be short-term and will be minimized through design and resource protection measures. The park expects there will be long-term benefits on aquatic resources and habitat from the reduced need for levee repairs and from the change in shoreline characteristics associated with reduced flow velocities. The selected alternative will improve local aquatic habitat conditions to a limited extent by creating pools on the upstream end of each deflector structure, potentially providing rearing habitat and high flow refuge for cutthroat trout. The deflectors will provide limited areas of gravel sorting and deposition on the downstream end of each structure that may promote vegetation establishment and invertebrate production. A decrease in maintenance frequency and duration will reduce construction related noise disturbances adjacent to marbled murrelet and northern spotted owl habitat, a longer-term beneficial effect.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

No controversy surfaced during the environmental analysis or public scoping and review process regarding the effects of the installation of deflectors on the quality of the human environment. Public comments received during public scoping and review of the EA were generally supportive of the retrofit proposal. Where concerns were expressed, they primarily centered on the preference to add engineered logjams to the proposed deflector installation.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The anticipated effects on the human environment of the deflectors, as analyzed in the EA, are not highly uncertain or unique, and do not involve unknown risks. Resource conditions in the project area are well known, and the anticipated physical impacts from implementing the selected action on the human environment, including aquatic resources, special status species and habitat, and cultural landscapes, are understood.

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.

The decision to authorize Pierce County to build deflectors within the park does not establish a precedent for future actions with significant effects. Future amendments to the right-of-way permit within Mount Rainier National Park would require separate consideration by the NPS.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

The EA concluded that the incremental adverse and beneficial impacts of the selected action will not result in significant impacts when combined with past, present, and future activities.

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 or may cause loss or destruction of significant scientific, cultural, or historical resources.

The NPS has determined there would be no loss or destruction of significant scientific, cultural, or historical resources. The selected alternative will have no effect on archaeological resources. The Washington SHPO concurred with the NPS determination that the selected action will have no adverse effect on the Mount Rainier National Historic Landmark District. The selected action will not diminish the scenic quality of the Nisqually to Paradise Road or the National Historic Landmark District compared to the no action alternative, and will potentially improve it.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat.

The marbled murrelet (*Brachyramphus marmoratus*) and the northern spotted owl (*Strix occidentalis caurina*) and their habitat have been documented in the project vicinity. The selected alternative *may affect, is likely to adversely affect the marbled murrelet*. The selected alternative *may affect, is not likely to adversely affect* the northern spotted owl and its designated critical habitat. Potential impacts are due to noise related to construction and activity at the edge of suitable nesting habitat for both species. A decrease in maintenance frequency and duration would reduce construction related noise disturbances adjacent to marbled murrelet and northern spotted owl habitat, a longer-term beneficial effect. The action alternatives would have *no effect* on other federally listed species or their critical habitat.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The selected action does not violate any Federal, State, or local environmental protection laws.

PUBLIC INVOLVEMENT

Public scoping was conducted June 18 through July 9, 2018, on the NPS Planning, Environment, and Public Comment (PEPC) website, prior to publication of the Environmental Assessment. Seven comment letters were received. Five respondents were fully supportive of the project, citing the potential improvement in stability along the levee face, and potential reduction of maintenance. Two letters were received expressing concerns about the addition of rock

deflectors without considering the installation of log jams. The EA provides a summary of public scoping comments.

The EA was made available for a 30-day public review and comment period from October 29, 2018 through November 28, 2018, on the NPS PEPC website. Announcement of the review opportunity was made through news releases issued to news media outlets, and the NPS notified individuals, businesses, organizations, libraries, state, county, and local governments, federal agencies, and culturally affiliated American Indian tribes via letter.

The NPS received three pieces of correspondence in response to the notification of the EA during the review period; the responses reiterated the range of comments submitted during scoping. No new substantive concerns or pertinent environmental information were received. The National Park Conservation Association was the only organization that provided comments. Of the three pieces of correspondence, ten individual comments are included in Attachment B. One individual responded in favor of Alternative B; one individual and the NPCA responded in favor of Alternative C. Responses to questions and substantive comments are provided as Attachment B.

AGENCY CONSULTATION

Washington State Historic Preservation Office

Documents related to the National Historic Preservation Act, in accordance with the Advisory Council on Historic Preservation regulations implementing Section 106 (36 CFR Part 800) were completed and submitted to the Washington SHPO. The NPS has determined that the selected action will have no adverse effect on the Mount Rainier National Historic Landmark District, and requested concurrence from the SHPO on November 27, 2018. The SHPO concurred with this determination in a letter dated November 29, 2018.

U.S. Fish and Wildlife Service

The NPS sent a Biological Assessment for the proposed project to the USFWS on June 15, 2018, requesting formal consultation. Formal consultation was officially initiated on September 13, 2018 after receiving additional information from the NPS. The Biological Assessment contains an evaluation of potential effects to threatened and endangered species. The NPS made the determination that the selected alternative *may affect, is likely to adversely affect* the marbled murrelet, and *may affect, is not likely to adversely affect* the northern spotted owl and its designated critical habitat; and would have *no effect* on other federally listed species or their critical habitat. The USFWS is expected to concur with this determination, and plans to issue a Biological Opinion late March 2019. Resource Protection measures provided in Attachment A include USFWS measures.

FINDING

On the basis of the information contained in the EA as summarized above, the NPS has determined that implementing the Selected Alternative is not a major federal action nor is it an action without precedent or similar to an action that normally requires an Environmental Impact

Statement (EIS). The conclusions of non-significance are supported by the conservation planning and environmental impact analysis completed, and the capability of listed mitigation measures to reduce or eliminate impacts. No adverse effects to cultural or historical resources will occur, and there are no unacceptable impacts. This determination also included due consideration of the minor nature of agency and public comments. Therefore, in compliance with the National Environmental Policy Act, an EIS will not be prepared, and the selected alternative may be implemented immediately.

Recommended:



Palmer Jenkins
Superintendent
Mount Rainier National Park

1/30/2019

Date

Approved:



Stan Austin
Regional Director
Pacific West Region

2/5/18

Date

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ATTACHMENT A
Mitigation Measures to Minimize Environmental Harm

Mount Rainier National Park
Upper Nisqually River Levee Retrofit Environmental Assessment

All mitigation measures will be implemented for the Selected Alternative at Mount Rainier National Park to ensure resource protection, and promote visitor enjoyment.

To prevent and minimize potential adverse impacts associated with the installation of flow deflector structures, best management practices (BMPs) and mitigation measures will be implemented during the construction and post-construction phases of the project.

At a minimum, the project shall comply with the terms and conditions set forth in the ROW agreement (RW 9450-04-09) and 2017 amendment (NPS 2009, 2017). Conditions related to the protection of natural and cultural resources are repeated below:

- In no case shall vegetation of any kind be damaged, disturbed, or destroyed without first obtaining approval from the Superintendent. Any vegetation that must be removed shall be mitigated as specified by the Superintendent.
- Vegetable-based or an approved biodegradable hydraulic fluid will be used in heavy equipment assigned to the project. Spill control kits will be onsite during operations.
- Fallen trees, snags, and other combustible materials occurring during the operation and maintenance of the flood control structure shall be disposed of as detailed in the ROW permit, or as agreed to with the NPS.
- Invasive exotics and noxious weeds shall be controlled using an integrated management approach. All herbicides proposed for use must be approved by the Superintendent prior to use.
- Rock and/or earth material required for repair or maintenance shall be obtained only from sites mutually selected and agreed upon by the Permittee and the Park Superintendent. Rock sources will be certified as weed free, or meet park standards to minimize the potential introduction of invasive plant species to the park.
- Roads or entrance ways will be maintained only in places mutually selected and agreed upon by the Permittee and the Park Superintendent.
- Heavy equipment shall not be used in the river bed without authorization from the Park Superintendent and possession of all applicable County, State, and Federal permits.
- Before entering the right-of-way, the undercarriage of all vehicles and equipment will be cleaned of dirt, mud and other materials, which may contain seeds or other plant parts of invasive exotics and noxious weeds.
- The Permittee will halt any activities and notify the Superintendent upon discovery of threatened or endangered species or archeological, paleontological, or historical findings. All artifacts unearthed remain the property of the park.

In addition, general and resource specific BMPs and mitigation measures for the project are listed below:

Communication with NPS (County and NPS Project Managers, EPS):

- Notify the NPS Project Manager (Engineer) and Environmental Protection Specialist (EPS) to consult on diversion locations and preconstruction meeting(s).
- Notify the NPS Project Manager and EPS of the beginning and ending dates of the project(s). Also include notification of any unexpected problems or any modifications to project implementation. Any decisions made in the field that result in greater impacts than anticipated by the proposed action must undergo additional environmental analysis.
- The Pierce County project manager must provide advance notice to the designated resource advisor/monitor before project begins so the EPS may make arrangements to be on-site during construction in order to monitor activities related to natural and cultural resource mitigation measures.
- Ensure that this project is communicated to affected staff and visitors. Pierce County will provide project information and updates to the NPS, and the NPS will communicate information to the public. Manage the worksite to avoid exposing visitors to hazards during construction.

Visitor Safety and Experience (County and NPS Project Managers, EPS):

- The proposed construction schedule and status of construction will be provided to the park periodically, who will then communicate with the public via a number of outlets: the park website, regional newspapers, radio, entrance stations, visitor centers, news releases, local newspapers, media outlets, postings in local businesses, and via social media.
- The majority of material deliveries will be made and disruptive work will be done during the week, rather than on weekends or holidays. Work adjacent to the Nisqually Road (easternmost end of the project) must occur during weekdays. Construction workers and park staff will wear appropriate protective gear such as hard hats and safety vests, gloves, and goggles to protect themselves when working in the construction zone. This project will be compliant with all federal, state, and local requirements and in accordance with Occupational Safety and Health standards pertaining to employee or worker safety.
- Visitors will not be allowed in the construction zone.

General Construction Measures (County and NPS Project Managers, EPS):

- Construction limits, including the staging area and parking areas, will be clearly marked prior to the beginning of work. Temporary construction fencing will only be installed where determined necessary by the NPS. As currently designed, the project will stage on the levee during construction.
- All tools, equipment, barricades, signs, surplus materials, and rubbish will be removed from the project work limits upon project completion.
- Preserve existing geodetic survey markers.
- Equipment (for example, excavators) will not be allowed to idle longer than 15 minutes. Motor vehicles will not be allowed to idle and must be turned off when not in use.
- Construction debris will be hauled from the park to a licensed disposal location. Debris will not be disposed of in the park.
- Vegetation will not be disturbed. Temporary stockpiling of materials and equipment will be in approved staging areas.

Cultural Resources (Project Managers, EPS, Archaeologist):

- In the event of the inadvertent discovery of historic properties such as archaeological resources, suspected human remains, funerary objects, sacred sites, or objects of cultural patrimony, the park archaeologist and Superintendent will be notified immediately. The park will follow their Archaeological Inadvertent Discovery Plan approved by the SHPO. Work in the affected area(s) would stop immediately until the historic properties are reviewed by the park. As appropriate, consultation with the Washington Department of Archaeology and Historic Preservation and any affected Native American tribes would also take place regarding disposition of affected artifacts and remains. During consultation, reasonable measures will be taken to protect the discovery site, including any appropriate stabilization or covering, to ensure the confidentiality of the discovery site and to restrict access to the discovery site.
- Historic buildings and landscapes will be protected by following the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Aquatic and Riparian Resources (Project Managers, EPS, Aquatic Ecologist):

- Construction will occur during the fish window, July 16-September 30, and completed no later than October. Staging may occur outside of the park boundary prior to July 16. Staging may occur within the park in consultation with the NPS prior to July 16.
- A Hazardous Spill Plan or Spill Prevention, Control and Countermeasures Plan, whichever is determined appropriate, will be in place, stating what actions will be taken in the event of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials. The plan will be submitted prior to the beginning of construction work as specified in the permit terms and conditions.
- In water work will be restricted to the fish window identified by the Washington State Department of Fish and Wildlife, which is July 16 to September 30 for the upper Nisqually River, upstream of Alder Dam.
- Instream work, including diversion of flow, and work within the ordinary high water mark will comply with the Washington State Hydraulic Code (WAC 220-070).
- Use of wood or altering the configuration of wood within the floodplain will require consultation with the NPS. Large wood situated on top of gravel bars, above the ordinary high water mark (OHWM) and not embedded may be considered for project use. Acquisition of wood on the floodplain may require river crossings, which will also need to be minimized and located in consultation with the NPS and consistent with the HPA issued by the Washington State Department of Ecology (for activities in state waters), and the Clean Water Act Section 401 and Section 404 issued by the Washington State Department of Ecology (WDOE) and the Army Corps of Engineers (USACE), respectively.
- A mutually agreeable water quality monitoring plan shall be developed and implemented before, during and after construction activities by Pierce County and results submitted to the NPS in the form of a report. If water quality does not meet WDOE standards at any time during project implementation, and in addition to complying with the terms of the WDOE section 401 permit, notify the NPS immediately, and determine and remedy the cause.
- The project shall implement applicable technical provisions for bank protection projects (WAC 220-110-050) and channel change/realignment (WAC 220-110-080).

- A diversion and fish removal plan shall be developed and approved by the NPS in advance of the project. The diversion plan will be consistent with (WAC 220-110-080).

Soundscapes (County and NPS Project Managers, EPS):

- All motor vehicles and equipment will have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise.
- Sound attenuation devices (such as rubber strips or sheeting) will be installed and maintained on all equipment.
- Use of unmuffled compression brakes will be prohibited within park boundaries.
- Use of air horns within the park will not be allowed except for safety.

Wildlife and Federally Listed Species (Project Managers, EPS, Wildlife Ecologist):

- Any roadkill or wildlife collisions will be reported to the park immediately.
- Feeding or approaching wildlife is prohibited.
- The park wildlife ecologist will be notified if bears or foxes loiter in the project area.
- A litter control program will be implemented during construction to eliminate the accumulation of trash. All food items will be stored inside vehicles, trailers, or wildlife-resistant receptacles except during actual use to prevent attracting wildlife.
- Noise-generating activities will be performed between two hours after sunrise and two hours before sunset to minimize impacts to marbled murrelets from April 1 through September 23.
- Night construction work is not allowed within the park boundary.
- Northern spotted owl surveys are ongoing, and the park may provide specific locations of owl territories. Exclusion zones will be based on the most recent information available and may change within a season as new information is gained. Currently there are no known spotted owl nest sites adjacent to the project area.
- Additional measures listed in the USFWS Biological Opinion will be added to this list.

Invasive Species management (Project Managers, EPS, Plant Ecologist):

- Rock, earth materials, native seed and/or plants, and erosion control measures (such as mulch) required for repair or maintenance of the levee shall be obtained only from sites mutually selected and agreed upon by Pierce County and the Park Superintendent. Materials shall be certified to be weed free according to North American Weed Management Association (NAWMA) standards and/or inspected by a park representative.
- All vehicles and equipment will be cleaned off prior to operating on NPS lands.
- Noxious weeds in the immediate area of mechanical operations shall be mowed to ground level prior to the start of project activities.
- All equipment and vehicles operating off of main roads shall be cleaned off prior to leaving the job site when the job site includes noxious weed populations.
- Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts is required and may be accomplished with a pressure hose.

Revegetation (Project Managers, EPS, Plant Ecologist):

- Apply excess sediment from deflector and ELJ excavation above OHWM on structures or on the levee, adjacent to structures.
- Pierce County will revegetate the levee adjacent to Sunshine Point according to the newly added ROW (2017). The NPS is seeking funding to revegetate the levee within the 2009 ROW permit boundary.

ATTACHMENT B Comments and Responses

Mount Rainier National Park Upper Nisqually River Levee Retrofit Environmental Assessment

1. There is no reference in the EA that climate change is one of the reasons for this needed action. We would like to see more specific acknowledgement of the anticipated climate change impacts at MORA and how various actions help the park adapt to anticipated changes.

The NPS acknowledges that climate change impacts have resulted in the current state of the park's rivers and streams, briefly discussed on page 20 of the EA. A discussion of anticipated climate change impacts at MORA and how various actions help the park adapt to anticipated changes is beyond the scope of this EA.

2. We support maintaining and improving protection of the Nisqually River levee through incorporating engineered logjams made of locally sourced or salvaged wood from native tree species. This approach would create fish habitat and make the levee more natural in appearance.

Under natural conditions this river would be lined with downed logs and brush, which would provide a variety of water flow conditions, shade and habitat for native fish and wildlife. Thus, ELJs would also provide a more historic and natural look for visitors to the park than a rock wall with manufactured deflectors, as presented in the engineering documents on the park's project website.

The NPS agrees that logjams have the potential improve conditions ecologically and aesthetically along the levee face; however, ELJs as an alternative to deflectors was dismissed (see page xx of the EA). The park may consider adding ELJs at a future date if the proposal is prioritized. The proposal would require a new analysis of the configuration of the river and floodplain, considering the functioning of the deflectors at that time. Approximately half of the deflectors incorporate large wood, most of which will be placed at the east end of the levee where they would be most visible from the Nisqually to Paradise Road, which will provide some improvement to habitat conditions over the existing condition.

3. Page 10 Alternative B, installation of deflectors with large wood. The detailed description of this alternative is vague and unclear regarding use of wood in the structures and which one would actually have this design feature.

Seven of the thirteen deflectors within the park boundary would incorporate large wood. Most would be placed at the east end of the levee. Figure 6 displays a deflector with integrated large wood.

4. Unfortunately this EA does not appear to update, address conclusions of, or analyze the recommendations in the ENTRIX report. Please refer to the background material/excerpts from report below as it seems critical in determining where to locate any ELJs if all, or a portion of Tahoma Creek were to avulse into the current side channel between the Nisqually to Paradise Road and main Nisqually River channel. This was a concern identified in the ENTRIX report. The geographic location of the old Sunshine Point Campground should be critical to decision makers based on hydrologic analysis, geomorphic assessment and hydraulic modeling from both Tahoma Creek and the Nisqually River that may contribute to increased vulnerability or protection to downriver assets.

Updating and addressing conclusions of, or analyzing recommendations in the ENTRIX report was beyond the scope of this EA. The NPS agrees the factors listed will be necessary for an updated ELJ design.

5. "The ELJs constructed under Alternative C would add to the impacts of Alternative B, and may add to the potential for increasing flood elevations locally." Can staff quantify how much potential there is for increasing flood elevations locally?

The amount of change in flood locally would depend on the amount of introduced rock ballast (original county proposal), and would depend on more detailed analysis and final design.

6. Only one conceptual design for ELJs is illustrated in the EA on Figure 8 - Typical design of Flow Deflection Engineered Log Jams (ELJs) on page 44-8. What analysis or decision making was made for this typical design based on the ENTRIX report, Appendix E - Draft Conceptual Alternative Plans Pages 144-149 and 152-154 (Options A-C)?

The typical design was based on the Entrix report, which was the same design as the typical for the Carbon River logjam. The final design would likely require rock or similar ballast to resist the forces at that location. The primary reason for using the option B as a model in the EA was due to the fact that the position of ELJs in Option A, the preferred alternative in the 2009 ENTRIX report, would interfere with the deflector design. A future project may adjust this based on updated modeling and analysis, and consider river and floodplain configuration, and potential for avulsion into the channel that flows through the campground.

7. Page 13-16. Resource Protection Measures and Best Management Practices. The EA makes no mention of County managing fish removal in the park. However, see Figure 4. Alternative B, proposed deflectors plan view on pages 40-4. Figure 4 - General Notes #3-4 references County responsibility for fish removal. Is the park delegating all its fisheries biology responsibilities to the County for this project? It seems the park should have some oversight.

The NPS will have oversight responsibility of fish removal and all aspects of work within the park. See the resource protection measures.

8. Page 21-22. Alternative A and B refer to Figure 9. HEC-RAS modeling of the Nisqually River along the levee showing velocity of flow before and after deflector installation (Pierce County 2016) on page 45-9. However, there is no similar modeling for shown for Alternative C.

Figures 12 and 13 show modeling with deflectors and logjams, and with logjams only.

9. The ENTRIX report (see Appendix F: Preliminary Draft Class C Cost Estimates for Site Alternatives) cost estimates are now ten years old. When the implementation of Alternative C may occur, if selected, is vague due to uncertainty of funding. The timeline for funding is outlined differently in separate places in the EA. "The engineered log jams would be a separate NPS project constructed during a different year, after the installation of the deflectors, when funding has been secured," page 12. "Alternative C would require an additional season of instream work that would likely occur two or more years after implementation of Alternative B," page 24. "The primary difference between alternatives B and C is that implementation of alternative C would require construction during a second year, separated from the deflector construction by two to five years depending on availability of funding," page 29.

All statements are intended to reflect timing of construction, and are true and not in conflict: if the NPS decides to fund the construction of log jams, ELJs or other design would require an additional season of construction that is most likely to occur two or more years after implementation of Alternative B. At this time, funding is not expected within five years unless park priorities change.

