

**Fiscal Years 2016 through 2026 Ediz Hook Revetment Repair  
Port Angeles, Clallam County, Washington**

**FINDING OF NO SIGNIFICANT IMPACT**

**1. Background**

The Ediz Hook Beach Erosion Control Project 10-year Maintenance and repairs Environmental Assessment (EA) evaluates the impacts of the proposed action, repair and maintenance of the armor rock at the Ediz Hook Revetment in Port Angeles, Clallam County, Washington. This repair is necessary to fix current and future damages to the Federal project. The Ediz Hook revetment, in combination with ongoing beach nourishment cycles, protects the sand spit from erosion, thereby maintaining protection of Port Angeles Harbor, the small boat basin and other structures from direct wave action, and preserving access to a U.S. Coast Guard station located at the tip of the spit. Damage occurred in December 2015, and temporary repairs occurred January 2016. Due to the location and extent of the damage it was critical to perform a temporary emergency repair of the damaged sections to prevent enlargement to the damage of the revetment and inundation and surge from the next coastal storm event and/or king tide from entering the Nippon Property and its filtration ponds. Permanent repair of the same location is scheduled to begin in July 2016, when the in-water work window reopens. The EA also evaluates the impacts of future repairs and beach nourishment cycles at Ediz Hook, on an as-needed basis.

**2. Purpose**

The purpose of the revetment repairs and beach nourishment cycles is to protect the sand spit from erosion, thereby maintaining protection of Port Angeles Harbor and the small boat basin from direct wave action, and preserving access to a U.S. Coast Guard station located at the tip of the spit. The proposed repairs are necessary because the structure has become degraded by storm waves this past season, which has resulted in the loss and displacement of core support rock with resulting settlement and displacement of the larger armor rock layer. It is also likely that future repairs of the revetment will be necessary due to winter storm events, as well as needed beach nourishment cycles. If no action were to be taken, then it is anticipated that with adverse weather conditions the loss of this protection will result in overtopping and damage to public property behind the revetment posing a threat to human health and safety.

### **3. Preferred Alternative.**

The project represents a planned, methodical approach to address environmental compliance for repairs from the December 2015 storm event, any future repairs needed along the entire revetment structure, and as needed beach nourishment cycles in front of the revetment. Construction will occur in 2016 for the permanent repair of the section damaged in the 2015 storm event, and future as-needed repairs could occur over a ten-year period from fiscal year (FY) 2016 to FY 2026. The emergency repair in January 2016 involved the placement of 3,250 tons of materials along the damaged section. The permanent repair of that same section to begin in July of 2016 will place 13,750 tons of armor material and 50,000 CY of 12-inch minus cobble and gravels. Future as needed repairs, will place an estimated 13,000 tons of armor material and 100,000 CY of 12-inch minus cobble and gravels in any given year.

### **4. Summary of Impacts and Compliance**

It was not feasible for the Corps to complete National Environmental Policy Act procedures prior to accomplishing the Federal actions of emergency placement of armor stone adjacent to vulnerable segments of the revetment in January 2016. This placement was an emergency action required during the ongoing winter storm season to reduce the risk to the stability and functionality of the Ediz Hook revetment posed by damaged sections identified the previous December. Project adverse impacts, including those of the January 2016 temporary placement, the upcoming 2016 permanent repair, and any as-needed, future repairs, are expected to be minor. Scheduled repair work will be completed at low tide and in the dry to the extent practicable. Organisms in this high-energy environment will be expected to recover quickly. The primary impact will be a minor and temporary disruption to area recreation and possible inconsequential disturbance to threatened and endangered species (salmonids) from construction related noise and vibrations during construction. Any in-water work will occur during the designated work window of 16 July to 15 February to avoid impacts to sensitive species.

The Corps has determined that the project may affect but is not likely to adversely affect marbled murrelet, green sturgeon, bull trout, Hood Canal summer chum, Chinook salmon, and southern resident killer whales. The project may affect but will not likely adversely affect the critical habitat of green sturgeon, bull trout, Hood Canal summer chum salmon, and Chinook salmon. The proposed project will have no effect on the critical habitat of marbled murrelet and killer whales. In letters dated 22 April 2016 and 12 May 2016, respectively, NMFS and USFWS concurred with the Corps' determination. The Corps has determined that the proposed action will not reduce the quality and/or quantity of Essential Fish Habitat (EFH) for Pacific salmon, coastal pelagic, and groundfish EFH and no adverse effects to EFH are expected to result from the proposed action. In a letter dated 22 April 22 2016 NMFS concurred with this finding. All construction work will be limited to the timeframe between 16 July to 15 February to avoid impacts salmonids and forage fish.

The Corps has determined that the proposed action will result in no impacts to any properties listed, proposed for listing, eligible for listing, or potentially eligible for listing in the National Register of Historic Places. In a letter dated 8 June 2016, the State Historic Preservation Office (SHPO) concurred with this finding. In addition, consultation letters were sent to the Jamestown S’Klallam, Lower Elwha Klallam, Port Gamble S’Klallam, and Skokomish Tribal Nations. In a response letter dated 10 June 2016, in respect to cultural resources, the Jamestown S’Klallam Tribe has deferred to the Lower Elwha Klallam Tribe. No other tribal comments were received; however, should the scope change or if new data is revealed coordination will be reopened.

There will be no impacts to wetlands as there are no wetlands in the area of the revetment repair. The Corps has determined that the project meets the criteria for Clean Water Act Nationwide Permit (NWP) 3, and all State conditions for general CWA Section 401 Certification under NWP 3 and for general CZMA consistency concurrence have been satisfied. The Corps also prepared a Coastal Zone Management Act (CZMA) Consistency Determination for a similar repair action on Ediz Hook in 1997 and determined that the repair is consistent to the maximum extent practicable with the enforceable policies specified in the City of Port Angeles Shoreline Management Master Plan and the State of Washington Shoreline Management Program. Washington Department of Ecology (WDOE) concurs that the 1997 determination applies to any future repairs of Ediz Hook, as long as they are within the authorized footprint and meet the conditions of a NWP 3. In a letter of verification dated 15 April 2016, the WDOE concurred with the Corps determination that the project meets the requirements for Section 401 Water Quality Certification and CZMA under NWP 3; therefore, an individual 401 certification and individual CZMA Consistency concurrence are not required.

Efforts will be made to minimize disturbances to local traffic patterns during construction through appropriate work hours, signage, notifications and proper traffic controls. It is anticipated that traffic and noise impacts will be minor, localized, and not significant. Effects to air quality do not exceed *de minimis* levels.


## **5. Public Involvement**

The proposed action has been coordinated with appropriate Federal, Tribal, state, and local agencies, and businesses, organizations, and individuals through distribution of the Ediz Hook Revetment Repair and Beach Nourishment Activities FY2016-2026 DRAFT Environmental Assessment for their review and comment. The 30-day comment period was 21 April through 23 May 2016. Four comment letters were received, from the Environmental Protection Agency, Washington State Department of Natural Resources, and two from the public.

**6. Finding**

Based on the attached environmental documentation, coordination, and analysis conducted by the Corps environmental staff, I have determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment and therefore does not require preparation of an environmental impact statement.

24 Jun 16  
Date

  
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John G. Buck  
Colonel, Corps of Engineers  
District Commander

# FINAL ENVIRONMENTAL ASSESSMENT

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## EDIZ HOOK REVETMENT REPAIRS AND BEACH NOURISHMENT ACTIVITIES: FY2016-2026



June 2016



Seattle District  
Corps of Engineers

## **Ediz Hook Revetment Repair and Beach Nourishment Activities FY2016-2026**

### **Clallam County, Washington**

#### **Draft Environmental Assessment**

**Responsible Agencies:** The responsible federal agency for this routine maintenance work is the U.S. Army Corps of Engineers (Corps), Seattle District.

**Abstract:** This document evaluates the impacts of the U.S. Army Corps of Engineers (Corps) repair of the Ediz Hook Beach Erosion Control Project. The purpose of the erosion control project is to protect the sand spit from erosion, thereby protecting Port Angeles Harbor, and the small boat basin from direct wave action, and maintaining access to the U.S. Coast Guard Station, Port Angeles, located at the end of the spit.

In accordance with the National Environmental Policy Act (NEPA), this Draft Environmental Assessment (EA) evaluates the impacts of the emergency repair that took place in January 2016 as well as the proposed full repair to be completed in stages over a 10-year period from fiscal years (FY) 2016-2026 between stations 55+00 and 175+00 as needed based on annual structure condition assessments.

An interim emergency repair performed in January 2016 consisted of repairs along a 200-ft section of the revetment between stations 170+50 to 171+50, adjacent to the Nippon Paper Industries property. The Corps placed approximately 2,550-tons of 2 to 10-ton armor stone as well as 700-tons of filter layer material. Due to the high tides during the emergency work, a full repair down to 0-ft Mean Lower Low Water (MLLW) was not possible; therefore, repairs were limited to areas above +6-ft MLLW. Future repairs and maintenance work over the next 10 years would will include the placement of armor stone, filter layer material and beach nourishment between stations 55+00 and 175+00 as needed based on annual structure condition assessments.

Potential impacts of the proposed work are described in this document. Impacts would generally be highly localized in nature, short in duration, and minor scope. Impacts are not expected to be significant either individually or cumulatively.

**Public Review and Comment Period:** April 21 through May 23, 2016

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## Acronyms and Abbreviations

BMP	Best Management Practice(s)
CEQ	Council on Environmental Quality
COPC	Chemicals of potential concern
CSO	Combined sewer outfall
CY	Cubic yards
DPS	Distinct population segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impacts
Ft	Foot/feet
FY	Fiscal Year
LWD	Large woody debris
MLLW	Mean lower low water
MHHW	Mean higher high water
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OHW	Ordinary high water

PFMC	Pacific Fishery Management Council
SHPO	State Historic Preservation Office
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
UST	Underground storage tank
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WDOE	Washington Department of Ecology
WISAARD	Washington Information System Architectural and Archaeological Records Database

# 1 INTRODUCTION

The Council on Environmental Quality (CEQ) regulations, 40 CFR § 1500.1(c) and 40 CFR § 1508.9(a)(1), interpreting the National Environmental Policy Act of 1969 (as amended), require Federal agencies to “*provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact*” on actions authorized, funded, or carried out by the Federal government to assist agency officials in making decisions that are based on an understanding of “environmental consequences, and take actions that protect, restore, and enhance the environment.” This Draft Environmental Assessment (EA) evaluates the impacts of the emergency repair that took place in January 2016 as well as the proposed full repair to be completed in stages over a 10-year period from fiscal years (FY) 2016-2026 between stations 55+00 and 175+00<sup>1</sup> as needed based on annual structure condition assessments.

The emergency repair of armor stone adjacent to the Nippon Industries mill took place in January 2016 and is evaluated retrospectively; only the execution of future FY 2016 to FY 2026 repairs are prospectively reviewed in this document. The U.S. Army Corp of Engineers (Corps) NEPA regulations regarding “*Emergency Actions*” does allow for completion of NEPA documentation after-the-fact in emergencies. Emergency actions are discussed in 33 CFR 230.8 as follows:

*Section 230.8 - Emergency actions. “In responding to emergency situations to prevent or reduce imminent risk of life, health, property, or severe economic losses, district commanders may proceed without the specific documentation and procedural requirements of other sections of this regulation. District commanders shall consider the probable environmental consequences in determining appropriate emergency actions and when requesting approval to proceed on emergency actions, will describe proposed NEPA documentation or reasons for exclusion from documentation. NEPA documentation should be accomplished prior to initiation of emergency work if time constraints render this practicable. Such documentation may be accomplished after the completion of emergency work, if appropriate. Emergency actions include Flood Control and Coastal Emergencies Activities... and projects constructed under sections 3 of the [Rivers and Harbors] Act of 1945 or 14 of the Flood Control Act of 1946 of the Continuing Authorities Program. When possible, emergency actions considered major in scope with potentially significant environmental impacts shall be referred through the division commanders to HQUSACE (CECW-RE) for consultation with CEQ about NEPA arrangements.”*

Completion of the NEPA documentation prior to project implementation of the January 2016 action (emergency repair with suitable sized armor stones) while still fulfilling the agency’s purpose and need of preserving the integrity and functionality of the revetment during the 2015-2016 winter season was not possible. Since identification of the nature and extent of revetment damage, insufficient time was available to assess and document the environmental impacts of the

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<sup>1</sup> Station 00+00 is the waterward end of the point, and then station numbers increase headed inland, terminating at Station number 181+55.

armor stone placement before the need to act to avert the risk of winter storm damage arose. It was impossible for the Corps to complete all the NEPA procedures prior to the date on which the major Federal action was necessary. Therefore, the agency complied with NEPA "to the fullest extent possible" under the circumstances.

### 1.1 LOCATION

Ediz Hook is located on the northern shore of the Olympic Peninsula in Port Angeles, Clallam County, Washington (Township 30 North, Range 6 West, Sections 32, 33, and 34). The spit juts easterly approximately 3.5 miles into the Strait of Juan de Fuca, forming Port Angeles Harbor (Figure 1).

### 1.2 AUTHORITY

Section 4 of the 1974 Water Resources Development Act (Public Law 93-251) authorized the Ediz Hook Beach Erosion Control Project. The project, adopted March 7, 1974 and completed in October of 1978 consists of about 13,300 lineal feet of rock revetment and 3,100 lineal feet of rock blanketing along with beach nourishment.

### 1.3 BACKGROUND

Ediz Hook provides storm protection to Port Angeles Harbor and its boat basin, provides a land-link to the mainland for the U.S. Coast Guard (USCG) station located on the spit's eastern end, and provides day use recreation for local residents and tourists. The City of Port Angeles is the local sponsor and partially funds the project, sharing 10.9 percent of the cost.

Since 1978, beach nourishment and/or revetment rehabilitations have occurred in 1985, 1991, 1997, 2002 and 2011. Table 1 below lists a detailed timeline of each nourishment and/or maintenance action taken along the spit.

Table 1. Construction, maintenance, and repairs timeline

Year	Beach nourishment & maintenance activities	Stationing
1978	Original beach nourishment - 160,000 ton gravel, cobble, and sand (5 locations)	174+10 to 145+60 131+70 to 125+70 112+70 to 105+70 98+70 to 74+70 50+00 to 40+00
	Original construction - 34,000 ton of rock blanket	41+00 to 10+00
	Original construction - 405,000 ton rock revetment	174+10 to 41+00
1985	Beach re-nourishment - 45,300 ton of gravel/cobble (2 locations)	174+00 to 150+00 115+00 to 90+00
	Rehabilitation of rock blanket – 36,000 ton rock revetment constructed to tie in with neighboring revetment to protect USCG runway	41+00 to 20+00
	Re-keying displaced revetment rock along entire structure length	where visible
1991	Emergency repair of remaining rock blanket, rock revetment constructed	20+00 to 10+00
1997	Beach re-nourishment - 45,000 tons of gravel/cobble (3 locations)	156+50 to 150+00 113+90 to 95+20 10+00 (USCG erosion area)

<b>Year</b>	<b>Beach nourishment &amp; maintenance activities</b>	<b>Stationing</b>
2002	Beach re-nourishment - 45,000 tons of gravel/cobble (3 locations)	160+00 to 150+00 109+00 to 104+00 100+00 to 94+00
2011	Beach re-nourishment – 50,000 tons of gravel/cobble (2 locations)	85+00 to 115+00 151+00 to 171+0

On 22 December 2015, the Seattle District received reports of damage to the Ediz Hook Revetment in the adjacent to the Nippon Paper Industries property from both Nippon Paper representatives as well as from the City of Port Angeles. Corps personnel responded to assess the damages and make recommendations regarding necessary repairs. After assessing the damages and considering the likelihood that a small wind or coastal storm event combined with a king tide, or a large wind or coastal storm event with even a normal high tide, would result in additional significant damages to the revetment and facilities behind the revetment. With the failed condition of the revetment and the proximity of the filter plant to wave action, an emergency repair was warranted. Repairs carried out in January 2016 consisted of the placement of 6,500 tons of smaller, more readily available, 2-5 ton stone along with a 3-foot layer of 2,500 tons of 6 to 12 inch quarry spalls as a filter layer to fill approximately 100 feet of failed revetment. Due to the high tides during the emergency work, a full repair down to 0-ft Mean Lower Low Water (MLLW) was not possible; therefore, repairs were limited to areas above +6-ft MLLW. In addition, two layers of 2 to 5 ton armor stone were placed on top of the revetment crest in front of the settling basin to minimize the potential for damage to the structure until a full repair can be accomplished. During the summer of 2016 when seas are calmer, a final repair would take place during low tide, down to 0-ft MLLW. These repairs would consist of restoring the revetment to the original height, width, and slope with 12,000 tons of 4 to 10 ton stones with a keyed-in toe along with a 3-foot layer of 5,000 tons of 6 to 12 inch quarry spalls as a filter layer.

#### **1.4 PURPOSE AND NEED**

The purpose of the Ediz Hook Beach Erosion Control Project is to protect the sand spit from erosion, thereby maintaining protection of Port Angeles Harbor and the small boat basin from direct wave action, and preserving access to a U.S. Coast Guard station located at the tip of the spit. The supply of sand, gravel, and cobble materials carried to the spit via longshore currents is reduced as compared to historic conditions. This reduction has been attributed to shoreline armoring along the toe of feeder bluffs west of Ediz Hook, and two dams that until recently were on the Elwha River.

The removal of Elwha and Glines Canyon dams on the Elwha River began in September 2011 and finished in August 2014. With both dams removed, draining the two reservoirs, the Elwha River can flow freely from its headwaters in the Olympic Mountains to the Strait of Juan de Fuca. Sediment once trapped behind the dams is beginning to rebuild critical river and nearshore habitats; vegetation is being restored once barren landscapes of the drained reservoirs, and anadromous salmon and trout are naturally migrating past the former dam sites for the first time in over 100 years. It was estimated in the 1996 Environmental Impact Statement (EIS) for the removal of the dams that it could take five years or more before the natural source of sediment would be seen on Ediz Hook (National Park Service, 1996). Based on the theorized schedule,

sediments should be noticeably appearing on Ediz Hook in 2019. However, due to other shoreline hardening structures (such as sea walls), sediment load reaching Ediz Hook from the Elwha River and feeder bluffs along the Strait of Juan de Fuca would be approximately 30 to 35 percent of pre-dam levels (Corps, 1971, NPS, 1996, and Shaffer et al 2008).

### 1.5 PREVIOUS DOCUMENTS INCORPORATED BY REFERENCE

A final EIS for the Ediz Hook revetment was filed with the Environmental Protection Agency (EPA) on 7 May 1973. Additionally, four previous EAs were completed in 1984, 1997, 2002, and 2011 to assess the impacts of proposed beach nourishment and revetment repair. These reports are incorporated by reference, and available for review at the Seattle District Office.



Figure 1. Ediz Hook and Port Angeles, Washington



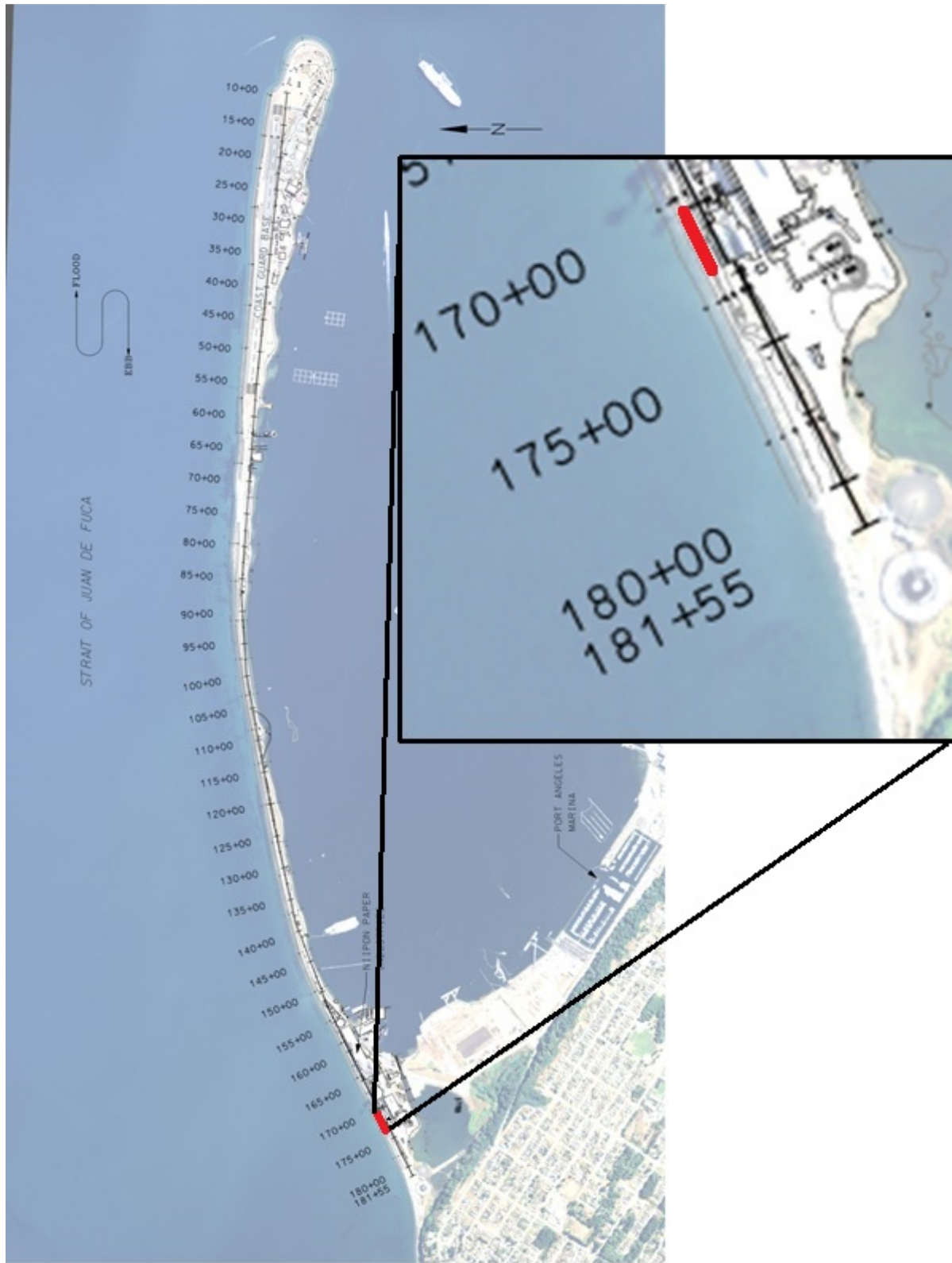


Figure 2. Station numbers and damaged section of revetment, repaired January 2016



## **2 PROPOSED ACTION AND ALTERNATIVES**

The Corps considered two alternatives for revetment maintenance: no action, and revetment repair and maintenance over a 10-year period. A 10-year period was chosen based on estimated revetment degradation rates and realistic funding constraints.

### **2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE**

Under the no-action alternative, no work would be done to stabilize the shoreline revetment. The shoreline revetment would continue to erode and landward resources would continue to be placed at risk. The no-action alternative would result in continued erosion of the ocean side of the spit. Over time, the elevation of the fore-beach would be lowered, resulting in increases in wave height and greater damage to the revetment. If the neck of the Hook eroded to the extent that the spit breached, the Coast Guard station would need to be relocated. Although the no-action alternative does not meet authorized project objectives, it will be carried forward as required by NEPA to help compare the relative merits and disadvantages of the other alternative considered.

### **2.2 ALTERNATIVE 2: PROPOSED ACTION ALTERNATIVE**

Alternative 2, the preferred alternative, is described below.

#### **2.2.1 January 2016 Emergency Repair**

Damage occurred in December 2015, and repairs occurred between stations 170+75 and 172+25 during daylight hours of January 12-15, 2016 (Figure 2). Due to location and extent of the damage it was critical to perform an temporary emergency repair of the damaged sections to prevent enlargement of the damage of the revetment and inundation and surge from the next coastal storm event and/or king tide from entering the Nippon Property and its filtration ponds. Given the failed condition of the revetment, it was likely that even a small wind or coastal storm event combined with a king tide or a large wind or coastal storm event with a normal high tide would result in additional significant damage to the revetment and facilities behind the revetment.

Access to the emergency repair area was through the Nippon Paper Industries plant at the west end of the revetment. Repair materials were delivered by truck and stockpiled adjacent to the repair area. All material was placed using an excavator.

The repair involved the placement of the following materials:

- 8-10 ton rock: 498 tons
- 3-6 ton rock: 1500 tons
- 2-3 ton rock: 550 tons
- 3-inch-minus embankment material: 385 tons
- 4x8 spall rock: 580 tons

The work was done by removing the ecology block wall had fallen onto the revetment when it failed. The crew then built a pad out of spall rock and 3-inch-minus rock so that the excavator had a working platform. Once the work reached the east end of the project, it proceeded outward, and the larger stones were placed as shown in Figure 4. Additionally, two layers of 2-5 ton armor stone were placed on top of the revetment crest in front of the filter plant. The work was done during both high and low tides as the tide levels and wave action were not severe

during the work. In-water work below MHHW was necessary to ensure adequate protection until a permanent repair could be done in the summer. See table 2 for a summary of quantities and material size.



Figure 3. Section in front of paper mill filtration pond damaged in the December 2015 storm (prior to emergency repair).

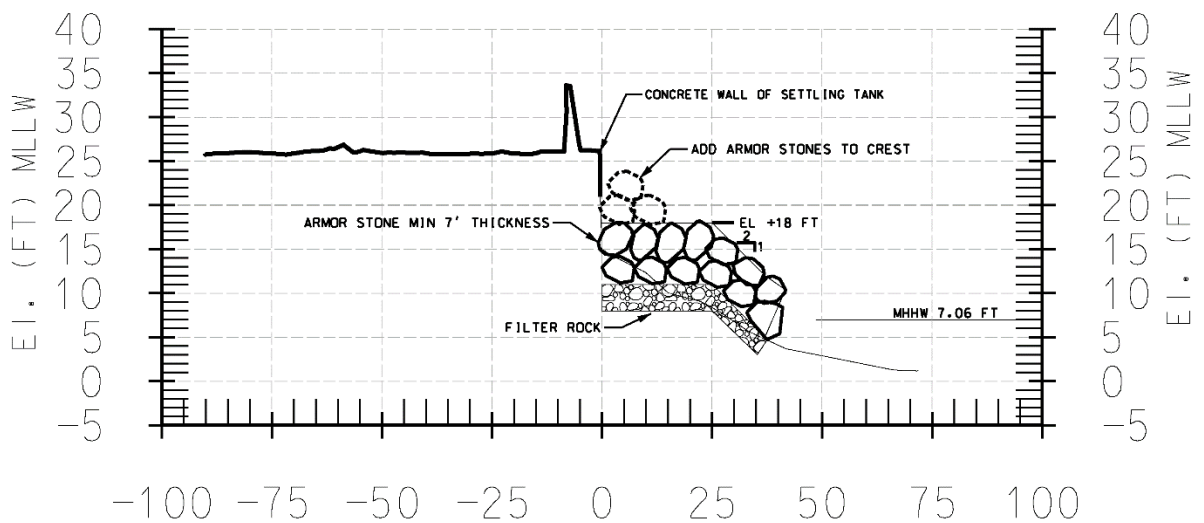


Figure 4. Emergency Repair Typical Section

## 2.2.2 Future Permanent Repairs

The proposed action going forward represents a “repair as-needed” approach to address the repairs from any future damages to the entire revetment structure.

### 2.2.2.1 FY16 Repair

Work will include the construction of a revetment toe, located at the emergency repair area (Figure 4). The construction of the revetment toe will require the placement of up to 1,000 tons of armor stone and 250 tons of filter layer and the placement of the beach re-nourishment material along 1,000 feet of revetment down to an elevation of 0 feet MLLW (Figure 5). In addition, to repair up to 1,000 feet of revetment between stations 140+00 and 170+00 placement of up to 10,000 tons of armor stone and 2,500 tons of filter material down to an elevation of 0 feet MLLW will be required. Rock will be delivered by truck, on existing roads, and placed via hydraulic excavators or similar equipment. Readily accessible armor rocks that have fallen from the revetment onto the beach or moved during construction will be re-keyed onto the revetment. Approximately 50,000 cubic yards (CY) of beach nourishment with 12-inch-minus cobble and gravels will be placed in front of the repaired revetment and other non-repair areas as needed between stations 140+00 and 175+00. See Table 2. Summary of repair material quantities and sizing for a summary of quantities and material size.

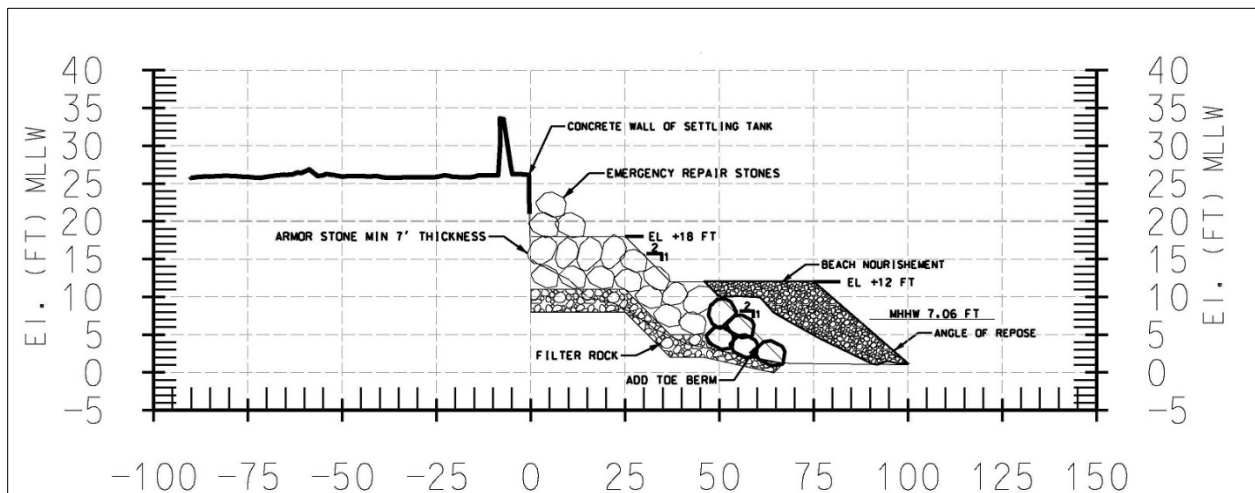


Figure 5. FY16 Repair and Beach Nourishment Typical Section

### 2.2.2.2 Future Repairs: FY17-26

To protect the structure from further damage, the Corps plans to replace armor stone, filter-layer material, and beach nourishment as needed, based on annual structure condition assessments (Figure 6). Long-term maintenance activities include the replacement of up to 70,000 tons of armor stone at damaged sections, placement of up to 200,000 CY of beach nourishment between stations 55+00 and 175+00 and up to 25,000-tons of filter layer material. See Figure 6, below, for a typical cross section and elevations. See Table 2 for a summary of quantities and material size.

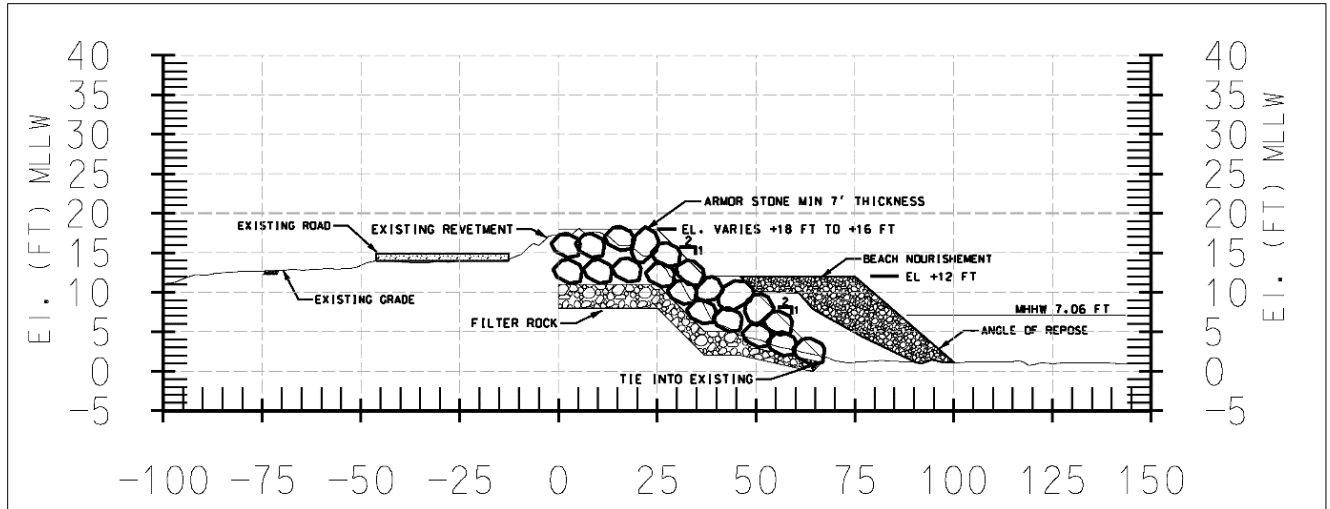


Figure 6. Typical revetment repair and beach nourishment section.

### 2.2.2.3 Summary of Repairs

All the materials, as placed and rearranged, will remain entirely within the 1973 footprint, and conform to the top elevation called for in original design. The project requires some work down to 0 feet MLLW to re-work and replace toe rock as necessary; this will be accomplished at low tides to the extent practicable. The majority of the work would be done in the dry; however, some in-water work may be necessary, likely in shallow water. Maintenance and repair work is expected to be accomplished 16 July through 15 February of any year in FY 2016 through 2026, with areas being prioritized based on severity of damage and risk to the structure as well as funding availability. Work in a particular year is expected to take 12 to 15 weeks, which includes mobilization and demobilization, and allowances for weather delays, with the assumption that 10,000 tons of rock is delivered and placed per week. See Table 2, below, for a summary of quantities and material size.

Table 2. Summary of repair material quantities and sizing

Dates	Materials	
January 2016 emergency repair	2,550 tons	2-10 ton armor stone
	700 tons	12 inch minus quarry spalls
Summer 2016 repair	11,000 tons	2-10 ton armor stone
	2,750 tons	12-inch minus quarry spalls
	50,000 CY	12-inch minus cobble and gravels

Dates	Materials	
Future, as needed repairs (3 additional years, over a ten year period)	Estimated quantities for each year:	
	11,000 tons	2-10 ton armor stone
	3,000 tons	12-inch minus quarry spalls
100,000 CY	12-inch minus cobble and gravels	

## 2.3 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER CONSIDERATION

### 2.3.1 Natural Processes

The natural processes alternative is similar to the no action alternative; however, it differs in that large rock (armor stones) would not be repositioned or replaced if they fell out of position from erosion, and finer materials including sand and smaller gravel would be included in the beach nourishment mix to be similar to the large variety of sediment size (fine silt to boulders) that could naturally occur from eroding bluffs. Including finer material in the beach nourishment materials would require approximately 1,000,000 CY of materials placed annually. This alternative would require annual or biennial placement of materials in perpetuity to supplement the sediments coming from the Elwha River after demolition of the two dams. The ten-fold increase in quantities would increase the project cost proportionally; therefore, with current funding constraints this alternative is rendered infeasible.

### 2.3.2 Full Repair in one year

Also considered, but not carried forward for comparison were two different timeframes for completing the revetment repair, with one being completing all the repairs required in one year. In this scenario, the entire length of the revetment (18,155 ft (3.4 mi)) would be surveyed and brought back to original construction design. Completing the repair in one year would meet both the purpose and need, but the cost, and current funding constraints are expected to render this alternative infeasible.

### 2.3.3 Full Repair spread over 50 years

A third alternative would be to extend the repairs for up to an extended period of up to 50 years. Extending the schedule of repair completion for the entire revetment over a period greater than the planned ten year period would likely lead to exacerbated progressive damage between repair episodes, thus resulting in piecemeal repair of the existing structure on an irregular schedule very similar to the emergency actions that have occurred in the past. Although these alternatives would meet the project need (protect human health and safety) they would likely not meet the project purpose (repair the structure without having to rely on costly emergency actions).

### 2.3.4 Addition of Large Woody Debris

In any of the alternatives, the addition of large woody debris (LWD) was considered. On high-energy coastal beaches with wind-blown sediments LWD aides in capturing and holding sand. As the debris and sediments are reworked with wave action and pushed further landward, dunes are formed (Eamer and Walker, 2010). If wind-blown accretion continues without erosion by



waves or high water levels, LWD deposits fill and vegetation eventually colonizes the dune. However, unlike long-shore beaches, spits such as Ediz Hook, are formed by longshore movement where the coast abruptly changes direction and the deposition of sediments carried in the longshore movement of sediments will create natural harbors. Spits often are complexly curved, with a characteristic recurved head (hook); probably resulting from the refraction of waves around the spit's end, and are constantly formed and reformed by waves. Spits, including Ediz Hook, are over-washed by heavy winter seas constantly being worked and reworked by the high-energy environment. In this transitional environment, any LWD deposited on the shoreline would not remain in place but would be transported further along by the prevailing wind and waves.

## **2.4 CONSERVATION MEASURES**

Construction would occur when Chinook, Hood Canal chum, and bull trout are least likely to be present in the action area. The proposed construction schedule (July 16 through February 15) is outside of the United States Fish and Wildlife Service (USFWS) in-water closure period for bull trout in Puget Sound marine waters (February 16 through July 15), and the National Marine Fisheries Service (NMFS) closure period for Chinook in Puget Sound marine waters (March 1 through July 1).

The placement of the nourishment materials and all rock removal and re-keying work would be timed to avoid periods when tidal waters have inundated the project site.

In addition, several construction best management practices (BMPs) would be implemented:

- Use of motorized equipment on the beach would be minimized, with a single access point for each stockpile area and a 50 ft work corridor waterward of the armor rocks;
- some large woody debris may be removed from the temporary stockpile areas prior to gravel/cobble placement, but any logs would be moved to adjacent beach areas instead of off-site;
- low elevation work would be done during low tides to minimize working in the wet;
- drive trains of equipment would not operate in the water;
- biodegradable hydraulic fluids would be used for machinery at the site;
- at least one fuel spill kit with absorbent pads would be onsite at all times; and
- no equipment fueling or servicing would occur within 300 feet of the water.

## **3 EXISTING ENVIRONMENT**

This section provides environmental baseline information on issues relevant to the decision process for selecting the preferred alternative. Factors for selecting the preferred alternative include considering which of the alternatives would be the most cost effective, least-cost environmentally acceptable, and meets the purpose and need of the project.

### **3.1 GEOLOGY AND SOILS**

Ediz Hook is a 3.5-mile long spit with an average top elevation of +14 ft MLLW, and widths ranging from 90 ft to 750 ft. The spit was formed by the eastward movement of littoral sand, gravel, and cobbles from eroding sea cliffs immediately to the west, and from river borne sediments of the Elwha River. Shoreline armoring along feeder bluffs west of Ediz Hook and dams on the Elwha River have reduced the materials carried to the spit by longshore currents. In

addition to contributing to erosion at Ediz Hook, this reduced sediment supply has caused the eastern edge of the pre-dam Elwha delta to erode, and the barrier beach at Freshwater Bay to recede and steepen. Prior to removal of the Elwha dams, Warrick et al (2009) predicted that some fine-grained sediment would ultimately be deposited far from the Elwha River mouth off the east side off the larger submarine delta or inside the tip of Ediz Hook at the entrance to Port Angeles harbor. Observations to date, however, have been unable to verify those predictions (Gelfenbaum *et al.* 2015).

With the recent removal of the two dams on the Elwha River, subtidal sediments are being detected along the nearshore between the river and Ediz Hook (Figure 7). These data were collected utilizing multibeam bathymetry and lidar topography. All but one of the drift cells indicates net accretion during the four-month period from June to October 2015 (summer months). The net accretion over all five cells is 116,250 cubic yards, with the greatest input of sediment to the subtidal region immediately east of the river delta (*i.e.* 97,400 CY). Sediment deposition in smaller fractions is evident in the subtidal areas (below MLLW) along Ediz Hook, suggesting that during calmer summer months there is a net accretion; however, the magnitude of sediment accretion is not large enough to be incorporated into the intertidal region.

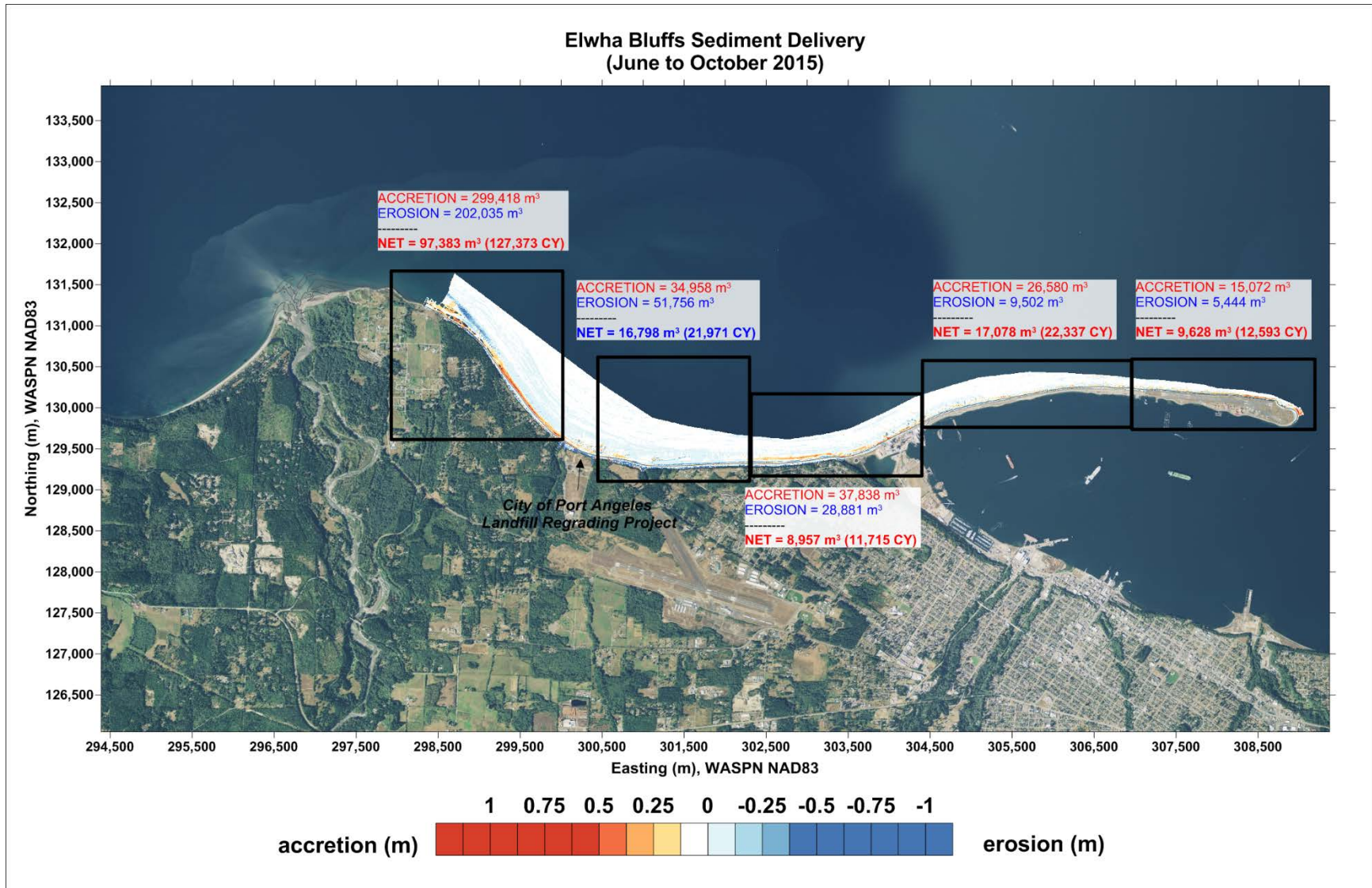


Figure 7. Ediz Hook Post-dam removal shoreline change analysis



### 3.2 WATER RESOURCES AND WATER QUALITY

Port Angeles Harbor has many commercial and industrial facilities along its shoreline. Over the past century, the Harbor has been used by a number of industries including sawmills and plywood manufacturing, pulp and paper production, marine shipping/transport, boat building and refurbishing, petroleum bulk fuel facilities, marinas, and commercial fishing. Since the early 1900s, pulp and paper mills have comprised a dominant portion of Port Angeles' industrial sector. Treated and untreated mill process effluents were commonly discharged into the Harbor, and wood product sources throughout the Harbor have been identified as significant sources of chemicals of potential concern (COPCs) in marine sediments. Petroleum storage and transport businesses have historically operated and currently conduct business along the Port Angeles waterfront. Spills and leaks from petroleum facilities and tankers, as well as from facilities with leaking underground storage tanks (UST), have introduced COPCs into the Harbor. Marinas, shipping industries, and docks and piling infrastructure all have a variety of potentially associated COPCs. Historically and currently, the Harbor has received discharges from Combined Sewer Outfalls (CSO), deepwater effluent outfalls, septic systems in various stages of maintenance outside the city limits, non-point source runoff from stormwater, and surface water discharge from creeks with varying degrees of residential and commercial land-use influences. All these discharges may contribute COPCs to the Harbor (Washington Department of Ecology (WDOE) 2008).

The Strait of Juan de Fuca side of Ediz Hook is on the WDOE 303d list for mercury in sediment, and is listed as a water of concern for bacteria in the water and cadmium and zinc in sediment (WDOE 2012).

Along the northern shore of the Olympic Peninsula, longshore movement of the littoral drift is predominately in a west-to-east direction and towards deeper water at the eastern terminus of the spit. This pattern is indicated by not only by Ediz Hook but is also evident by the larger Dungeness Spit to the east and multiple other smaller points. The natural littoral drift moves sediment (depositing, re-suspending, and re-depositing) which in itself results in continued suspension of sediments and turbid conditions.

### 3.3 VEGETATION

Upland vegetation along Ediz Hook consists of terrestrial salt-tolerant grasses and shrubs growing mainly on the more protected southeaster harbor) side of the spit. Vegetation is sparse on the windward / revetment side. The erosive nature of wind and waves prevents soil accretion or colonization in the nearshore of the spit. No trees are present on the spit, other than some shore pines (*Pinus contorta*) planted near the Coast Guard administrative buildings. Large woody debris accumulates on the upper beach and revetment, along with a wrack of surf-thrown bull kelp (*Nereocystis luetkeana*), *Pterygophora californica*, *Laminaria spp.*, and other macroalgae.

Eelgrass (*Zostera marina*) is present in the sheltered waters of Port Angeles Harbor east of the spit and mid-length on the northwest side of the spit, and kelp beds are present in Strait of Juan de Fuca waters west of the spit (Norris and Fraser 2006, Norris et al 2011). A query of the WDNR eelgrass mapping data base does not show eelgrass immediately in front of the repair site. According to this mapping tool, the closest eelgrass bed occurs at the eastern tip of Ediz

Hook on the harbor side The species composition of the kelp beds in the vicinity of Ediz Hook shift seasonally, and consist of an overstory of the annual brown kelp (*Nereocystis luetkeana*), commonly known as bull kelp, and a varied understory of *Laminariales* and fleshy red algae. *N. luetkeana* densities are highest in the summer and fall months, while fleshy red algae are seasonally present in the winter and spring months. The perennial brown algae *Pterygophora californica* is the dominant understory component of *Nereocystis* beds in this area of Strait (Shaffer, et al. 2007).

### 3.4 FISH AND WILDLIFE

According to the Water Resource Inventory Area (WRIA) 18 Salmon and Steelhead Habitat Limiting Factors Report (Kerwin 1999), estuarine and marine habitats in the vicinity of the proposed project are significantly impacted by physical alteration of natural estuaries, alteration of nearshore ecological function due to shoreline armoring, and poor water quality in Port Angeles Harbor.

Habitat conditions for fish and wildlife along the northern shore of Ediz Hook is characterized by an armor stone revetment fronted by a narrow beach of cobbles, gravel, and patches of sand. A general steepening of the beach has resulted from the initial placement of the revetment, which beach nourishment can temporarily ameliorate. Large woody debris accumulates on the upper beach and revetment, along with a wrack of surf-thrown bull kelp (*Nereocystis luetkeana*), *Pterygophora californica*, *Laminaria* spp., and other macroalgae. In addition, some of the large armor stone have toppled from the revetment face and are partially buried on the beach. The overstory kelp *N. luetkeana* is visible offshore.

#### 3.4.1 Fish

Out-migrating juvenile salmonids utilize waters along the shorelines of Ediz Hook and the Strait of Juan de Fuca, with the peak migration period being between March 15 and June 15. Juvenile salmon inhabiting nearshore marine and estuarine waters feed on pelagic and epibenthic invertebrates. Forage fish such as Pacific herring, sand lance, and surf smelt are also present in the project area. A documented sand lance spawning beach is located on the harbor side of Ediz Hook, but no forage fish spawning is found along the Strait side (WDFW 2016). Pacific halibut reside in Strait of Juan de Fuca waters near Ediz Hook. During summer months, adult halibut dwell in the shallower waters feeding on forage fish and crustaceans. In November, they migrate into deeper waters to spawn.

The project area has been designated as Essential Fish Habitat (EFH) for various life stages of 81 species of groundfish, 6 coastal pelagic species, and three species of Pacific salmon. Essential Fish Habitat (EFH) for the Pacific Coast salmon fishery is those waters and substrate necessary for salmon production needed to support a long-term sustainable fishery and salmon contributions to a healthy ecosystem. Salmon EFH and potential adverse impacts to EFH have been identified by NMFS and the Pacific Fishery Management Council (PFMC). Important features of marine EFH for salmon are: (1) adequate water quality, (2) adequate temperature, (3) adequate prey species and forage base, (4) adequate depth, cover, marine vegetation, and algae in estuarine and near-shore habitats (PFMC 1999).

### 3.4.2 Wildlife

Ediz Hook and adjacent waters provide habitat for a variety of shorebirds and waterfowl. The protected waters of Port Angeles Harbor attract plovers, whimbrels, oystercatchers, geese, loons, ducks, turnstones and sanderlings. Auklets, puffin, and common murre are occasional visitors, and the project area is one of the Olympic Peninsula's best viewing areas for gull species. Harbor seals (*Phoca vitulina richardsi*) are known to utilize beach area on the south side of the spit as well as structures in harbor area as haul-out and loafing areas (Jeffries et al 2000).

### 3.5 THREATENED AND ENDANGERED SPECIES

Six species protected under the Endangered Species Act (ESA) are potentially found in Ediz Hook project vicinity (Table 1). In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. The Corps has prepared a Biological Evaluation (BE) to assess potential impacts of the proposed work on species protected under the Act. Section 7 Endangered Species Act consultation will be completed prior to construction.

Table 3. Protected Species Potentially Occurring in the Project Area

Species	Listing Status	Critical Habitat
Marbled Murrelet ( <i>Brachyramphus marmoratus</i> )	Threatened	Designated – not in project area
Southern distinct population segment green sturgeon ( <i>Acipenser medirostris</i> )	Threatened	Designated
Coastal/Puget Sound bull trout ( <i>Salvelinus confluentus</i> )	Threatened	Designated
Puget Sound Chinook salmon ( <i>Onchorhynchus tshawytscha</i> )	Threatened	Designated
Hood Canal summer-run chum salmon ( <i>O. keta</i> )	Threatened	Designated
Southern resident Killer whale ( <i>Orcinus orca</i> )	Endangered	Designated

Other ESA listed species found in the Strait of Juan de Fuca include humpback whale (*Megaptera novaeangliae*), blue whale (*Balaenoptera musculus*), sperm whale (*Physeter macrocephalus*), green sea turtle (*Chelonia mydas*), Puget Sound steelhead (*Oncorhynchus mykiss*), and Eastern DPS eulachon (*Thaleichthys pacificus*). However, these species are found in deeper, offshore waters, well away from the revetment repair footprint. Thus, **no effect** is anticipated for these species.

### 3.6 AIR QUALITY AND GREENHOUSE GASES

Clallam County meets U.S. Environmental Protection Agency (EPA) Ambient Air Quality standards, and those set by the State of Washington, administered locally by the Olympic Region

Clean Air Authority (ORCAA) for suspended particulates and sulfur dioxide. According to ORCAA's air quality monitoring program, air quality is generally good in the Port Angeles area.

The primary greenhouse gases in the atmosphere are carbon dioxide, methane, and water vapor. The characteristic these gases have in common is that they absorb radiation within the thermal infrared range, which is the fundamental cause of the "greenhouse effect." Anthropogenic sources of greenhouse gases have been increasing over the past 150 years, and have reached a rate of contribution that is causing climate change. The concern for Federal projects is the contribution of greenhouse gases to the atmosphere in such large quantities as to outweigh the benefit of executing the proposed action.

### **3.7 NOISE**

Principal sources of sound along much of the project area are natural (i.e., wind and surf). Areas near the Coast Guard station and Nippon mill would periodically have higher noise levels (e.g., helicopters or machinery).

### **3.8 CULTURAL RESOURCES**

The Corps has coordinated its environmental review of impacts on cultural resources for NEPA with its responsibilities to take into account effects on historic properties as required by Section 106 of the National Historic Preservation Act (NHPA). The Corps has determined and documented the area of potential effect (APE) for the project, as required at 36 C.F.R § 800.4 of the regulations implementing Section 106. The APE includes the length of the revetment repair and beach nourishment activities, as well as all staging and access areas. All the materials, as placed and rearranged, will remain entirely within the 1973 footprint, and conform to the top elevation called for in the original design. The APE for both direct and indirect effects encompasses approximately 87 acres. The Washington State Historic Preservation Officer (SHPO) agreed with our determination of the APE on 14 April 2016.

The Corps has conducted a records search and literature review of the Washington Information System Architectural and Archaeological Records Database (WISAARD). The literature review and records search revealed that there are no properties listed in the National Register of Historic Places (NRHP) or the Washington State Historic Site Register in the project area. While there are known archaeological sites on Ediz Hook, no cultural resources have been recorded within footprint of the revetment. The Corps has notified the Lower Elwha Klallam Tribe, Jamestown S'Klallam Tribe, Port Gamble S'Klallam Tribe, and Skokomish Tribe about the project to identify properties to which they may attach religious or cultural significance or other concerns with historic properties that may be affected. The Tribes did not comment on the undertaking. The Ediz Hook Revetment was constructed in 1973 and as it is less than 50 years old, it does not meet the minimum age threshold for inclusion on the NRHP.

As the proposed action is entirely within the existing footprint of the existing revetment and will not include any disturbance of native ground, the Corps has determined there will be no historic properties affected by the proposed project. The Corps notified the SHPO of our finding of No Historic Properties Affected in a letter dated June 2, 2016. The SHPO agreed with this determination on June 8, 2016. Coordination letters may be found in Appendix E.

## **3.9 LAND USE**

### **3.9.1 Coast Guard Group Port Angeles**

The U.S. Coast Guard air-sea rescue station that serves Washington’s coastal and inland waters lies on the seaward end of Ediz Hook. Established in 1935, Group Port Angeles is the nation's oldest operating air station. In 2010, it was recommissioned as Air Station/Sector Field Station Port Angeles as part of the consolidation of operational command of all units located in the waters of Puget Sound and the northern coast of Washington. There are approximately 300 men and women based at this station, including a helicopter rescue crew. The station has a 24-hour operations center; military exchange, medical clinic, administrative building; and temporary quarters for personnel during their 24-hour shifts. The station has a 4,000-foot long runway used in the training of Coast Guard helicopter pilots and crew. The runway is considered too short and narrow for larger-aircraft landings, although larger cargo planes have occasionally used it to land. Logs thrown up by storms and large flocks of sea gulls make the runway hazardous.

### **3.9.2 Nippon Paper Industries USA**

Nippon Paper Industries USA owns and operates the 95-year-old pulp and paper mill on the landward end of Ediz Hook. Currently, the mill supplies paper to a variety of end users including lightweight printing, industrial applications and specialty items. In 2013, Nippon Paper Industries completed an \$85 million cogeneration plant that uses waste forest biomass to produce more than 165,000 megawatts of “green” electricity annually while providing waste steam for mill operations. In 2015, the mill invested additional capital in the both the pulp and paper mills improving production yield and quality while reducing energy and water usage.

## **3.10 UTILITIES AND INFRASTRUCTURE**

The landward end of the revetment project protects the Nippon Mill and its wastewater treatment plant. The damaged section requiring emergency repair was immediately adjacent to the wastewater treatment plant.

Fresh water and wastewater pipelines are buried along the centerline of the spit either underneath Ediz Hook Road or alongside on the southeastern (harbor) side of the road. Telephone and electrical lines are suspended above ground along the southeastern side of the road. No other utilities or pipes are buried under the revetment on the northwestern side of Ediz Hook.

The Ediz Hook Road itself is built along the crest of the spit. In the winter months, the road is overtopped by storm driven waves especially when the storms are in conjunction with high tides. This storm activity will leave standing water on the road.

## **3.11 TRANSPORTATION**

Port Angeles Harbor is the only deep-draft harbor on the northern shore of the Olympic Peninsula; it is easily accessible to the largest vessels due to its natural depths of up to 192 feet. Licensed pilots board almost all ships destined for Puget Sound ports in Port Angeles. Port Angeles Harbor also provides moorage for log ships, oil tankers, two commercial ferries, recreational fishers, crabbers and shrimpers.

### **3.12 RECREATION**

Two Port Angeles city parks and a portion of an 8-mile long waterfront trail are located on Ediz Hook. There are also a number of picnic areas and boat launches along the eastern side of the spit. Recreational fishing occurs in the harbor, from boats or the city pier. The large number of shorebirds, gulls, and waterfowl in the area make the spit a prime location for birdwatchers.

### **3.13 SOCIOECONOMIC**

The project is located near the city of Port Angeles, Washington in Clallam County.

Employment within the county is primarily related to management/professional, service, sales, transportation, education/health, and social services. In the 2010-2014 5-year estimates, the U.S. Census Bureau estimated that non-whites made up 12.2 percent of the total population in Clallam County, and the percentage of residents with incomes below poverty level was 16.2 percent (U.S. Census Bureau, 2015).

The end of the spit is home to a USCG air-sea rescue station (Section 3.9.1) which currently has approximately 300 personnel based on-site. The Nippon Mill on the landward end of the spit employs over 200 people (Section 3.9.2). The City of Port Angeles hosts a ferry landing, linking it with Victoria, British Columbia, Canada. The various businesses utilizing the Port have the direct impact of over 2,000 jobs, has an operating budget of \$8.8 million with a \$584,000 net surplus before depreciation (Port of Port Angeles 2015). A 2012 economic study found that including direct, indirect and induced impacts, the Port and its tenants created approximately 4,000 local jobs, and generated \$100.2 million in income in Clallam County and \$149.1 million in Washington State in 2012 as result of its own and its tenant's activity (Port of Port Angeles 2012).

## **4 ENVIRONMENTAL EFFECTS**

### **4.1 GEOLOGY AND SOILS**

#### **4.1.1 No Action**

Beach soil characteristics would not be affected by this alternative. However, the erosive nature of soils on site would continue to be an issue, with wave-induced instability and sloughing as an ongoing effect. Without nourishment, there is risk that a breach would occur on the landward end of the spit, which over time would lead to the erosion of the entire spit eliminating the protection from direct wave action provided to Port Angeles Harbor and the small boat basin, and eliminating access to the U.S. Coast Guard Station, Port Angeles, located at the end of the spit.

With the removal of the two dams on the Elwha River, it was estimated in the 1996 dam removal EIS that it could take five years or more before the natural source of sediment would be seen on Ediz Hook (National Park Service, 1996). Based on the theorized schedule, sediments should be noticeably appearing on Ediz Hook in 2019. However, due to other shoreline hardening structures (such as sea walls), the sediments reaching Ediz Hook from the Elwha River and feeder bluffs along the Strait of Juan de Fuca would be approximately 30 to 35 percent of pre-dam levels (Corps, 1971, NPS, 1996, and Shaffer, et al 2008). Even though more sediments will be available in the littoral flow, they will not be sufficient to naturally rebuild the spit to self-



sustaining conditions, nor prevent erosion and the associated danger to the spit. Post dam removal monitoring has found increased sediments within the sub-tidal zone, but to date accretion has not occurred within the intertidal zone.

#### **4.1.2 Proposed action**

The revetment, along with the reduction in availability of sediment that naturally feeds the shoreline, has resulted in a steepening of the beach profile along the western side of Ediz Hook. The proposed beach nourishment would delay the conversion of the beach fronting the revetment from a high intertidal beach to a subtidal beach. Bathymetric surveys conducted prior to and after past nourishment activities showed a restored beach profile above -10 ft MLLW, with little change in the beach profile between -10 ft and -20 ft MLLW. Generally, most of the nourishment materials are caught up by the littoral flow and distributed in the first two winter seasons. The deep water to the east of Ediz Hook has, and would continue to intercept the littoral drift. Therefore, no change to beaches east of Ediz Hook would occur as a result of the project.

The nourishment material would be placed as high as possible in the intertidal zone, thereby mimicking natural sediment erosion and transport processes to the maximum extent possible. The beach nourishment material would be slightly coarser than that of the native material. The larger sized material would be more resistant to erosion, thereby remaining in the littoral system longer and reducing replenishment frequency. The placement of larger material for revetment repair would only maintain the status quo of Ediz Hook, and would not have any additional impacts on geology.

### **4.2 WATER RESOURCES AND WATER QUALITY**

#### **4.2.1 No Action**

With the no action alternative, the shoreline would continue to erode, resulting in continued suspension of solids, and turbid conditions. There would be no change to water temperature.

#### **4.2.2 Proposed action**

Any increases in turbidity resulting from the proposed action would be minor considering the large grain sizes of the nourishment material. The nourishment materials would be washed at the quarry so that the percentage of fines would be quite low (less than 3 percent by weight). Any sediment plumes attributable to the project would be temporary, localized, and equivalent to those created by natural sediment transport processes. With respect to chemical contamination, the proposed action would not affect baseline conditions for this indicator.

Beach nourishment material will be placed as high as possible in the intertidal zone, thereby mimicking natural sediment erosion and transport processes to the maximum extent practicable. Deep waters at the east end of the Hook have intercepted the littoral drift and will continue to do so; thus, no change to down drift beaches east of Ediz Hook will occur as a result of the project.

### **4.3 VEGETATION**

#### **4.3.1 No Action**

Under the no action plan, terrestrial plants would be subjected to greater wave action and would lose their foothold over time as the spit erodes. In the long term, if a breach should occur, then

the remaining land and its associated plant community would be subjected to greater risk of erosion. Indirect impacts may affect sub-aquatic vegetation, such as eelgrass beds, if the hydrology and currents change due to a breach in the land spit.

#### **4.3.2 Proposed action**

The proposed maintenance and repairs are not expected to have an effect on the kelp bed offshore of the Ediz Hook revetment for two reasons. First, the beach nourishment materials would be placed upon the beach adjacent to the kelp bed during mid-summer months. Algae are most vulnerable to sediment impacts during spring months, when increasing light levels trigger reproduction. Second, the nourishment materials would have a coarse grain size and therefore are not expected to remain suspended in the water column for very long. This reduces the chance for sub-threshold light levels that could affect macroalgae growth rates or reproductive cycles. No impacts to the eelgrass beds are anticipated as the cobble material will be dumped above the MLLW contour (0 ft), and the surveyed beds in the area are below the -15 ft contour (Norris and Fraser, 2007). No impacts to vegetation are anticipated from placement of materials to repair the revetment, as it would be placed at elevations well above kelp and eelgrass beds, and given the larger size, would not affect turbidity and associated light levels.

As upland vegetation is extremely sparse on the windward / revetment side of the spit, there is little present that would be damaged by the movement of heavy equipment or placement of rocks or gravels. The erosive nature of wind and wave action would continue to prevent colonization of plants within the revetment.

### **4.4 FISH AND WILDLIFE**

#### **4.4.1 Fish**

##### **4.4.1.1 No Action**

Under the no action alternative, the shoreline would continue to erode without revetment repair and beach nourishment. Over time, the beach would convert from high intertidal beach to a subtidal beach. Indirect impacts such as a change in the fish species composition could occur if a breach would occur in the spit, as this would cause the loss of the sand lance spawning beaches on the harbor side of the spit. Also, without the proposed beach nourishment the beach profile would steepen, leading to less shallow water habitat for juvenile salmonids.

##### **4.4.1.2 Proposed action**

In addition to protecting the integrity of the revetment, maintenance of a higher, more gently graded beach profile would maintain the range of intertidal elevations necessary to support the epibenthic invertebrates that serve as prey for a wide variety of marine fishes. However, the proposed action would temporarily adversely affect epibenthic prey organisms, particularly gammarid amphipods, within and adjacent to the beach nourishment and revetment repair footprint. Amphipods are mobile epifauna that are adapted to heavy disturbance regimes, and are thus expected to recolonize the nourishment area quickly. The scale of mortality impacts that would result from the proposed project is not likely to affect amphipod population dynamics in the project area. Likewise, a shift in benthic assemblage composition due to the use of nourishment material slightly coarser than native material is not expected.



Salmonids and forage fish such as herring, surf smelt, and sand lance, would not be directly impacted by the proposed action for two reasons. First, placement of the repair and nourishment materials would occur above the waterline at low tides to the extent practicable so as not to directly interfere with fish usage of beach habitat. In the event that in-water work is required, it would be done during the in-water work window of 16 July to 15 February, which avoids impacts to forage fish species. Second, turbidity is not expected to increase substantially above ambient conditions due to the large grain size of the material. Indirect effects are also not anticipated since no documented spawning beaches occur in the immediate project area. NOAA-sponsored studies have shown that the epibenthic fauna that would likely be impacted by material placement do not appear to constitute a significant fraction of these species' diet, as they tend to rely more on pelagic organisms (Simenstad, et al. 1977).

The proposed action will affect epibenthic prey organisms within and adjacent to the placement of materials, but disturbed areas are expected to be rapidly recolonized. Many organisms will be covered by placed material and will not survive. Amphipods are mobile epifauna that are adapted to heavy disturbance regimes, and are thus expected to recolonize the nourishment area quickly. The scale of mortality impacts which will result from the proposed project is not likely to affect amphipod population dynamics in the action area. Likewise, a shift in benthic assemblage composition due to the use of nourishment material slightly coarser than native material is not expected. The repair and nourishment materials will be placed along Ediz Hook soon after the end of the juvenile salmonid outmigration period. This schedule would allow for maximum recovery of the epibenthos prior to the salmonid outmigration period.

#### **4.4.2 Wildlife**

##### **4.4.2.1 No Action**

As the intertidal beach erodes to subtidal beach, foraging habitat for wildlife would decrease for those species that feed directly in the zone such as crabs, barnacles, snails, mussels, anemones, and sea urchins. Indirectly, this loss of foraging habitat would affect the larger species, such as seals, sea lions, and several species of birds (gulls, crows, auklets, and murre) that feed in the intertidal zone.

##### **4.4.2.2 Proposed Action**

Noise associated with the project may have a temporary effect on bird populations in the vicinity of operating heavy machinery. Indirectly the noise and activity may disturb harbor seals hauled out on south side of the spit. The impacts of any sound disturbance would likely result in displacement of animals rather than injury. Disposal operations are not expected to result in a long-term reduction in the abundance and distribution of any prey items. No breeding or nesting areas would be directly impacted. Therefore, any impacts would be minor and localized.

#### **4.5 THREATENED AND ENDANGERED SPECIES**

##### **4.5.1 No Action**

Under the No-Action alternative, land use is expected to continue similar to baseline conditions, with no changes expected to threatened or endangered species or their critical habitats. Without regular beach nourishment cycles the beach substrate composition will change and the profile will steepen over time due to the presence of the revetment and the shoreline armoring down-drift of Ediz Hook. This would lead to suboptimal habitat for migrating juvenile salmonids and

indirectly, the predators that depend on them. Juvenile salmonids are more vulnerable to predators in deeper water and the substrate may be less likely to support their benthic prey items. The effects of shoreline armoring on beach profiles and sediment composition is a limiting factor along the Eastern Strait of Juan de Fuca.

This alternative could lead to significant damage to the revetment wall. Voids along the revetment created by unrepaired, or under repaired (not utilizing sufficient sized rock) damage may increase predator habitat during high tides. Any damages that occur in front of the Nippon Paper Mill could result in their effluent entering the nearshore habitat along the Hook.

#### 4.5.2 Proposed action

Construction would occur when Puget Sound Chinook, Hood Canal chum, and bull trout are least likely to be present in the action area. The maintenance work would be scheduled to occur between 16 July and 15 February to accommodate work windows for these species. Effect determinations made in the project Biological Evaluation (BE) are listed in Table 4. Section 7 Endangered Species Act consultation will be completed with the USFWS and NMFS prior to the finalization of this EA.

Table 4. Species of Concern Determination Summary

Species	Effects Determination	Critical Habitat Determination
Marbled murrelet	Not likely to adversely affect	No effect
Green sturgeon	Not likely to adversely affect	Not likely to adversely affect
Bull trout	Not likely to adversely affect	Not likely to adversely affect
Chinook salmon	Not likely to adversely affect	Not likely to adversely affect
Chum salmon	Not likely to adversely affect	Not likely to adversely affect
Killer whale	Not likely to adversely affect	No effect

Since construction activities will have no effect on nesting habitat, long-term effects to the murrelet food base are not anticipated, and the effects of any noise disturbance during construction are expected to be minor and short in duration, the proposed project may affect, but is not likely to adversely affect marbled murrelet. Because designated critical habitat is not in the project area, the work will have no effect on designated critical habitat for this species.

The proposed project may affect, but is not likely to adversely affect the Southern DPS of green sturgeon, bull trout, and Chinook salmon and the designated critical habitat for these species. This determination is based upon the localized geographic scope of the project, the majority of work being done at low tides or higher elevations, and the low likelihood that green sturgeon, bull trout, and Chinook salmon will be present in the action area during construction activities and upon minimal effects to PCEs. Beach nourishment or repair activities are not expected to impact prey of bull trout or Chinook salmon occurring in the Strait.

The proposed action may affect, but is not likely to adversely affect chum salmon or its designated critical habitat. This determination is based upon the lack of significant water quality

impacts and the short-term, localized nature of any reductions in prey abundance which may occur.

The proposed action may effect, but is not likely to adversely affect southern resident killer whales based on the shallow depths of the work, the majority of the work being done at low tide, and the minimal impacts to their preferred prey species (Chinook and chum salmon).

## **4.6 AIR QUALITY AND GREENHOUSE GASES**

### **4.6.1 No Action**

Under the no action alternative, no additional repairs or maintenance would be made on the revetment; therefore, no fossil fuel burning equipment would be used. No impact concerning air quality would occur as a result of taking no action to address the erosion.

### **4.6.2 Proposed action**

The operation of heavy equipment associated with the project would temporarily increase air emissions, including greenhouse gases, and noise in the immediate project vicinity. These increases would be minor in scope, temporary in duration, and are not expected to result in significant impacts. The total volatile organic compound emissions for this project during construction were also anticipated to be well below the *de minimis* level of 100 tons per year. Therefore, this action conforms to the Washington State Air Quality standards, administered locally by ORCAA (Olympic Region Clean Air Agency). Diesel fuel consumption by heavy machinery required for construction, material haul-off, and gasoline consumption for travel to the sites for all Corps projects, including this project, are a part of world-wide cumulative contributions to change in climate by way of increases in greenhouse gas emission.

## **4.7 NOISE**

### **4.7.1 No Action**

Under the no action alternative, no heavy machinery would be working on the revetment, and existing conditions (occasional vehicles, waves crashing on the rocks) are expected to persist.

### **4.7.2 Proposed action**

During construction activities, localized noise levels are expected to increase from the use of heavy equipment (engines and back-up alarms) and when rocks are deposited. By repairing the structure, and reducing the likelihood of a failure occurring, the status quo would be maintained, resulting in continuation of the present volume of users (people and vehicles).

## **4.8 CULTURAL RESOURCES**

### **4.8.1 No Action**

Without implementation of the proposed action, the Ediz Hook spit is at risk of breaching in the long term, which could potentially damage known archaeological sites in the project vicinity.

### **4.8.2 Proposed action**

The proposed action would have no adverse impact on cultural resources, as there are no historic properties eligible for the National Register of Historic Places within the project APE. The revetment has been subject to a number of storm events and repairs, which are considered normal

and routine in nature. As the proposed action is entirely within the existing footprint of the existing revetment and will not include any disturbance of native ground, the Corps has determined there will be no historic properties affected by the proposed project. The Corps notified the SHPO of our finding of No Historic Properties Affected in a letter dated June 2, 2016. The SHPO agreed with our determination on June 8, 2016. Coordination letters may be found in Appendix E.

## **4.9 LAND USE**

### **4.9.1 No Action**

Without beach nourishment, wave run-up against the revetment that protects Ediz Hook Road would increase, causing the revetment to fail. Without the revetment to mitigate wave action, the road would be subject to pounding waves, and would be damaged. Access to points towards the end of the road, to the two City of Port Angeles parks, and the USCG Station, would be cut off. If a breach occurred in the spit, the protection the spit provides to Port Angeles Harbor and the small boat basin from direct wave action would be eliminated, and access to the U.S. Coast Guard Station, Port Angeles, located at the end of the spit would be eliminated.

### **4.9.2 Proposed action**

The project would have no effects on land use in the immediate vicinity. With beach nourishment, wave run-up would be lessened, and the revetment protecting Ediz Hook Road would remain more stable. Severe storms and their associated waves could still affect the road.

Construction vehicles may disrupt traffic for Coast Guard personnel, those utilizing the City of Port Angeles Sail and Paddle Park or Harborview Park, or those employed at the Nippon paper mill. These impacts would be temporary and highly localized, and are therefore are expected to be minor.

## **4.10 UTILITIES AND INFRASTRUCTURE**

### **4.10.1 No Action**

In the long-term, if there was a breach in the Ediz Hook spit, utilities such as water (fresh and waste) pipes, communication lines, and power lines would be lost, directly affecting customers on the spit. A breach would also render the paved road useless past the point of the breach. Indirectly a breach in the spit could negatively affect utilities and infrastructure located within Ediz Hook Harbor.

### **4.10.2 Proposed action**

No utility lines are located along the northeastern shoreline of the Ediz Hook spit; therefore, long-term maintenance of the revetment would not directly affect public services such as water, electrical, and telecommunication lines. However, continued protection of Ediz Hook spit would maintain these utilities as well as the road both of which are located near the centerline of the spit.

## **4.11 TRANSPORTATION**

### **4.11.1 No Action**

If the wave driven erosion continued unchecked, causing damage to the Ediz Hook Road, then access to facilities beyond the point of the damage or breach would be hampered or cut-off completely. Further, protection for all sized of watercraft utilizing the natural harbor formed by the Hook would be detrimentally affected.

### **4.11.2 Proposed action**

A primary purpose of the proposed project is to the protect Port Angeles Harbor and the small boat basin from direct wave action and to provide access to the U.S. Coast Guard Station, Port Angeles. With the maintenance work completed, there is less risk of erosion to the road or risk of breach in the continuity of the spit. However, the winter storm driven waves that overtop the road are expected to increase in frequency and magnitude with the changes in climate and sea level. In the immediate vicinity of the project area, no impacts to commercial or recreational vehicles or watercraft are expected to result from the maintenance work.

## **4.12 RECREATION**

### **4.12.1 No Action**

Without beach nourishment, the direct loss of the recreational benefits those people enjoy utilizing the beach for such activities as walking, beach combing, fishing, and watching wildlife. Indirect impacts would be the increased risk of damage to the Ediz Hook Road, which could cut off access to the City's Sail and Paddle Park and Harborview Park, which would include loss of access to the small watercraft boat launch. Protection to Port Angeles Harbor and the small boat basin from direct wave action would also be eliminated.

### **4.12.2 Proposed action**

As stated above, construction vehicles may temporarily disrupt local and tourist traffic on and adjacent to Ediz Hook. Noise associated with the usage of heavy machinery may disturb recreational users of the parks on the spit. Use of the beach areas in and directly adjacent to any stockpile footprints would be precluded during construction for safety reasons. However, these impacts would be also be temporary and highly localized, so no significant impacts on recreation are anticipated. Protection to Port Angeles Harbor and the small boat basin from direct wave action with the spit in place would be continued.

## **4.13 SOCIOECONOMIC**

### **4.13.1 No Action**

Under the no action plan, continued protection of Port Angeles Harbor and the small boat basin from direct wave action and access to the USCG station are at risk. Potentially the station could be relocated and the Port Angeles community could lose the economic benefit of the approximately 300 employees stationed there. The Nippon Mill on the landward end of the spit would be increased risk for wave damage, potentially causing the mill to close and the company to relocate or lay off the 200 or more people employed. Watercraft and associated businesses utilizing the harbor would also be at risk if a breach occurred in the spit, causing the waterfront to be subject to increased wave action. The Port Angeles community would suffer the indirect economic impacts of the potential loss of over 500 jobs.

#### **4.13.2 Proposed action**

By nourishing the beach, those businesses and services utilizing the Ediz Hook Road would not be at risk of closing or forced relocation due to the spit eroding away. The Port Angeles harbor and those businesses associated with it would remain protected.

### **5 UNAVOIDABLE AND ADVERSE EFFECTS**

It is anticipated that project adverse impacts would be minor. The primary unavoidable adverse impact would be a minor and temporary disruption to area recreation and possible disturbance to threatened and endangered species (salmonids) from construction-related noise and vibrations during construction. There is a probable, short-term impact to area benthic organisms in the nearshore intertidal areas immediately in front of the revetment wall due to work below MHHW. This work would be completed at low tide and in the dry to the extent practicable. However, in the event that in-water work is necessary organisms in this high-energy environment would be expected to recover quickly. There would be a minor increase in air pollution and greenhouse gases in the area as a result of heavy machinery equipment use.

### **6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource.

Implementation of the proposed action will involve human labor, the consumption of fuel, oil, and lubricants for construction vehicles and loss of natural resources. The work would require importing cobbles and gravels from an existing, licensed quarry. These materials would remain on the beach for a limited amount of time, and then be lost to deeper waters at the eastern end of the spit. The proposed revetment repairs would not entail any significant irretrievable or irreversible commitments of resources.

### **7 CUMULATIVE IMPACTS**

As described in previous sections, erosion at Ediz Hook is thought to be symptomatic of a reduction in sand, gravel, and cobble materials carried to the spit via longshore currents. The reduction in sediment transport can be at least partially attributed to two factors: a municipal drinking water/industrial supply water line and associated shoreline-armoring running along the toe of feeder bluffs west of Ediz Hook, and two dams on the Elwha River. The removal of the Elwha and Glines Canyon Dams on the Elwha River began in mid-September 2011. The last piece of concrete was removed in August 2014. Today, both dams are gone, the Lake Mills and Lake Aldwell reservoirs have drained, and the Elwha River flows freely from its headwaters in the Olympic Mountains to the Strait of Juan de Fuca. Sediment once trapped behind the dams is rebuilding river and nearshore habitats, vegetation is being restored in the once barren landscapes of the drained reservoirs, and anadromous salmon and trout are naturally migrating past the



former dam sites for the first time in over 100 years. According to the 1996 EIS for the removal of the two dams, a 35 percent increase in sediment load from the Elwha River is expected; however, it could take 5 years or more before the natural source of sediment would be seen on Ediz Hook (National Park Service 1996).

With the removal of the two dams on the Elwha River, the natural sediment source for Ediz Hook should increase; however, it is not anticipated to cease requiring beach nourishment cycles or other beach rebuilding activities, it may only lengthen the time span between cycles. The City of Port Angeles and WDOE have sponsored studies for the restoration of their shorelines in the Strait of Juan de Fuca including Ediz Hook (City of Port Angeles, 2012, and Shipman et al, 2014), but to date no specific projects along the western shoreline of Ediz Hook have been funded for feasibility and construction.

Sea level change during the period of analysis for this EA is expected to range between 0.02 and 0.42 ft, based on "*Procedures to Evaluate Sea Level change Impacts, Responses, and Adaptation*" (Corps 2014). Sea Level change over the next 100 years is expected to range between 0.08 and 5.78 ft. There is significant uncertainty in both the rate and impact that sea level change would have on the project. An increase in sea level would potentially allow wave action to affect the structure more frequently and at a higher elevation increasing the rate of erosion and damage to the structure. The low and intermediate estimates of sea level rise could likely be adapted to by increasing the frequency and volume of nourishment placed in front of the structure to match the increased erosion rates. The high estimates of sea level rise would significantly increase the frequency and severity of overtopping and damage from waves and may require a modification to the structure, or the land behind the structure to adapt to the increase in overtopping and wave damage.

The proposed beach nourishment is intended to counteract some of the adverse impacts associated with past development projects including shoreline armoring along the Strait of Juan de Fuca. The placement of nourishment materials would mimic natural littoral processes, thereby reducing the symptoms of a chronic sediment shortage. The revetment repairs would perpetuate the hardened conditions of Ediz Hook. This contributes cumulatively to shoreline armoring along the eastern shores of the Strait of Juan de Fuca, and its associated impacts to geomorphology, substrate, and benthic communities by way of steepening of the beach profile and altering the substrate composition.

## **8 COORDINATION**

The following agencies and entities have been involved with the environmental coordination of this proposed project:

- U.S. Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)
- Washington Department of Fish and Game (WDFW)
- Washington Department of Ecology (WDOE)
- Washington State Historic Preservation Office (SHPO)
- Jamestown S'Klallam Tribe
- Lower Elwha Klallam Tribe

- Port Gamble S’Klallam
- Skokomish Tribe

## 9 ENVIRONMENTAL COMPLIANCE

The Corps has analyzed the environmental effects of the alternatives and the following sections describe how the preferred alternative complies with all pertinent environmental laws and executive orders.

### 9.1 NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) (42 U.S.C. §4321 et seq.) commits federal agencies to considering, documenting, and publicly disclosing the environmental effects of their actions. As required by NEPA, this Draft EA describes existing environmental conditions at the project site, the proposed action and alternatives, potential environmental impacts of the proposed project, and measures to minimize environmental impacts. The draft EA was made available for public review and comment on April 21 through May 23, 2016, 2014 via mailings and posting on the public Corps website. The Notice of Availability, comment letters, and Corps’ response are in Appendix F. The submittal of the Final EA and the signed Finding of No Significant Impacts (FONSI) completes the NEPA process and fully comply with this Act.

### 9.2 ENDANGERED SPECIES ACT

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species and their critical habitats. A Biological Evaluation has been submitted to USFWS and NMFS on April 13, 2016 for the Section 7 ESA consultation. The Corps has determined that the project **may affect but is not likely to adversely affect** marbled murrelet, green sturgeon, bull trout, Hood Canal summer chum, Chinook salmon, and southern resident killer whales. The project **may affect but would not likely adversely affect** the critical habitat of green sturgeon, bull trout, Hood Canal summer chum salmon, and Chinook salmon. The proposed project would have **no effect** on the critical habitat of marbled murrelet and killer whales. In letters dated April 22, 16 and May 12, 2016, respectively, NMFS and USFWS concurred with the Corps’ determination.

### 9.3 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

In accordance with Magnuson-Stevens Fishery Conservation and Management Act, Section 305(b)(2), *“Each Federal agency shall consult with the Secretary [of Commerce] with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act.”* The project area has been designated as Essential Fish Habitat (EFH) for various life stages of 81 species of groundfish, six coastal pelagic species, and three species of Pacific salmon. The Corps has determined that the proposed action will not reduce the quality and/or quantity of EFH for Pacific salmon, coastal pelagic, and groundfish EFH and no adverse effects to EFH are expected to result from the proposed action. This determination was submitted to NMFS on April 13, 2016, and NMFS concurred with the finding in their letter dated April 22, 2016.



In the context of EFH, the proposed action will not result in excessive levels of organic materials or inorganic contaminants. The action will not result in physical alterations, which could affect water temperature. Water quality (turbidity) may be temporarily impacted during and shortly after placement of the nourishment materials, but no long-term degradation will occur. Beach contours will be modified, but in a way which mimics more natural conditions. The action will not remove large woody debris or other natural beach complexity features, nor is it likely to affect any vegetated shallows. Benthic productivity beneath and adjacent to the gravel/cobble stockpiles will be temporarily impacted, but significant effects to prey species are not anticipated.

The proposed project is not expected to result in a significant increase in turbidity due to the large grain size of the nourishment and revetment repair materials. The materials will be clean, washed gravels/cobbles from an upland source, so the potential for contamination is extremely low. The project will alter the beach profile along Ediz Hook above the -10 foot MLLW depth contour, but this change will result from more natural sediment transport processes compared to current conditions. The project will have little or no impacts on the kelp bed offshore of the revetment, given the time of year the material will be placed. A short-term impact to benthic infauna and epifauna productivity in the stockpile footprints is expected to result from the project, but the amount of habitat impacted is relatively small compared to the total EFH habitat identified for any of the species evaluated. In no case does the habitat at the site represent any unique habitat that is limited in distribution or is not available elsewhere.

The use of clean fill material for beach replenishment and other beneficial uses is encouraged (PFMC 1998). The Corps has determined that the proposed action will not reduce the quality and/or quantity of EFH for Pacific salmon, coastal pelagic, and groundfish EFH. No adverse effects to EFH are expected to result from the proposed action.

#### **9.4 CLEAN WATER ACT**

The object of the Federal Water Pollution Control Act (33 U.S.C § 1252 et seq.), commonly referred to as Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. The revetment repair project, if conducted by a permit applicant, would meet the criteria for authorization under Nationwide Permit (NWP) 3, Maintenance. It consists of repair of a previously authorized and presently serviceable structure that will continue its function of erosion control once repaired. No changes in structure footprint or configuration will be made as a result of this project, and no more than minor deviations in construction materials will be made, as compared to the 1978 rehabilitation design, in order to conform to current construction standards. Therefore, the Corps has concluded that the project is functionally analogous to the effects of a project authorized under NWP 3. Proposals qualifying for authorization under NWP 3 have been granted general Section 401 Certification by WDOE, if those proposals meet specified conditions. As further discussed in Appendix A, the project meets WDOE 401 General Conditions, and an individual 401 review is not required because: (1) The project would have activities below MHHW (the jurisdictional equivalent to the ordinary high water mark (OHWM) in marine waters), but no new work outside of the original footprint; (2) The proposed project does not increase the original footprint of the structure, and (3) the project does not include adding any new structure to the site. Any work

required below the MHHW line would be done at low tide and in the dry to the extent practicable. However, some in-water work may be required, likely in shallow depths. Since project requires limited work below MHHW, there is a possibility that some minor turbidity could be generated. All construction work would be limited to the timeframe between 15 July and 15 February in order to reduce impacts on salmonids at vulnerable life stages. The emergency repairs completed in January 2016 were only on uplands, with no in-water component or wetlands impact. The CWA was not triggered for this interim project and the full repair as evaluated in this EA meets the criteria for NWP 3. A 404(b)(1) analysis was done to verify this analogy and is provided in Appendix A. The Corps has found that the Ediz Hook revetment repair project is analogous to the conditions of NWP 3 pursuant to Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act, and the Corps may thus avail itself of the State's general Section 401 Certification applicable to NWP 3. The NWP 3 functional analogy was submitted to WDOE for their review and verification on March 9, 2016. In the Letter of Verification dated April 15, 2016, WDOE determined that the proposed work for 2016 meets the requirements for Washington State 401 Water Quality Certification under NWP3, Maintenance (Appendix A). Future repairs will require a separate WDOE review, due in part in that all NWPs are reevaluated in 5-year cycles, and current evaluation expires on December 31, 2016. Once the new NWP revisions are published, the Corps will resubmit for proposed work 2017-2022. In future years, no repair work will be conducted on the revetment without a current Water Quality Certificate or equivalent.

Section 402 of the Act requires a National Pollutant Discharge Elimination System (NPDES) permit and the associated implementing regulations for General Permit for Discharges from large and small construction activities for construction disturbance over one acre. This project would not have land disturbance of over an acre; therefore, an NPDES permit will not be required.

## **9.5 CLEAN AIR ACT OF 1972**

The Clean Air Act (CAA) as Amended (42 U.S.C. §7401, et seq.) prohibits federal agencies from approving any action that does not conform to an approved State or federal implementation plan. Blasting and the removal of rock, the operation of equipment, and the operation of vehicles during construction will result in increased vehicle emissions and a slight increase in fugitive dust. These effects will be localized and temporary. Emissions will not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 ton/year for ozone) or affect implementation of Olympic Region Clean Air Agency's Clean Air Act implementation plan. Therefore, effects will be insignificant.

## **9.6 NATIONAL HISTORIC PRESERVATION ACT OF 1966**

Section 106 of the National Historic Preservation Act requires that a federally assisted or federally permitted project account for the potential effects on sites, districts, buildings, structures, or objects that are included in or eligible for inclusion in the National Register of Historic Places. The Corps has determined that the proposed action would result in no impacts to any properties listed, proposed for listing, eligible for listing, or potentially eligible for listing in the National Register of Historic Places. In a letter dated 8 June 2016, the State Historic Preservation Office (SHPO) concurred with this finding. In addition, consultation letters were sent to the Jamestown S'Klallam, Lower Elwha Klallam, Port Gamble S'Klallam, and Skokomish Tribal Nations. In a response letter dated 10 June 2016, in respect to cultural resources, the Jamestown S'Klallam Tribe has deferred to the Lower Elwha Klallam Tribe;

however, should the scope change or if new data is revealed coordination will be reopened. All coordination letters may be found in Appendix E.

### **9.7 COASTAL ZONE MANAGEMENT ACT**

The Coastal Zone Management Act (CZMA) of 1972, as amended, requires the Corps to carry out their activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program. Per 15 C.F.R. § 930.32(b), in an emergency or other similar unforeseen circumstance, the Federal agency must still adhere to the consistency requirements, to the extent that exigent circumstances allow. Pursuant to the CZMA, the Corps' actions are also required to be consistent to the maximum extent practicable with the approved State Coastal Zone Management Program. The State has provided CZMA consistency concurrence for NWP 3. Based on the evaluation for the project, which includes the January 2016 emergency repairs, the Corps has determined that the proposed project is consistent to the maximum extent practicable with enforceable policies of the City of Port Angeles Shoreline Management Plan, and therefore in compliance with the Coastal Zone Management Act. General State concurrence is provided for those projects that do not require individual CWA Section 401 Certification due to meeting the parameters of Nationwide Permit 3, as well as WDOE's conditions. The Corps has determined that this project is analogous to both the parameters of NWP 3 and the State conditions under NWP 3, does not require individual Water Quality Certification, and thus does not require an individual CZMA consistency determination; however, the Corps prepared a consistency determination for this project, it can found in Appendix B. In the Letter of Verification dated April 15, 2016, WDOE concurred that the project meets the requirements for Washington NWP3.

### **9.8 FISH AND WILDLIFE COORDINATION ACT**

The Fish and Wildlife Coordination Act (16 U.S.C. § 470) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. The Fish and Wildlife Coordination Act Report was completed for the initial construction of the project but is not required for maintenance work.

### **9.9 MIGRATORY BIRD TREATY ACT OF 1918 AND EXECUTIVE ORDER 13186, MIGRATORY BIRD HABITAT PROTECTION**

The Migratory Bird Treaty Act (16 U.S.C. § 703-712) of 1918, as amended, affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. EO 13186 directs federal agencies to evaluate the effects of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative effects to migratory birds. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. Minor construction related impacts such as with heavy equipment movement and noise might disturb migratory birds while they loaf, forage or feed. However, the revetment area is in a constant state of being a disturbed habitat due to the high-energy marine environment and the heavy use by boaters, surfers and fishers. Truck traffic and related noise would be restricted to existing roadways, the rock quarry, and access to the site would only be via the existing roadway. The project would generate no reasonable expectation of take of migratory birds. No permits or authorizations for incidental take of migratory birds are required.

## **9.10 EXECUTIVE ORDER 12898, ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS**

Executive Order 12898 directs federal agencies to take the appropriate steps to identify and address any disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population.

The proposed repairs will ensure the Ediz Hook Revetment continues to function as designed, with beneficial effect to all populations. Therefore, the proposed action would not disproportionately affect minority or low-income populations nor have any adverse human health impacts. No interaction with other projects would result in any such disproportionate impacts. No cumulative impacts to Environmental Justice would be expected from interaction of the proposed action with other past, present, and reasonably foreseeable projects. Further, tribal governments that are also environmental justice communities in the project area have been engaged and informed about the proposed action.

## **9.11 EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS**

Executive Order 11990 encourages Federal agencies to take actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. The project consists of repair of a previously authorized and presently serviceable revetment structure that will continue its function of erosion control once repaired. No changes in structure footprint or configuration will be made because of this project, and no more than minor deviations in construction materials will be made, as compared to the 1972 rehabilitation design, in order to conform to current construction standards. There are no wetlands in the project area, and no net loss of wetlands will occur. Actions proposed by the Corps are consistent with Executive Order 11990.

## **10 SUMMARY / CONCLUSION**

Based on the above analysis, this project is not a major Federal action significantly affecting the quality of the human or natural environment, and therefore does not require preparation of an environmental impact statement. A signed FONSI will complete this environmental review and a draft version is in Appendix C.

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## 13 APPENDICES

- A. NWP 3 Functional Analogy Memo and 404(b)(1) Analysis
- B. Coastal Zone Consistency Determination
- C. Sea Level Change Analysis
- D. Threatened and Endangered Species Coordination
- E. Cultural and Historic Properties Coordination
- F. Notice of Availability and Comment Letters Received