

**Quillayute River Restoration – Reach 3
ENVIRONMENTAL ASSESSMENT**

PREPARED FOR THE QUILEUTE TRIBE

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Quillayute River Restoration Reach 3 Environmental Assessment

Proposed Federal Actions:	The Quileute Tribe has been awarded federal and state funding to construct a habitat restoration and bank stabilization project on the Quillayute River. The proposed project would take place partly on Tribal Trust Indian land and partly within Olympic National Park. The proposed project is considered a federal action and must comply with the National Environmental Policy Act (NEPA), which requires the preparation of an Environmental Assessment (EA). The National Park Service (NPS) is the lead federal agency, and the Bureau of Indian Affairs (BIA) Northwest Region and the Natural Resources Conservation Service (NRCS) are cooperating agencies.
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Abstract:	<p>This EA evaluates the potential environmental impacts associated with constructing large wood structures and high-flow pilot channels on the banks and floodplain of the Quillayute River between river miles 1.7 and 2.9. The project would redirect river flows and reduce the potential for an avulsion from the Quillayute River, protect streambanks from erosion at a culturally important site, improve salmonid habitat for both juveniles and adults, address low-flow fish passage conditions, and provide sustainable and improved access to the river for tribal fishermen and fish buyers.</p> <p>The project would involve material hauling (e.g., logs, gravel, rock), floodplain excavation, large wood structure construction, gravel parking lot improvements, and site restoration. The construction would employ best management practices to ensure the protection of protected resources.</p>

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LIST OF ABBREVIATIONS AND ACRONYMS

BIA – Bureau of Indian Affairs
BMP – best management practice
BO – Biological Opinion
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
cfs – cubic feet per second
CY – cubic yards
DAHP – Department of Archaeology and Historic Preservation
DBH – diameter at breast height
EA – Environmental Assessment
Ecology – Washington State Department of Ecology
EFH – essential fish habitat
EO – Executive Order
EPA – U.S. Environmental Protection Agency
ESA – Endangered Species Act
ESC – erosion and sediment control
FHWA – Federal Highways Administration
HPA – Hydraulic Project Approval
LF – linear feet
NEPA – National Environmental Policy Act
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
NPS – National Park Service
NRCS – National Resources Conservation Service
OHWM – ordinary high water mark
QNR – Quileute Natural Resources
RV – recreational vehicle
SEC – Special Environmental Concern
SPCC – Spill Prevention, Control, and Countermeasure
USACE – U.S. Army Corps of Engineers
U.S.C. – United States Code
USCG – U.S. Coast Guard
USFWS – U.S. Fish and Wildlife Service

WA-110 – Washington State Highway 110

WDFW – Washington Department of Fish and Wildlife

1. PURPOSE AND NEED

1.1 Introduction

The Quileute Tribe of the Quileute Reservation (hereinafter, “Quileute Tribe”) is planning a series of river restoration projects to address environmental and economic threats on and off reservation lands and to provide benefits to the tribal community. These projects were identified in a recent planning process that involved a geomorphic assessment, alternatives analysis, and action plan for the Quillayute River (Tetra Tech 2020a). The focus of this Environmental Assessment (EA) is a high-priority project, referred to as Reach 3, that would construct large wood structures and excavate high-flow side channels on the banks and floodplain of the Quillayute River between river miles 1.7 and 2.9 in Sections 22 and 23, Township 28N, Range 15W (Figure 1).

The Reach 3 project is located on a portion of the Quileute Tribe’s reservation lands on the south side of the river at a vital point known as Thunder Field, and a portion of Olympic National Park on the north side of the river. Project funding is through the Quileute Tribe and includes financial contributions from the National Fish and Wildlife Foundation and the Washington Coast Restoration and Resilience Initiative. In addition, the Natural Resources Conservation Service (NRCS) intends to provide federal funding via the Environmental Quality Incentives Program. This project is considered a federal action (40 Code of Federal Regulations [CFR] 1508.1(q)(2-3)) and, as such, must comply with the National Environmental Policy Act (NEPA) and associated regulations (40 CFR 1500-1508, 43 CFR 46). The National Park Service (NPS) is the lead agency of the NEPA review process for this project. Both the Bureau of Indian Affairs (BIA), acting on behalf of the Quileute Tribe, and the NRCS are acting as cooperating agencies.

This document has been prepared in accordance with NEPA (42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500-1508), the NPS 2015 NEPA Handbook (NPS Director’s Order 12), and the BIA NEPA Handbook (59 Indian Affairs Manual 3-H).

1.2 Project Area Description

The Reach 3 project includes the banks and floodplain of the Quillayute River between river miles 1.7 and 2.9, near the village of La Push, on the west coast of the Olympic Peninsula in Washington State (Figure 1). The Quillayute River is fed by four major tributaries (Dickey River, Sol Duc River, Bogachiel River, and Calawah River) and has a total watershed area of 627 square miles. La Push is a small community within Quileute Tribe reservation lands that includes the tribe’s essential government facilities, the Quileute Resort, a wastewater treatment plant, tribal businesses, more than 30 residences, a marina, and a U.S. Coast Guard (USCG) station.

Notable physical features within the area include two meander bends of the Quillayute River, the laterally migrating riverbanks and point bars, the forested floodplain on both sides of the river, and tidally influenced Smith Slough (Figure 2). Thunder Road is a 1.2-mile-long gravel-surfaced road that leads from the village of La Push to Thunder Field, a vital access point along the left bank of the Quillayute River used for tribal fishing access, hunting, gathering, ceremonies, and recreation. Mora Road runs along the north side of the river, and provides public access to Olympic National Park at Mora Campground and Rialto Beach. Mora Road is also an important access route to tribal land north of the Quillayute River, and it facilitates dredging and jetty maintenance activities that are critical for the safety of La Push and the continued operation of the marina and USCG station.

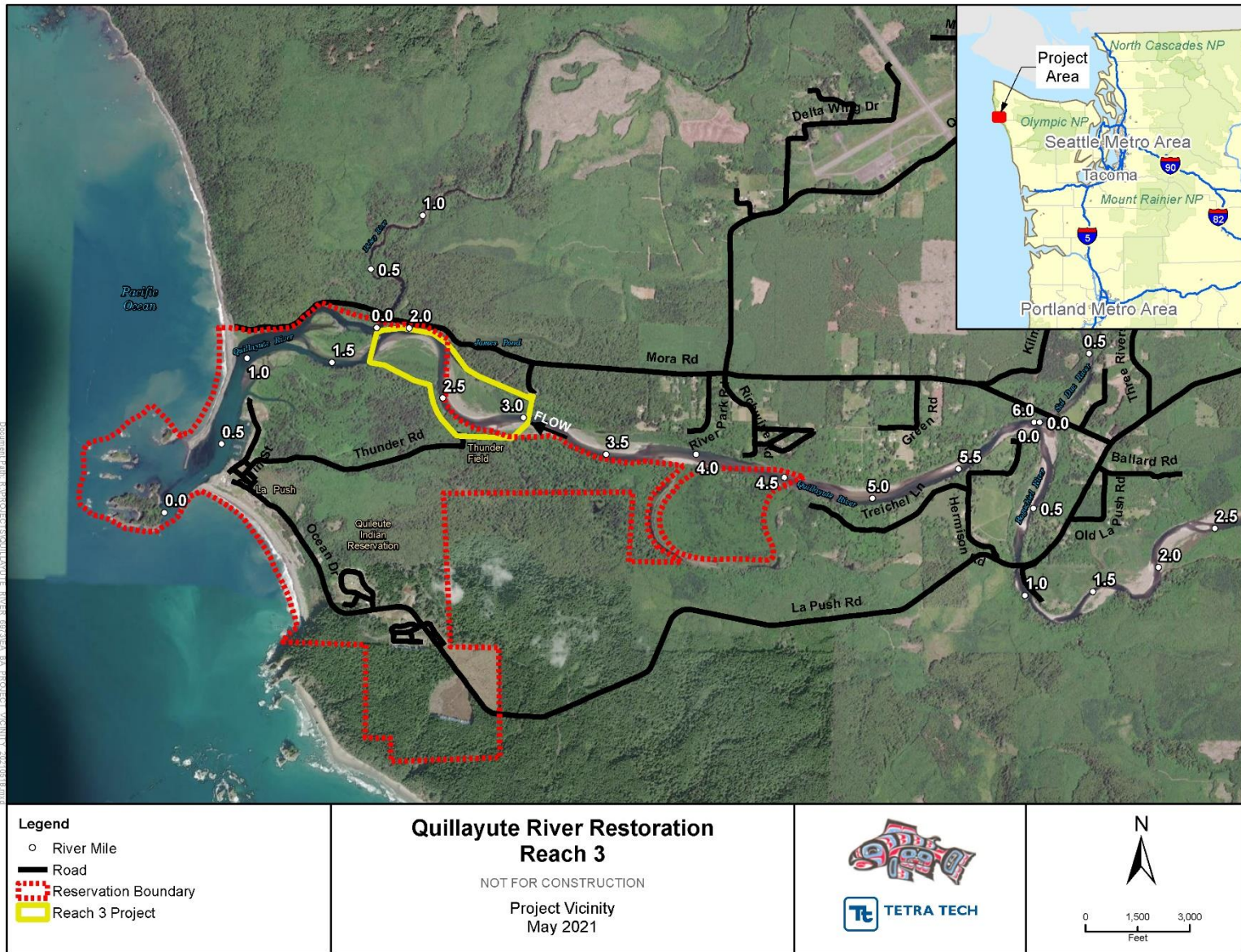


Figure 1. Project Vicinity

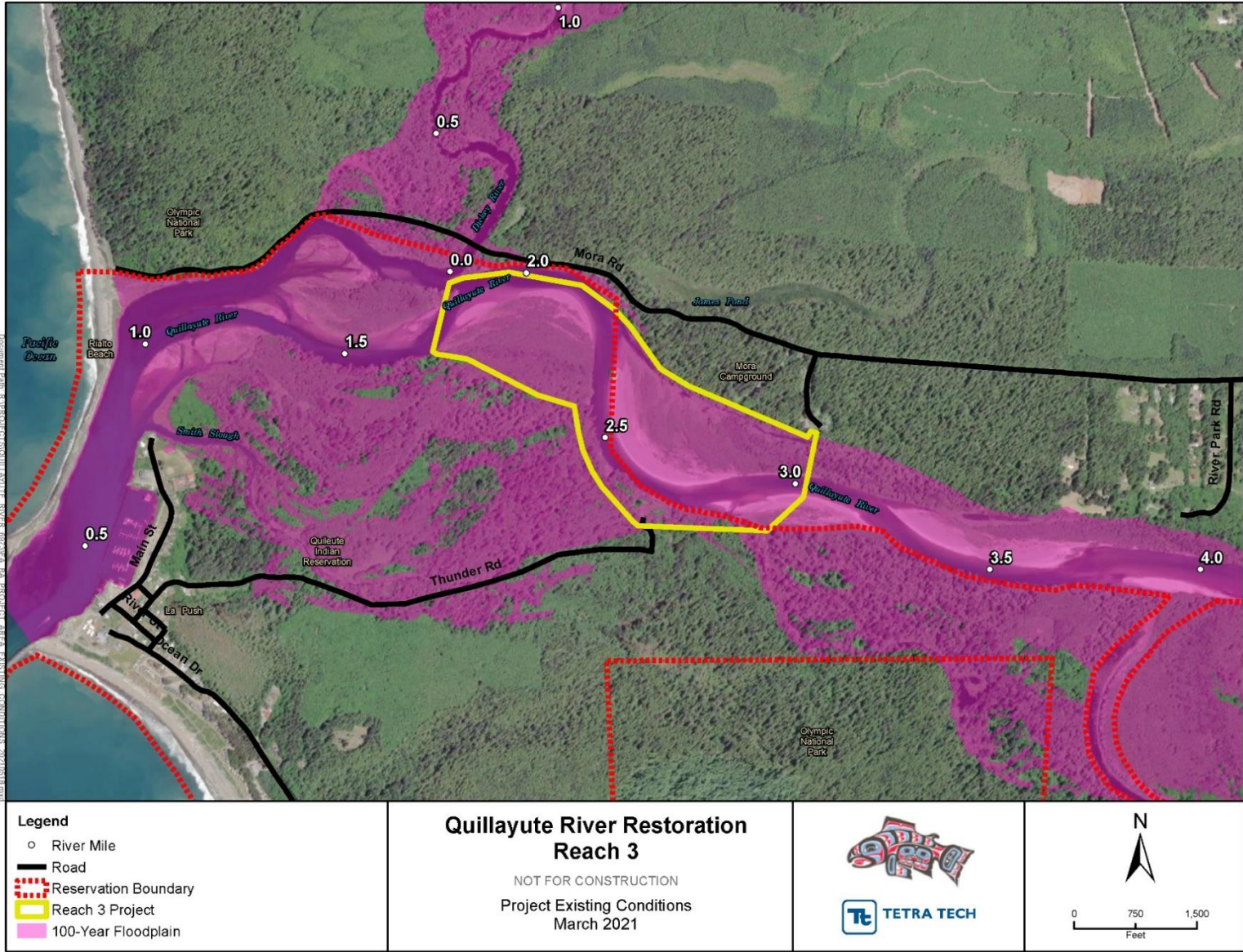


Figure 2. Reach 3 Existing Conditions

The floodplain forest is a patchwork of mixed conifers in the drier upland areas, stands of red alder in the wetter lowland areas, and a small amount of open prairie and wetlands. Timber within the mixed conifer areas consists of approximately 50-year-old hemlock and scattered Sitka spruce that are approximately 70 to 90 years old. On higher terraces near the Reach 3 project, such as in the Mora Campground, trees are estimated to be several hundred years old. Riparian plant communities reflect the dynamic nature of geomorphic processes in this reach of the Quillayute River. In areas of active bank erosion, relatively large trees are adjacent to the river, whereas newly formed point bars are colonized with a relatively young age-structured vegetation community. Upland areas on the reservation that have been identified for construction staging are currently forested but have been approved for clearing and development as part of the Quileute Tribe's Move To Higher Ground project (Pacific Forest Management, Inc. 2017).

1.2.1 Purpose and Need

The village of La Push and much of the surrounding reservation lands are susceptible to a variety of threats posed by natural events (Oregon Climate Change Research Institute 2016; Tetra Tech 2020a). Due to its location on the Pacific Coast, the village is within tsunami and liquefaction hazard zones. Additionally, flooding driven by both river flow and tidal conditions is common and is anticipated to worsen under modeled climate change scenarios. Significant lateral channel migration in Reach 3 has reduced the area of Thunder Field and increased the risk of a major avulsion into Smith Slough that would threaten infrastructure and the safety of residents (NRCS 2015).

Fishing is an important cultural activity as well as a source of food and income for tribal members. While many salmon stocks in the Quillayute River are relatively healthy compared to others in the region, wild populations have declined significantly from historic levels, and aquatic habitat within the drainage has been degraded due to 150 years of human activities such as logging, road building, and other development.

With these threats in mind, the Quileute Tribe's long-term goals for actions on the Quillayute River are to: 1) improve community safety for the village of La Push, 2) enhance salmonid habitat, 3) attenuate flooding and control erosion, 4) improve access for tribal fishermen, 5) protect and maintain access to culturally important land, and 6) improve long-term climate resiliency. The tribe's Action Plan (Tetra Tech 2020a) identified project opportunities throughout the entire mainstem Quillayute River that would help meet these goals. Opportunities were compiled into conceptual alternatives that underwent a prioritization process that considered stakeholder input and potential benefits and constraints. This ultimately led to the refinement of a preferred alternative and a strategy for the phased implementation of multiple projects over sequential years, based on available funding and adjacent landowner willingness.

Reach 3 was identified as the highest priority for implementation, and the Quileute Natural Resources (QNR) has advanced the design to the 60 percent level (Tetra Tech 2020b). The proposed action has the following objectives:

- Install fish-friendly structures and features to redirect flows.
- Reduce the potential for an avulsion from the Quillayute River.
- Provide fish-friendly streambank protection to reduce erosion and detour lateral bank recession.
- Ensure designs do not negatively impact fishing on the Quillayute River.
- Increase salmonid habitat for both juveniles and adults.
- Address low-flow fish passage conditions.

- Provide ways for fishermen and fish buyers to access the Quillayute River while not impacting other objectives.
- Ensure designs do not negatively impact infrastructure, visitor access, or natural conditions within Olympic National Park.

Thus, the purpose of this action is to meet the objectives established for Reach 3, which are designed to address the needs identified in the long-term goals of the action plan. The need is for improved community safety, salmonid habitat, flooding and erosion control, river access, and climate resiliency. The proposed action has the potential to benefit a wide range of resources on both the Quileute Reservation and within Olympic National Park. These effects are analyzed in Section 3 of this EA.

1.2.2 NEPA Determination Process

The NPS, along with the BIA and the NRCS as cooperating agencies, will review this EA to determine whether the proposed project would result in any significant impacts to the human environment. If there are no significant impacts, the NPS Regional Director (Interior Regions 8, 9, 10, and 12), will issue a Finding of No Significant Impact and the NEPA process will be complete. If there is a likelihood that significant impacts would occur, then an Environmental Impact Statement would be prepared, and additional analysis and public review would be completed prior to the NPS issuing a Record of Decision.

1.2.3 Consultation and Coordination with Other Agencies

Under NEPA, the lead agency must coordinate with other federal agencies and provide an opportunity for public involvement. The project must also comply with other relevant federal regulations identified in Table 1. All proposed activities would occur on NPS or Quileute Reservation lands; therefore, the project is exempt from many state and local regulations such as Clallam County shoreline, floodplain, and critical area ordinances; Washington State Environmental Policy Act review; and Washington Department of Fish and Wildlife (WDFW) Hydraulic Project Approval (HPA). The project would be consistent with Quileute Tribal laws and regulations and would require review by the Quileute Tribal Council and QNR. The project would be also consistent with the Olympic National Park General Management Plan (NPS 2008) and Executive Order 11988 on Floodplain Management.

Table 1. Anticipated Authorizations and Permits Required for the Project

Authorization	Agency
Clean Water Act (CWA) Section 404	USACE
Rivers and Harbors Act Section 10	USACE
CWA Section 401	EPA (Tribal Lands) Ecology (NPS Lands)
Endangered Species Act (ESA)	NMFS USFWS
Magnuson-Stevens Fishery Conservation and Management Act	NMFS
Marine Mammal Protection Act	NMFS
National Historic Preservation Act Section 106	DAHP

USACE = U.S. Army Corps of Engineers
 EPA = U.S. Environmental Protection Agency
 Ecology = Washington State Department of Ecology

NMFS = National Marine Fisheries Service
 USFWS = U.S. Fish and Wildlife Service
 DAHP = Washington Department of Archaeology and Historic Preservation

The following outreach and coordination actions have been completed or are underway:

- The Quileute Tribe has hosted monthly stakeholder meetings since June 2020. The group known as the Quillayute River Restoration Working Group includes representatives from the BIA, NPS, National Marine Fisheries Service (NMFS), NRCS, U.S. Army Corps of Engineers (USACE), USCG, WDFW, Federal Highways Administration (FHWA), and others.
- Informal ESA Section 7 Consultation began in May 2021, with the submittal of a draft Biological Assessment to the U.S. Fish and Wildlife Service (USFWS) and NMFS. The decision document will provide the final terms and conditions provided by the USFWS and NMFS and other relevant project consultations.
- A Cultural Resources review was submitted to the Washington Department of Archaeology and Historic Preservation (DAHP) in June 2021. A copy of the letter to DAHP is included in Appendix A.
- A Joint Aquatic Resources Permit Application was prepared and will be submitted to the USACE and the U.S. Environmental Protection Agency (EPA). Pre-filing notifications for Section 401 Water Quality Certification were submitted to the EPA and the Washington State Department of Ecology (Ecology) on January 21, 2021 and March 16, 2021, respectively. A pre-filing meeting occurred with EPA on January 28, 2021.
- Several agencies have provided technical support to aid in addressing a variety of issues and impacts associated with the Reach 3 project. These agencies include the BIA, NPS, NRCS, USFWS, NMFS, and WDFW.
- NRCS provided the following assistance to the Quileute Tribe: An erosion study (NRCS 2015), engineering review of hydrologic modeling, risk assessment, conceptual engineering design, and preliminary engineering design. In addition, the NRCS provided review and comment on consultation documents related to Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act, and the Magnuson-Stevens Fishery Conservation and Management Act.

2. ALTERNATIVES AND THE PROPOSED ACTION

The alternatives considered in this EA include 1) a no-action alternative that represents the continuation of current environmental trends at Reach 3, and 2) a proposed action alternative that represents the implementation of the Reach 3 restoration design that was developed as the preferred alternative during the Quileute Tribe’s planning process. A description of the planning process and alternatives that were considered but dismissed is provided in the geomorphic assessment (Tetra Tech 2020a).

2.1 No Action Alternative

In the No Action Alternative, the project activities described in the Proposed Action (Section 2.2) would not be implemented, and the Quillayute River at Reach 3 would remain as described in the Existing Conditions sections of this EA (Section 3). Large wood structures would not be built, and floodplain excavation would not occur. Impacts to vegetation, soils, wildlife, and other resources due to staging and temporary access routes would not be necessary. Lateral migration of the river would likely continue at current rates, and a significant portion of Thunder Field would eventually be lost to erosion. Geomorphic processes could also indirectly affect areas downstream; for example, leading to continued bank erosion along Mora Road. The increased risk of a major avulsion into Smith Slough that would threaten infrastructure and the safety of residents in the lower village of La Push would continue. Habitat features that have been identified as lacking in the Quillayute River would not be restored or enhanced on either the reservation or Olympic National Park lands. This alternative would not meet the purpose and need defined by the Quileute Tribe.

2.2 Proposed Action Alternative

In the Proposed Action Alternative, several large wood structures would be installed on the banks and floodplain on both sides of the river to provide bank protection, flow redirection, and habitat features (Figure 3). These structures would be built using combinations of whole trees (at least 45 feet long and 30 inches diameter with 6-foot minimum diameter rootwads and branches attached), large logs (at least 45 feet long and 30 inches diameter with 6-foot minimum diameter rootwads), cross members (at least 45 feet long and 30 inches diameter with optional 6-foot-diameter rootwads), medium logs (at least 20 feet long and 18 inches diameter), timber piles, boulders, native alluvium, and rack material. Best management practices (BMPs) associated with any clearing and development with woody materials are discussed as part of the Quileute Tribe’s Move To Higher Ground project Environmental Assessment (Pacific Forest Management, Inc. 2017). Structure types include the following:

- A revetment log structure intended to inhibit bank erosion at Thunder Field and resist a mainstem avulsion into Smith Slough (Figure 4). The revetment log structure would also provide improved aquatic habitat complexity and stabilize the improved walkable fishing access area (described below). The structure would be placed tight to the bank to ensure it does not inhibit the placement of fishing nets.
- A deflector structure placed along the bank downstream of the revetment log structure to protect the eroding streambank and create pool habitat (Figure 5). The location and dimensions of the deflector structure have been designed to not inhibit the placement of fishing nets.

- Large apex structures placed where flow splits are desired to encourage high flows onto the floodplain and into excavated pilot channels (Figure 6). These structures have been designed and located to not inhibit the placement of fishing nets and have been evaluated for bumper logs to ensure boater safety.
- Large deflector structures placed at key locations along the banks to redirect stream energy away from eroding stream banks and to create complex pool habitat (Figure 7). Large deflector structures would be placed at the downstream extent of side channels and would provide complex alcove habitat. The locations and dimensions within the wetted channel have been designed to minimize impacts to the placement of fishing nets, while still effectively redirecting stream energy away from eroding banks.
- Floodplain log structures, which would maintain the alignment of high flow channels, increase floodplain connection, and provide habitat complexity and diversity (Figure 8). These structures would also be placed adjacent to the large apex structures at the inlet of the floodplain connections at the upstream extent of the site as well as adjacent to the two downstream large apex structures to increase habitat complexity and diversity at those locations. The locations and dimensions of floodplain log structures have been selected to avoid inhibiting the placement of fishing nets.

A 20-foot-wide improved walkable fishing access area that allows tribal fishermen to hand-launch small boats would be constructed in the revetment log structure by placing timbers and boulders in a stair-step configuration (Figure 4). Excavation on the floodplain would be used to create pilot channels that would work in conjunction with the apex structures and floodplain log structures to initiate side channels that activate at high flow (Figure 8). Existing trees less than 24 inches in diameter at breast height (DBH) within the footprint of the pilot channels would be tipped over with root wads intact and used in place to supplement the floodplain wood supply; larger trees, if encountered, would not be felled. The 100-foot-by-50-foot parking area at the terminus of Thunder Road would be improved with added base material, grading, and better drainage. Finally, a vehicle barrier consisting of a series of large boulders would be constructed to keep vehicles from approaching the riverbank.

Construction access to Reach 3 would be via existing paved and gravel roads (i.e., La Push Road, Thunder Road, and Mora Road), as well as temporary access routes across the floodplain (Figure 9). Temporary bridges would be used as needed to avoid sensitive aquatic areas; for example, to drive equipment from the Mora Campground down to the floodplain across the linear wetlands at the toe of the slope. Additional opportunities for the delivery of equipment and materials include barge and helicopter. Multiple staging areas have been identified, some of which utilize existing cleared areas and others that would require vegetation clearing. Helicopter operations to deliver wood to the floodplain staging areas are expected to require a large helicopter, such as a Chinook 234, for approximately 3 days, which would occur consecutively barring weather or other unforeseen issues.

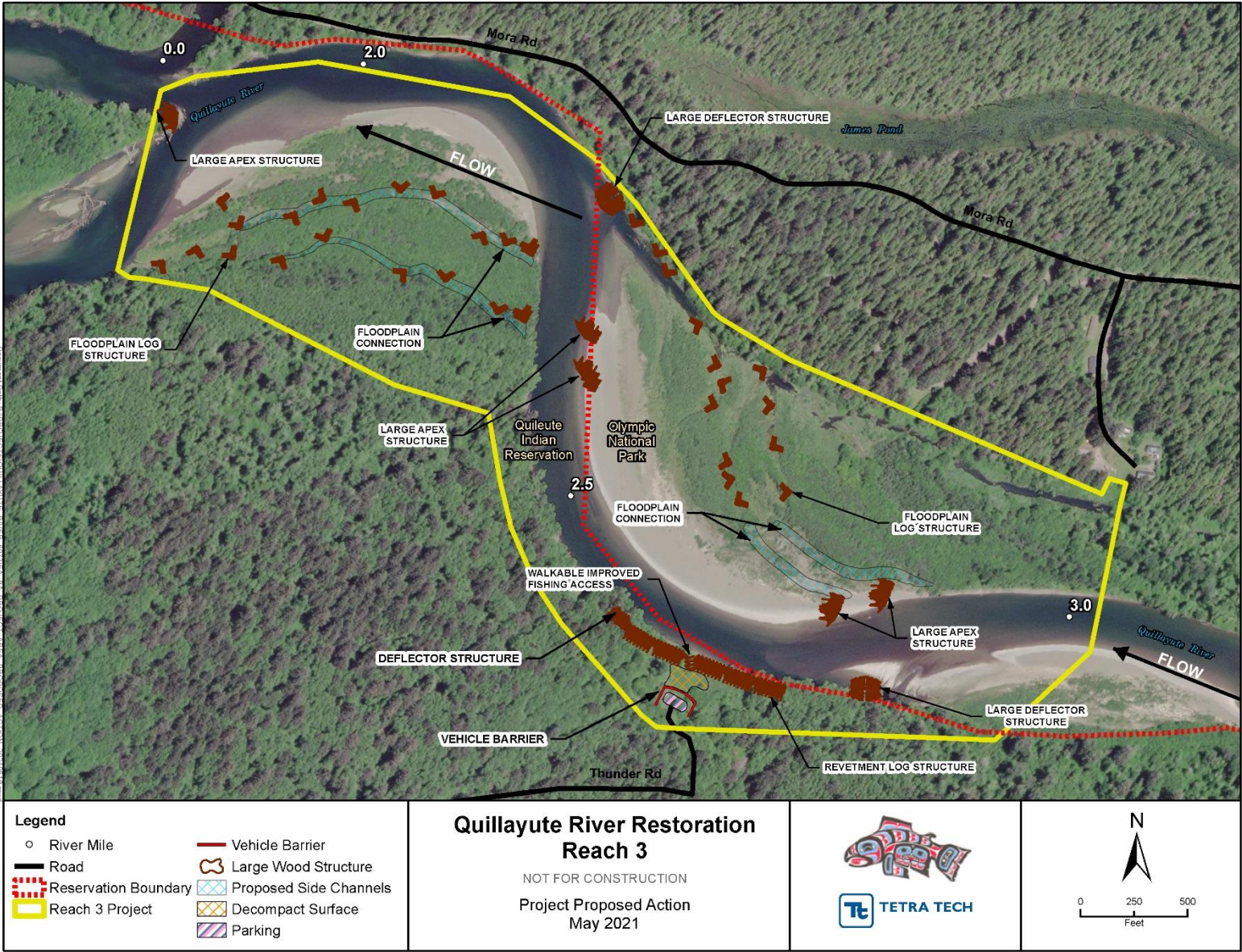


Figure 3. Proposed Restoration Design Elements



Figure 4. Revetment Log Structure and Improved Walkable Fishing Access



Figure 5. Deflector Structure



Figure 6. Large Apex Structure

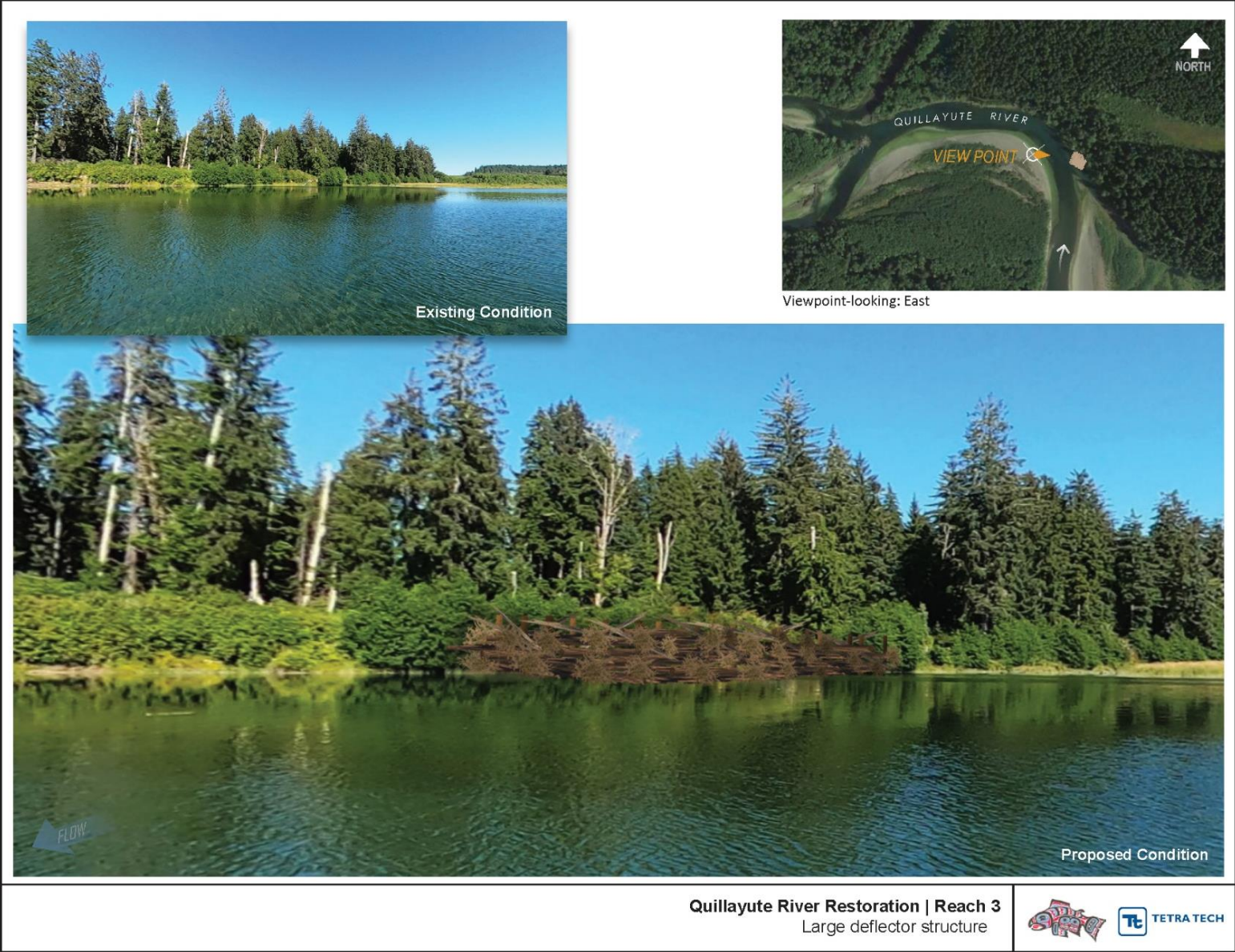


Figure 7. Large Deflector Structure



Figure 8. Floodplain Log Structure and High Flow Channel

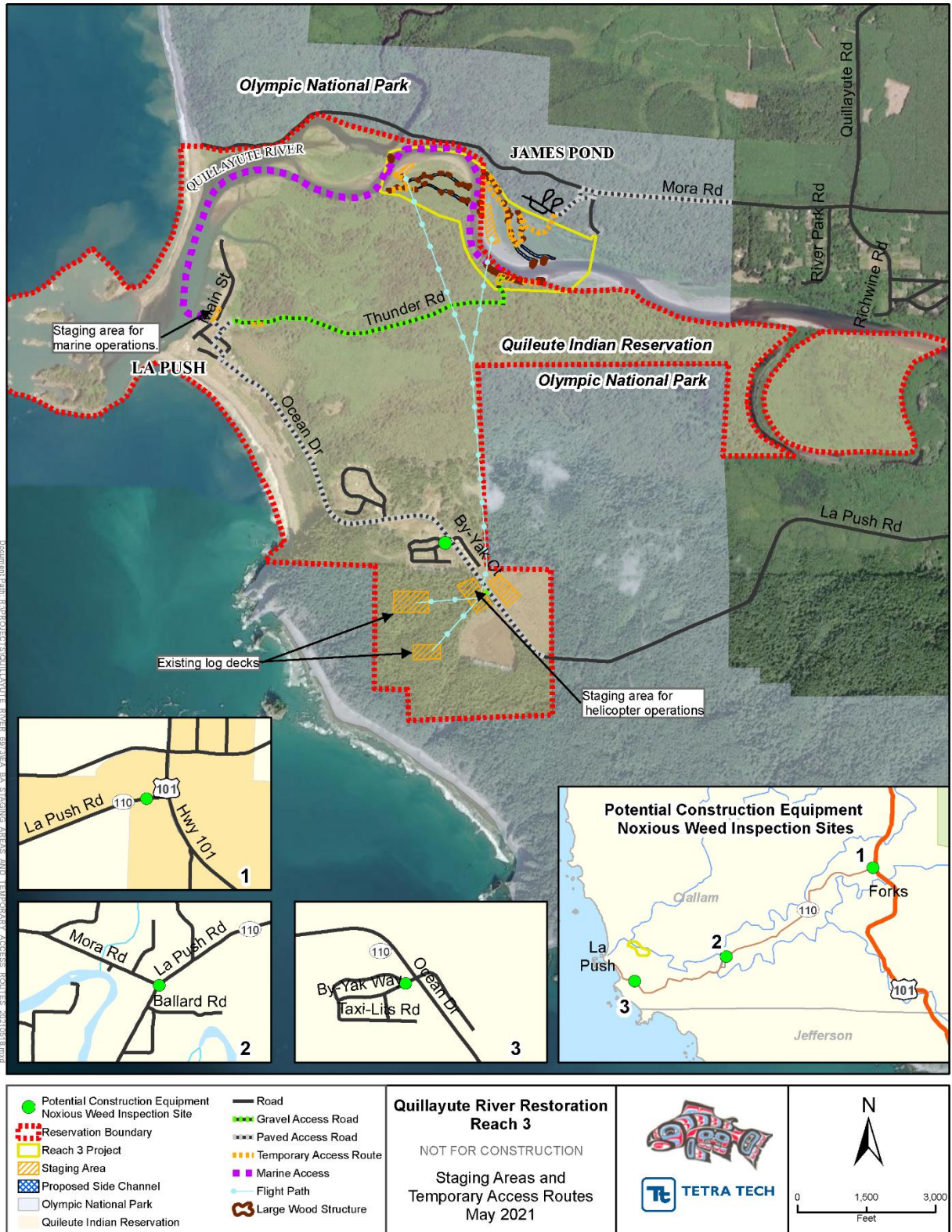


Figure 9. Staging Areas and Temporary Access Routes

Construction is proposed to occur in 2022, with the potential for additional construction and final revegetation in 2023 based on environmental factors, construction sequencing, or other constraints. Post-project monitoring as defined in the Quileute Tribe’s grant commitments would continue for at least 3 years following completion. Monitored elements would include groundwater temperature and flux, vegetation cover, water levels, and elevation. During this time period, the methods proposed for monitoring would require the installation and maintenance of semi-permanent benchmarks (i.e., rebar or tree tags) to mark the start of approximately 25 transects for elevation and vegetation surveys, a barometric pressure sensor and a water pressure sensor that would be housed in a stilling well, and 10 to 20 groundwater flux temperature rods.

Construction activity would be focused at three locations (i.e., Thunder Field, the Quileute floodplain, and the Mora floodplain), each requiring approximately 2 weeks of intensive construction. Mobilization would begin as early as mid-May with preparation of staging areas and access routes. Construction work above the ordinary high water mark (OHWM) would begin in mid-June, and work below the OHWM would be performed during the recommended in-water work window, which has been established to 1) avoid critical periods of salmonid spawning, rearing, and migration; 2) not interfere with the tribal fishing season; and 3) take advantage of the historical low-flow period. The allowable in-water work period for protection of juvenile salmonid migration, feeding, and rearing areas in Tidal Reference Area 14 is July 15 to February 15 (WAC 220-660-330). This timeframe overlaps with the marbled murrelet nesting season. To minimize noise and visual disturbance to nesting marbled murrelets, daily construction activities would be limited to daylight hours beginning 2 hours after sunrise and ending 2 hours before sunset.

The land disturbance and structure quantities for the proposed action are shown in Table 2. The locations of design elements and staging areas and access routes are shown on Figures 3 and 9, respectively.

Table 2. Total Land Disturbance and Structure Quantities of Proposed Activities by Land Ownership

Proposed Activity	Tribal Trust Land	NPS Land	Total
Large Wood Structures			
Total area of impact	2.4 acres	1.6 acres	4.0 acres
Revetment log structures	720 LF	0 LF	720 LF
Deflector structures	1	0	1
Large deflector structures	0	2	2
Large apex structures	3	2	5
Floodplain log structures	24	16	40
Floodplain Excavation			
Total area of impact	2.7 acres	1.6 acres	4.3 acres
Volume of impact	13,957 CY	9,694 CY	23,651 CY
Other Elements			
Total area of impact	0.4 acre	0.0 acre	0.4 acre
Fishing access locations	1	0	1
Parking area improvement and vehicle barriers	Excavation: 529 CY Rock import: 93 CY	0 CY	Excavation: 529 CY Rock import: 93 CY
Staging Areas			
Existing cleared areas	0.6 acre	0.0 acre	0.6 acre
New impact areas	10.4 acres	4.0 acres	14.4 acres

Proposed Activity	Tribal Trust Land	NPS Land	Total
Access Routes			
Existing paved roads	12,363 LF	4,729 LF	17,092 LF
Existing gravel road	6,998 LF	0 LF	6,998 LF
Temporary access areas	1,420 LF	4,677 LF	6,097 LF

LF = linear feet; CY = cubic yards

3. EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES

This chapter provides an analysis of how the proposed alternatives are anticipated to affect the physical, biological, and social resources in and around the Reach 3 area. The existing conditions of each resource are described, followed by a discussion of the environmental consequences of each alternative including the trend in the overall condition of each impact topic when the impacts from the proposed action are added to past, present, and reasonably foreseeable future actions (further detailed below).

Mitigation measures intended to avoid or minimize adverse effects are also listed in each resource section. Alternatives can lead to either a beneficial effect that improves the resource, or an adverse effect that harms the resource. The analysis considers effects in accordance with 40 CFR 1508.1(g), which states:

(g) Effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives. (1) Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

The duration of the effect is also considered: temporary effects are those that occur only during construction; short-term effects are reversible within a 5-year period; and long-term effects persist for more than 5 years.

Trend in Resource Impacts

The identification of trends in the overall condition of resources are related to impacts on the environment that result from the incremental impacts of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1502.15).

Past actions in the vicinity of Reach 3 include 1) the transfer of the “Northern Lands” from the NPS to the Quileute Tribe under Public Law 112-97 and the Move To Higher Ground—the tribe’s ongoing effort to move critical tribal infrastructure, such as the school, out of the tsunami hazard zone; 2) improvements to the La Push flood berm that reduce the frequency of flooding in La Push; and 3) recently completed culvert repairs and surface improvements to Thunder Road that improved access to Thunder Field and the river. Original construction of the sea dike and jetty at the mouth of the river are considered part of the existing condition.

Ongoing actions in the vicinity of Reach 3 include 1) periodic maintenance dredging by the USACE at the mouth of the Quillayute River; 2) use of the spoils to maintain the spit; and 3) repairs on the sea dike and jetty as needed. These activities maintain the navigation channel in the lower river and protect the marina and USCG station from ocean swell.

Reasonably foreseeable future actions near Reach 3 include 1) continued dredging and jetty maintenance by the USACE; 2) installation of bank protection features along Mora Road by the NPS and FHWA; and 3) additional Quillayute River Restoration activities upstream and downstream of Reach 3 led by the Quileute Tribe.

Impact Topics Dismissed from Further Analysis

Some elements of the environment were eliminated from further consideration due to either their lack of presence within the project area or the project having no effect or no noticeable effect on these elements. These include agriculture, mineral extraction, and paleontological resources. Explanations for the dismissal of these topics are provided in Appendix B.

Cooperating agency NRCS utilizes agency-specific terminology for Special Environmental Concerns (SEC). In the following subsections that discuss existing conditions, specific NRCS SECs are denoted as such and provided within [square brackets].

3.1 Land Resources

3.1.1 Topography and Geomorphic Processes

3.1.1.1 Existing Conditions

The proposed Reach 3 project lies within the broad Quillayute River Valley, approximately 2 river miles from its terminus at the Pacific Ocean and immediately upstream from the confluence of the Dickey River. The width of the Quillayute River at this location during a 1-year recurrence flow is approximately 600 feet, and water levels and velocities are affected by a muted tidal signal. The channel has migrated back and forth across the valley for millennia, resulting in a relatively flat topography of the floodplain terrace with depressional areas that provide evidence of historic channel alignments. Topographic features within Reach 3 include two meander bends of the Quillayute River, the laterally migrating riverbanks and point bars, the forested floodplain, and several tidally influenced sloughs. Portions of the riverbank at Thunder Field are experiencing lateral bank erosion and have been identified by the NRCS to meet the definition of the following resource concern: bank erosion from streams, shorelines, or water conveyance channels. A detailed assessment of the geomorphic processes at work in the Quillayute River was developed by the QNR and used as the basis for the restoration action plan and Proposed Action Alternative within Reach 3 (Tetra Tech 2020a). Existing conditions were considered degraded.

NRCS SECs [Floodplain Management, Riparian Area, and Wetlands]

3.1.1.2 Environmental Consequences

No Action: Under the No Action Alternative, degraded conditions within the river would continue, the village of La Push would be at risk due to the potential for rapid changes in channel alignment, and changes to the existing topography would occur as a result of geomorphic processes. Given the recent trends of lateral bank migration, it is likely that Thunder Field would continue to erode in the near-term and the point bars on both sides of the river would continue to aggrade. The long-term alignment of the Quillayute River is difficult to predict, but if left unconstrained, it would likely continue to migrate back and forth within the valley, threaten La Push, reduce the area available for tribal use at Thunder Field, and possibly create secondary channels or isolated off-channel areas such as oxbows. The No Action Alternative would lead to a long-term adverse effect on site-scale topography. Therefore, this alternative would have long-term adverse effects on topography and geomorphic processes.

Proposed Action: Under the Proposed Action Alternative, changes in topography would occur from construction and the cut and fill associated with large wood structures and floodplain channels. These constructed features would be located to 1) protect against erosion and lateral migration of the banks, 2) improve fish habitat by initiating pool scour or gravel aggradation in different areas, and 3) improve fish passage at low flow. The structures would mimic the presumed natural conditions in this reach of the Quillayute River, to restore geomorphic processes, create habitat, and help restore natural hydrologic function. Therefore, the effects to site-scale topography would lead to long-term benefits for river processes, fish populations, and the tribe.

The Reach 3 project, in conjunction with past, present, and reasonably foreseeable future actions, including additional restoration projects planned elsewhere in the Quillayute River, would add long-term beneficial effects to the overall adverse trends in geomorphic processes.

3.1.1.3 Mitigation

Mitigation measures to reduce impacts to landforms include the following:

- Minimize disturbance to geomorphically sensitive landforms (e.g., Quillayute River banks) by installing fencing and flagging to restrict vehicles and equipment to designated routes.
- Use temporary bridges to span ecologically sensitive aquatic areas (i.e., delineated wetland near Mora Campground) and minimize the impact of driving heavy equipment on the floodplain.

3.1.2 Soils

3.1.2.1 Existing Conditions

Soil surveys on the Quileute Reservation identified 17 soil types or soil complexes (NRCS 2016a). Soil data for the NPS land within the area are not available because it has not been surveyed, but soils are assumed to be similar to those on the reservation side of the river. Soil complexes include two or more dissimilar components occurring in a regularly repeating pattern (NRCS 2016b). In the Thunder Field area, four different soil complexes, made up of six different soil series, were identified. These soil series included the Queets, Hoh, Aabab, Nuby, Conquille, and Typic Humaquepts. Soils along Thunder Road consist primarily of the Hoh-Aabab complex and the Aabab-Nuby complex. These soil complexes are mucky-mineral depressions on either intermediate or higher river terraces.

A soil profile of the riverbank at Thunder Field consisted of sandy silt and silty sand within the upper 5.5 feet, with a layer of dense, well-graded fine gravel below 5.5 feet depth (Tetra Tech 2020a). This stratification is consistent with alluvial floodplain deposits that would be expected at the site.

Four of the five soil types mapped within the area have at least a partial hydric component (NRCS 2020). However, field investigations performed during a wetland delineation of Reach 3 determined that most of the soils had a very high sand content and failed to meet hydric criteria (Tetra Tech 2020c).

NRCS SEC [Wetlands]

3.1.2.2 Environmental Consequences

No Action: Under the No Action Alternative, no construction activities would occur and there would be no changes to the existing soils in the area. Bank erosion at Thunder Field would not be addressed and soil loss would continue, resulting in long-term adverse impacts on soils.

Proposed Action: Under the Proposed Action Alternative, localized impacts to soils would occur during construction from the use of heavy equipment. Excavation associated with the large wood structures and floodplain channels would displace the top several feet of soil and alluvium in those locations. Driving heavy equipment on unpaved temporary access routes across the floodplain to clear vegetation, haul materials, and access the construction areas would result in compaction of soils along these routes. Further effects to soils could occur if soil disturbance and vegetation removal result in erosion. However, the final design would include best management practices (BMPs) for limiting soil exposure during construction, and the contractor would be responsible for developing and implementing an erosion and sediment control (ESC) plan and decompacting and revegetating the work areas.

The proposed action would add additional adverse and beneficial effects on the overall soil condition trends within the project area when considered in conjunction with past, present, and reasonably foreseeable future actions.

3.1.2.3 Mitigation

Mitigation measures to reduce impacts to soils include the following:

- Locate staging areas in previously disturbed or graveled areas to minimize disturbance to soil and vegetation, where possible.
- Minimize the footprint of construction disturbance areas and vegetation removal by installing fencing and flagging to restrict vehicles and equipment to designated routes.
- Install, inspect, and maintain erosion and stormwater control BMPs.
- Decompect and reseed disturbed areas with native species mix (see Section 3.3.2).

3.2 Water Resources

3.2.1 Existing Conditions

Annual precipitation in the Quillayute River drainage averages 105 inches near the coast and 120 inches in the headwaters (NOAA 2021) with most of the precipitation occurring in fall and winter. The upper elevations are characterized by heavy precipitation with snow accumulation in winter months. Hydrologic modeling results indicate the 1-year recurrence flow event in the Quillayute River is 39,381 cubic feet per second (cfs) and the 100-year event is 131,500 cfs (Tetra Tech 2020a). Flooding is common in Reach 3 and downstream in the village of La Push and is often exacerbated by a combination of high river flow and high tidal conditions. Surface water from the Reach 3 floodplains either infiltrates or flows into the Quillayute River and then to the Pacific Ocean. In some years, late summer low flows in the mainstem of the Quillayute River have been identified as a limiting factor for upstream fish migration (NOAA 2016).

Water quality monitoring by Ecology in tributaries to the Quillayute River, including the Dickey, Bogachiel, and Sol Duc rivers, found water quality impairments in portions of these tributaries (QNR 2017). In the Dickey River, temperature and bacteria were listed as major impairments in multiple reaches while pH and dissolved oxygen were listed as minor concerns. In the Bogachiel River, temperature was listed as a major impairment in multiple reaches while dissolved oxygen and bacteria were listed as minor impairments. In the Sol Duc River, temperature and pH were listed as major impairments in multiple reaches while dissolved oxygen and bacteria were listed as minor impairments.

The QNR also monitored water quality in the Quillayute Basin between June 2012 and June 2019, compiling temperature, pH, dissolved oxygen, and turbidity measurements at several sites, which included Thunder Field starting in 2018 (QNR 2019). Average monthly water temperature at Thunder Field varied between approximately 5 and 15 degrees Celsius throughout the year. Average monthly dissolved oxygen levels varied between 8.5 and 11.0 milligrams per liter and were inversely correlated with temperature. Average monthly pH levels varied between 6.5 and 7.2, and average monthly turbidity levels were low throughout the year, never exceeding 10 nephelometric turbidity units.

NRCS SEC [Clean Water Act]

3.2.2 Environmental Consequences

No Action: Under the No Action Alternative, no change to the existing condition of water resources would occur. The variability of the quality, quantity, and timing of flows in the Quillayute River would remain unchanged.

Proposed Action: Under the Proposed Action Alternative, construction activities have the potential to cause temporary impacts to water quality. Excavation and fill of the stream bed, banks, and floodplain could lead to localized increases in turbidity when those areas are re-wetted. The use of a barge and heavy equipment near the river could increase the risk of hydraulic fluid leaks or fuel spills and pollution of runoff if proper containment precautions are not taken. Improvements to the parking area at the terminus of Thunder Road would direct runoff away from the river and lead to a long-term beneficial effect on water quality. The project would have no effect on the quantity and timing of river flows; however, it would result in alterations to the distribution of water across the floodplain during high-flow events. This redistribution of flows would lead to a long-term beneficial effect for aquatic habitat in Reach 3.

The project would require authorization for the Proposed Action under the Clean Water Act Section 401 and water quality certificates from both the EPA and Ecology. The contractor would operate according to an approved Spill Prevention, Control, and Countermeasure (SPCC) Plan and the BMPs listed below (Section 3.2.3) would be implemented by the contractor to minimize the risk of adverse effects to water quality. These authorizations would be applied for in 2021 and the project would not be implemented prior to these approvals.

If other in-water work were to take place concurrently with Reach 3 construction (for example, dredging, jetty maintenance, and Mora Road bank stabilization), turbidity plumes could overlap in time and space and lead to temporary adverse effects and an overall neutral trend on water quality when combined with past, present, and reasonably foreseeable future actions.

3.2.3 Mitigation

Mitigation measures to reduce impacts to water resources include the following:

- Schedule in-water work to occur during periods of low river flow that typically occur between July and the end of September.
- Isolate areas of in-water work with temporary cofferdams, installing cofferdams at low tide when possible, and dewatering to contain turbidity.
- Monitor dewatering and rewatering rates to minimize sediment disturbance and to prevent fish stranding.
- Install erosion and sediment control BMPs according to an approved ESC Plan.

- Develop and implement an SPCC Plan and equip the project site with emergency cleanup supplies in case of oil or diesel leaks or spills.
- Establish staging and refueling areas with secondary containment at least 150 feet away from any natural waterbody or wetland.
- Immediately collect and dispose of any fuel, oil, or other contaminants leaked or spilled during construction in accordance with federal regulations.
- Restore, stabilize, and revegetate disturbed areas prior to completion.

3.3 Living Resources

3.3.1 Protected Species

3.3.1.1 Existing Conditions

Wildlife species that are protected by the Endangered Species Act (ESA) or other laws are identified below. Additional species that frequently occur within Reach 3 are addressed in Section 3.3.3.

Endangered Species Act

Section 7 of the ESA (16 U.S.C. 1531 et seq.) of 1973 as amended, and its implementing regulations found at 50 CFR 402, require federal agencies to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of habitat. To assist in identifying any threatened and endangered, as well as any candidate and proposed species, USFWS and NMFS web-based tools were used.

The only species listed as threatened or endangered under the ESA that may be affected by the project is the marbled murrelet (*Brachyramphus marmoratus*). Designated critical habitat for marbled murrelet does not exist in the affected Reach 3 area; however, a predictive habitat model based on remote sensing data suggests that certain areas of the nearby floodplain forest may contain characteristics that are considered suitable for murrelet nesting (Raphael et al. 2016; Figure 10). A recent survey of the project site conducted by QNR and NPS biologists on May 26, 2021, determined that the area was unlikely to provide suitable nesting habitat due to the forest structure and a high corvid population density (S. Gremel, Olympic National Park wildlife biologist, personal communication). A Biological Assessment has been prepared to initiate informal ESA Section 7 consultation with the USFWS regarding the potential effects of the project on marbled murrelet.

Northern spotted owl (*Strix occidentalis caurina*) surveys last conducted in 2004 observed a nest within 1 mile from the site, but there has been no spotted owl activity documented since the early 2000s (USFWS 2017). None of the salmonids using the Quillayute River drainage are ESA-listed.

Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), of 1940, as amended, and the Migratory Bird Treaty Act (16 U.S.C. 703-712), of 1918, as amended, prohibit anyone, without a permit, from “taking” eagles or any bird, including their parts, nests, or eggs. Within these Acts, eagles/nests/eggs/young are not to be “disturbed” including agitated or bothered.

Bald eagles (*Haliaeetus leucocephalus*) may occur near Reach 3, but there are no eagle nests within proximity to where construction would occur (Rasmussen 2016).

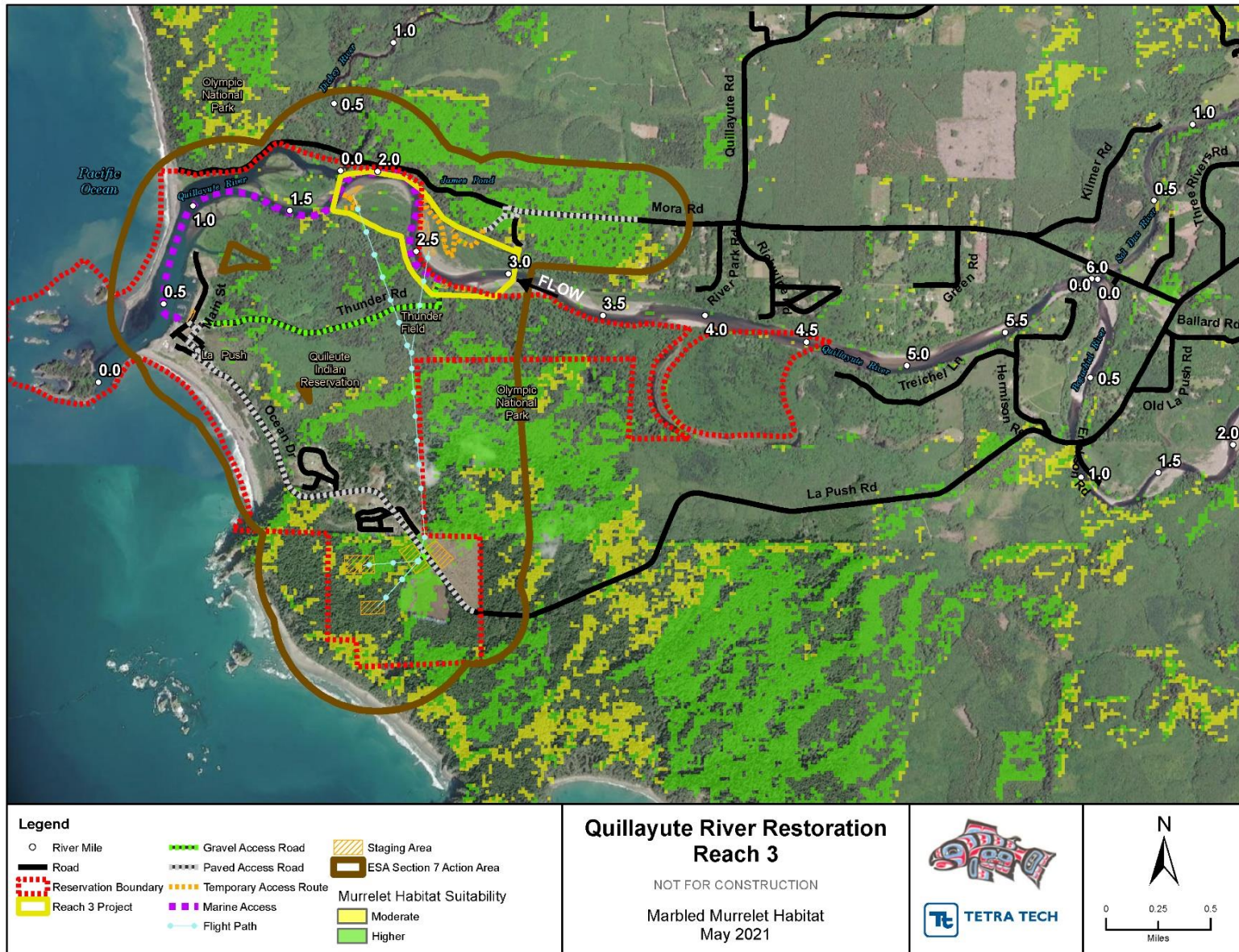


Figure 10. Marbled Murrelet Habitat

Marine Mammal Protection Act

Marine mammals are protected under the Marine Mammal Protection Act. Harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californianus*) may swim up to Reach 3 from the mouth of the river on occasion. NMFS confirmed no consultation is needed for marine mammals.

Magnuson-Stevens Act

The riverine habitat is considered essential fish habitat (EFH) for salmon and is therefore protected under the Magnuson-Stevens Act. NMFS has confirmed the Quillayute River is designated as EFH for both Chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*O. kisutch*) and requires consultation. An assessment of potential effects on EFH was included in the Biological Assessment submitted for ESA Section 7 consultation.

The NRCS has identified the following resource concern related to degraded habitat within the Quillayute River: Aquatic Habitat for Fish and Other Organisms.

NRCS SECs [Endangered and Threatened Species, Essential Fish Habitat, Migratory Birds, Bald and Golden Eagle Protection Act]

3.3.1.2 Environmental Consequences

No Action: Under the No Action Alternative, no construction would occur, and Reach 3 would remain undisturbed in its existing condition. Protected species would continue to use the area in its existing condition. The No Action Alternative would have no effect on protected species or habitats.

Proposed Action: Under the Proposed Action Alternative, temporary adverse effects to protected species may occur. Construction activity would generate noise and disturbance in the area that could temporarily disrupt the distribution and behavior of marbled murrelet. These activities would include barge and helicopter operation to and from the staging areas; the use of haul trucks, excavators, and pile drivers on the floodplain; and periodic use of other construction equipment such as pumps and chainsaws. Vegetation clearing required for staging areas, access routes, and large wood structures would result in an adverse effect to species that use those plant communities for habitat, although no clearing of marbled murrelet-suitable habitat is proposed under this project. In-water work could temporarily lead to adverse effects to water quality, which is a component of EFH. Conservation measures and BMPs implemented during construction would minimize these adverse effects, and Chinook and coho salmon are expected to be able to avoid the temporary disruptions due to project activities by moving to suitable habitats available nearby. Helicopter operations would occur over small portions of suitable marbled murrelet habitat for approximately 3 days during the nesting season.

Over the long term, the Proposed Action Alternative would have a beneficial effect on protected species and habitats affected by the project. The large wood structures and high-flow floodplain channels would improve the quality of EFH for both adult and juvenile salmonids. The alignment and cross-sectional geometry of the river would improve the ability for fish to migrate past the area at low flow, potentially increasing the number of adults that reach spawning grounds in the tributaries. Stabilizing the bank at Thunder Field would prevent the further erosion and undercutting of the more mature forested areas, preserving those habitats for species such as marbled murrelet that prefer large trees and multi-layer canopies.

The disruption caused by the noise and visual disturbance of multiple construction projects in the area would add temporary or short-term adverse effects to the overall neutral or adverse trends to nesting

marbled murrelets when the proposed action is added to past, future, and reasonably foreseeable future actions.

ESA Effects Determination: “*may affect, not likely to adversely affect*” for marbled murrelets; “*no effect*” on northern spotted owls. See the Biological Assessment for more details.

EFH Effects Determination: temporary adverse effect on EFH for Chinook and coho salmon due to construction along the channel margin and on the floodplain. See the Biological Assessment for more details.

3.3.1.3 Mitigation

Mitigation measures to reduce impacts to protected species include the following:

- Restrict helicopter operations to occur over no more than 3 consecutive days, barring any unforeseen weather or emergency issues.
- Designate flight paths that best avoid threshold distances to nearby or adjacent suitable habitat.
- An informal survey was conducted by NPS and tribal biologists that determined that no suitable murrelet habitat nesting habitat is within the flight path.
- Restrict construction activities to the approved work windows (work would begin no sooner than 2 hours after sunrise and would stop 2 hours before sunset) to minimize potential disturbance to marbled murrelets.
- Plan helicopter operations to occur over the fewest number of days possible, and maintain a flight path and elevation that avoids murrelet habitat to the extent practicable.
- Maintain work areas in a clean condition, with no unsecured food or trash that would attract corvids or other nuisance species.
- Additional conservation measures developed during consultation with the USFWS and NMFS (see the decision document for the terms and conditions as provided by the USFWS and NMFS).

3.3.2 Vegetation

3.3.2.1 Existing Conditions

Vegetation on the Reach 3 floodplain includes species native to the coastal temperate rainforests of the Olympic Peninsula as well as non-native invasive species common to the area. Overstory plants within these coniferous coastal forests include Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*). In the vicinity of Thunder Field, the forest consists of approximately 50-year-old hemlock stands with scattered Sitka spruce believed to be approximately 70 to 90 years old (Rasmussen 2016). In and around the Mora Campground and on the slopes east of Rialto Beach, older trees are present. The largest specimen of Sitka spruce in the campground measured 76 inches in DBH and was estimated to be 350 years old. Other large Sitka spruce and western hemlock in the campground area were also estimated to be approximately 300 years old. Remnant stumps of large-diameter western red cedar indicate the historic presence of these species prior to selective logging that occurred in the late nineteenth and early twentieth century (J. Coles, Olympic National Park botanist, personal communication).

Within the proposed construction footprint on the active Quillayute River floodplain, woody vegetation is predominantly red alder (*Alnus rubra*), vine maple (*Acer circinatum*), red osier dogwood (*Cornus*

sericea), and willow (*Salix* spp.). Coastal rainforest understory consists primarily of salal (*Gaultheria shallon*), salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), red elderberry (*Sambucus racemosa*), red huckleberry (*Vaccinium parvifolium*), sword fern (*Polystichum munitum*), and deer fern (*Blechnum spicant*). Other native graminoids in the area include slough sedge (*Carex obnupta*), common rush (*Juncus effusus*), tufted hairgrass (*Deschampsia cespitosa*), spike bentgrass (*Agrostis exarata*), and blue wildrye (*Elymus glaucus*). The floodplain and adjacent river banks harbor significant infestations of non-native invasive plant species such as giant knotweed (*Polygonum* spp.), tansy ragwort (*Jacobaea vulgaris*), foxglove (*Digitalis purpurea*), purple loosestrife (*Lythrum salicaria*), English holly (*Ilex aquifolium*), English ivy (*Hedera helix*), Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus bifrons*), Canada thistle (*Cirsium arvense*), and reed canarygrass (*Phalaris arundinacea*). No threatened or endangered plants are known to exist within the area.

NRCS SECs [Riparian Area, Invasive Species, Wetlands]

3.3.2.2 Environmental Consequences

No Action: Under the No Action Alternative, no changes to the existing vegetation would occur within the Reach 3 area. The continued lateral migration of the Quillayute River would erode banks and topple trees in the Thunder Field area, while more recently aggraded bank and bar areas would continue to colonize with volunteer species and undergo a slow succession to a more mature forest composition.

Proposed Action: The Proposed Action Alternative would have adverse impacts to some of the trees and other vegetation within the footprint of construction, staging, and access routes. Clearing and grubbing would occur in all areas identified for large wood structures, floodplain channel excavation, temporary access routes, and staging areas (Figures 3 and 10, Table 2). Most of these locations are on the banks and active floodplain of the Quillayute River where vegetation consists primarily of shrub species and young trees. In areas where larger, more mature trees exist within the proposed excavation footprint of the pilot channels, trees up to 24 inches DBH would be tipped over, intact, and used in place to supplement floodplain wood supply. The total number of affected larger, mature trees would be verified in the field, but is anticipated to be fewer than 12. Trees larger than 24 inches DBH would be left undisturbed. Within the Mora Campground, access routes would utilize existing roads to minimize the need to create new roads or disturb vegetation. On the floodplain near the campground, access routes would be established to avoid large trees as much as possible. Following construction, exposed areas would be revegetated with native species according to the project planting plan. Monitoring and treatment of these areas is planned to prevent infestation with non-native invasive species. Over the long term, bank stabilization at Thunder Field across the river from Mora Campground would allow the existing vegetation communities to mature and provide a more complete mosaic of habitat types. Overall, the Proposed Action Alternative would have a short-term adverse effect on vegetation where clearing and grubbing occurs, and a neutral effect over the long term as cleared and grubbed areas re-vegetate and existing vegetation communities mature.

The proposed action would add little to no additional adverse effects on vegetation trends within the project area when considered in conjunction with past, present, and reasonably foreseeable future actions.

3.3.2.3 Mitigation

Mitigation measures to reduce impacts to vegetation include the following:

- Delineate work area limits to protect existing vegetation and avoid disturbing trees larger than 24 inches DBH.

- Coordinate with the NPS to establish an access route from Mora Campground that minimizes impacts to large trees in the floodplain.
- Salvage existing topsoil and vegetation whenever possible.
- Remove weeds prior to and/or following construction to ensure newly exposed soils do not become colonized by non-native plants.
- Cut or crush vegetation rather than blade in areas that would remain vegetated to increase the ability of native plants to recover.
- Decomact and reseed or replant disturbed areas with native species mixes defined in the planting plan. To protect genetic integrity, revegetation propagules would be sourced from within the same habitats in the same watershed. The best sources for seeds and cuttings would be natural areas (i.e., not managed forests) within the lower Sol Duc-Calawah-Quillayute River watershed within 5 to 10 miles of the coast.
- Pressure wash all equipment, including barges, prior to entering the construction area to prevent introduction of non-native species.
- Inspect imported materials and equipment for noxious weeds and treat any areas where noxious weed species are identified following construction.
- Source mineral materials from a quarry that has been certified weed-free by the staff of the Clallam County Noxious Weed Board.

3.3.3 Other Biological Communities

3.3.3.1 Existing Conditions

Biological communities present in and around Reach 3 are those associated with the Coastal Temperate Rainforest of the Olympic Peninsula. These include the fish and wildlife species discussed below, the vegetation discussed in Section 3.3.2, as well as the aspects of the physical environment described Sections 3.1 and 3.2.

Anadromous fish runs are a fundamental component of the coastal ecosystem. The Quillayute River is known as a major salmon-producing drainage and ranks second in Washington state for the greatest number of anadromous salmonid stocks (Smith 2005). Salmon use the river throughout the year, whether for spawning, rearing, or migration. While none of the stocks are listed under the ESA, the returns of wild origin fish have trended downward in recent decades and have been supplemented by hatchery programs.

Chinook (spring, summer, and fall runs) and coho salmon are addressed in Section 3.3.1, Protected Species. In addition to Chinook and coho salmon, chum salmon (*O. keta*), pink salmon (*O. gorbuscha*), sockeye salmon (*O. nerka*), steelhead (summer and winter runs) and resident rainbow trout (*O. mykiss*), coastal cutthroat trout (*O. clarkii*), and mountain whitefish (*Prosopium williamsoni*) all use the aquatic habitats provided by the Quillayute River and its tributaries. Other fish species that may occur infrequently in the Quillayute River include Pacific lamprey (*Entosphenus tridentatus*), eulachon (*Thaleichthys pacificus*), white sturgeon (*Acipenser transmontanus*), and green sturgeon (*Acipenser medirostris*). Olympic mudminnow (*Novumbra hubbsi*) are known to occur within James Pond, and may also occupy off-channel areas of the Quillayute River.

A wide variety of wildlife species can be encountered in the Quillayute River valley due to the undeveloped setting and the close proximity of large tracts of protected forest habitat and the Pacific

Coast. In this section, discussion of wildlife is limited to vertebrates (i.e., mammals, birds, reptiles, amphibians, and fish) and to those not already discussed in Section 3.3.1.

Some of the more common mammals that may occur in or adjacent to Reach 3 include Roosevelt elk (*Cervus elaphus roosevelti*), coastal blacktail deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), cougar (*Puma concolor*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), ground squirrel (*Sciurus* spp.), river otter (*Lontra canadensis*) and cottontail rabbit (*Sylvilagus* spp.).

Over 100 avian species have been observed at the nearby Mora area (eBird 2021). Some of the most common during the proposed June to September construction window include waterfowl, such as Canada goose (*Branta canadensis*), surf scoter (*Melanitta perspicillata*), common merganser (*Mergus merganser*), hooded merganser (*Lophodytes cucullatus*), various species of ducks, gulls, and cormorants, great blue heron (*Ardea herodias*), bald eagle (*Haliaeetus leucocephalus*), barred owl (*Strix varia*), belted kingfisher (*Megaceryle alcyon*), Steller’s jay (*Cyanocitta stelleri*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), golden-crowned kinglet (*Regulus satrapa*), Pacific wren (*Troglodytes pacificus*), Swainson’s thrush (*Catharus ustulatus*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), red crossbill (*Loxia curvirostra*), song sparrow (*Melospiza melodia*), and Wilson’s warbler (*Cardellina pusilla*) (eBird 2021; USACE 2016). Reptiles and amphibians are also common, including garter snakes (*Thamnophis* spp.), salamanders (various spp.), newts (various spp.), and frogs (*Ranus* spp.) (F. Geyer, personal communication, December 19, 2016).

3.3.3.2 Environmental Consequences

No Action: Under the No Action Alternative, construction would not occur and Reach 3 would remain in its existing condition. Existing impairments and ongoing threats to the habitats that support the salmonid community would continue, including, but not limited to, development, recreational use, and geomorphic processes. The current assemblage of terrestrial wildlife species would continue to use the area, but the degradation of conditions that have been identified as limiting factors for fish populations, both in the immediate area and in the ability to migrate to and from the rest of the drainage, would result in a long-term adverse effect.

Proposed Action: Under the Proposed Action Alternative, in-water work may lead to temporary adverse effects to water quality, specifically turbidity and sediment released during re-wetting of isolated work areas and a risk of pollutant spills, which could in turn affect the quality of aquatic habitat and fish behavior in the area. Disruptions caused by barge travel and the isolation of construction work areas would also lead to a temporary adverse effect. Protocols to exclude fish from the in-water work areas frequently involve capturing and handling fish before releasing them in safe areas. While this activity is intended to reduce overall harm to fish within the area, this handling can lead to disturbance and injury to a small percentage of salvaged fish.

The Proposed Action Alternative would also cause temporary adverse effects to terrestrial wildlife species. Construction activity would generate noise and disturbance in the area that could temporarily disrupt the distribution and behavior of wildlife. These activities would include barge and helicopter operation to and from the staging areas; the use of haul trucks, excavators, and pile drivers on the floodplain; and periodic use of other construction equipment such as pumps and chainsaws. Vegetation clearing required for staging areas, access routes, and large wood structures would result in temporary or short-term adverse effects to species that use those plant communities for habitat.

As identified in Section 3.3.3.3 below, conservation measures and BMPs implemented during construction would minimize these adverse effects, and terrestrial wildlife are expected to be able to avoid the temporary disruptions resulting from project activities by moving to suitable habitats available nearby.

The long-term effect of the Proposed Action Alternative would be an incremental benefit to the ecosystems and biological communities in the drainage. The large wood structures and high-flow floodplain channels would improve the quality of habitat for both adult and juvenile salmonids. The alignment and cross-sectional geometry of the river would improve the ability for fish to migrate past the area at low flow, potentially increasing the number of adults that reach spawning grounds in the tributaries. Stabilizing the bank at Thunder Field would prevent the further erosion and undercutting of the more mature forested areas, preserving those habitats for species that prefer large trees and multi-layer canopies. Over the long term, the Proposed Action Alternative would have a beneficial effect on wildlife, especially fish species, and those that feed on them.

The Reach 3 project, in conjunction with past, present, and reasonably foreseeable future actions, including additional restoration projects planned elsewhere in the Quillayute River, would lead to long-term beneficial trends for biological communities, and salmonids in particular, through improved habitat conditions. The disruption caused by the noise and visual disturbance of multiple construction projects in the area could lead to temporary adverse effects to, but an overall neutral trend on, other biological communities.

3.3.3.3 Mitigation

Mitigation measures for impacts to fish, wildlife, and other biological communities are described previously in Sections 3.3.1 and 3.3.2, and also include the following:

- Delineate construction limits to protect existing vegetation and minimize noise and visual disturbance to wildlife.
- Implement soil and erosion control BMPs to eliminate sediment discharges into waterways and wetlands.
- Restrict construction activities to the approved work windows to minimize potential disturbance to marbled murrelets.
- Plan helicopter operations to occur over the fewest number of days possible.
- Minimize direct harm to fish by isolating the in-water work areas and relocate fish according to the best management practices established by resource management agencies.
- Maintain work areas in a clean condition, with no unsecured food or trash that would attract corvids or other nuisance species.
- Visually examine in-water equipment, such as the barge, for aquatic invasive species.
- Additional conservation measures developed during consultation with the USFWS and NMFS (see the decision document for the terms and conditions as provided by the USFWS and NMFS).

3.4 Cultural Resources

3.4.1 Cultural, Sacred, and Traditional Cultural Properties

3.4.1.1 Existing Conditions

Thunder Field is an important access point to the Quillayute River, which is a resource vitally important for the Quileute Tribe’s ongoing fishing access, hunting, gathering, ceremonies, and recreation.

NRCS SECs [Cultural Resources/Historic Properties]

3.4.1.2 Environmental Consequences

No Action: The No Action Alternative would have no impacts to cultural, sacred, or traditional cultural properties that have been identified by DAHP. One likely result of the implementation of the No Action Alternative is further erosion and lateral migration of the river at Thunder Field, resulting in the loss of land area and a long-term adverse effect on the Quileute Tribe’s use of Thunder Field and access to the Quillayute River for traditional and cultural uses.

Under the Proposed Action Alternative, construction activities would have no effect on historic properties within the APE. Therefore, the Proposed Action Alternative would have a long-term beneficial effect on the tribe’s access to Thunder Field and the Quillayute River for traditional and cultural uses.

Proposed Action: The proposed parking improvements, vehicle barrier, and fishing access, in addition to the recent Thunder Road improvements, would add long-term beneficial effects to the overall neutral trends on tribal member access and cultural use of Thunder Field, when combined with other past, present, and reasonably foreseeable future actions.

Area of Potential Effect: See Appendix A for a BIA and NPS letter to the Washington DAHP and response of concurrence from the DAHP.

Assessment of Effect: “No historic properties effected”; see decision document for final consultation information.

3.4.1.3 Mitigation

The proposed action would have no impact on historic properties and would require no mitigation.

In the event of unanticipated discovery of archaeological or other cultural resources, work would be stopped and the Engineer and Owner’s Representative (either Quileute Tribe representative or Olympic National Park archaeologist / Section 106 advisor) would be notified. The resource would be protected in the state it was found until proper protocols are established.

3.5 Socioeconomic Conditions

3.5.1 Employment and Income

3.5.1.1 Existing Conditions

Population, employment, and income information for the Quileute Reservation, which are based on the U.S. Census Bureau’s 2019 5-year American Community Survey estimates, are presented in Table 3. Clallam County population, employment, and income information are presented for comparison.

Table 3. Population, Employment, and Income 5-Year Estimates for the Quileute Reservation

Demographic	Quileute Reservation	Clallam County
Total Population	406	77,331
Civilian Labor Force (population 16 years and over and in labor force)	159	31,059
Unemployed	28	2,386
Percent Unemployed	9.5%	3.7%
Median Household Income	\$ 35,938	\$ 52,192
Per Capita Income	\$ 18,784	\$ 30,283

Source: U.S. Census Bureau 2015-2019 American Community Survey (ACS) 5-Year Estimates

The percentage of unemployed residents of the Quileute Reservation (9.5 percent) is higher than that of Clallam County (3.7 percent), and conversely, the median household income and per capita income of the Quileute Reservation are both below that of Clallam County. This is reflective of the limited job opportunities and the lack of higher paying jobs available to Quileute residents.

The remote location of La Push and the Quileute Reservation, which are on the western side of the Olympic Mountains and far from major urban areas, limits the amount of job opportunities. Employment opportunities of the reservation include commercial fishing, working for the Quileute Tribe government, and working for tribal enterprises such as the Quileute Oceanside Resort. Tourism is an important driver of the local economy, with visitors drawn to La Push by the natural beauty of ocean beaches, forested coastline, and proximity to Olympic National Park. However, the seasonality of the tourist economy limits its contribution to the employment and income opportunities for residents. There are other opportunities outside of the reservation, such as jobs within the timber industry or the City of Forks (population 3,866 as of 2018; U.S. Census Bureau 2018).

NRCS SEC [Environmental Justice]

3.5.1.2 Environmental Consequences

No Action: Under the No Action Alternative, there would be no effects on employment and income because no construction work would occur. Adverse effects on income for tribal fishermen could occur due to continued limitations to river access at Thunder Field due to bank erosion and continued depressed fish stocks that, in turn, limit fishing opportunities. Therefore, the No Action Alternative would have long-term adverse impacts to employment and income.

Proposed Action: Under the Proposed Action Alternative, construction activities would cause a temporary adverse effect on access to Thunder Field and the Quillayute River and the ability to fish. The proposed use of Mora Road and Campground for access to the north side of Reach 3 would also disrupt the visitor experience and lead to a temporary adverse effect on tourism and the economic benefits it provides. Construction schedules would be coordinated with the Quileute Tribe’s fishing seasons to minimize this interruption, and construction access routes would be coordinated with the Olympic National Park to minimize impact to users of the Mora Campground. The construction work itself could benefit employment and income by hiring a local contractor and by incorporating Indian Preference Act (U.S.C. 25 §§ 472 & 473) terms into the contract language. The Quileute Tribe has estimated that construction of the project would create 16 weeks of full-time work for four construction laborers, one construction supervisor, six equipment operators, one habitat biologist, and one engineer. Hiring Quileute Tribal members for construction would lead to a short-term beneficial effect. Long-term benefits would

accrue via improved access to the river for tribal fishermen, and via improved fish habitat and fish passage rates within the Quillayute River that would lead to increases in fish populations and better fishing opportunities. Therefore, the Proposed Action Alternative would have a mix of temporary adverse effects to employment and income due to construction interruptions, short-term beneficial effects due to potential construction job opportunities, and long-term beneficial effects due to improved fishing opportunities.

The overall trend of the Proposed Action Alternative on employment and income would be neutral for the temporary beneficial effects, but would add to the short- and long-term beneficial trends on employment and income when combined with other past, present, and reasonably foreseeable future actions.

3.5.1.3 Mitigation

Mitigation measures for impacts to employment and income include the following:

- Coordinate the construction schedule with the QNR to allow tribal members access to fishing areas during key fishing seasons.
- Incorporate Indian Preference Act (U.S.C. 25 §§ 472 and 473) terms into the construction contract language.

3.5.2 Lifestyle and Cultural Values

3.5.2.1 Existing Conditions

Quileute culture and lifestyle embodies values and aspects of the tribe's lifestyle before European settlers came into the area. Important aspects of Quileute culture include the language, community activities, and celebration of fishing, gathering, and hunting traditions that were essential for traditional livelihood.

The Quileute Tribe participates in activities that foster a sense of community, including storytelling, gift giving, dancing, drumming, singing traditional songs, carving, and long-distance paddling. Fishing is an important part of the community culture, and tribal members are taught to fish at a young age. Hunting game provides meat for subsistence and important ceremonies, such as funerals.

Improving Thunder Field, and the Quillayute River would in turn improve the access and opportunity for traditional uses, especially fishing and recreation, as well as the other activities previously mentioned.

NRCS SECs [Cultural Resources/Historic Properties, Scenic Beauty]

3.5.2.2 Environmental Consequences

No Action: Under the No Action Alternative, further erosion of Thunder Field would lead to a long-term adverse effect to the lifestyle and cultural values of Quileute Tribal members because it would limit the continued use of the area as a river access point and gathering area.

Proposed Action: Under the Proposed Action Alternative, protecting Thunder Field from further bank erosion would lead to improved access to the Quillayute River, opportunities for cultural learning, and use of the land on the reservation. Therefore, the Proposed Action Alternative would have long-term beneficial effects on the tribe's lifestyle and cultural values.

The proposed action would add long-term beneficial effects to the overall adverse trends on lifestyle and cultural value within the project area when considered in conjunction with past, present, and reasonably foreseeable future actions.

3.5.2.3 Mitigation

No mitigation for impacts to lifestyle and cultural values is proposed.

3.5.3 Community Infrastructure

3.5.3.1 Existing Conditions

The Quileute Public Works Department maintains the water, sewer, and stormwater utilities on the reservation. Quileute Public Works also provides waste management services and street services including signage, road maintenance, and coordination with BIA for larger roadway improvements. Electrical utility service is provided by the Clallam County Public Utility District. Telecommunications are provided by CenturyLink for landlines and Verizon for cell phones. Due to the remote coastal location, and often challenging weather (namely, the major winter storms off the Pacific Ocean), utilities and infrastructure can be compromised. Road flooding and power outages may occur several times during the winter, and there are moments of interruptions to Internet service.

The La Push Police Department and a volunteer fire department provide public safety services to the Quileute Tribe. The Quileute Tribal Council oversees the government departments that serve the community, such as Administration, Natural Resources, Human Services, Human Resources, Public Works, the Health Center, and the Tribal Court. The Quileute Housing Authority and Quileute Tribal School serve the community as well, along with the tribal enterprises on the reservation, such as the marina and the resort. A complete list of the government departments and their related facilities is provided on the tribe's website (Quileute Nation 2020).

On the north side of the river, Mora Road provides access to the Mora Ranger Station, Mora Campground, and the Dickey boat launch, and terminates at Rialto Beach. Facilities within Mora Campground include a water supply system, multiple wastewater systems, a maintenance facility, multiple restrooms, and a recreational vehicle (RV) dump station. There are 94 sites within the campground, an amphitheater, and housing for 30 park employees in a residential area.

NRCS SECs [Environmental Justice, Natural Areas]

3.5.3.2 Environmental Consequences

No Action: Under the No Action Alternative, no changes to utilities and government services would occur.

Proposed Action: Under the Proposed Action Alternative, construction activities would have a temporary adverse effect on the access to Thunder Road and Thunder Field. Construction traffic would temporarily increase disruptions to those using NPS infrastructure on the north side of the river. Over the long term, the Proposed Action Alternative would increase the resiliency of infrastructure in La Push by reducing flood risk and improving accessibility and safety at Thunder Field through parking lot improvements, a vehicle barrier, and fishing access, resulting in a long-term beneficial effect to community infrastructure. Vehicle access to NPS infrastructure would not be restricted during construction, with the exception of potential traffic control delays of no more than 15 to 30 minutes to ensure public safety. There would be no effect on facilities in the Mora area; however, a beneficial effect could accrue from reduced erosion along Mora Road downstream of the project.

The Reach 3 project and its anticipated effect on geomorphic processes, in conjunction with additional efforts by the NPS to protect streambanks downstream of Reach 3, would add long-term beneficial effects

to the overall beneficial trends on community infrastructure when combined with other past, present, and reasonably foreseeable future actions.

3.5.3.3 Mitigation

Mitigation measures for construction related impacts to community infrastructure include the following:

- Develop and implement a traffic control plan prior to implementation to ensure safe construction access on La Push Road (Washington State Highway 110 [WA-110]), Thunder Road, and Mora Road.
- Develop and implement a traffic control plan prior to implementation to ensure safety for Mora Campground staff and public.
- If funded by the NRCS, permanent warning signs would be placed upstream of wood after implementation to ensure boater safety.

3.5.4 Environmental Justice

3.5.4.1 Existing Conditions

Environmental justice derives conceptually from the equal protection clause in the 14th Amendment to the U.S. Constitution. Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Population*, directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The EO provisions also apply fully to programs involving Native Americans. With percentages of minority and low-income populations in the Quileute Reservation well in excess of Clallam County, it is concluded that there are both minority and low-income populations present in the Quileute Reservation.

NRCS SEC [Environmental Justice]

3.5.4.2 Environmental Consequences

No Action: Under the No Action Alternative, bank erosion at Thunder Field would not be addressed. Further land area could be lost and access to the river by Quileute Tribal members could become more limited. Habitat improvements for fish would not be created, and the factors currently limiting fish populations would be unchanged. These effects of the No Action Alternative would lead to long-term adverse impacts to minority and low-income populations.

Proposed Action: Under the Proposed Action Alternative, bank erosion at Thunder Field would be halted and access to the river would be improved, allowing tribal members to exercise treaty rights and access resources for ceremonial and subsistence purposes. Similarly, the Proposed Action Alternative could alleviate erosive forces on the right bank downstream of the project and lead to a beneficial effect on Mora Road and the ability of tribal members to access reservation land on the north side of the river. Therefore, the Proposed Action Alternative would have a long-term beneficial effect on the local minority and low-income populations.

The proposed action would add beneficial effects on the overall adverse trends on environmental justice within the project area when considered in conjunction with past, present, and reasonably foreseeable future actions.

3.5.4.3 Mitigation

Mitigation for impacts to environmental justice is not proposed.

3.6 Resource Use Patterns

3.6.1 Hunting, Fishing, Gathering

3.6.1.1 Existing Conditions

Olympic National Park was created in 1938 when consultation with treaty tribes was not required as it is today. In 1953, the coastal strip of land was added to the Olympic National Park through congressional action, and the existing Quileute Reservation became surrounded by Olympic National Park. Establishment of the boundary for the newly designated park lands led to a 50-year boundary dispute between the Quileute Tribe and Olympic National Park. In 2012, Congress passed Public Law 112-97 that settled the boundary dispute and led to limited treaty access to resources due to the National Park Service’s rules regarding harvest. Lands within the reservation, especially Thunder Field, became more important as a location to exercise treaty rights and harvest traditional resources for subsistence and ceremonial purposes. As part of the negotiated agreement, the tribe gave up its right to hunt in the Thunder Field area using firearms, which has limited the tribe’s ability to hunt certain game. Thunder Field also provides an important access point for tribal fishermen to the Quillayute River, especially for those without motorized boats. It also provides areas of more mature forest vegetation communities for gathering certain plant species.

Quileute tribal fishing seasons are managed by the tribe. Fishing seasons and other regulations are determined each year based on conditions and expected returns. The in-river gill net fishery typically operates year-round, with effort variable depending on season. For example, in 2020, gill net fishing at Reach 3 was open 3 days per week from April 6 to May 20, 2 days per week from May 25 to August 25, a half-day per week from August 31 to November 9, and 4.5 days per week between November 16 and December 11.

Recreational fishing on the Quillayute River and its tributaries is also important for non-tribal residents and visitors. Data for the level of use of Reach 3 by recreational fishermen are not available; however, winter steelhead creel surveys (WDFW 2021) demonstrate that bank and boat-based anglers are common throughout the Bogachiel and Quillayute rivers, at least during the steelhead season when surveys were conducted; for example, a total of 677 angler interviews were conducted between December 9, 2019 and March 25, 2020. Recreational fishing opportunities lead to direct benefits to the local economy by increasing visitation and supporting local guide companies.

3.6.1.2 Environmental Consequences

No Action: Under the No Action Alternative, bank erosion at Thunder Field would continue to undermine areas of forest and reduce opportunities for foraging. Steep cut banks would continue to limit access to the river and inhibit fishing opportunities for tribal members. Therefore, the No Action Alternative would have adverse impacts to hunting, fishing, and gathering opportunities over the long term.

Proposed Action: Under the Proposed Action Alternative, construction activities would create temporary disturbances in Reach 3 that may inhibit hunting, fishing, and gathering. Barge traffic on the lower Quillayute River could disrupt tribal fishing practices if it occurs during times when nets are set. However, once constructed, the project would halt erosion at Thunder Field and maintain the existing

forested areas over the long term that provide opportunities for hunting, fishing, and gathering. Improvements to fish habitat and to fish passage success during low flows would likely improve salmonid populations, which would lead to more opportunity for fishing success not only at Reach 3, but also throughout the drainage. These benefits would be realized by both tribal and non-tribal fishermen. Therefore, the Proposed Action Alternative would have a long-term beneficial effect on hunting, fishing, and gathering.

If the proposed in-water work and use of a barge were to occur at the same time as dredging, spit repair, or Mora Road repair, the increase in vessel traffic in the lower Quillayute River could add a temporary adverse effect on the overall adverse trends on fishing activities; however, the proposed action would have a long-term beneficial effect on the overall adverse trend on fishing activities when combined with past, present, and reasonably foreseeable future actions.

3.6.1.3 Mitigation

Mitigation measures for potential impacts to hunting, fishing, and gathering include the following:

- Locate the large wood structures on the banks to minimize risk to boaters and provide sufficient unrestricted width across the river to allow tribal members to set typical fishing nets.
- Coordinate the construction schedule with the QNR to allow tribal members access to fishing areas during key fishing seasons.

3.6.2 Recreation

3.6.2.1 Existing Conditions

The Quileute Reservation is adjacent to Olympic National Park on the northern, southern, and eastern boundaries. The Quileute Reservation and Olympic National Park both contain scenic and recreational attractions including forested lands, fishing, camping, hiking, sightseeing, viewing of marine mammals and birds, use of ocean beaches, surfing, and boating. Recreational amenities attract tourism to the reservation, and tribal enterprises such as the Quileute Oceanside Resort and the Quileute Harbor Marina provide a source of revenue for the local economy. For tribal members, Thunder Field provides access to the Quillayute River for many of these recreational amenities and activities.

Mora Campground is adjacent to the Reach 3 floodplain and is open year-round, with 94 campsites available during the peak season. Sites are limited to 8 persons, for a maximum campground occupancy of 752. Tent and RV camping is permitted, with most sites limited to a vehicle length of 21 feet with a few sites supporting vehicles up to 35 feet. There are no RV hook-ups available, but there is a dump station. The campground has three comfort stations and a visitor amphitheater. Reservations are required for the campground during the peak season (May 26 to September 15).

Over the past 10 years, high weekend use begins in May, with peak campground use seen from Memorial Day to Labor Day. The campground is generally full during the peak season on weekends and holidays, and is full most days of the week in July and August when 75 sites on average are used every day. Numbers of campers per site are not available, but total campground occupancy during the peak season likely varies between 250 and 400 people (assuming 2.6 to 4.0 campers/site).

Total day use of the Mora/Rialto area is best evaluated based on vehicle use, which is electronically monitored on Mora Road. Day use patterns for Mora/Rialto are very similar to the campground use, with peak visitation generally seen in July and August. During the last 10 years, the peak average daily use was

seen in August 2020 when 633 vehicles per day were counted (about 1,650 visitors per day assuming 2.6 visitors in each vehicle). Over the last 10 years, the average counts during the peak season were 482 vehicles per day (about 1,250 visitors per day assuming 2.6 visitors per vehicle). Visitor use is down slightly over the last 10 years compared to the period of record (1993 – present), possibly due to the loss of parking space at Rialto Beach. Peak usage was seen in August 2004, when daily visits averaged 2,427 vehicles per day, or approximately 6,300 visitors per day if assuming 2.6 visitors per vehicle.

Recreational boaters also use the lower Quillayute River with several access points for small boats near Reach 3. Mora Road also provides access to Rialto Beach and several trailheads.

NRCS SEC [Natural Area]

3.6.2.2 Environmental Consequences

No Action: Under the No Action Alternative, construction would not occur and there would be no disruption to recreational users of the area. Continued bank erosion at Thunder Field could lead to a long-term adverse effect on recreational access to the river by Quileute Tribal members.

Proposed Action: Under the Proposed Action Alternative, a temporary disruption to recreational users would occur during construction. During this time, there would be limited access to Thunder Field by tribal members due to the volume of construction traffic on Thunder Road. Over the long term, the project would lead to a beneficial effect on recreation at Thunder Field by protecting the area from further erosion, improving access to the river with improved walkable fishing access and improved parking area.

No long-term change to recreation on the NPS (north) side of the river is anticipated; however, construction activity could lead to temporary disruption to the Mora Campground. Certain roads within the campground would be used for construction access to the floodplain, and the traffic control necessary to ensure public safety could lead to delays of up to 15 to 30 minutes. On the days scheduled for helicopter operations, any campsites deemed by the construction contractor or NPS to be at risk would be closed to the public. Helicopter operations would occur over approximately 3 consecutive days (depending on weather or other unforeseen issues that may arise), and the number of campsites affected would be no more than 50 percent of the total campground capacity.

Construction noise from heavy equipment and helicopters and safety-related access restrictions would also lead to temporary adverse effects on recreation. Boaters and other river users may be impacted by the presence of large wood structures, which can lead to safety concerns. These concerns have been addressed in a large wood risk assessment (Tetra Tech 2020d). Overall, the Proposed Action Alternative would have temporary adverse effects and long-term beneficial effects on recreation.

In conclusion, the Reach 3 project would result in a temporary disruption to recreational users during construction, primarily related to access restrictions (Thunder Road and Thunder Field) and noise. None of the other actions would affect access to Thunder Road or Thunder Field. If concurrent, traffic and construction noise related to USACE navigation channel maintenance and bank protection measure construction along Mora Road could have temporary adverse effects on recreational use. Over the long term, the project would lead to a beneficial effect on recreation at Thunder Field by protecting the area from further erosion and improving access to the river through walkable fishing access and improved parking area.

Therefore, the proposed action would have temporary adverse effects that would have no effect on trends in recreation; however, the proposed action would add long-term beneficial effects to the overall adverse trend on recreation when combined with other past, present, and reasonably foreseeable future actions.

3.6.2.3 Mitigation

Mitigation measures for potential impacts to recreation include the following:

- Plan construction access routes and staging areas on the north side of the river and establish work timing limitations (8:00 a.m. to 6:00 p.m.) to minimize disruption to users of the Mora Campground.
- Maintain vehicle access to NPS facilities and Mora Campground 24 hours per day, 7 days per week, with the exception of possible delays of no longer than 30 minutes to control traffic and minimize risks to public safety.
- Limit helicopter operations to weekdays, during daylight hours, and for the minimum number of days necessary.
- Develop the locations and designs of large wood structures to minimize safety risk to boaters and other river users.

3.6.3 Transportation Networks

3.6.3.1 Existing Conditions

The Quileute Reservation is connected to the regional transportation network via WA-110, which continues to the reservation boundaries and terminates in La Push. WA-110 connects to U.S. Highway 101 15 miles east of the reservation. Both U.S. 101 and WA-110 are two-lane highways and provide the only road access in and out of the reservation (Figure 1). Thunder Field is accessed through the lower village and Thunder Road. Reach 3 is also accessible from the north off of Mora Road, a spur of WA-110 that begins 5.6 miles away from La Push. Mora Road provides access to private land on the north side of the river and to Olympic National Park land adjacent to Reach 3 where the Mora Ranger Station, Mora Campground, and Rialto Beach are located. There is access to the campground from Mora Road, as well as a maintenance road. Mora Road also provides access to tribal land on the spit at the mouth of the Quillayute River. In July and August 2019, NPS traffic counts recorded about 8,900 and 17,500 vehicles entering the park on Mora Road, respectively, including staff, recreation, and non-recreation traffic (NPS 2021).

3.6.3.2 Environmental Consequences

No Action: Under the No Action Alternative, there would be no change to the transportation network.

Proposed Action: Under the Proposed Action Alternative, construction activity would result in temporary disruption of the transportation networks as large trucks deliver equipment and materials to the staging areas. Use of the transportation network would follow a traffic control plan developed by the contractor and approved by the Washington State Department of Transportation and FHWA. Flaggers on La Push Road would regulate traffic during helicopter operations to ensure public safety. Thunder Road would be closed to non-construction-related traffic for approximately 1 month. Mora Road could benefit from decreased bank erosion, preserving access. Therefore, a temporary adverse effect would occur to the transportation network during construction, but no short-term or long-term effects are anticipated.

The proposed action would add a temporary adverse effect on transportation networks, but would add overall long-term beneficial effects to the overall neutral or beneficial trends on transportation networks when combined with past, present, and reasonably foreseeable future actions.

3.6.3.3 Mitigation

Mitigation measures for impacts to transportation networks include the following:

- Develop and implement a traffic control plan to ensure safe construction access on La Push Road (WA-110), Thunder Road, and Mora Road.
- Coordinate with the Olympic National Park to minimize impacts to Mora Campground operation and NPS facilities maintenance during construction.
- Notify the public of construction schedules and travel restrictions on Thunder Road.

3.7 Other Values

3.7.1 Wilderness

3.7.1.1 Existing Conditions

The Reach 3 project lies partially within the Quileute Tribe’s “Northern Lands,” a 510-acre tract designated for conservation and partially within Olympic National Park. Proposed construction activities would not occur within designated wilderness; however, the coastal section of the Daniel J. Evans Wilderness is 0.2 miles to the north. While Reach 3 is generally undeveloped, it receives a moderate level of human use due to its proximity to the village of La Push and other recreational attractions such as Mora Campground and Rialto Beach.

NRCS SEC [Natural Area]

3.7.1.2 Environmental Consequences

No Action: The No Action Alternative would have no impacts to the existing conditions within Reach 3. The level of human use would remain unchanged. No effect on designated wilderness would occur.

Proposed Action: Under the Proposed Action Alternative, there would be temporary but no short-term or long-term effects to wilderness character. Noise generated by heavy-lift helicopters used for transporting materials to the Reach 3 project and from other construction-related activities such as the operation of heavy equipment and pile driving would have a temporary adverse impact on the following qualities of wilderness character: natural, undeveloped, and opportunities for solitude. Further analysis of noise impacts is presented in Section 3.7.2 below. Helicopter operations are anticipated to last approximately 3 days and pile driving would last several weeks. Therefore, the Proposed Action would have a temporary adverse effect on the natural, undeveloped, and opportunities for solitude qualities of wilderness character of a small portion of the nearby Daniel J. Evans Wilderness Area.

The proposed action would have temporary adverse effects on wilderness character within the project area and would not add to the overall adverse trend on wilderness character when considered in conjunction with past, present, and reasonably foreseeable future actions.

3.7.1.3 Mitigation

Mitigation for impacts to wilderness is not proposed because the helicopter flight paths have been planned to minimize impacts and no flights would occur over wilderness.

3.7.2 Noise and Light

3.7.2.1 Existing Conditions

Reach 3 lies within undeveloped, forested land in the Quillayute River valley. However, noise and light from human activity are common in the area due to the relative proximity to La Push, Mora Road, and Mora Campground. Anthropogenic noise sources include automobiles, boat motors, and airplanes passing overhead. Navy jets, in particular, generate high levels of noise for short periods of time in this area. Nighttime light primarily comes from headlights from vehicle use on Thunder Road and Mora Road.

3.7.2.2 Environmental Consequences

No Action: Under the No Action Alternative, there would be no increase of the existing noise and light conditions in the area. Therefore, the No Action Alternative would have no impact on noise and light.

Proposed Action: Under the Proposed Action Alternative, construction activity would lead to a temporary increase of noise within the Reach 3 area. Vehicles, heavy equipment, chainsaws, pile drivers, and helicopters would generate noise while they are being operated during the day. These activities would be restricted at dusk and at dawn to minimize disturbance to marbled murrelets during nesting and fledging season. Night-time work would not be allowed, and quiet times between 10:00 p.m. and 6:00 a.m. would be observed for Mora Campground. Many factors determine how far away sound can be heard, including the source levels, the noise absorbing characteristics of the site, and background sound levels. The forested nature of the site and surrounding areas would help to attenuate sound propagation, and the proximity of ocean surf may increase background sound levels on a regular basis. The City of Forks operates a small airport (airport identifier UIL) approximately 2.5 miles from Reach 3 and low-flying aircraft are not uncommon in this area; however, the heavy-lift helicopter proposed for this project would likely exceed the typical aircraft noise levels for a duration of approximately 3 days. Pile-driving activity, using either a vibratory driver or an impact driver, would be necessary for installing the timber piles elements of the large wood structures. Pile driving would occur over several weeks during the in-water work window. Therefore, construction activities that are part of the Proposed Action Alternative would have a temporary adverse effect on noise levels in the local area.

If conducted concurrently with the Reach 3 project, traffic related to USACE navigation channel maintenance and bank protection measure construction along Mora Road would result in a temporary increase of noise within Reach 3 and in adjacent areas and would have a neutral effect on the overall adverse trends on noise and light when combined with past, present, and other reasonably foreseeable future actions.

3.7.2.3 Mitigation

Mitigation measures for impacts to noise and light levels include the following:

- Restrict night work and observe campground quiet times.
- Plan helicopter operations to occur over the fewest number of days possible.

3.7.3 Visual

3.7.3.1 Existing Conditions

Reach 3 is in a wide section of the lower Quillayute River in an undeveloped forested part of the reservation and immediately adjacent to NPS lands. The construction area cannot be viewed from La Push; however, tribal fishermen, river users, campers at the Mora Campground, and travelers along Mora Road would have potential views of the construction area.

NRCS SEC [Scenic Beauty]

3.7.3.2 Environmental Consequences

No Action: Under the No Action Alternative, visual quality would not change at Reach 3; therefore, the No Action Alternative would have no impacts to visual resources.

Proposed Action: Under the Proposed Action Alternative, small portions of Reach 3 would be cleared of vegetation and temporarily used for staging or access routes. These areas would be reseeded after construction activities have been completed. Excavated floodplain areas would also be cleared of existing vegetation but would eventually recolonize naturally with species that are appropriate for the conditions. Permanent impacts to visual quality would include the large wood structures. These features consist of engineered log jams that are designed to mimic the function of naturally occurring structures. Immediately after construction, these structures are anticipated to appear somewhat incongruous with the surrounding landscape, but over time, they would promote scour, deposition, and natural revegetation that would make them blend in and create visually appealing river features. Therefore, the Proposed Action Alternative would have short-term adverse effects on visual resources in the immediate area but would result in a beneficial effect over the long term.

The proposed action would add beneficial effects on the overall beneficial trends on visual resources within the project area when considered in conjunction with past, present, and foreseeable future actions.

3.7.3.3 Mitigation

Mitigation measures for impacts to visual aesthetics include the following:

- Stabilize, reseed, and replant disturbed areas, including large wood structures, to promote revegetation and minimize visual incongruities.

3.7.4 Public Health and Safety

3.7.4.1 Existing Conditions

One of the primary goals of the Quileute Tribe's action plan and a major objective for this proposed project is to improve public health and safety for residents of La Push. As described in the Purpose and Need (Section 1), La Push is susceptible to frequent flooding, and the rapid lateral migration of the Quillayute River at Reach 3 has led to concern that the mainstem could avulse into Smith Slough, causing significant damage and harm to residents.

Tribal access to the Quillayute River at Thunder Field is currently impeded by the high, steep, eroding bank at the end of Thunder Road. The parking area is not maintained and has no barricade to keep vehicles from approaching too close to the unstable riverbank. Public access to Reach 3 on the north side of the river is possible only on foot through the Mora Campground; vehicle access to the river is possible

upstream at Richwine Bar. On the river itself, there are very few log jams or other structures that extend into the river at normal flows, and thus, there are few hazards to boaters and other users of the river.

3.7.4.2 Environmental Consequences

No Action: Under the No Action Alternative, the potential threat to public health and safety in La Push and the existing hazards at Thunder Field would remain unchanged in the short term. There would be no change to river hazards. Indirectly, not addressing lateral bank migration at Thunder Field could increase the risk of erosion and an eventual avulsion. Overall, the No Action Alternative could have an adverse long-term impact on public health and safety for La Push residents.

Proposed Action: Under the Proposed Action Alternative, the mainstem of the Quillayute River would be deflected away from Smith Slough and other relic channels at Thunder Field to reduce the risk of avulsion. Geomorphic changes at the Reach 3 project could also reduce erosion processes downstream, leading to a beneficial effect to safety on Mora Road. Improvements to the parking area, the new vehicle barrier, and walkable fishing access would reduce the hazardous conditions at Thunder Field while increasing access for tribal members. Large wood structures in the river would increase risk to fishermen, recreational boaters, and other river users by creating a potential for entanglement. This issue has been addressed in detail in a large wood risk assessment (Tetra Tech 2020d). The proposed large wood structures would not impede safe access to the Dickey boat launch.

Helicopter operations would be carefully planned to minimize risk to public safety; however, it is impossible to entirely eliminate risk to the public if they are present near the take-off and landing areas and in the flight paths during operations. A detailed flight plan and safety operation plan would be developed to NPS standards by the contractor prior to any work involving helicopters. Flaggers would be used to temporarily restrict traffic on any road underneath a helicopter flight path, and signs and other notices would be used to keep the public out of the work area. Overall, the Proposed Action Alternative would have a mixed effect on public health and safety: a long-term beneficial effect in certain locations, but also temporary short- and long-term adverse effects in other locations, depending on the type of user and time-scale considered.

The proposed action would add long-term beneficial effects as well as short- and long-term adverse effects to the overall beneficial trends on public health and safety when combined with past, present, and reasonably foreseeable future actions.

3.7.4.3 Mitigation

Mitigation measures for potential impacts to public health and safety include the following:

- Develop a safety plan for helicopter operations that would be approved by NPS prior to implementation.
- Plan helicopter operations to occur over the fewest number of days possible.
- If funded by the NRCS, place permanent warning signs upstream of wood after implementation to ensure boater safety.
- Develop the locations and designs of large wood structures to minimize risk to the safety of boaters and other river users.

3.7.5 Indian Trust Assets

3.7.5.1 Existing Conditions

The Quileute Reservation includes 2,156 acres. The boundary with NPS land in Reach 3 was established recently in 2012 under Public Law 112-97 and involved a transfer of NPS land to the Quileute Tribe for the purpose of providing tsunami and flood protection. This area, known as the “Northern Lands,” is designated for conservation.

3.7.5.2 Environmental Consequences

No Action: Under the No Action Alternative, no change to the legal boundary of Indian trust assets would occur. However, continued erosion of Thunder Field would diminish the functional use of Tribal Trust land by reducing the forested floodplain area available for use by tribal members. Therefore, the No Action Alternative would have an overall long-term adverse effect on Indian Trust assets.

Proposed Action: Under the Proposed Action Alternative, the large wood structures and restoration features would be constructed both on trust land and on NPS land. NPS has collaborated with the tribe on this project and no change in the current boundary would occur. The bank stabilization offered by the position of the proposed large wood structures would maintain the useable land area at Thunder Field. Thus, the Proposed Action Alternative would have a long-term beneficial effect on Indian Trust assets.

The proposed action would add long-term beneficial effects on the overall beneficial trends on Indian Trust Assets when considered in conjunction with past, present, and foreseeable future actions.

3.7.5.3 Mitigation

Mitigation for impacts to Indian Trust Assets is not proposed.

4. CONSULTATION AND COORDINATION

A description of the consultation and coordination activities that have occurred for the Reach 3 project is provided in Section 1.2.3. These activities have included monthly stakeholder meetings with the Quillayute River Restoration Working Group that began in June 2020 (with participation by QNR, NPS, NRCS, FHWA, and USCG), several pre-filing meetings with relevant regulatory agencies (USACE, EPA, and Ecology), and NEPA pre-planning meetings with the lead and cooperating agencies that contributed to this EA (QNR, BIA, NPS, and NRCS). A complete list of agencies that have been involved is provided below.

Tribal

Quileute Tribe

Federal

Bureau of Indian Affairs, U.S. Department of Interior

National Park Service, U.S. Department of Interior

Natural Resource Conservation Services, U.S. Department of Agriculture

National Marine Fisheries Service, U.S. Department of Commerce

U.S. Fish and Wildlife Service, U.S. Department of Interior

Federal Highways Administration, U.S. Department of Transportation

U.S. Army Corps of Engineers

U.S. Environmental Protection Agency

U.S. Coast Guard

State

Washington State Department of Archaeology and Historic Preservation

Washington Department of Fish and Wildlife

Washington State Department of Ecology

Local Government

None

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6. REFERENCES

- eBird. 2021. Field Checklist for Mora Road Overlook, Clallam, Washington, US. Available online at: ebird.org/hotspot/L4052978. Accessed February 2021.
- Ecology (Washington State Department of Ecology). 2020. Washington State Department of Ecology Facility/Site database, available online at: <http://www.ecy.wa.gov/fs/>. Accessed January 2020.
- NPS (National Park Service). 2008. Record of Decision for Final General Management Plan Environmental Impact Statement. Federal Register, November 12, 2008, Volume 73, No. 219, P. 66919.
- NPS. 2021. National Park Service Visitor Use Statistics, Olympic NP (OLYM) Reports. National Park Service, U.S. Department of the Interior, Natural Resource Stewardship and Science. Available online at: <https://irma.nps.gov/STATS/Reports/Park/OLYM>.
- NRCS (Natural Resources Conservation Service). 2015. Quillayute River Reach Assessment: Assessment of River Reach Form, Pattern, Trend, Streambank Erosion, and Channel Succession.
- NRCS. 2016a. Move To Higher Ground Draft Soil Map. February 2016.
- NRCS. 2016b. Soil Survey Manual – Chapter Two. Available online at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054252. Accessed December 2016.
- NRCS. 2020. Hydric Soils National List. Available online at: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>. Accessed May 2020.
- NOAA (National Oceanic and Atmospheric Administration). 2016. Ecological Concerns Data Dictionary. National Oceanic and Atmospheric Administration. National Marine Fisheries Service, Pacific Northwest Fisheries Science Center. Seattle, WA. Available online at: https://www.webapps.nwfsc.noaa.gov/apex/parrdata/inventory/tables/table/ecological_concerns_data_dictionary.
- NOAA. 2021. WETS Table for Quillayute Airport, WA. ACIS, NOAA Regional Climate Centers. National Oceanic and Atmospheric Administration. Available online at: <http://agacis.rcc-acis.org/?fips=53009>.
- Oregon Climate Change Research Institute. 2016. Climate Change Vulnerability Assessment for the Treaty of Olympia Tribes: A Report to the Quinault Indian Nation, Hoh Tribe, and Quileute Tribe. Oregon Climate Change Research Institute, Corvallis, Oregon.
- Pacific Forest Management, Inc. 2017. Move To Higher Ground Phase 1: Logging Unit, Environmental Assessment. Prepared for the Bureau of Indian Affairs and the Quileute Tribe. 47 pp.
- QNR (Quileute Natural Resources). 2017. Thunder Road Betterment Project Environmental Assessment. Prepared for Bureau of Indian Affairs, NW Region Office, Portland, Oregon. 58 pp.
- QNR. 2019. Quileute Tribal Assessment Report, water quality data. Provided September 2019.
- Quileute Nation. 2020. quileutenation.org. Accessed December 2020.
- Raphael, M.G., G.A. Falxa, D. Lynch, S.K. Nelson, S.F. Pearson, A.J. Shirk, and R.D. Young. 2016. Status and Trend of Nesting Habitat for the Marbled Murrelet under the Northwest Forest Plan. Chapter 2 in: Falxa, G.A.; Raphael, M.G., technical editors. 2016. Northwest Forest Plan—The

- first 20 years (1994-2013): status and trend of marbled murrelet populations and nesting habitat. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Gen. Tech. Rep. PNW-GTR-933., Portland, OR. 132 pp.
- Rasmussen, N. 2016. Biological Assessment, Thunder Road Betterment Project. Prepared for the Quileute Tribe and Bureau of Indian Affairs.
- Smith, C.J. 2005. Salmon Habitat Limiting Factors in Washington State. Washington State Conservation Commission. Olympia, Washington.
- Tetra Tech (Tetra Tech, Inc.) 2020a. Quillayute River Project: Geomorphic Assessment Report. Prepared for Quileute Natural Resources, La Push, WA. February 2020. 73 pp.
- Tetra Tech. 2020b. Quillayute River Project: Basis of Design Report, 60 Percent Design. Prepared for Quileute Natural Resources, La Push, WA. June 2020. 73 pp.
- Tetra Tech. 2020c. Quillayute River Project: Wetland Delineation Report. Prepared for Quileute Natural Resources, La Push, WA. June 2020. 73 pp.
- Tetra Tech. 2020d. Quillayute River Project: Large Woody Debris (LWD) Structures Risk Assessment. Prepared for Quileute Natural Resources, La Push, WA. May 2020. 57 pp.
- U.S. Census Bureau. 2018. City and Town Population Totals. Forks, Washington. Accessed February 2021.
- USACE (U.S. Army Corps of Engineers). 2016. Quillayute River Navigation Project Comprehensive Environmental Study. July 1981.
- USFWS (U.S. Fish and Wildlife Service). 2017. Biological opinion for Thunder Road betterment project. USFWS Reference: 01EWF00-2017-F-0374. U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey. 62 pp.
- WDFW (Washington Department of Fish and Wildlife). 2021. <https://wdfw.wa.gov/fishing/reports/creel/steelhead/2019-2020#bogachiel-quillayute>. Accessed February 2021.

Appendix A

National Historic Preservation Act Section 106 Consultation

Appendix B

Impact Topics Considered but Dismissed

The following topics were eliminated from further consideration due to either their lack of presence within the project area or the project would have no effect or no noticeable effect on these elements.. A brief discussion of why each topic was dismissed is provided below.

LAND RESOURCES

Geological Resources

The Quillayute River and the lower reaches of the major tributaries lie on a terrace that extends eastward from the coast. The terrace consists mainly of alluvium in the floodplains and glacial deposits elsewhere (Tetra Tech 2020). Rock debris carved during extensive glaciation of the Olympic Mountains has been transported to the present-day coastal areas largely by meltwater from glaciers. Glaciers advanced and retreated several times to carve the landscape and transport rock debris. Dramatic changes in relative sea level elevation from the time of deglaciation to the present have also affected valleys in the area. The resulting alluvial valley fill is highly erodible and forms a very low relief surface, enabling streams to readily migrate across the entire valley bottom (Tetra Tech 2020; Schasse et al. 2004; Polenz et al. 2004).

The Proposed Action Alternative would have temporary impacts to surficial alluvium due to excavation activities. The underlying geology and nature of geological resources would not be affected.

Mineral Resources

No mineral resource areas have been identified within Reach 3. The project would have no impact on mineral resources.

Paleontological resources

No paleontological resource areas have been identified within Reach 3. The project would have no impact on paleontological resources.

AIR QUALITY

Clallam County is considered “in attainment” of the National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency (EPA). Pollutants regulated under NAAQS include carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Air quality in the area is also monitored by the Olympic Region Clean Air Agency with the nearest air monitoring station located at Cheeka Peak, approximately 50 miles north of La Push. Olympic National Park is a Class 1 airshed.

The Quileute Reservation lands are generally rural and forested, with close proximity to the Pacific Ocean, which provides a reliable flow of clean air. The Quileute Reservation is home to approximately 406 tribal members and does not have large population centers nearby. For these reasons, air quality is considered good in the area. Air quality in specific locations may be degraded occasionally due to exhaust from vehicles, boats, or from burning, but these conditions are temporary.

Under the Proposed Action Alternative, construction activities such as the use of helicopters, heavy equipment, and other combustion engines, could lead to temporary adverse effects to localized air quality. Dust and airborne particulate matter would be generated by rotor wash during helicopter take-off and landing and by excavators during placement and handling of material. The contractor would be

responsible for developing and implementing dust control best management practices. Increases in both dust and emissions would be temporary and localized, with a discountable effect on air quality in the area.

NRCS SEC [Clean Air Act]

LIVING RESOURCES

Agriculture

No livestock, crops, or prime or unique farmland resource areas are present within Reach 3. The Proposed Action Alternative would have no impact on agricultural resources.

CULTURAL RESOURCES

Historic and Archaeological Resources

The National Historic Preservation Act (NHPA) Section 106 requires federal agencies to identify cultural resources that may be affected by a federal action. If a resource is determined to be a historic property—defined as: “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property” (NHPA 16 USC 470w, Sec. 301[5])—then the significance of the resource must be evaluated. The Bureau of Indian Affairs (BIA) Northwest Regional Office and the National Park Service (NPS) are conducting Section 106 reviews and have made preliminary determinations of “No Adverse Effect” to historic properties. Documentation of the Section 106 consultation is provided in Appendix A.

In the event of unanticipated discovery of archaeological resources, work would be stopped and the Engineer and Owner’s Representative (either Quileute Tribe representative or Olympic National Park archaeologist / Section 106 advisor) would be notified. The resource would be protected in the state it was found until proper protocols could be followed.

NRCS SEC [Cultural Resources/Historic Properties]

RESOURCE USE PATTERNS

Mineral Extraction

There are no mineral extraction activities at Reach 3, nor would mineral extraction be permitted in the future under the established management plans. The Proposed Action Alternative would have no impact on mineral extraction activities.

Timber Harvesting

The reservation land within Reach 3 has never been commercially harvested (F. Geyer, personal communication, December 19, 2016) and is managed as conservation land by the tribe according to the terms and conditions of Public Law 112-97. NPS land within Reach 3 is floodplain and not available for timber harvest. Therefore, the Proposed Action Alternative would have no impact on the ability to harvest timber within Reach 3.

Land Use Plans

The Proposed Action Alternative is consistent with current land use plans as identified under Public Law 112-97 “Conditions of Northern Lands” and the Olympic National Park General Management Plan (NPS 2008). The Proposed Action Alternative would have no impact on existing authorized land uses.

NRCS SEC [Coastal Zone Management, Natural Area]

OTHER VALUES

Climate Change (Greenhouse Gases)

As described in the Purpose and Need (Section 1), this project has been planned and designed to respond to threats posed by climate change, such as the increased frequency of major flooding. Rising sea level, increased winter rainfall and less snow in the higher elevations are examples of physical phenomena that have been observed and can be attributed to climate change (Mote et al. 2008). However, the effect of the alternatives presented in this Environmental Assessment on global atmospheric greenhouse gas levels is insignificant due to the limited temporal and geographical scale of project activities. The Proposed Action Alternative would have no effect on climate change.

Hazardous Materials

No hazardous materials are known to exist in Reach 3. A recent search of EPA’s Envirofacts database (available at: <https://www3.epa.gov/enviro/facts/rcrainfo/search.html>) and the State’s database (Ecology 2020) found no facilities or sites of environmental interest. The risk of small spills of hydraulic fluid or fuel are addressed in the Section 3.2. The Proposed Action Alternative would have no effect on hazardous materials with implementation of applicable BMPs, as discussed in Section 3.2.3.

REFERENCES

- Ecology (Washington State Department of Ecology). 2020. Washington State Department of Ecology Facility/Site database, available online at: <http://www.ecy.wa.gov/fs/>. Accessed January 2020.
- Mote, P., A. Petersen, S. Reeder, H. Shipman, and L.W. Binder. 2008. Sea Level Rise in the Coastal Waters of Washington State. A report by the University of Washington Climate Impacts Group and Washington Department of Ecology. January 2008. 11 pp.
- NPS (National Park Service). 2008. Record of Decision for Final General Management Plan Environmental Impact Statement. Federal Register, November 12, 2008, Volume 73, No. 219, P. 66919.
- Polenz, M., K. Wegmann, and H. Schasse. 2004. Geologic Map of the Elwha and Angeles Point 7.5-minute Quadrangles, Clallam County, Washington.
- Schasse, H.W., K.W. Wegmann, M. Polenz. 2004. Geologic Map of the Port Angeles and Ediz Hook 7.5-minute Quadrangles, Clallam County, Washington.
- Tetra Tech (Tetra Tech, Inc.). 2020. Quillayute River Project: Geomorphic Assessment Report. Prepared for Quileute Natural Resources, La Push, WA. February 2020. 73 pp.