FINDING OF NO SIGNIFICANT IMPACT (FONSI)
AND
CLEAN WATER ACT STATEMEMT OF FINDINGS
SHOALWATER DUNE BARRIER REPAIR PROJECT
PACIFIC COUNTY, WASHINGTON

The U.S. Army Corps of Engineers, Seattle District (Corps) has conducted a supplemental environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The final Supplemental Environmental Assessment (SEA) dated October 2022 for the Shoalwater Bay Dune Barrier Repair Project addresses flood fight activities and an emergency repair to a barrier dune located near the City of Tokeland, Pacific County, Washington.

A significant storm event occurred in December 2018 which resulted in significant erosion to the barrier dune on the northern reach of the project. This left the dune susceptible to direct wave attack the following storm season. By December 2019, over 50 percent of the dune cross-section had been eroded between Station 15+00 and 33+00. A flood fight in December 2019, and a second flood fight in January 2020 was conducted to place a cobble berm in front of the dune to reduce the rate of dune scarping. These efforts prevented a breach through the dune for the remainder of the 2019/2020 storm season, but it was apparent that there was not enough material placed during these flood fights to restore the full level of protection. In November 2020 a larger than forecast storm event caused breaching and 100 percent loss of the dune cross-section from Station 5+00 to 21+00. A January 2021 storm resulted in continued erosion and further the loss of the dune cross-section between Station 3+00 to Station 37+00. An emergency repair is needed to rehabilitate existing flood control works and address damage caused during the November 2020 and January 2021extraordinary coastal storm events.

An Environmental Assessment (EA) was prepared in 2009; supplemented in 2013 to amend the in-water work window in order to avoid work being performed during unpredictable and potentially hazardous working conditions; and further supplemented in 2018 to conduct emergency restoration of the barrier dune. The 2022 SEA evaluated the potential incremental effects from the 2019/2020 flood fights and the 2022 modified emergency repair design, including increased dynamic revetment material volume, construction of a temporary haul road, a temporary channel crossing, and adjusted borrow site location. Elements of the dredging and placement of materials that have not changed from the description in the 2009 EA, 2013 SEA, and 2018 SEA are incorporated by reference.

The emergency flood fights and current levee repair are all authorized by Public Law 84-99 (33 U.S. Code Section 701n). The Corps' rehabilitation and restoration work under this authority is limited to flood control works and federally authorized shore protective works threatened or damaged by coastal storm. In addition, Corps assistance is authorized, in support of State and local response activities, to provide temporary assistance to meet an immediate threat in order to preserve life,

residential, commercial, and industrial property; and public facilities and services. The Shoalwater Bay Tribe is the local non-Federal sponsor for the described Federal actions.

Action: There are two Federal actions analyzed in the SEA summarized below.

(1) Flood Fight Activities: For both the flood assistance events in December 2019 and January 2020, a total of 10,000 tons of 18-inch minus shot rock (unsorted quarry stone) was placed along approximately 3,700 linear feet (LF) of the barrier dune. In December 2019, approximately 5,500 tons of shot rock was placed along 3,700 LF. In January 2020, approximately 4,500 tons of shot rock was placed along approximately 1,900 LF. The flood fight actions reduced the imminent threat of dune breaching, but the dune remained in a severely damaged and compromised state. Following the 2021 storm season the remainder of the approximately 3,700 LF of northern barrier dune was eroded away.

(2) Emergency Repair: The preferred alternative is Alternative 2, Barrier Dune Restoration, to repair only the highly damaged northern section of dune to the full design template. Included in this alternative is an increased quantity of cobble placement that would function as a dynamic revetment structure to protect the sand dune from direct wave attack and erosion.

Alternatives: In addition to a "no action" plan, one alternative was evaluated to restore the northern 4,000 feet of dune (Section 2.2). For both alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan which includes the 2019/2020 flood fights are listed in Table 1:

Table 1: Summary of Potential Effects of the Proposed Action

	Insignificant effects	Insignificant effects as a result of mitigation	Resource unaffected by action
Geology, soils, and hydrology	☒	☐	☐
Surface water	☒	☐	☐
Plant communities	☒	☐	☐
Fish and aquatic species	☒	☐	☐
Wildlife	☒	☐	☐
Threatened/Endangered species/critical habitat	☒	☐	☐
Land and shoreline use	☐	☐	☒
Socioeconomics	☒	☐	☐
Cultural resources	☒	☐	☐

	Insignificant effects	Insignificant effects as a result of mitigation	Resource unaffected by action
Native American Issues	☒	☐	☐
Recreation	☒	☐	☐
Noise	☒	☐	☐
Air quality	☒	☐	☐
Environmental health/ hazardous and toxic waste	☐	☐	☒
Water quality	☒	☐	☐
Climate change/sea level rise	☒	☐	☐

Impact Minimization: All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the flood fight activities and emergency repair. Best management practices (BMPs) as detailed in the SEA are implemented, as appropriate, to minimize impacts. Section 2.3 of the final SEA lists BMPs and conservation measures to reduce environmental impacts of the emergency repair. This includes on-site biological monitoring, timing/sequencing to avoid potential impacts to fish and wildlife species, and monitoring for turbidity, dissolved oxygen, and pH changes during construction.

Cumulative Effects: The human environment will benefit by the flood fights, emergency action, and associated future maintenance dredging actions through the reduction of storm damages and associated flooding on the Shoalwater Reservation and surrounding community. In the context of past, present, and reasonably foreseeable actions, implementation of the flood fights and emergency repair will not result in significant detrimental cumulative effects.

Public Review: Public review of the Notice of Preparation for the emergency repair was completed 5 May 2022. All comments submitted during the public review period are addressed in the final SEA (Appendix A of the SEA).

Treaty Tribes: The Shoalwater Bay Indian Tribe (Shoalwater Tribe) is the project sponsor. As this project was specifically authorized for the protection of the Shoalwater Reservation, the Corps has and will continue to coordinate and consult with the Shoalwater Tribe throughout all repair efforts.

Compliance with Applicable Environmental Laws: Impacts from the federal actions are minor, short-term, and temporary. The project complies with ESA, Section 401 and 404 of the Clean Water Act, the National Historic Preservation Act, and other environmental laws as documented in the 2009 EA and this final SEA.

a. Endangered Species Act:
The U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), are responsible for implementing the Endangered Species Act (ESA) of 1973. The Corps originally consulted with USFWS and NMFS in 2009 and re-initiated consultation due to project changes and/or newly listed species and critical habitat designation in 2011, 2012, 2013, and 2017. The flood fight activities occurred during the winter months with crews working during low tide cycles, thus in-water work was avoided. The winter work also avoided the western snowy plover and streaked horned lark nesting season. Incremental impacts to ESA-listed species during the flood fight actions are unlikely. Coordination with the USFWS and NMFS for the emergency repair was initiated through the submission of a biological assessment (BA) addendum on 12 May 2022. The BA Addendum was intended specifically to supplement prior consultation to cover the effects of new and revised project features on western snowy plover, streaked horned lark, southern green sturgeon, Lower Columbia River Chinook, Upper Willamette River Chinook, Columbia River chum and critical habitat for western snowy plover, streaked horned lark, and southern green sturgeon. The Corps received a letter of concurrence from NMFS on 27 May 2022 and a Biological Opinion from USFWS on 6 July 2022.

b. Magnuson-Stevens Fishery Conservation and Management Act:
The May 2022 BA addendum contained the Corps' determination that the proposed project changes may adversely affect Essential Fish Habitat (EFH) for federally managed fish species in Washington waters. The Corps included seven conservation measures designed to mitigate the adverse effects caused by dredging and temporary culverts. NMFS concluded the action would adversely affect EFH but did not provide conservation recommendations as the adverse effects are temporary.

c. Coastal Zone Management Act:
The Corps determined the emergency repair proposed project changes are consistent to the maximum extent practicable with the enforceable policies of the Washington State Coastal Zone Management Program. The Corps prepared a Coastal Zone Management Act (CZMA) Consistency Determination outlining this determination for concurrence from the Washington Department of Ecology (Ecology). The Corps submitted the CZMA Consistency Determination to Ecology on 29 April 2022. Ecology requested an extension for their decision as provided for in CFR 930.41(b) in order to complete the public comment process, which extended the 60-day review period to 30 July 2022. The Corps received Ecology's concurrence on 21 July 2022.

d. Clean Water Act:
Per the 2009 EA, impacts to water quality are not expected to result from the emergency repair. Turbidity is not expected to increase substantially above ambient conditions due to the predominately sandy nature of the dredged material, and the

large quantities of suspended sand currently transported via longshore drift in the project area. On 22 April 2022, the Corps requested a pre-filing meeting per the 'Clean Water Act Section 401 Certification Rule' (Final Rule) (effective 11 September 2020) in anticipation of needing Section 401 Water Quality Certifications (WQC) from the Environmental Protection Agency (EPA) and Ecology. On 24 May 2022, the Corps requested Section 401 WQCs from both EPA and Ecology. The Corps received WQCs from Ecology on 19 July 2022 and from EPA on 21 July 2022.

e. National Historic Preservation Act:
On 4 May 2022, the Corps initiated consultation with the State Historic Preservation Officer (SHPO) and affected tribes with an area of potential effect (APE) letter. On 4 April 2022, SHPO concurred with the APE. The Corps notified the Shoalwater Tribe in a letter dated 6 April 2022 pursuant to 36 C.F.R.§ 800.3(f) about the project to identify properties to which they may attach religious or cultural significance. To date, the Shoalwater Tribe has not responded to the cultural resources letter with any concerns. The Corps received a letter on 4 May 2022 from the Tribal Council in response to the Notice of Preparation, which expressed full support for the project. On 26 May 2022, the Corps sent a determination and findings letter to the SHPO, documenting the Corps finding of no adverse effect. SHPO responded to the determination and findings letter on 2 June 2022 and concurred with no adverse effect by the proposed undertaking. Due to unforeseen changes during construction, the Contractor had to change their construction methods, which involved ground disturbance. Because ground disturbance was not included in the initial APE determination, the Corps reconsulted with SHPO on 28 July 2022 to include ground disturbance and to report the determination and finding that no historic properties would be affected by the change in methods. WA SHPO concurred with the Corps' determination on 28 July 2022.

Other Significant Environmental Compliance:
All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

District Engineer's Findings and Conclusion:
I have evaluated the flood fight activities and emergency repair in light of the public interest factors prescribed in 33 CFR 336.1(c). The following factors were evaluated as considerations potentially impacting the quality of the human environment in the 2009 EA, 2018 SEA, and the accompanying SEA: navigation and the Federal standard for dredged material disposal; water quality; wetlands; endangered species; historic resources; scenic and recreation values; fish and wildlife; and applicable state/regional/local land use classifications, determinations, and/or policies. In accordance with 33 CFR 337.1(a)(14) and 325.3(c)(1), the following additional relevant factors were also considered: air quality, noise, land use, utilities, and infrastructure.

The selected alternative represents the least costly alternative constituting the discharge of dredged or fill material into waters of the U.S.; in the least costly manner and at the least costly and most practicable location; is consistent with sound engineering practices; and meets the environmental standards established by the Clean Water Act Section 404(b)(1) evaluation process. Execution of the selected alternative, following consideration of all applicable evaluation factors is in the public interest.

Furthermore, based on the attached supplemental environmental assessment, I have determined that evaluated in combination the 2019/2020 flood fight activities did not, and the 2022 emergency repair does not, constitute a major Federal action that will have significant effects on the quality of the human environment, and the project does not require preparation of an environmental impact statement.

1 Nov 2022
Date

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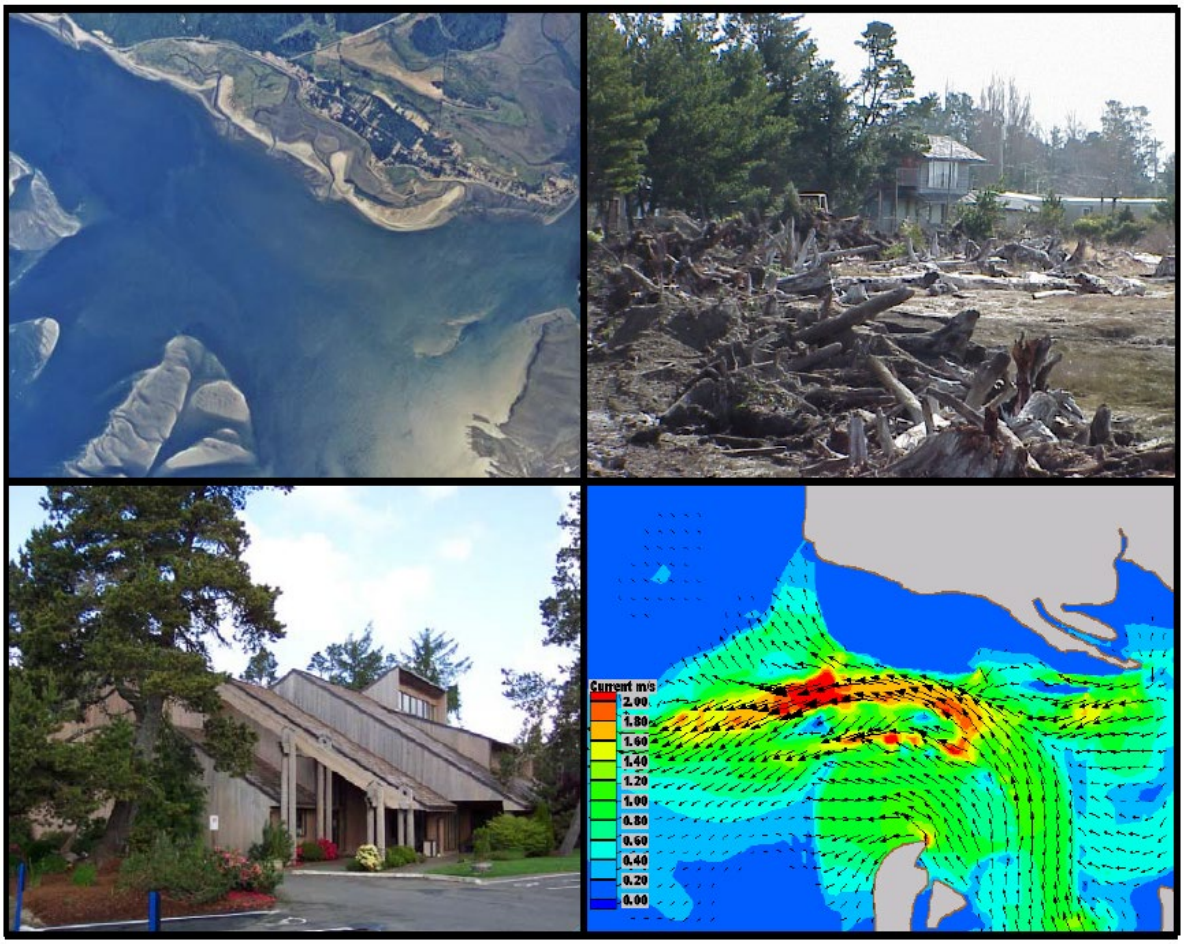
Date: 2022.11.01 15:17:05 -07'00'

Alexander "Xander" L. Bullock
Colonel, Corps of Engineers
District Commander

Final Supplemental Environmental Assessment

Shoalwater Dune Barrier Repair, Washington
Pacific County, Washington

Shoalwater Bay Indian Reservation
Flood and Coastal Storm Damage Reduction



US Army Corps
of Engineers®
Seattle District

October 2022

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1. INTRODUCTION

The purpose of an Environmental Assessment (EA), as reflected in 40 CFR sections 1500.1(c) and 1508.9(a)(1) of the Council on Environmental Quality regulations implementing the National Environmental Policy Act of 1969 (as amended) (NEPA), is 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, and "*to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment*." Pursuant to Section 102(C) of NEPA, this supplemental EA (SEA) evaluates environmental consequences of past flood fight activities and the emergency rehabilitation action currently being implemented by the U.S. Army Corps of Engineers (Corps) at the barrier dune located offshore of the Shoalwater Bay Indian Reservation (Shoalwater Reservation), Pacific County, Washington. As a result of a determination of significantly elevated risk of potential damage to human life, safety and property, the Corps District Commander made a determination that immediate emergency repair activities were necessary to be undertaken prior to full compliance with NEPA as further discussed in EA. An EA was prepared in 2009; supplemented in 2013 to amend the in-water work window in order to avoid work being performed during unpredictable and potentially hazardous working conditions; and further supplemented in 2018 to conduct emergency restoration of the barrier dune. This SEA evaluates the potential incremental effects of the modified repair design, including increased dynamic revetment material volume, construction of a temporary haul road, a temporary channel crossing, and adjusted borrow site location. Elements of the dredging and placement of materials that have not changed from the description in the 2009 EA are incorporated by reference, and may be found at the following location:

https://www.nws.usace.army.mil/Missions/Civil-Works/Programs-and-Projects/Projects/Shoalwater/

The document link is titled "Shoalwater Environmental Assessment July 2009."

This SEA also integrates a review of factors underlying a determination of whether executing the project would be in the public interest, pursuant to Clean Water Act Section 404 and rules and regulations published as 33 CFR Part 335, "*Operation and Maintenance of Army Corps of Engineers Civil Works Projects Involving the Discharge of Dredged or Fill Material into Waters of the U.S. or Ocean Waters*"; 33 CFR Part 336, "*Factors to be Considered in Evaluation of Army Corps of Engineers Dredging Projects Involving the Discharge of Dredged Material into Waters of the U.S. and Ocean Waters*"; 33 CFR Part 337, "*Practice and Procedure*"; and 33 CFR Part 338, "Other Corps Activities Involving the Discharge of Dredged Material or Fill into Waters of the U.S.

1.1. Background

The Shoalwater Reservation was historically protected by a barrier spit (Graveyard and Empire Spits) fronting the tidal embayment (North Cove). The Shoalwater Reservation is slightly greater than one-square mile in area and consists of 440 acres of uplands and 700 acres of important tide flat and intertidal habitat in North Cove. All Shoalwater Reservation land is tribally owned and is bounded by steep natural hillsides to the east and north and by Willapa Bay to the south. The restoration of the deteriorated barrier dune is not a new project. As discussed further in Section 1.3, it was originally authorized by Section 5153 of WRDA 2007 (Public Law 110-114) which resulted in a feasibility study that concluded in 2009 with an EA (USACE 2009) and a signed Finding of No Significant Impact (FONSI) in January 2010. A Memorandum of Agreement was executed in September 2010 at the U.S. Army Corps of Engineers Headquarters between the Department of the Army and the Shoalwater Bay Indian Tribe. In September 2011, a construction contract was awarded, and work commenced in 2012. A 9,800 linear feet (LF) barrier dune restoration project was constructed on Empire Spit by the Corps in 2013 with 709,000 cubic yards (CY) of dredged material from a designated borrow site approximately one mile offshore. A 2018 emergency repair restored the dune to the fully authorized 12,500 (LF) project length with 937,000 CY of dredged material.

1.2. Damaging Flood Events

A significant storm event occurred in December 2018 which resulted in significant erosion to the barrier dune on the northern reach of the project from Station 3+00 to 37+00. This left the dune susceptible to direct wave attack the following storm season. By December 2019, over 50 percent of the dune cross-section had been eroded between Station 15+00 and 33+00. A flood fight in December 2019, and a second flood fight in January 2020 was conducted to place a cobble berm in front of the dune to reduce the rate of dune scarping. These efforts prevented a breach through the dune for the remainder of the 2019/2020 storm season, but it was apparent that there was not enough material placed during these flood fights to restore the full level of protection. In November 2020 a larger than forecast storm event caused breaching and 100 percent loss of the dune cross-section from station 5+00 to 21+00. A January 2021 storm resulted in continued erosion and further the loss of the dune cross-section between Station 3+00 to Station 37+00.

The immediate effect of erosion of the barrier dune results in life safety concerns for the Shoalwater Tribe and flooding risk to millions of dollars of infrastructure in the area. The effects of the recent extraordinary storms have resulted in an even greater threat to life, property, and safety for the Shoalwater Tribe than existed prior to initial construction of the dune barrier. Therefore, immediate action is needed to repair the northern damaged portion of the dune before next storm season (fall 2022) from Station 40+00 to Station 0+00 for a total repair length of 4,000 LF.

1.3. Authority

The Shoalwater Bay Shoreline Erosion Study was conducted in accordance with Section 545 of the Water Resources Development Act (WRDA) of 2000, Public Law 106-541, as amended by

Section 5153 of WRDA 2007 (Public Law 110-114). Section 545 of WRDA 2000, as amended, authorized a study, and authorized a project, subject to Secretarial approval, for coastal erosion protection and ecosystem restoration for the Tribal reservation of the Shoalwater Bay Indian Tribe (Shoalwater Tribe). The complete text of Section 545 of WRDA 2000, as amended, is as follows:

> *SEC. 545. WILLAPA BAY, WASHINGTON.*
>
> *(a) STUDY. - The Secretary shall conduct a study to determine the feasibility of providing coastal erosion protection and ecosystem restoration for the tribal reservation of the Shoalwater Bay Tribe on Willapa Bay, Washington.*
>
> *(b) PROJECT. -*
>
> *(1) IN GENERAL. - Notwithstanding any other provision of law (including any requirement for economic justification), the Secretary shall construct and maintain a project to provide coastal erosion protection and ecosystem restoration for the tribal reservation of the Shoalwater Bay Tribe on Willapa Bay, Washington, at Federal expense, if the Secretary determines that the project -*
>
> *(A) is a cost-effective means of providing erosion protection and ecosystem restoration;*
>
> *(B) is environmentally acceptable and technically feasible; and*
>
> *(C) will improve the economic and social conditions of the Shoalwater Bay Tribe.*
>
> *(2) LANDS, EASEMENTS, AND RIGHTS-OF-WAY. - As a condition of the project, described in paragraph (1), the Shoalwater Bay Tribe shall provide lands, easements, rights-of-way, and dredged material disposal areas necessary for implementation of the project.*
>
> (NOTE: For purposes of this Act, the term Secretary means the Secretary of the Army)

This authorization was also amended by the FY 2002 Energy and Water Development Appropriations Act, Public Law 107-66. Title I, Construction General, provided "… That all studies for the project shall be cost shared in the same proportion as the construction implementation costs." (i.e., at 100 percent Federal cost).

The 2019/2020 flood fights and this emergency repair are authorized by Public Law 84-99, the Flood Control and Coastal Emergency Act. Rehabilitation assistance under the Public Law 84-99 program for a coastal storm risk management project damaged by an extraordinary storm includes all repairs to hard structures and the replenishment of sacrificial features that replaces the beach fill lost due to the extraordinary storm and repair/restoration to a pre-storm condition is necessary to allow for adequate functioning of the project.

1.4. PROJECT LOCATION

The project area is located on the north side of the entrance to Willapa Bay, a large estuarine system located on the southwest Pacific Ocean coast in Pacific County, Washington (Figure 1). Willapa Bay's entrance to the Pacific Ocean is approximately 28 miles north of the mouth of the

Columbia River and 17 miles south of the Grays Harbor entrance. The Shoalwater Reservation is located on the northern shore of Willapa Bay in northwestern Pacific County, Washington (Figure 2). The Shoalwater Dune Barrier Repair Project is located on and adjacent to the Shoalwater Reservation.

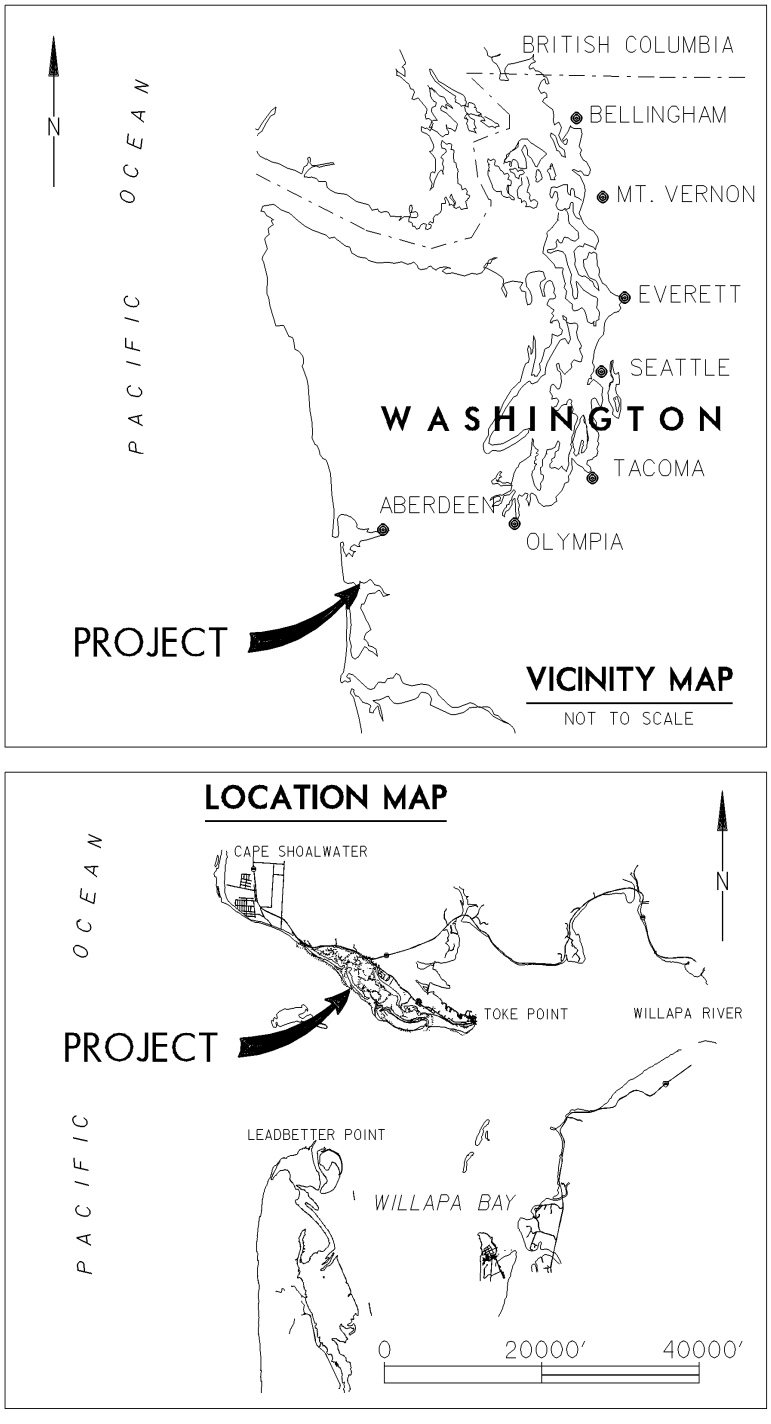


Figure 1. Project vicinity and location maps.

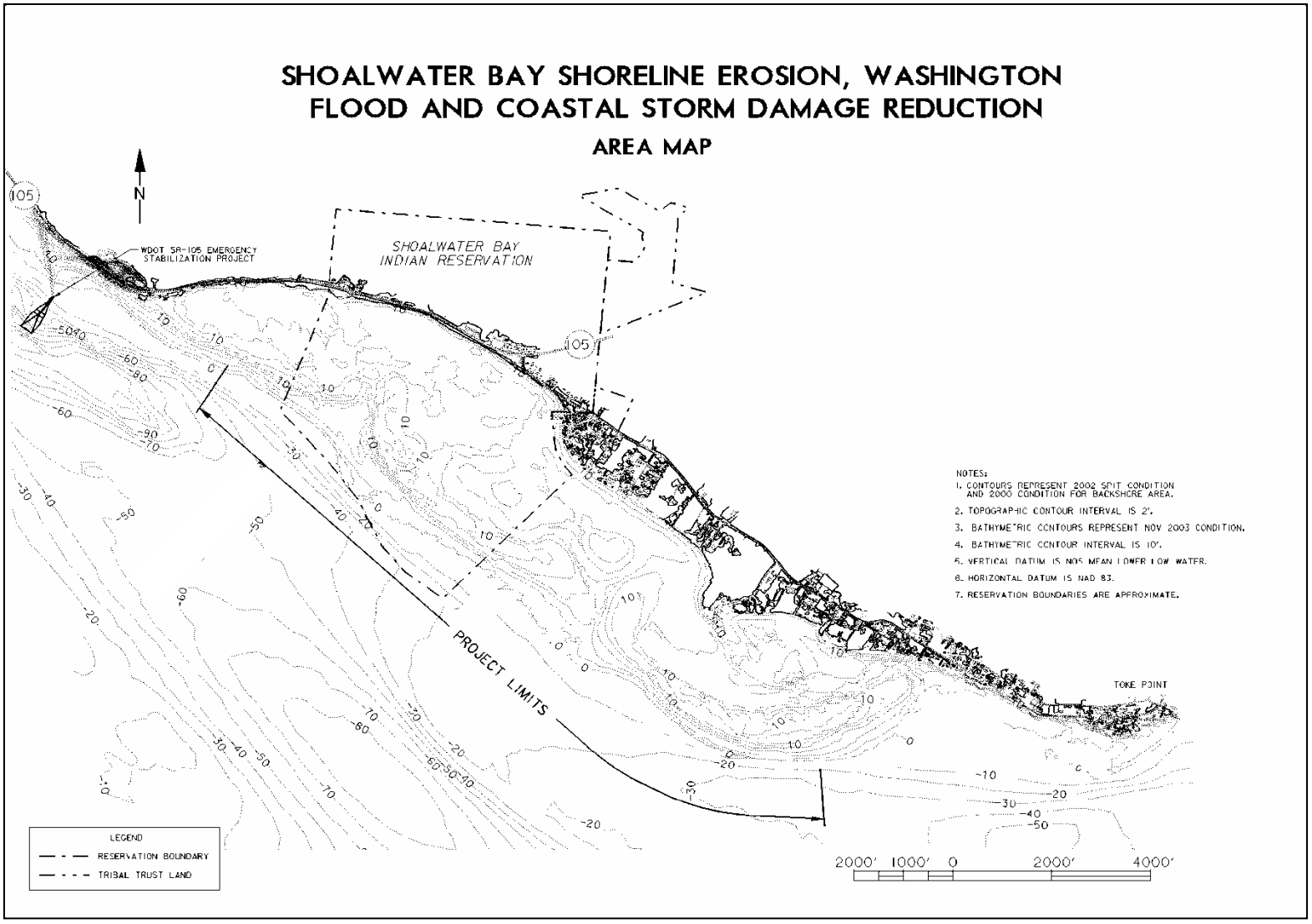


Figure 2. Shoalwater Reservation

1.5. Purpose and Need

This SEA addresses two Federal actions. The need for conducting emergency flood fight measures in 2019/2020 has been presented in Section 1.2; the need for implementing an emergency repair in 2022 has also been presented in Section 1.2. The purpose of the 2019/2020 flood fights was to provide temporary supplemental protection to meet an immediate threat in light of the barrier dune's condition as damaged by 2018-2020 storms. A cobble berm was placed to prevent breaching of the dune, but there was not enough material placed during these flood fights to restore the full level of protection. Even with these flood fight efforts, the barrier dune system only provided protection to approximately a 1-year flood event (100 percent annual chance exceedance [ACE]) with an increased risk to life safety, improved property, and public infrastructure. The purpose of the current emergency repair is to restore the pre-damage level of flood protection (50-year storm event) exhibited prior to the 2018, 2020, and 2021 storm events to protect lives and property from subsequent flooding. The completed flood fights and the current emergency repair addressed in this SEA are the result of the Shoalwater Tribe's request for assistance.

1.6. December 2019 and January 2020 Flood Fight Repairs

For both flood assistance events in December and January, a total of 10,000 tons of 18-inch minus shot rock (unsorted quarry stone) was placed along approximately 3,700 LF. In December 2019, approximately 5,500 tons of shot rock was placed along 3,700 LF. In January 2020, approximately 4,500 tons of shot rock was placed along approximately 1,900 LF. The flood fight actions reduced the imminent threat of dune breaching, but the dune remained in a severely damaged and compromised state.

These flood fights have not proven to be adequate due to the availability of contractors, high water conditions, dynamic coastal conditions, and short timeframes. Following the 2021 storm season the remainder of the approximately 3,700 LF of northern barrier dune was eroded away and was last surveyed as having eroded down to an elevation of 10 to 12 feet above mean lower low water (MLLW). This adds significant risk to the success of future flood response efforts. Emergency response flood fighting would prove to be difficult, if required.

2. PROPOSED 2022 ACTION AND ALTERNATIVES

2.1. Alternative 1 – No Action

Under this alternative, the barrier dune would remain in its current damaged state and no repairs would be made to restore project functionality to either pre-storm conditions or design template conditions. This alternative would not meet the project purpose because approximately 4,000 feet of the 12,500-foot project does not currently provide the project design level of protection. Dune width within this region of the project has been completely lost, while dune heights have been reduced to elevations that are overtopped by a 1-year water level event. The dune would likely be further damaged in future flood events, which would further endanger homes, businesses, and public infrastructure during future flood events.

The No Action Alternative is not recommended because it poses increased risk to the Shoalwater Reservation and community, and therefore does not meet the purpose and need of the action. While the No Action Alternative is not recommended, it is carried forward for further evaluation to serve as a base condition for evaluation of other alternatives.

2.2. Alternative 2 – Barrier Dune Restoration (Preferred Alternative)

This alternative consists of dredging at one potential borrow area offshore of Tokeland Peninsula for the purpose of obtaining approximately 460,000 CY of sand to restore the northern 4,000 feet of dune, with a crest elevation of +25 feet MLLW (Figures 3-7). The borrow area is still located in the adjacent Willapa Bay entrance and channel but has been shifted southeast to an area that has experienced higher rates of accretion than previously used sites (Figure 3). The 2018 dune repair project plans included cobble placement to provide additional protection from wave action at the northern third of the dune (4,000 LF) but was not implemented. The current repair includes an increased quantity of cobble placement in the northern damaged section that functions as a dynamic revetment structure to protect the sand dune from direct wave attack and erosion. New construction measures include a land access route (haul road) to the repair area along Graveyard Spit for safe transportation of resources and personnel into and out of the project site and a temporary tidal channel crossing to reach the repair area.

The toe of the dune will be stabilized with approximately 216,000 tons of 10-inch minus rounded streambed cobble or angular quarried spall placed along the northern 4,000 feet of the project. This dynamic revetment structure is placed on the oceanside sideslope of the repaired dune from +5 to +15 feet MLLW. The cobble sized material will function as a dynamic revetment. The individual cobbles will be dynamic (or mobile) in the wave swash zone (i.e., upper part of the beach between backbeach and surf zone, where intense erosion occurs during storms) allowing the cobble berm to reshape itself over time based on the wave environment. Infiltration of water through the void space between cobbles will reduce the wave runup on the dune face, thereby reducing the risk of waves overtopping the dune. Through these processes the dynamic revetment absorbs wave energy more effectively than a traditional static rock revetment and reduces the wave runup that occurs on an unprotected sandy beach.

The cobble berm has a top width of 75 feet and slopes down to the existing beach at 1 vertical on 7.5 horizontal grade. Some excavation is necessary to embed the toe in the beach in order to prevent undermining when the beach profile lowers during the winter storm season. Typical height of the berm varies between 13 feet to 15 feet above the existing grade.

A two and a half lane (30-feet wide) temporary haul road constructed across Graveyard and Empire Spit supports the safe transportation of resources into and out of the project site. The elevated road is composed of quarry spalls and will be removed post-construction. The temporary road is constructed above high tide line to the greatest extent practicable. Total haul road distance is approximately 4,700 feet.

A temporary causeway comprised of several corrugated metal pipe (CMP) culverts and quarry rock fill material was constructed to cross the tidal inlet (Cannery Slough) separating Graveyard Spit from Empire Spit. The distance between the high tide line between Graveyard Spit and Empire Spit is presently 950 feet, however the inlet channel thalweg below the low tide line is only 100-200 feet. Daily tidal flow is maintained from Willapa Bay to the backshore embayment. A hydraulic analysis was performed to ensure the culverts are appropriately sized for the tidal prism so that significant head differential and excessive scour of the inlet does not occur.

Sand fencing is being installed in 75-foot segments perpendicular to the shoreline on the back side (landward) of the dune to help retain sand along 3,700 feet of the northern repair area. Each section of fence is spaced approximately 25 feet apart. The sand fencing provides immediate erosion control. Revegetation is not planned in order to provide habitat for western snowy plover and streaked horned lark, Endangered Species Act (ESA)-listed bird species.

Equipment utilized in the repair are similar to those employed during previous barrier dune construction and repair projects and include: hydraulic dredge, hydraulic excavators, dump trucks, bulldozers, and all-terrain vehicles. All heavy equipment and vehicles are limited to the work area and construction staging areas, as identified on the design plans (Appendix A). Due to the threat of coastal storms and hazardous working conditions, temporary causeway construction over Cannery Slough began in June, with dredging occurring 16 July through 15 February. Construction vehicles access the site by the haul road off of SR 105 and Sunset Lane. Cobble is staged within the construction footprint at designated staging areas. Dune repairs are expected to take approximately 4 months. Best management practices (BMPs) and conservation measures are employed to minimize project impacts.

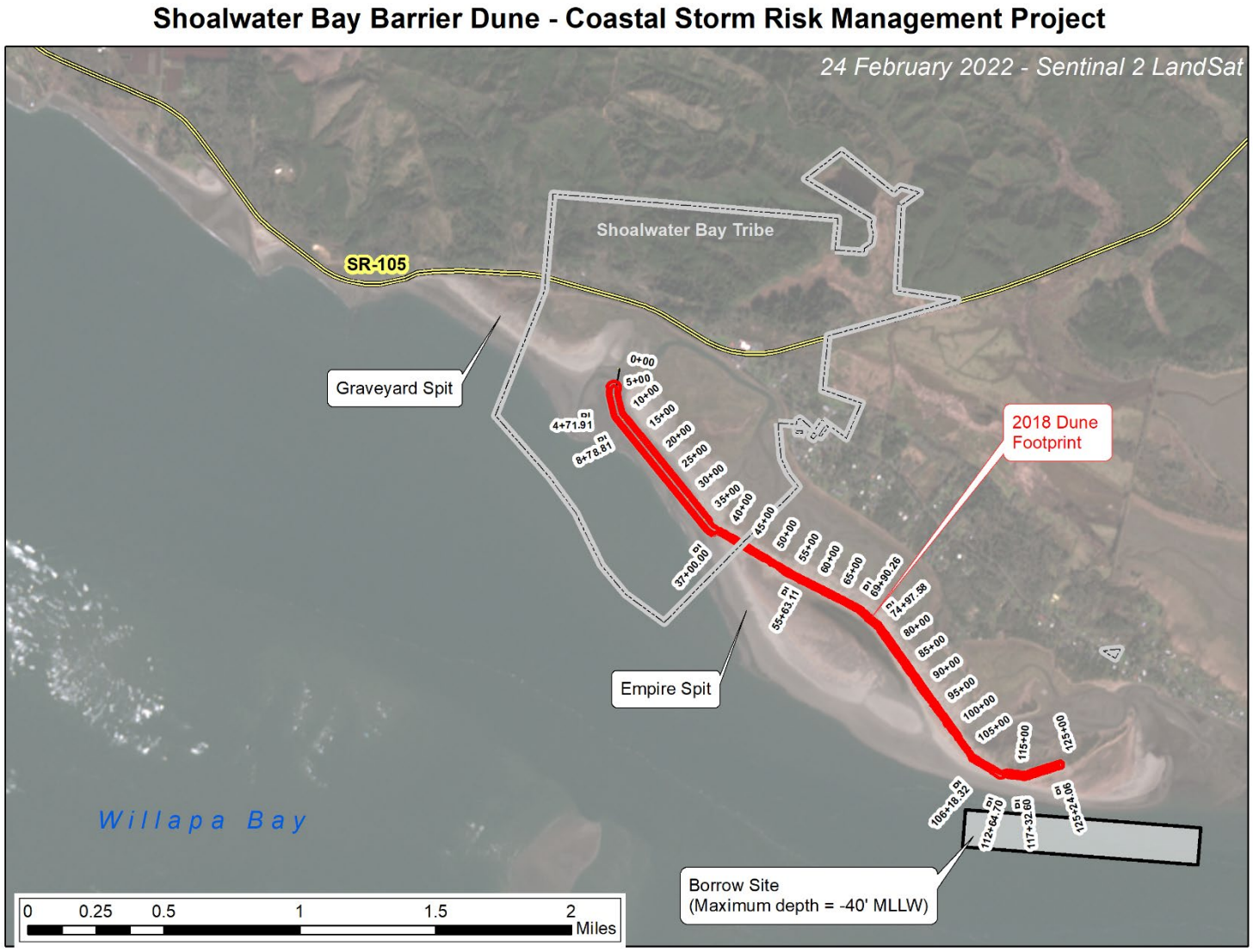


Figure 3: Location of Shoalwater Bay Coastal Storm Risk Management Project Barrier Dune (in red) and Borrow Site (black outline)

Figure 4. Location of damaged region needing repair and approximate location of setback alignment.

Shoalwater Bay Barrier Dune - Coastal Storm Risk Management Project - Landside Pipeline layout

Figure 5. Landward pipeline route required to avoid ESA-listed species

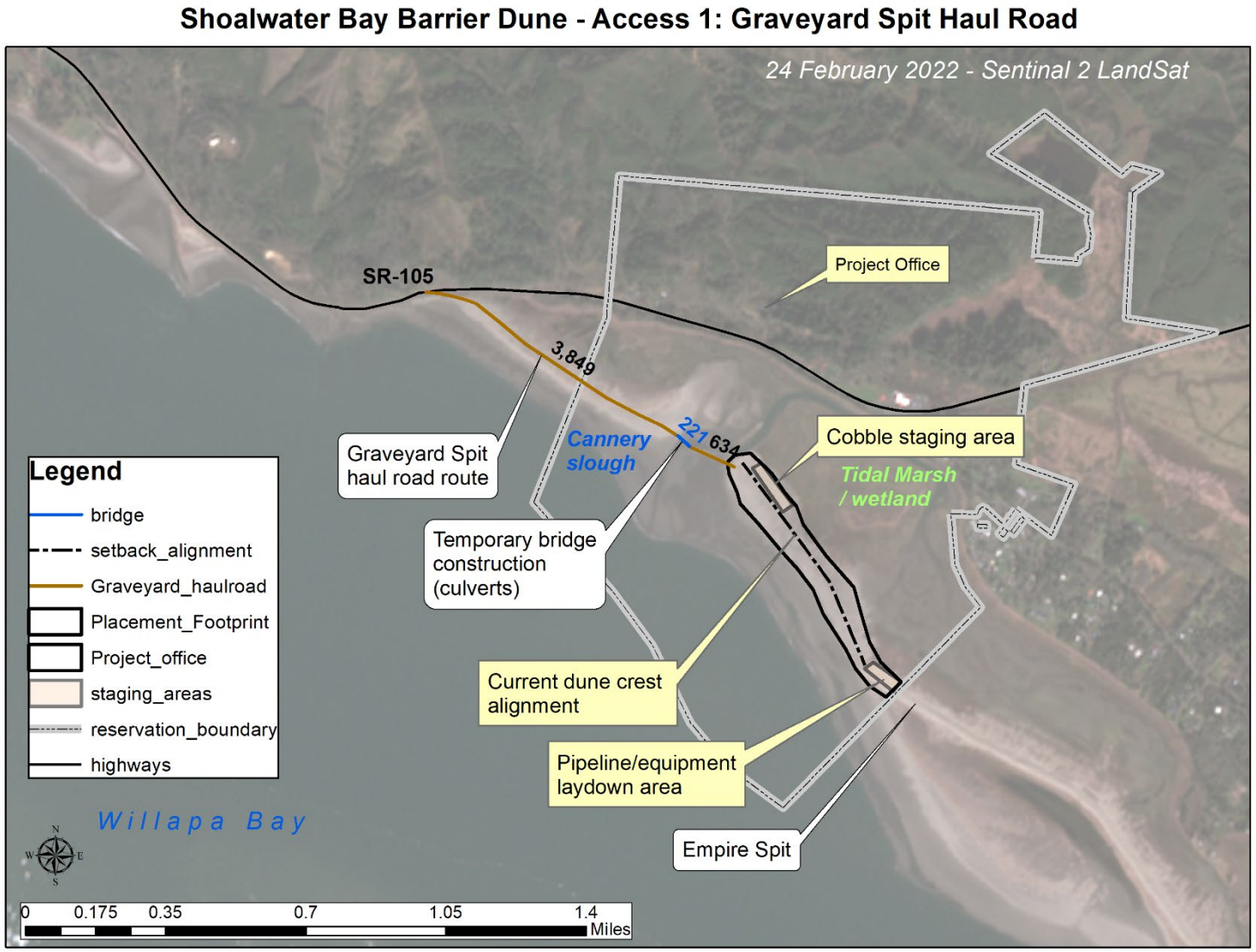
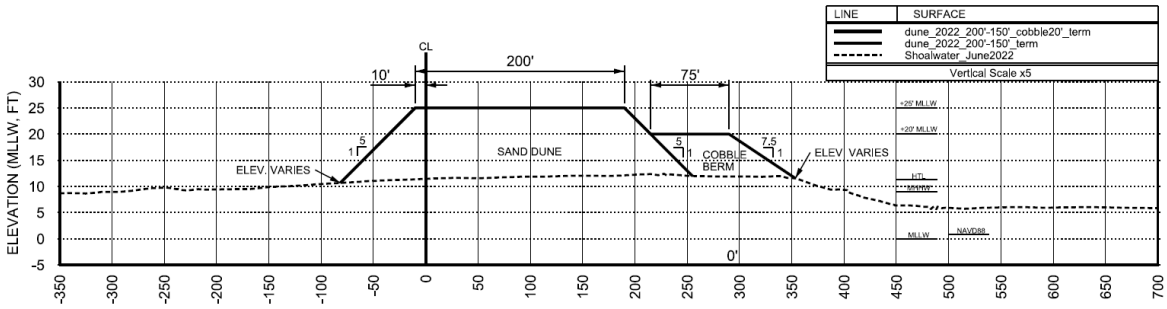


Figure 6. Northern land access route along Graveyard Spit (haul road distances in feet)



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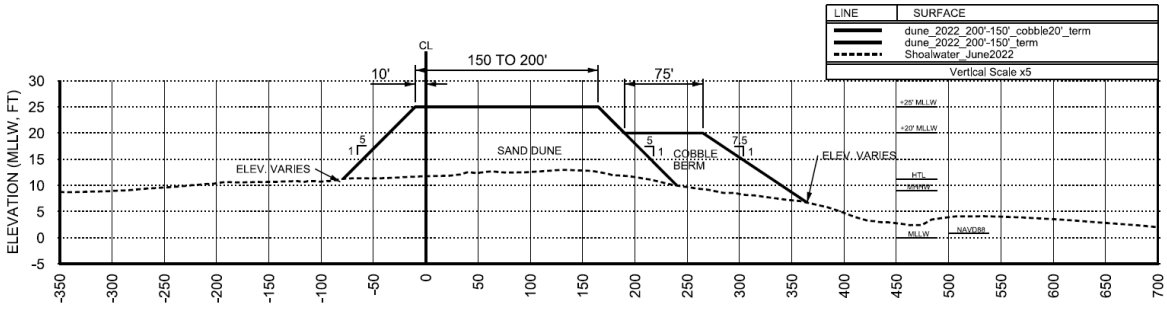
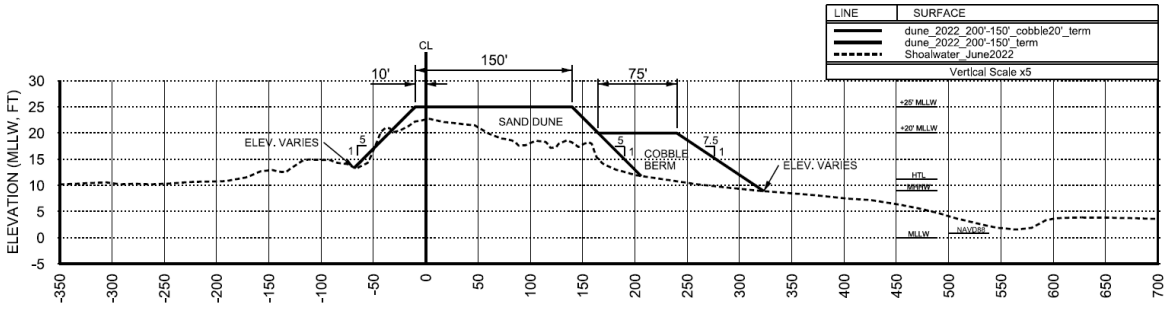
(VERTICAL AXIS EXAGGERATED x5)



STA. 35+00 TO 37+00

(VERTICAL AXIS EXAGGERATED x5)



STA. 37+00 TO 45+00

(VERTICAL AXIS EXAGGERATED x5)

Figure 7. Design template for barrier dune and dynamic revetment (cobble berm) construction

2.3. Best Management Practices and Conservation Measures

2.3.1. Best Management Practices (BMPs)

Site-specific BMPs have been identified to avoid and minimize unnecessary damage to the environment. BMPs include the following:

- The dredging footprint is limited within the borrow area boundaries, reflecting deeper cuts over a smaller footprint (as opposed to a shallow cut over a large surface area). Lateral movement of the dredge head is minimized, and the dredge head operated only when below the sand surface, in order to minimize the entrainment of fish and crab. The dredge is only operated with the intake at or below the surface of the sand being removed. The intake may be raised a maximum of three feet along the bed for brief periods for purging or flushing the intake system.
- All existing debris or other deleterious materials resulting from dredging activities is removed and disposed of upland such that it does not enter tribal or state waters.
- Heavy equipment is limited to upland staging areas and the dune footprint to the greatest extent possible throughout the project. All equipment remains clear of high-quality vegetated habitat areas, including wetlands, landward of the dune repair project. The operation of heavy equipment is held to the minimum necessary within all intertidal areas.
- Upland travel routes to the active dune construction site were clearly marked prior to commencing construction activities and maintained until all work is completed.
- Travel routes utilized for moving sand that are not on the barrier dune are clearly marked prior to moving material and not placed within any existing wetlands.
- The boundaries of jurisdictional interdunal wetlands that overlap the backside of the dune footprint are staked and clearly marked to prevent any unintended encroachment into adjacent wetlands. Alteration or disturbance of existing beach and intertidal vegetation is held to a minimum.
- Work in and near adjacent areas of Willapa Bay and North Cove is done so as to minimize release of suspended solids, erosion, and other water quality impacts.
- Equipment does not operate on the beach when the work area is inundated by tidal waters.
- Cobble and filter material are free of fine-grained materials that could cause turbidity impacts during construction - washing may be required at the source/quarry.
- Removal of native bank line vegetation is limited to the minimum amount needed to construct the project.
- Large woody material existing within the barrier dune footprint is cleared from the construction area footprint and stockpiled for later replacement. All stockpile locations are clear of environmentally sensitive areas, including wetlands.

- Removal or scraping of native vegetation is limited to the minimum amount needed to construct the project. Vegetation scraped from the existing dune (e.g., to construct dewatering features like ponds or berms, staging areas, etc.) is not stockpiled in wetland or other high quality habitat areas.
- Garbage, plastic, and debris encountered and created during construction is removed from the site and disposed in an approved upland facility. The storage methods/locations while onsite, are upland of the ordinary high water mark so that the garbage, plastic, and debris cannot enter the water or cause water quality degradation. Storage methods/locations are animal, weather, and wind proof.
- No petroleum products, chemicals, or other toxic or deleterious materials are allowed to enter tribal or state waters.
- All equipment staging, cleaning, maintenance, refueling and fuel storage areas are located in uplands. These activities related to oils and grease take place within specified, clearly marked upland location(s), and where practicable, are a minimum of 50 feet from tribal and state waters.
- Equipment used for this project is free of external petroleum-based products while used around tribal and state waters, including wetlands. Accumulation of soils or debris are removed from the drive mechanisms (wheels, tires, tracks, etc.) and the undercarriage of equipment prior to its use around tribal and state waters, including wetlands.
- All equipment being used below the ordinary high water mark utilize bio-degradable hydraulic fluid.
- To prevent the transporting of and introducing of aquatic invasive species, vessels, equipment, boots, and other gear are thoroughly cleaned before arriving and leaving the job site. For a large vessel such as a barge, this includes thorough rinsing of the vessel along with sweeping or vacuuming of the deck before arriving in Willapa Bay. This level of cleaning is also done before a vessel leaves Willapa Bay.
- All equipment and vehicles are inspected daily for fluid leaks before leaving the staging area(s). Any leaks detected are repaired in the staging area before resuming operations.
- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., are checked regularly for drips or leaks and are maintained and stored properly to prevent spills into tribal or state waters.
- Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment is not discharged into tribal or state waters.
- Secondary containment is placed under any equipment stored on site.
- No equipment or construction materials stored on site are located within wetlands.
- Anchors or spuds are not deployed in eel grass, kelp, or forage fish spawning beds.

- Anchor cable tension is maintained to prevent anchor cables from dragging on the seafloor bed.

2.3.2. Conservation Measures

The Corps has developed a list of conservation measures and incorporated these into the dune repair design to reduce environmental impacts of the repair. For this project the measures include the following:

- Temporary causeway construction started no earlier than 1 June.
- Dredging occurs during the 16 July through 15 February work window.
- All work on Empire and Graveyard spit avoids and/or minimizes impacts to western snowy plover and streaked horned lark during the nesting season of 1 April through August/early September, through implementation of the 2022 Western Snowy Plover and Streaked Horned Lark Protection Plan.
- To reduce entrainment and the generation of turbidity, the hydraulic dredge is only operated with the intake at or below the surface of the material being removed, and the intake is only raised a maximum of three feet above the bed for brief periods of purging or flushing of the intake system.
- The contractor coordinated with Corps, Washington Department of Fish and Wildlife (WDFW), U.S. Fish and Wildlife Service (USFWS), and Shoalwater Tribe staff to conduct nesting surveys for western snowy plovers and streaked horned lark at the project site prior to construction. Construction timing and implementation was adjusted as necessary to avoid impacts to nesting western snowy plovers and streaked horned larks based on these survey results and coordination with WDFW and USFWS.
- Monitoring by the contractor and/or Corps and Tribal biologists is conducted daily throughout construction to locate active western snowy plover and streaked horned lark nests and determine location of broods.
- All trash is contained, and a spill control plan implemented to reduce the risk of contaminants entering the water.
- Light towers located on the beach are pointed towards the immediate work area, mitigating light intrusion to other areas of the beach.
- Large woody debris stockpiled during construction is placed at the toe of the restored dune to provide habitat and nutrients for establishing plants and invertebrates.
- Temporary haul road and channel crossing materials will be removed at construction completion and the area fully restored to pre-existing conditions.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section evaluates impacts to various resources by the alternatives carried forward for evaluation. Table 1 identifies the resources evaluated for detailed analysis in the 2009 EA with a

rationale for inclusion or exclusion based on incremental changes from this emergency action. Resources are excluded from detailed analysis if there was no change from the 2009 EA and are not potentially affected by the alternatives or have no material bearing on the decision-making process.

Table 1. Resources Evaluated in the 2009 EA and Incremental Changes Based on the Emergency Action.

Resource	Incremental change from 2009 EA (Y/N)	Rationale for inclusion or exclusion
Geology, Soils, and Hydrology	Y	There are incremental impacts to geology, soils, and hydrology anticipated from the project changes (Section 3.1).
Surface Water	Y	There are incremental impacts to surface waters anticipated from the project changes (Section 3.2).
Plant Communities	Y	There are temporary wetland impacts anticipated from the project changes (Section 3.3).
Fish and Aquatic Species	Y	Many different fish and aquatic species may be present. Analysis is required to determine which species would be present, the intensity of effects, and how to avoid or minimize effects (Section 3.4).
Wildlife	Y	Wildlife species may be present. Analysis is required to determine which species would be present, the intensity of effects, and how to avoid or minimize effects (Section 3.5).
Threatened and Endangered Species	Y	The emergency action may affect protected species in the project area. Analysis is required to determine the effects (Section 3.6).
Land and Shoreline Use	N	No incremental impacts to land use are expected from the project changes.
Socioeconomics	N	No incremental impacts to socioeconomics are expected from the project changes.
Cultural Resources	N	No incremental impacts to cultural resources are expected from the project changes.
Native American Issues	N	No incremental impacts to the economic and social conditions of the Shoalwater Tribe are expected from the project changes.
Recreation	N	No incremental impacts to recreation are expected from the project changes.

Resource	Incremental change from 2009 EA (Y/N)	Rationale for inclusion or exclusion
Noise	Y	Incremental impacts to noise anticipated from the project changes will arise due to construction of the haul road and slough crossing; therefore, analysis is required to determine the impacts of effects (Section 3.7).
Air Quality	Y	The air-pollutant concentrations in the project area have consistently been below the National Ambient Air Quality Standards; however, an analysis of pollutant emissions from the project changes is necessary to disclose to the public (Section 3.8)
Environmental Health / Hazardous and Toxic Waste	N	The project change is unlikely to have any incremental effects or be incrementally affected by any hazardous or toxic waste.
Climate Change/Sea Level Rise	Y	The project change should be analyzed in relation to climate change/seal level rise (Section 3.9).

3.1. GEOLOGY AND SOILS

Geologic, soil, and hydrologic characteristics of the project area are described in the 2009 EA.

3.1.1. No Action

The no-action alternative would result in continued overwash and loss of barrier dune elevation, and consequently, increased flooding and storm damages on the Shoalwater Reservation.

3.1.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

The placement of a cobble berm during flood fight activities changed the substrate in the northern project area. This change in substrate was intended to help retain the dune structure for a longer time period. The change in substrate did not substantially change the character of the beach since the substrate will remain dominated by sand.

All other impacts are the same as those described in the 2009 EA.

3.1.3. Barrier Dune Restoration

In 2007 and again in 2018, the Dredged Material Management Program (DMMP) agencies (Corps, EPA, Ecology, and Washington State Department of Natural Resources) determined that dredged material from two offshore borrow areas met the exclusionary criteria stipulated in the Clean Water Act Section 404(b)(1) guidelines (DMMP 2007, 2018). The project is located in a highly dynamic coastal area with high-energy waves and currents. The dredged material is also far from any known sources of contamination. The adjusted borrow site is slightly

southeast of the previous borrow areas but still in the Willapa Bay entrance area and within pumping distance of the eroded dune. Eighteen samples (three samples from each of six cores taken from different depths below mudline) indicate that the material is primarily poorly graded fine sands with average fines content (silt + clay) of approximately 7 percent (ECC Environmental LCC 2022).

The 2018 Tier 1 Determination was updated and agreed to by the DMMP agencies regarding the suitability of the borrow material needed to restore the dune (DMMP 2022). Based on 2022 borrow site grain size data, and an evaluation of spill response information since 2018, the DMMP agencies concluded that all 460,000 CY are suitable for use in dune restoration.

The 2018 SEA included cobble placement to provide additional protection from wave action at the northern third of the dune (3,500 LF) but was not implemented due to contracting and funding constraints. This design feature has been modified for the 2022 repair and includes an increased quantity of cobble placement in the northern damaged section that will function as a dynamic revetment structure to protect the sand dune from direct wave attack and erosion.

Dynamic revetments are engineered structures constructed to mimic natural composite sand and cobble beaches. They are analogous to bluff backed beaches found on the Pacific Northwest shorelines (e.g., Olympic Peninsula and coastal headlands on the Oregon Coast). Dynamic revetments dissipate wave energy by reflection, absorbing energy through water infiltration, and cross-shore movement of individual cobble units in the beach profile. Individual cobble-sized material will be dynamic (or mobile) in the wave swash zone (i.e., upper part of the beach between backbeach and surf zone, where intense erosion occurs during storms) allowing the cobble berm to reshape itself over time based on the wave environment. Infiltration of water through the void space between cobbles will reduce the wave runup on the dune face, thereby reducing the risk of waves overtopping the dune. Through these processes the dynamic revetment will absorb wave energy more effectively than a traditional static rock revetment and reduce the wave runup that will occur on an unprotected sandy beach.

The temporary haul road and causeway will be removed upon construction completion and the disturbed areas restored to pre-project conditions.

3.2. Surface Water

Surface waters in the vicinity of the project area are described in the 2009 EA. Willapa Bay is categorized as excellent for water quality and beneficial uses, and categorization criteria apply as described in Washington Administrative Code 173-201A-210 (1).

3.2.1. No Action

There would be no change to surface waters from the no-action alternative.

3.2.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

The flood fights occurred during the winter months with crews working during low tide cycles, both night and day. As no dredging occurred and work was conducted during low tide cycles, in-water work was avoided. No incremental impacts to surface waters were observed during the flood fight actions.

3.2.3. Barrier Dune Restoration

Water quality impacts could occur from the construction and removal of the temporary causeway in Cannery Slough. The Corps is following the EPA-approved site-specific Water Quality Monitoring Plan (WQMP; dated July 18, 2022), which includes instrumented and visual monitoring during causeway construction to detect significant turbidity discharges. Turbidity curtains are installed, as needed, downstream of the work area prior to the start of construction activities and removed at the end of the workday to minimize turbidity. Other water quality parameters are monitored weekly during causeway construction, including pH, dissolved oxygen, and temperature.

3.3. PLANT COMMUNITIES

Marsh plants continue to dominate the intertidal areas of North Cove as discussed in the 2009 EA. No major changes in vegetation in the surrounding areas have occurred since that document was prepared.

3.3.1. No Action

Without the project, North Cove plant communities would continue to be impacted by in-filling with sand due to storm waves overwashing the eroding barrier dune and depositing sand in the North Cove embayment. The degradation of the North Cove habitat adversely affects the ability of the cove to support harvest of local native plant species traditionally used by Tribal members for Tribal crafts and for cultural and spiritual uses.

3.3.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

Placement of the cobble berm occurred on the seaward side of the barrier dune. This area was subject to daily tide cycles and erosive storm waves, thus was unvegetated. No impacts to plant communities occurred from the flood fight activities.

3.3.3. Barrier Dune Restoration

Wetlands are located immediately adjacent to the project area. The temporary haul road alignment, staging areas, and dynamic revetment are not located in jurisdictional wetlands. The placement of sand in the northern section of the project will avoid impacts to mosaic wetland by adjusting the project alignment to move closer to the ocean side. Sand fencing installation on the backside of the restoration area will aid in sand retention and maintain habitat for ESA-listed species. Sand fencing provides immediate erosion control, whereas dune grass plantings could take years to help stabilize the dune. The repaired dune will protect the North Cove saltmarsh wetlands landward of the dune, providing habitat for listed species and other coastal resources important to the Shoalwater Tribe.

3.4. FISH AND AQUATIC SPECIES

Fish communities in and around the project area are described in the 2009 EA, including within Willapa Bay.

3.4.1. No Action

In the absence of the project, aquatic species would likely continue to be impacted by existing and future eroding conditions. The productive subsistence shellfish growing and harvesting habitat of North Cove would continue to be impacted and lost to in-filling with sand due to storm waves overwashing the eroding barrier dune and depositing sand in the North Cove embayment.

3.4.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

The flood fights occurred during the winter months with crews working during low tide cycles, both night and day. As no dredging occurred and work was conducted during low tide cycles, in-water work was avoided. Incremental impacts to fish and aquatic species surface waters during the flood fight actions is highly unlikely.

3.4.3. Barrier Dune Restoration

Fish

Due to the threat of coastal storms and hazardous working conditions, temporary causeway construction could occur starting 1 June, with dredging occurring between 16 July and 15 February. During dredging and pumping activities, most fish are likely re-locating to other areas of Willapa Bay, with negligible impacts to their fitness or survival. The work is still being done with a hydraulic dredge, and some fish are likely to be entrained, or suctioned into the dredge with the sediment slurry. Given the temporary nature of the dredging and the limited geographic extent of the borrow site, impacts to fish species are expected to be minimal.

Causeway construction is temporary in the aquatic environment and conveys full tidal prism daily. Willapa Bay is a very productive estuary with abundant food resources (e.g., burrowing shrimp, other benthic invertebrates). Culverts ensure fish have unimpeded slough access throughout the construction period and all material will be removed upon construction completion.

The increased amount of rounded cobble or angular quarry spall and corresponding lengthier placement duration will neither increase turbid conditions during substrate modification, nor increase effects to habitat characteristics of substrate in a manner that impairs its function for fish. This work is temporary and localized, and there will be no lasting adverse impacts on fish.

Crabs

The window for the dredging would occur between the 16 July through 15 February in-water work window. Based on 2008 and 2012 crab trawl data, and visual observations of the dredge pipe outfall in 2018, crab abundance appears similar to what is expected for coastal bar habitats at Grays Harbor and the Columbia River (in contrast to relatively lower crab abundance

expected in inner harbor areas). The data indicate various life stages from recently settled crab larvae through adults occur in the new borrow area throughout the dredging window. Impact minimization and avoidance measures in 2012, 2013, and 2018 included timing the dredging to occur during periods of less crab abundance, and the use of techniques that minimize potential crab entrainment during dredging. Similar measures are being employed for this repair work.

Benthic Community

There are no incremental impacts to the benthic community anticipated from the change in borrow area. The footprint is still located on the north side of the Willapa Bay channel; therefore, impacts will be similar to those described in the 2009 EA. No major shift in the composition of the benthic community is expected in the area where cobble will be placed since the percentage of cobble to sand will be low.

Intertidal and subtidal habitats on and adjacent to Graveyard/Empire Spit are disturbed by the temporary haul road/channel crossing. Benthic organisms are likely to be depressed in the area directly impacted by the crossing activities. However, abundance of benthic invertebrates should recover within one year and given that the amount of area disturbed is small relative to the entire area around Willapa Bay, it is unlikely the crossing will appreciably diminish benthic prey resources.

3.5. WILDLIFE

Wildlife in and around the project area are described in the 2009 EA. Since construction of the project there has been an increase in ESA-listed bird species nesting in the restored dune area. Refer to additional details in section 3.6.

3.5.1. No Action

In the absence of the project, wildlife species would likely continue to be impacted by existing and future eroding conditions.

3.5.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

Construction of the cobble berm during flood fight actions may have had minor, short-term impacts to wildlife due to increased noise in the project area. Wildlife likely returned to the project area immediately after completion of the flood fights.

3.5.3. Barrier Dune Restoration

Construction of the barrier dune may have minor, short-term impacts to wildlife due to increased noise and turbidity in the project area. Wildlife populations that utilize the project area may be temporarily displaced as a result of the construction associated with the restoration but are expected to return upon completion of dune construction. The completion of the project will help to maintain and restore the existing tidal flat habitat in North Cove that is essential to many of the current waterfowl and wildlife inhabitants.

3.6. Threatened and Endangered Species

Twenty-three species protected by the ESA of 1973, as amended, are potentially found in the vicinity of the project (Table 2). The relevant threatened and endangered species under the jurisdiction of the USFWS are coastal/Puget Sound bull trout, green sea turtle, olive Ridley sea turtle, marbled murrelet, northern spotted owl, short tailed albatross, western snowy plover, streaked horned lark, and Oregon silverspot butterfly. The relevant threatened and endangered species under the jurisdiction of the National Marine Fisheries Service (NMFS) are southern green sturgeon, Lower Columbia Chinook salmon, Upper Willamette River Chinook salmon, Columbia River chum salmon, eulachon, leatherback sea turtle, loggerhead sea turtle, sperm whale, sei whale, fin whale, humpback whale, blue whale, and southern resident killer whale. The Corps originally consulted with USFWS and NMFS in 2009 and re-initiated consultation due to project changes and/or newly listed species and critical habitat designation in 2011, 2012, 2013, and 2017. The Corps does not anticipate any additional effects to ESA-listed species previously consulted on or their designated critical habitat beyond what has been analyzed previously, with the exception of western snowy plover and streaked horned lark.

Table 2. Listed species/critical habitat potentially occurring in the action area and corresponding effect determinations.

Species	Listing Status	Species Effect Determination	Critical Habitat	Critical Habitat Determination
Oregon Silverspot Butterfly *Speyeria zerene hippolyta*	Endangered	No effect	Designated (none in action area)	No effect
Marbled Murrelet *Brachyramphus marmoratus*	Threatened	May affect, not likely to adversely affect	Designated (none in action area)	No Effect
Western Snowy Plover *Charadrius alexandrinus nivosus*	Threatened	May affect, likely to adversely affect	Designated – action area included	May affect, not likely to adversely affect
Northern Spotted Owl *Strix occidentalis caurina*	Threatened	No Effect	Designated (none in action area)	No Effect
Short-tailed Albatross *Phoebastria albatrus*	Endangered	No Effect	None	Not applicable
Streaked Horned Lark *Eremophila alpestris strigata*	Threatened	May affect, likely to adversely affect	Designated – action area included	May affect, not likely to adversely affect

Yellow-billed Cuckoo *Coccyzus americanus*	Threatened	No Effect	Proposed (none in action area)	No Effect
Coastal-Puget Sound Bull Trout *Salvelinus confluentus*	Threatened	May affect, not likely to adversely affect	Designated (none in action area)	No Effect
Southern Green Sturgeon *Acipenser medirostris*	Threatened	May affect, not likely to adversely affect	Designated – action area included	May affect, not likely to adversely affect
Lower Columbia Chinook salmon *Oncorhynchus tshawytscha*	Threatened	May affect, not likely to adversely affect	Designated (none in action area)	No Effect
Upper Willamette River Chinook salmon *Onchorhynchus tshawytscha*	Threatened	May affect, not likely to adversely affect	Designated (none in action area)	No Effect
Columbia River chum salmon *Onchorhynchus keta*	Threatened	May affect, not likely to adversely affect	Designated (none in action area)	No Effect
Eulachon *Thaleichthys pacificus*	Threatened	May affect, not likely to adversely affect	Designated (none in action area)	May affect, not likely to adversely affect
Loggerhead Sea Turtle *Caretta*	Threatened	No Effect	None	Not applicable
Green Sea Turtle *Chelonia mydas*	Threatened	No Effect	Designated (none in action area)	No Effect
Olive Ridley Sea Turtle *Lepidochelys olivacea*	Threatened	No Effect	None	Not applicable
Leatherback Sea Turtle *Dermochelys coriacea*	Endangered	No Effect	Designated – action area included	May affect, not likely to adversely affect
Humpback Whale *Megoptera novaeangliae*	Endangered	May affect, not likely to adversely affect	None	Not applicable
Sperm Whale	Endangered	No Effect	None	Not applicable

Physeter catodon				
Sei Whale *Balaenoptera borealis*	Endangered	No Effect	None	Not applicable
Fin Whale *Balaenoptera physalus*	Endangered	No Effect	None	Not applicable
Blue Whale *Balaenoptera musculus*	Endangered	No Effect	None	Not applicable
Southern Resident Killer Whale *Orcinus orca*	Endangered	May affect, not likely to adversely affect	Designated (none in action area)	No Effect

3.6.1. No Action

It is likely that without a dune repair project, available western snowy plover and streaked horned lark habitat would be drastically reduced or eliminated by erosion.

3.6.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

The flood fights occurred during the winter months with crews working during low tide cycles, thus in-water work was avoided. The winter work also avoided the western snowy plover and streaked horned lark nesting season. Incremental impacts to ESA-listed species during the flood fight actions are unlikely.

3.6.3. Barrier Dune Restoration

Prior to initiating the dune restoration work, the area was surveyed for nesting western snowy plovers and streaked horned larks. Surveys and monitoring continued throughout the nesting season. Nest surveys and nest buffers reduced the likelihood of construction activities occurring within the vicinity of active nests of both western snowy plovers and streaked horned larks. If biologists found snowy plover or streaked horned lark nests the Corps coordinated work with the USFWS, WDFW, and Shoalwater Tribe to avoid or modify work in the immediate area so that direct effects to the species were unlikely. Nest buffer distances were agreed upon by the Corps, USFWS, WDFW, and the Shoalwater Tribe and construction activities were prohibited within the buffers. Buffers remained in place until biologists determined that nests had hatched. Environmental monitors ensured construction equipment did not operate near non-fledged snowy plover chicks or streaked horned larks and physical barriers (e.g., silt fences and/or empty dredge pipes) were used to prevent chicks from moving into active construction areas. Biologists were also present during equipment moves to guide equipment operators away from nests and broods.

In the northern section of the project, the substrate characteristics will change due to the introduction of cobble-sized material. Three times as much cobble-sized material is planned as compared to 2018 due to changed conditions and increased erosional forces at the northern end of the dune. The mixing of the cobble with the dredged sand material changes the

substrate in the northern project area but will not appreciably reduce the amount of available nesting habitat as most of this area will become unsuitable for nesting without the project. Any material transported to the south would be the smaller size fraction of cobble (<3") and be located in a thin band in the upper intertidal area. Impacts to the substrate are not anticipated to the degree that would deter plover or lark nesting in the southern section of the project area, given that this is an accretion area for sand as well.

The temporary haul road will only have short-term effects to critical habitat as the road will be removed at construction completion prior to the 2023 nesting season. No increase in the average human disturbance level is anticipated following construction and haul road removal, and the SR 105 guardrail will be replaced (e.g., recreation level is anticipated to remain static).

3.7. Noise

Noise in the project area is described in the 2009 EA. No changes to noise levels have occurred since that document was prepared.

3.7.1. No Action

The no-action alternative is not anticipated to have any effects on noise levels in the area.

3.7.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

Increased residential noise levels from flood fight activities may have occurred due to the delivery of cobble material. Operation of heavy equipment to shape the berm took place well away from developed areas. Noise impacts were minor and temporary for the flood fight activities.

3.7.3. Barrier Dune Restoration

Incremental impacts to noise anticipated from the project changes arise due to the addition of the temporary haul road and delivery of cobble material. Noise from dredging and operation of heavy equipment and construction vehicles occurs for a longer period of time. However, these impacts are still minor and temporary. Equipment operates well away from developed areas, and changes in residential noise levels are unlikely.

3.8. Air Quality

Air quality in the project area is described in the 2009 EA. No changes to air quality have occurred since that document was prepared.

3.8.1. No Action

The no-action alternative is not anticipated to have any effects on air quality.

3.8.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

Construction vehicles and heavy equipment used during construction temporarily and locally generated increased gasoline and diesel exhaust fumes. The small area of construction and the short duration of the work limited impacts to air quality. The activity constitutes routine repair

of an existing facility, generating an increase in direct emissions of a criteria pollutant or its precursors that is clearly *de minimis*, and is therefore exempted by 40 CFR Section 93.153(c)(2)(iv) from the conformity determination requirements. Emissions generated by the construction activities were minor, short-term, and well below the *de minimis* threshold. Unquantifiable but slight exacerbation of effects of CO_2 emissions on global climate change occurred from the completed flood fight activities.

3.8.3. Barrier Dune Restoration

For the emergency repair, effects to air quality are expected to be the same as discussed above for flood fight activities. Emissions generated by the construction activities are anticipated to be minor, short-term, and well below the *de minimis* threshold.

3.9. Climate Change and Sea Level Rise

The climate of Willapa Bay was discussed in the 2009 EA (USACE 2009). Reinstated 2016 guidance from CEQ directs Federal agencies to consider how climate change affects a proposed action and the alternatives. The Corps must also consider multiple future sea levels (low, intermediate, high) on Civil Works projects through Engineer Regulation 1100-2-8162. Climate change presents a known risk to North Cove. Sea level change will create more frequent storm events that were historically considered infrequent events. The consequences of sea level rise will result in more frequent wave attack on beaches and backshore dunes and shoreline retreat.

3.9.1. No Action

Under the no action alternative, the damaged northern section of the dune would not be repaired leaving the Shoalwater Reservation vulnerable to sea level rise and resultant storms. This would cause further shoreline retreat along with life safety concerns for the Shoalwater Tribe and flooding risk to millions of dollars of infrastructure in the area.

3.9.2. Flood Fight Activities (December 2019 and January 2020 Repairs)

The flood fight activities placed a quarry spall berm in front of the eroding dune to reduce the rate of dune scarping. These efforts prevented a breach through the dune for the remainder of the 2019/2020 storm season, but there was not enough material placed during these flood fights to restore the full level of protection. The Shoalwater Reservation and surrounding communities were left vulnerable to sea level rise and resultant storms.

3.9.3. Barrier Dune Restoration

The emergency repair consists of soft engineering structures such as beach and dune fills that would form a new elevation profile as mean sea level rises. A simple model for describing this process is the Bruun rule where shoreline retreat in the upper beach profile is displaced offshore following sea level rise (Figure 8). Various strategies have been considered for adapting to future sea level change scenarios over the project life cycle. These include (1) raising the dune crest elevation to reduce the risk of dune overwash, (2) increasing the volume of sand fill during future planned nourishment events, (3) constructing a cobble berm/dynamic revetment structure to protect the dune and minimize shoreline retreat and (4) relocating

and/or removing high risk properties and/or infrastructure susceptible to coastal flooding and erosion. Measures (2) and (3) are currently being implemented in the 2022 repair project. The other measures will be considered again during the design of the next nourishment event.

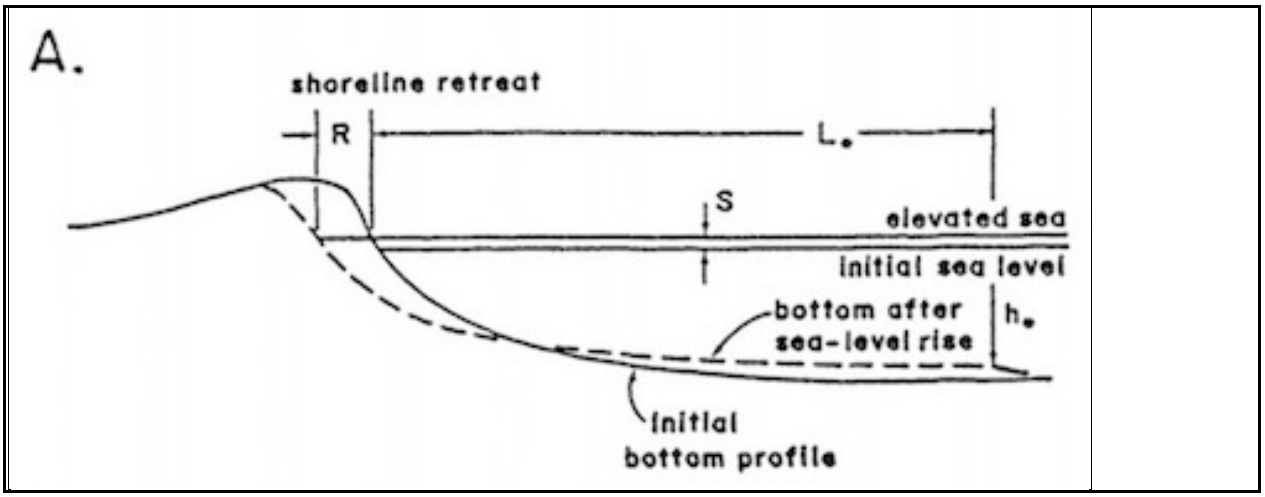


Figure 8. Conceptual model described by Bruun (1962).

The inclusion of a dynamic revetment fronting the northern 4,000 feet of restored sand dune will combat increased wave attack and shoreline retreat due to sea level rise in two ways. First, infiltration of water into the void space between individual cobbles will reduce wave runup prior to reaching the dune crest, and thereby reduce the risk of dune overwash. Second, as mean sea level increases the dynamic revetment structure will adapt by reshaping itself. As mean sea level rises cobbles will move up the beach profile during storm events.

4. UNAVOIDABLE ADVERSE EFFECTS

Anticipated incremental increases in unavoidable adverse effects that could occur as a result of the project changes include temporary and localized increases in noise and turbidity, temporary depression of benthic fish and invertebrate productivity, and temporary disruption to recreational and Tribal cultural uses at the project site. These impacts are temporary, localized, and discountable.

5. CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ) regulations implementing NEPA defines cumulative effects as the effects on the environment which results from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.7).

Cumulative effects of the dune restoration project are described in the 2009 EA. The modified repair design, including increased dynamic revetment material volume, construction of a

temporary haul road, a temporary channel crossing, and adjusted borrow site location are not expected to increase cumulative effects on the natural environment. The conservation measures implemented to ameliorate negative effects act to further reduce any detrimental cumulative impacts of this project. The human environment will benefit by the emergency action and associated future maintenance dredging actions through the reduction of storm damages and associated flooding on the Shoalwater Reservation and surrounding community. In the context of past, present, and reasonably foreseeable actions, implementation of the emergency repair will not result in significant detrimental cumulative effects.

6. MITIGATION

Mitigation for effects of proposed actions is considered as part of the NEPA process. Mitigation includes:

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

The 2019/2020 flood fight activities and emergency repair were planned and designed to avoid and minimize project impacts to the maximum extent feasible. As a restoration project that preserves interdunal and estuarine wetlands, the Corps considers the action to be self-mitigating. In addition, potential impacts of the project on ESA-listed fish were minimized through implementation of timing restrictions. For the protection of these species, in-water work occurs between June 1 and February 15. Impacts to ESA-listed birds are avoided and/or minimized through implementation of the 2022 Western Snowy Plover and Streaked Horned Lark Protection Plan. The use of material (sand) of similar size and composition to the substrate presently on the beach minimizes habitat impacts of the proposed action. The dynamic revetment structure protects the sand dune from direct wave attack and erosion, allowing natural coastal processes, including erosion and accretion due to currents and waves, to continue unabated while providing protection to the Shoalwater Reservation. Sand fences constructed on the backside of the northern section of the dune aid in sand retention and maintain habitat for ESA-listed bird species.

7. PUBLIC COORDINATION

The following agencies and entities have been consulted during the preparation of this SEA:

National Marine Fisheries Service
U.S. Fish and Wildlife Service
Environmental Protection Agency
Washington Department of Ecology

Washington Department of Fish and Wildlife
Shoalwater Bay Indian Tribe

8. ENVIRONMENTAL COMPLIANCE

8.1. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) (42 USC 4321 ET SEQ.)

It was not feasible for the Corps to complete all NEPA procedures prior to accomplishing the Federal actions of emergency response activities during the coastal storm events of 2019 and 2020, nor was it possible prior to commencing construction of this 2022 emergency repair.

The 2019 and 2020 temporary flood fight repair efforts were considered an "emergency action" because it was necessary to protect human life and property and was time-critical in light of a flood event then ongoing. Under NEPA, the Corps is required to comply with NEPA to the fullest extent possible (Section 102). The Corps' NEPA regulation regarding "emergency actions" allows for completion of NEPA documentation after the fact in emergency situations. 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 pursuant to Public Law 84-99, as amended, 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 emergency repair actions in 2019 and 2020 – while still fulfilling the agency's emergency levee rehabilitation authorities and responsibilities under PL 84-99 – was impossible. In the midst of a coastal storm event, insufficient time was available to formally assess and document the environmental impacts of the proposal in a final SEA, particularly in light of the other urgent projects also requiring evaluation under NEPA and other environmental regimes that are further discussed below. It was impossible for the Corps to complete all the following NEPA procedures prior to the date on which Federal action was necessary: promulgate, and evaluate public comments received in response to, a Notice of Preparation; complete and finalize the SEA; determine whether a FONSI is appropriate or an EIS must be prepared; and execute and promulgate a FONSI, if deemed warranted.

Therefore, the agency complied with NEPA "to the fullest extent possible" under the circumstances, with respect to emergency response activities during the coastal storm events. The determination to proceed with the emergency repairs was preceded by consideration and a decision to proceed by the District Engineer, reflected through a December 17, 2019 declaration of emergency letter and a January 9, 2020 extended declaration of emergency letter. This SEA constitutes the after the fact NEPA documentation required by NEPA and the regulation cited above.

The current Federal action is this 2022 emergency repair, which started construction in June 2022. The Corps' obligations under NEPA have been satisfied to the fullest extent possible throughout this project execution. Completion of the NEPA documentation prior to project construction, while still fulfilling the agency's emergency rehabilitation authorities and responsibilities under PL 84-99 in order to protect life, property and safety ahead of the next coastal storm season, was impossible in this instance. Additionally, the Shoalwater Tribe's Chairwoman, sent a letter on behalf of the Tribal Council to the Corps on 4 May 2022, expressing full support for the repair and expressed that the Tribe had "no concerns under NEPA, SEPA, CWA, Section 7 of the Endangered Species Act" and was committed to providing "support for consultation with USFWS, NMFS, EPA, Ecology, State Parks and WSDOT as needed to ensure the project does not incur setbacks." The Tribe expressed increased flooding from the next coastal storm season, which begins in October 2022, could effectively "destroy our Tribal homes, Medical Clinic, Businesses, and main Tribal Operations Building." Given the urgent circumstances, the Corps determined that an emergency response and undertaking of this repair was appropriate. Therefore, as described more fully below, the agency has complied and is continuing to comply with NEPA "to the fullest extent possible" under the circumstances.

Pursuant to the NEPA, the Corps prepared an initial 2009 EA and FONSI, a SEA and amended FONSI in 2013, and a SEA in 2018 and amended FONSI for this project. This SEA is being prepared for this emergency repair to address the new construction measures relevant to the repair that were not previously evaluated in the original EA or the subsequent supplemental EAs.

A Notice of Preparation was promulgated by the Seattle District on April 14, 2022, inviting the public and interested agencies and Tribes to comment on the emergency action for a period of 21 days. The comment period ended on May 5, 2022. Three comment emails/letters were received: one from the Shoalwater Tribe expressing support for this emergency action and the Tribe's willingness to support coordination and consultation with USFWS, NMFS, EPA, and Ecology, another letter from EPA stating its support of the Corps' efforts and providing preliminary recommendations to address water quality and biological resources for the Corps' NEPA analysis, and a final informal comment from Washington State Department of Transportation informing the Corps of a project being planned for Graveyard Spit (Appendix A). Furthermore, a Public Notice of anticipated discharge of fill material into waters of the United States under Section 404 of the CWA was also issued on April 14, 2022.

The in-water work window to minimize adverse impacts to ESA-listed aquatic species for the Shoalwater Dune Barrier repair began June 1 for temporary channel crossing construction and will extend from July 16 to February 15 for berm construction activities including cobble placement and hydraulic sand placement. This time window dictates the interval during which in-water construction activities must be conducted and the close of the window thus dictates the date on which in-water actions must be complete.

The detailed project schedule in Table 4 reflects the minimum time interval required for each sequential step in the procurement and execution processes leading up to the start of the coastal storm season. The dune in its damaged state, without repair ahead of the next coastal storm season, would result in the dune's failure to provide protection to the Shoalwater Bay Tribe and increased risk to safety, life, and property. Additionally, the timing of construction before the storm season considers that completion of in-water construction would be impracticable, if not impossible after October 1 due to dynamic waves resulting in significant safety concerns and increased safety risk for any contractor to perform any in-water work in this unique project area. If these dates cannot be met, the project is in jeopardy of delay, leaving the coastal berm in the current damaged condition into the upcoming coastal winter storm season.

Completion of the prescribed environmental compliance and concurrence procedures prior to the Federal action of project construction, while still fulfilling the agency's emergency authorities and responsibilities under PL 84-99, is impossible in this instance

Table 4. Project schedule for the 2022 Shoalwater Dune Barrier Repair

CRITICAL PATH	**DATE (of occurrence or conclusion)**
Sponsor request for assistance	20 January 2021
PIR approval and funding for project design/execution	02 January 2022
Contracting preparation for solicitation	07 March-29 April 2022
Solicitation date	29 April 2022
Solicitation period	29 April – 06 May 2022
Real Estate Certification	06 May 2022
Award Date	16 May 2022
On site planning (surveys)	18 May – 7 July 2022
Temporary road construction (tidal crossing)	01 June 2022
FONSI signature	October 2022
Dune Barrier/Berm Construction	16 July – 31 October 2022
Construction completion	30 January 2023
Site Restoration	28 February 2023

The work in question is considered an "emergency action" because it is necessary to protect human life and property. Under NEPA, the Corps is required to comply with NEPA to the fullest

extent possible (Section 102). The Corps' NEPA regulation regarding "Emergency Actions" does allow for completion of NEPA documentation after the fact in emergency situations. 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 pursuant to Public Law 84-99, as amended, 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 construction, while still fulfilling the agency's emergency rehabilitation authorities and responsibilities under PL 84-99, was impossible in this instance. It was impossible for the Corps to complete the remaining NEPA procedures prior to project execution: obtain CWA water quality certification, obtain CZMA consistency concurrence; and complete and finalize the SEA; determine whether a FONSI is appropriate or an EIS must be prepared; and execute and promulgate a FONSI, if deemed warranted. Therefore, the agency has complied and is continuing to comply with NEPA "to the fullest extent possible" under the circumstances, and the District Commander issued a Determination of Alternative Environmental Procedural Compliance on 13 May 2022 prior to award of a contract and construction of the temporary haul access road to the project site documenting that determination for the record. The District Commander also issued an updated Determination of Alternative Environmental Procedural Compliance on 15 July 2022 prior to construction of the project documenting that determination for the record.

8.2. Endangered Species Act of 1973 (16 USC 1531-1544)

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 designated critical habitat. The Corps originally consulted with USFWS and NMFS in 2009 and re-initiated consultation due to project changes and/or newly listed species and critical habitat designation in 2011, 2012, 2013, and 2017. Coordination with USFWS and NMFS for the current repair was initiated through the submission of a BA addendum on 12 May 2022. The BA Addendum was intended specifically to

supplement prior consultation to cover the effects of new and revised project features on western snowy plover, streaked horned lark, southern green sturgeon, Lower Columbia River Chinook, Upper Willamette River Chinook, Columbia River chum and critical habitat for western snowy plover, streaked horned lark, and southern green sturgeon. The Corps determined there would not be any additional effects to ESA-listed species previously consulted on or their designated critical habitat beyond what had been analyzed previously, with the exception of western snowy plover and streaked horned lark. The Corps received a letter of concurrence from NMFS on 27 May 2022 and a Biological Opinion from USFWS on 6 July 2022 (Appendix B).

8.3. Clean Water Act, as Amended (33 USC 1251 et seq.)

The Clean Water Act requires Federal agencies to protect waters of the United States. The Act prohibits the placement of dredged or fill material into waters of the United States and their adjacent wetlands unless it can be demonstrated there are no practicable alternatives. The Corps documented substantive compliance with Section 404 of the Clean Water Act via evaluation consistent with the 404(b)(1) Guidelines (Appendix C). The current construction would involve approximately 6.5 acres of sand and cobble placement below the high tide line. All fill impacts are entirely on Shoalwater Reservation land and are under the jurisdiction of EPA. On 22 April 2022, the Corps requested a pre-filing meeting per the 'Clean Water Act Section 401 Certification Rule' (Final Rule) (effective 11 September 2020) in anticipation of needing Water Quality Certifications (WQC) from EPA and Ecology. On 24 May 2022, the Corps requested Section 401 WQCs from both EPA and Ecology. The Corps received WQCs from Ecology on 19 July 2022 and EPA on 21 July 2022 (Appendix C).

Section 402 of the Clean Water Act would be triggered by construction as the area of disturbance would be greater than one acre. A Stormwater Pollution Prevention Plan would be prepared, and a National Pollutant Discharge Elimination System Construction General Permit would be acquired from the EPA prior to construction.

8.4. Rivers and Harbors Act

This is a Congressionally authorized project and the Corps does not obtain Rivers and Harbor Act permits. Navigation may experience temporary and minor disruptions during the actual dredging process but no long-term adverse effects to navigation will occur as a result of the emergency repair.

8.5. Coastal Zone Management Act (16 U.S.C. 1451-1465)

The Coastal Zone Management Act (CZMA) of 1972 as amended requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program. Only the portions of the emergency project that will occur off the Shoalwater Reservation are subject to the Washington Coastal Zone management program.[1] The Corps has determined

[1] The Shoalwater Reservation is excluded from the State's coastal zone per 15 CFR Sec. 923.33 (Excluded lands), which states:

that the emergency repair is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Management Program. The Corps prepared a CZMA Consistency Determination outlining this determination for concurrence from Ecology (Appendix D). The Corps submitted the CZMA Consistency Determination to Ecology on 29 April 2022. Ecology requested an extension for their decision as provided for in CFR 930.41(b) in order to complete the public comment process, which extended the 60-day review period to 30 July 2022. The Corps received Ecology's concurrence on 21 July 2022 (Appendix D).

8.6. National Historic Preservation Act (16 USC 470 et seq., 110)

The Corps is required to consider effects on historic properties as required by Section 106 of the NHPA. The Corps has coordinated its review of cultural resources impacts under Section 106 of the National Historic Preservation Act (NHPA). The Corps has determined and documented the area of potential effect (APE) for the undertaking and consulted with the Washington State Historic Preservation Office (WA SHPO) in a letter dated 4 April 2022 under Section 106 as provided at 36 C.F.R § 800.4(a). The WA SHPO respond back to the letter and concurred with our APE determination on 4 April 2022.

The Corps staff archaeologist conducted a records search and literature review of the Washington Information System Architectural and Archaeological Records Database. No previously recorded archaeological sites, historic properties, or traditional cultural properties were located within the project footprint. Furthermore, the Corps staff archaeologist conducted two pedestrian surveys of the APE. The first survey occurred on 8 March 2022, and the staff archaeologist conducted the preliminary survey with the project design team. The second survey occurred on 23 March 2022. The staff archaeologist determined the probability of finding intact cultural resources is negligible, since the APE is located on the sandy, tidal area that is inundated by water between daily tidal episodes.

The Corps notified the Shoalwater Tribe in a letter dated 6 April 2022 pursuant to 36 C.F.R.§ 800.3(f) about the project to identify properties to which they may attach religious or cultural significance. The Corps has held government to government meetings with the Shoalwater Tribe on 8 March and 23 March 2022. To date, the Shoalwater Tribe has not responded to the cultural resources letter with any concerns. The Corps received a letter on 4 May 2022 from the Tribal Council in response to the Notice of Preparation, which expressed full support for the project.

The Corps had consulted previously with WA SHPO for both the 2013 and the 2018 Shoalwater Dune repairs with findings of no effect to historic properties. The area has also had extensive disturbance related to modern construction from Washington Department of Transportation bringing in culturally deposited boulders along the highway. Furthermore, the daily tidal

(a) The boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its officers or agents. To meet this requirement, the program must describe, list or map lands or types of lands owned, leased, held in trust or otherwise used solely by Federal agencies.

episodes and frequent storm events have created an environment where the likelihood of funding intact undisturbed cultural deposits is negligible.

The Corps continued consultation by providing another letter to WA SHPO dated 26 May 2022. The letter provided a brief project description, summarized the efforts to identify historic properties, summarized the survey reported in the APE letter, and requested concurrence with the Corps' determinations and findings of no adverse effect as provided at 36 C.F.R.§ 800.4(d). WA SHPO responded to the determination and findings letter on 2 June 2022 and concurred with no adverse effect by the undertaking (Appendix E).

Due to unforeseen changes during construction, the Contractor had to redesign the specifications, which involved ground disturbance. Because ground disturbance was not included in the initial APE determination, the Corps reconsulted with WA SHPO on 28 July 2022 to include ground disturbance and to report the determination and finding that no historic properties are affected by the change to specifications. WA SHPO concurred with the Corps' determination on 28 July 2022 (Appendix E). An archaeological monitor was hired to monitor the ground disturbance portion of construction in the event of an inadvertent discovery.

8.7. Clean Air Act As Amended (42 USC 7401, et seq.)

The Clean Air Act (CAA) as amended (42 U.S.C. §7401, et seq.) prohibits Federal agencies from approving or conducting any action that does not conform to an approved state, Tribal, or Federal implementation plan. Under 40 CFR 93.153(c)(2)(iv), conformity determinations are not required for Federal maintenance and repair activities where the increase in emissions associated with the activity falls below the *de minimis* level. The impact to air quality is anticipated to be minor due to the size of construction and the type of equipment used (hydraulic dredge, hydraulic excavators, dump trucks, bulldozers, and all-terrain vehicles). The small area of construction and the nature of the work would limit the impact to air quality, which is expected to be well below the *de minimis* threshold of 100 tons per year of CO or PM10.

8.8. Magnuson Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Sustainable Fisheries Act (16 USC 1801 et seq), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires Federal agencies to consult with NMFS regarding actions that may affect Essential Fish Habitat (EFH). The action area is designated as EFH for various life stages of 26 species of groundfish, five coastal pelagic species, and two species of Pacific salmon according to the NMFS Fisheries Management Plans (PFMC 2020, 2021a, 2021b). The potential effects of dredging to EFH were included in the 2007 Biological Evaluation, 2017 BA, and included as part of the BA Addendum submitted in May 2022. The EFH assessment included effects to EFH from the modified design features including adjusted borrow location, increased cobble placement, construction of a temporary haul road, and temporary channel crossing. Therefore, the Corps determined that the modified project features may adversely affect EFH, as dredging in the adjusted borrow location and installation and removal of the temporary causeway constitutes detectable effects to EFH. The Corps

included seven conservation measures designed to mitigate the adverse effects caused by dredging and temporary culverts. Conservation measures are:

- Only one borrow site will be impacted by the emergency action; no additional dredging sites are proposed.
- Benthic hydrograph data will be taken periodically by the Corps to assess the sea floor morphology within the borrow area; a summary of this data will be provided to NMFS to assess the recovery over time of benthic morphology.
- All provisions of Ecology and EPA Section 401 Water Quality Certifications will be implemented to minimize turbidity and dissolved oxygen impacts.
- Vessels, equipment, boots and other gear will be thoroughly cleaned before arriving and leaving the job site to prevent the transporting of and introducing of aquatic invasive species. For a large vessel such as a barge, this could include thorough rinsing of the vessel along with sweeping or vacuuming of the deck before arriving in or leaving Willapa Bay.
- All equipment and vehicles must be inspected daily for fluid leaks before leaving the staging area(s). Any leaks detected must be repaired in the staging area before resuming operations.
- Culvert installation and removal will occur during low tide. The Corps will make every effort to avoid the use of galvanized material in the corrugated metal culverts for the temporary channel crossing, in order to avoid the potential for zinc and lead to leach from the metal.
- Dredged sediments will remain within the coastal environment, which will allow coastal processes to continue to form habitat for EFH species and their food sources.

8.9. Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. Coordination under this Act occurred during 2006 for the Shoalwater Bay Erosion Project (USFWS 2006). Additional USFWS coordination is not required for barrier dune restoration work such as the emergency repair.

8.10. Migratory Bird Treaty Act and Migratory Bird Conservation Act (16 USC 701-715)

The emergency repair is conducted in such a manner that migratory birds are not be harmed or harassed to any significant degree.

8.11. Executive Order 12898, Environmental Justice, and Executive Order 14008, Tackling the Climate Crisis at Home and Abroad

EO 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. EO 14008 updates EO 12898 and has expanded Federal agencies' responsibilities for assessing environmental justice consequences of their actions to include the impact of climate change on the health of the American people.

An analysis of demographic data was conducted to derive information on the approximate locations of low-income and minority populations in the community of concern. Since the analysis considers disproportionate impacts, areas were defined to compare the area affected by the emergency action and a larger regional area that serves as a basis for comparison and includes the area affected. The larger regional area is defined as the smallest political unit that includes the affected area and is called the community of comparison. For purposes of the analysis, the affected area is approximately a five-mile radius around the project area, and Pacific County, is the community of comparison. The Council on Environmental Quality's Climate and Economic Justice Screening tool was used to identify whether the project area would disproportionately affect minority and low-income populations. There are no disproportionately disadvantaged populations relative to the entirety of Pacific County based on the CEQ screening tool (CEQ 2022). All of Pacific County is disadvantaged in the following categories: climate change for expected building loss rate and expected population loss rate; low income and higher education non-enrollment; and heart disease.

The emergency repair does not involve a facility siting decision and would not disproportionately affect disadvantaged minority or low-income populations including through any adverse human health impacts. The project restores the 50-year protection of the barrier dune for the affected area, and the preferred alternative of repairing the barrier dune would provide a universal benefit to persons, including disadvantaged minority, low-income, and tribal communities, residing in the area of analysis. No adverse cumulative impacts to environmental justice are expected from interaction of the barrier dune restoration with other past, present, and reasonably foreseeable projects. This project enhances protection for a tribal community and aims to support the Shoalwater Tribe's efforts to protect critical infrastructure, cultural resources, and ecologically significantly wetlands surrounding tribal lands. Further, Tribal governments that are also environmental justice communities in the project area have been actively engaged, actively supportive, and well-informed about the emergency repair.

8.12. Executive Order 11988, Floodplain Management Guidelines

Executive Order 11988 requires Federal agencies to evaluate the potential effects of actions on floodplains and to avoid undertaking actions that directly or indirectly induce growth in the floodplain or adversely affect natural floodplain values. This Executive Order also directs that proposed projects consider how natural moderation of floods may be attained and promotes the restoration of environmental features that act to modify floods (e.g., wetlands). The emergency repair may enable additional development of the Shoalwater Reservation because it

will result in less severe flooding of the low-lying areas. However, the barrier dune will only be rebuilt to its historic height. The Corps is not providing additional protection beyond the historic level that it offered in its pre-eroded state. In addition, the restoration of the barrier dune is a "natural" method of moderating the flood hazard on the Shoalwater Reservation and adjacent communities. Therefore, the project is in compliance with this order.

8.13. Executive Order 11990, Protection of Wetlands

Executive Order 11990 directs 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 placement of sand in the northern section of the project could impact mosaic wetland. This potential impact is avoided by adjusting the project alignment to move closer to the ocean side. The repaired barrier dune serves to protect and preserve Class 1 estuarine wetlands landward of the dune system.

9. CONCLUSION

Based on the analysis presented above, evaluated in combination the 2019/2020 flood fight activities did not, and the emergency repair project changes will not result in incremental increases in environmental impacts that constitute a major Federal action significantly affecting the quality of the human environment when considered in conjunction with the overall project effects addressed in the 2009 EA. Therefore, an EIS is not required. Conservation measures, BMPs, and coordination with Federal, State, and Tribal natural resource departments, and limiting work to the designated project footprints is sufficient to avoid significant impacts to natural resources.

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APPENDIX A

PUBLIC COMMENTS AND RESPONSES

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Commenter	General Theme	Comment	Response
WSDOT	Coordination	"...The Washington State Department of Transportation, along with the Department of Ecology and the Corps of Engineers, is designing a project on Graveyard Spit, adjacent to the Shoalwater Bay project on Empire Spit. You may be aware of it. It has come to our attention that the construction access road for the Shoalwater Bay project is planned to be on the alignment of the Graveyard Spit project. We think this is an exciting opportunity that could benefit both of our projects. There has been speculation that the road bed could be left in place or stockpiled for later use in our project. We would like to know the composition and volume of the temporary road aggregate. Ideally it would close to the gradation of angular rock that is planned for the core of the dynamic revetment that we are designing. We would also be interested in the sourcing of the road bed rock and the rounded or angular rock for the cobble toe of the repair project. We would be interested as well in the details of how the access road ties into State route 105, and traffic control measures that would be in place, if any."	The Corps appreciates the planning that is going into the WSDOT project as it will benefit North Cove. The Corps is coordinating with WSDOT to share information that may be helpful in their future project.
Shoalwater Bay Indian Tribe	Tribal Coordination and Consultation	Letter of Support	The Corps thanks the Shoalwater Bay Indian Tribe for their continued partnership and support. We look forward to completing a successful repair to restore protection to the Shoalwater Reservation, tribal community, and resources.
EPA	Water Quality	Describe steps to be taken to ensure the chemical and physical dredge material quality (e.g. provide reference to the most recent Dredged Material Management Program Tier 1 Analysis (dated January 11, 2018) and the Corps' 2018 repair experience).	The DMMP agencies determined that the risk that conditions have changed substantively in the borrow site area since 2018 is low, and that the borrow site material continues to meet the exclusionary criteria under the CWA Section 404(b)(1) guidelines. See Section 3.1.2 of the SEA.
EPA	Water Quality	Describe any spill events or groundings in the borrow and placement areas that have occurred since January 2018.	The Corps reviewed spill response records for Pacific County from the Department of Ecology Environmental Response Tracking System (ERTS) website. The search looked for all spill responses within the Willapa Bay watershed for spills greater than 100 gallons since 2018 the CWA Section 404(b)(1) guidelines. The search found four incidents of spill responses of over 100 gallons since 2018. The DMMP agencies determined that the risk that conditions have changed substantively in the borrow site area since 2018 is low, and that the borrow site material continues to meet the exclusionary criteria under the CWA Section 404(b)(1) guidelines
EPA	Water Quality	Describes steps that will be taken to confirm the source of cobble and/or quarry spalls as a "clean" source.	Cobble and filter material must meet gradations specifications and be free of fine-grained materials that could cause turbidity impacts during construction (e.g., washing may be required at the source/quarry).
EPA	Water Quality	Describe the potential for temporary piling placement and removal, including likely location(s).	No pilings will be used.
EPA	Water Quality	In order to maximize the effectiveness of the revetment and minimize the environmental impact of shoreline erosion in the future, provide a technical analysis or citation supporting the proposed materials to be used in the project and describe how construction sequencing will avoid compaction of revetment material into an interlocked matrix. EPA notes past project repair designs indicated that 10"-minus rounded cobble would dissipate wave energy, trap sand, and perform better in a dynamic revetment, and 10"-minus rounded river cobble was proposed for the last repair in 2018.	See Sections 2.2.1 and 3.1.2 for dynamic revetment details.
EPA	Water Quality	Provide detail on the anticipated water quality impacts to occur from the construction, use, and removal of a temporary haul road on Graveyard Spit; and a temporary bridge causeway between Graveyard and Empire Spits. EPA recommends that this also include a monitoring program to detect where water quality impacts occur. Include mechanisms to address these anticipated environmental impacts upon completion of the repair work, including fill and structure removal, a revegetation plan, and other measures to return the dune system to its prior condition.	A water quality monitoring plan covering the dredging, settling basin discharge, and slough crossing activities was reviewed and approved by EPA and Ecology prior to issuance of water quality certifications for the project.
EPA	Water Quality	Provide a list of Best Management Practices (BMPs) to protect surface water resources during project activities (e.g., during dredging and dewatering, construction of the access road and bridge causeway, rehandling and placement of dredged and fill materials, proximity to surface water resources, presence of erosive beach sediments or observed scouring, discharge through culverts, etc.). EPA suggests that the Corps consult BMPs followed during the 2018 repair and consider lessons learned.	See Section 2.2.2 for a list of project BMPs and and Conservation Measures.

Commenter	General Theme	Comment	Response
EPA	Water Quality	Include a plan to monitor the effectiveness of BMPs.	The Contractor will monitor all BMPs and adaptively manage as needed.
EPA	Water Quality	Coordinate and integrate environmental impact information from other concurrent regulatory processes as appropriate. Information may be prepared during the CWA § 401 certification process that is applicable and appropriate to include in the NEPA Analysis.	All regulatory processes are complete and have been incorporated into the project.
EPA	Wetlands	Evaluate the direct and secondary impacts of the proposed project on wetlands. Specifically, evaluate potential impacts from the placement of cobble/quarry spalls and sand in the northern section of the project (e.g., size of impact, wetland rating).	The temporary haul road alignment and staging areas would not be located in jurisdictional wetlands.No dynamic revetment material (i.e., cobble/quarry spalls) will be placed in wetlands. See Section 3.2.2.
EPA	Wetlands	Where potential impacts to wetlands resources and functions are identified, detail the steps to be taken to avoid and minimize impacts from project activities (e.g., floodwater inundation, channelization or redirection, and erosion or aggradation).	The placement of sand to repair the dune would avoid impacts to mosaic wetland by adjusting the project alignment to move closer to the ocean side. The reoaured dune would protect the North Cove saltmarsh wetlands landward of the dune, providing habitat for listed species and other coastal resources important to the Shoalwater Tribe.
EPA	Wetlands	Includes mechanisms to minimize project impacts to wetland vegetation, riparian habitat, and aquatic biota. For example short term erosion control can be addressed by installing sand fencing, while long-term erosion measures could include revegetation with native dune grass species. EPA notes that the last repair included sand fencing, and the NEPA analysis could report on the effectiveness of that measure over time.	Sand fencing would be installed on the backside of the restoration area to aid in sand retention and maintain habitat for ESA-listed species. Sand fencing would provide immediate erosion control, whereas dune grass plantings could take years to help stabilize the dune.
EPA	Wetlands	Include plans for disposal of anthropogenic debris encountered during construction, including sand fencing.	Garbage, plastic and debris encountered and created during construction would be removed from the site and disposed in an approved upland facility. The storage methods/locations while onsite, would be upland of the ordinary high water mark so that the garbage, plastic, and debris cannot enter the water or cause water quality degradation. Storage methods/locations would be animal, weather and wind proof.
EPA	Biological Resources	Include measures to reduce risks and protect biota and habitat known to occur in the project area (e.g. the Endangered Species Act-listed Western snowy plover (Charadrius nivosus nivosus) and Streaked Horned lark (Eremophila alpestris strigata)). The proposed project impacts are related to the anticipated loss and degradation of suitable habitats and cover; increased sediment delivery to the marine environment, resulting in increased turbidity; and higher-than-optimal noise levels during construction.	Please see Conservation Measures listed in Section 2.2.2.
EPA	Biological Resources	Include methods to minimize temporary displacement of wildlife during the construction phase.	Construction of the barrier dune could have minor, short-term impacts to wildlife due to increased noise and turbidity in the project area. Wildlife populations that utilize the project area would be temporarily displaced as a result of the construction associated with the restoration but are expected to return upon completion of dune construction. The completion of the project would help to maintain and restore the existing tidal flat habitat in North Cove that is essential to many of the current waterfowl and wildlife inhabitants.
EPA	Biological Resources	Include plans for addressing construction-related impacts post-construction. For example, vehicle access during construction may impact wildlife nesting habitat. Removal of the temporary road and causeway crossing Cannery Slough post-construction would address those nesting habitat impacts. Similarly, the NEPA analysis can describe plans for restoring any tidal flat habitat in North Cove is restored to pre-construction condition.	Temporary haul road and channel crossing materials would be removed at construction completion and the area fully restored to pre-existing conditions. Existing large woody debris would be stockpiled during construction and placed at the landward toe of the restored barrier dune to provide habitat and nutrients for establishing plants and invertebrate species.
EPA	Biological Resources	Identify measures to minimize and/or avoid noise impacts to sensitive species (e.g. nesting Western snowy plover). For example, acoustic shielding (e.g., through strategic positioning of non-noise generating equipment like unused hydraulic pipeline) and other noise reduction techniques can minimize and avoid noise impacts.1	Nest buffers would reduce the likelihood of construction activities occurring within the vicinity of active nests of both western snowy plovers and streaked horned larks. Nest buffer distances would be agreed upon by the Corps, USFWS, WDFW, and the Tribe and construction activities would be prohibited within the buffers. Buffers would remain in place until biologists have determined that nests have fledged. See Section 3.5.2.
EPA	Biological Resources	Describe BMPs that will be used to ensure invasive species being introduced to the site (e.g. prevent invasive species from Willapa Bay being introduced via dredging and construction equipment and other materials brought in for the project).	The Contractor shall prevent the transporting of and introducing of aquatic invasive species by thoroughly cleaning vessels, equipment, boots and other gear before arriving and leaving the job site. For a large vessel such as a barge, this could include thorough rinsing of the vessel along with sweeping or vacuuming of the deck before arriving in Willapa Bay. This level of cleaning would also be expected before a vessel leaves Willapa Bay.

Commenter	General Theme	Comment	Response
EPA	Biological Resources	Describe impacts to biota from the sand borrow areas (we note that changes to infaunal community structure may persist for several years, affecting food sources for commercially valuable marine species).	There are no incremental impacts to the benthic community anticipated from the proposed change in borrow area. The footprint is still located on the north side of the Willapa Bay channel; therefore, impacts will be similar to those described in the 2009 EA.
EPA	Biological Resources	Discuss the results of the Dungeness crab entrainment study that was conducted during the 2018 project repair.	Based on 2008 and 2012 crab trawl data, and visual observations of the dredge pipe outfall in 2018, crab abundance appears similar to what would be expected for coastal bar habitats at Grays Harbor and the Columbia River. The data indicate various life stages from recently settled crab larvae through adults would occur in the new borrow area throughout the proposed dredging window. Impact minimization and avoidance measures in 2012, 2013, and 2018 included timing the dredging to occur during periods of less crab abundance, and the use of techniques that minimize potential crab entrainment during dredging. Similar measures would be employed for the proposed repair work.
EPA	Air Quality	Discuss ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards, and criteria pollutant non-attainment areas in the analysis area and vicinity, if applicable.	Air quality in the project area is described in the 2009 EA. No changes to air quality have occurred since that document was prepared.
EPA	Air Quality	Specify all emission sources and quantify related emissions; estimate criteria pollutant emissions for the analysis area; and discuss mitigation measures, including BMPs associated with diesel exhaust from construction equipment to minimize air quality impacts from this project.	Construction vehicles and heavy equipment used during the proposed construction would temporarily and locally generate increased gasoline and diesel exhaust fumes. The small area of construction and the short duration of the work would limit the impact to air quality. The activity would constitute routine repair of an existing facility, generating an increase in direct emissions of a criteria pollutant or its precursors that would be clearly de minimis, and would therefore be exempted by 40 CFR Section 93.153(c)(2)(iv) from the conformity determination requirements. Emissions generated by the construction activity are expected to be minor, short-term, and well below the de minimis threshold. Unquantifiable but insignificant exacerbation of effects of CO2 emissions on global climate change would be anticipated.
EPA	Tribal Coordination and Consultation	EPA encourages the Corps to continue to consult with the Tribe and incorporate their feedback when making decisions regarding the project.	The Corps will continue to consult and coordinate with the Tribe throughout the project.
EPA	Climate Change and Sea Level Rise	Include a discussion of reasonably foreseeable effects that climate change may have on the proposed action and the planning area. This information could help inform the development of measures to improve the resilience of the barrier dune.	Climate change presents a known risk to the project. Sea level change will create more frequent storm events that were historically considered infrequent events. The consequences of sea level rise will result in more frequent wave attack on beaches and backshore dunes and shoreline retreat. Soft engineering structures such as beach and dune fills will form a new elevation profile as mean sea level rises. A simple model for describing this process is the Bruun rule where shoreline retreat in the upper beach profile is displaced offshore following sea level rise. Various strategies have been considered for adapting to future sea level change scenarios over the project life-cycle. Measures proposed for this repair include increasing the volume of sand fill and constructing a cobble berm/dynamic revetment structure to protect the dune and minimize shoreline retreat.
EPA	Climate Change and Sea Level Rise	If projected changes could notably exacerbate the environmental impacts of the project, identify measures to be taken to minimize the impacts.	Without sufficient protection, dune overwash would cause large volumes of sand to fill the backshore tidal wetland. This would likely create the biggest environmental impact in the project area associated with mean sea level change. The inclusion of a dynamic revetment fronting the northern 4,000 feet of restored sand dune will reduce this risk in two ways. First, infiltration of water into the void space between individual cobbles will reduce wave runup prior to reaching the dune crest, and thereby reduce the risk of dune overwash. Second, as mean sea level increases the dynamic revetment structure will adapt by reshaping itself. As mean sea level rises cobbles will move up the beach profile during storm events.

Commenter	General Theme	Comment	Response
EPA	Climate Change and Sea Level Rise	Consult NOAA's 2022 Sea Level Rise Technical Report[2] and consider multiple sea-level rise scenarios (low, intermediate, and high) and their implications for the long-term functionality of the barrier dune. NOAA's models estimate that by 2050, increases in tide and storm surge heights will cause "major" flooding to occur five times as often as it does today, which is likely to impact rates of erosion.	The Corps is mandated to consider multiple future sea levels (low, intermediate, high) on Civil Works projects through Engineer Regulation 1100-2-8162. This policy guidance uses similar future mean sea level forecasts as the NOAA report referenced. The predicted relative mean sea level change in Tokeland, WA by year 2050 ranges from 0.3 to 1.55 feet and by year 2100 from 0.6 to 4.9 feet (Figure 3). As stated in previous responses, a number of adaptation strategies are being considered to mitigate the risk presented by future sea level change. Additionally, since periodic beach and dune nourishment is anticipated on this project, these strategies will be reevaluated in each design prior to implementation.
EPA	Climate Change and Sea Level Rise	Include steps for developing a plan for regular adaptive management of the barrier dune. This may include planning for routine beach/dune nourishment, and for maintenance of project features like sand fencing over time.	Routine beach/dune renourishment is already included in the Operations and Maintenance manual for the project. The original decision document for the project assumed the project would require renourishment every 5 years. This has proven to be a fairly accurate estimate, with the last two maintenance events occurring 4 years apart. Other adaptive maintenance strategies like sand fencing and native plantings to promote dune health have been used and will be considered in the future. Sand fencing is typically preferred over dune plantings to avoid impacts to ESA-listed shorebird habitat at the project.
EPA	Climate Change and Sea Level Rise	Include a discussion of the littoral cell sediment transport context and cumulative impacts related to other planned and existing shoreline erosion protection projects north of the proposed repair area, including work done by federal, state, local and tribal entities	The net littoral transport along Graveyard and Empire Spit is to the southeast. This is primarily due to the wave obliqueness (angle of waves) to the shoreline. Additionally longshore currents are also driven by gradients in wave height alongshore. Incident waves decrease in height from the town of North Cove (northwest) to Tokeland (southeast) which produces a residual current directed to the southeast. These factors result in any sand in suspension being transported alongshore to the terminal end of Empire Spit. Shoreline monitoring along Graveyard Spit and Empire Spit from 2014 to 2016 indicated a net sediment deficit of 315,000 cubic yards/year. This area is a sediment sink due to a combination of factors. The primary facto being the location of the channel thalweg across the Willapa Bay ocean bar. During this time period, the channel thalweg migrated the closest to the North Cove shoreline than anytime in recent history. This results in a diminished supply of sand that feeds the shoreline near the town of North Cove. As a result less sediment is capable of being transported through littoral drift to Graveyard and Empire Spits. Secondly, a number of longshore barriers (groins) have been installed to protect SR-105 updrift of the project. This further inhibits littoral drift to the project area. Thus in order to compensate for these sediment deficits, sediment must be placed to bring this area to equilibrium. In recent years the rapid retreat of Graveyard Spit has further focused wave energy on the northern end of the dune on Empire Spit. Construction activities have historically resulted in a net benefit to habitat downdrift of the placement area. Dune erosion on the northern 4,000 feet has been transported alongshore and deposited in front of the dune resulting a wide flat beach. Thus, the material is still maintained in the littoral zone and is providing protection and habitat benefits to the southern 8,500 feet of the project.

SHOALWATER BAY INDIAN TRIBE
P.O. Box 130 · Tokeland, Washington 98590-0130
Telephone (360) 267-6766 · Fax (360) 267-6778

United States Army Corps of Engineers, Seattle District
Planning, Environmental and Cultural Resources Branch
4735 East Marginal Way South, Bldg. 1202
Seattle, WA 98134
ATTN: Melissa Leslie (PMP-C)

RE: Shoalwater Bay Shoreline Erosion Repair- Notice of Preparation

Ms. Leslie:

We, the members of the Shoalwater Bay Indian Tribe Tribal Council, do hereby support fully, the Shoalwater Bay Shoreline Erosion Repair Project, as described in the Public Notice on April 14, 2022.

We deeply appreciate the extraordinary time and effort the US Army Corps of Engineers, Seattle District have given to our Tribe in order to keep us safe and able to access services off Reservation in emergencies.

The U.S. Army Corps of Engineers has kindly maintained the Berm to the best of their ability, but sadly, we have now lost approximately 4,000 feet of protection from the berm since previous construction. The continuing degradation and tidal infiltration during King Tides and storm events, increases the potential of intense flooding of the peninsula. This would effectively destroy our Tribal homes, Medical Clinic, Businesses and main Tribal Operations building leaving many Tribal residents homeless or in danger and rendering Tribal Operations inoperable.

We have no concerns under NEPA, SEPA, CWA and Section 107 of the Endangered Species Act. We will continue to provide support and consultation with USFWS, NMFS, EPA, Ecology, State Parks and WSDOT as needed to ensure the project does not incur setbacks.

We appreciate all assistance as a matter of utmost urgency to protect the lives and property of the Shoalwater Bay Indian Tribe and its beloved residents.

Sincerely,

Charlene Nelson

Charlene Nelson, Chairwoman
Shoalwater Bay Indian Tribe / Tribal Council

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155, 14-D12
Seattle, WA 98101-3144

REGIONAL
ADMINISTRATOR'S
DIVISION

May 5, 2022

Melissa Leslie, Project Manager
US Army Corps of Engineers – Seattle District
Planning, Environmental and Cultural Resources Branch
4735 East Marginal Way South, Bldg. 1202
Seattle, Washington 98134

Dear Melissa Leslie,

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' April 2022 Notice of Preparation to prepare a Supplemental Environmental Assessment for the Shoalwater Bay Shoreline Erosion Repair (EPA Project Number 22-0022-USACE). EPA has conducted its review pursuant to the National Environmental Policy Act and our review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA and requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement.

According to the Notice, the proposed emergency repair is intended to rehabilitate existing flood control works and address damage caused during extraordinary coastal storm events in November 2020 and January 2021. The Notice summarizes project activities (e.g., dredging, cobble or quarry spall placement, temporary road and bridge construction), conservation measures, best management practices, and impacts of the project.

EPA supports the Corps' efforts to reduce coastal erosion and the resulting flooding and coastal storm damage to the Shoalwater Reservation. To address potential environmental impacts associated with the project, EPA is providing recommendations to address water quality and biological resources, as well as post-project removal of temporary structures. The enclosed Detailed Comments provide greater detail of our recommendations for the NEPA analysis.

Thank you for the opportunity to review the Notice for this project. If you have questions about this review, please contact Alessandro Molina of my staff at (206) 553-2724 and molina.alessandro@epa.gov, or me, at (206) 553-1774 or at chu.rebecca@epa.gov.

Sincerely,

Rebecca Chu, Chief
Policy and Environmental Review Branch

Enclosure

U.S. EPA Detailed Comments on the
Shoalwater Bay Shoreline Erosion Repair Project NOP
Pacific County, Washington
May 2022

Water Quality

Runoff over surfaces disturbed during project activities can introduce sediments and other pollutants into surface waters. To address these environmental impacts, EPA recommends the NEPA analysis:

- Describe steps to be taken to ensure the chemical and physical dredge material quality (e.g. provide reference to the most recent Dredged Material Management Program Tier 1 Analysis (dated January 11, 2018) and the Corps' 2018 repair experience).
- Describe any spill events or groundings in the borrow and placement areas that have occurred since January 2018.
- Describes steps that will be taken to confirm the source of cobble and/or quarry spalls as a "clean" source.
- Describe the potential for temporary piling placement and removal, including likely location(s).
- In order to maximize the effectiveness of the revetment and minimize the environmental impact of shoreline erosion in the future, provide a technical analysis or citation supporting the proposed materials to be used in the project and describe how construction sequencing will avoid compaction of revetment material into an interlocked matrix. EPA notes past project repair designs indicated that 10"-minus rounded cobble would dissipate wave energy, trap sand, and perform better in a dynamic revetment, and 10"-minus rounded river cobble was proposed for the last repair in 2018.
- Provide detail on the anticipated water quality impacts to occur from the construction, use, and removal of a temporary haul road on Graveyard Spit; and a temporary bridge causeway between Graveyard and Empire Spits. EPA recommends that this also include a monitoring program to detect where water quality impacts occur. Include mechanisms to address these anticipated environmental impacts upon completion of the repair work, including fill and structure removal, a revegetation plan, and other measures to return the dune system to its prior condition.
- Provide a list of Best Management Practices (BMPs) to protect surface water resources during project activities (e.g., during dredging and dewatering, construction of the access road and bridge causeway, rehandling and placement of dredged and fill materials, proximity to surface water resources, presence of erosive beach sediments or observed scouring, discharge through culverts, etc.). EPA suggests that the Corps consult BMPs followed during the 2018 repair and consider lessons learned.
- Include a plan to monitor the effectiveness of BMPs.
- Coordinate and integrate environmental impact information from other concurrent regulatory processes as appropriate. Information may be prepared during the CWA § 401 certification process that is applicable and appropriate to include in the NEPA Analysis.

Wetlands

The proposed project may impact wetlands in the project area. To address these environmental impacts, EPA recommends the NEPA analysis:

- Evaluate the direct and secondary impacts of the proposed project on wetlands. Specifically, evaluate potential impacts from the placement of cobble/quarry spalls and sand in the northern section of the project (e.g., size of impact, wetland rating).
- Where potential impacts to wetlands resources and functions are identified, detail the steps to be taken to avoid and minimize impacts from project activities (e.g., floodwater inundation, channelization or redirection, and erosion or aggradation).
- Includes mechanisms to minimize project impacts to wetland vegetation, riparian habitat, and aquatic biota. For example short term erosion control can be addressed by installing sand fencing, while long-term erosion measures could include revegetation with native dune grass species. EPA notes that the last repair included sand fencing, and the NEPA analysis could report on the effectiveness of that measure over time.

- Include plans for disposal of anthropogenic debris encountered during construction, including sand fencing.

Biological Resources
The proposed project may have impacts to biota and their habitat. To address these environmental impacts, EPA recommends the NEPA analysis:

- Include measures to reduce risks and protect biota and habitat known to occur in the project area (e.g. the Endangered Species Act-listed Western snowy plover *(Charadrius nivosus nivosus)* and Streaked Horned lark *(Eremophila alpestris strigata)).* The proposed project impacts are related to the anticipated loss and degradation of suitable habitats and cover; increased sediment delivery to the marine environment, resulting in increased turbidity; and higher-than-optimal noise levels during construction.
- Include methods to minimize temporary displacement of wildlife during the construction phase.
- Include plans for addressing construction-related impacts post-construction. For example, vehicle access during construction may impact wildlife nesting habitat. Removal of the temporary road and causeway crossing Cannery Slough post-construction would address those nesting habitat impacts. Similarly, the NEPA analysis can describe plans for restoring any tidal flat habitat in North Cove is restored to pre-construction condition.
- Identify measures to minimize and/or avoid noise impacts to sensitive species (e.g. nesting Western snowy plover). For example, acoustic shielding (e.g., through strategic positioning of non-noise generating equipment like unused hydraulic pipeline) and other noise reduction techniques can minimize and avoid noise impacts.[1]
- Describe BMPs that will be used to ensure invasive species being introduced to the site (e.g. prevent invasive species from Willapa Bay being introduced via dredging and construction equipment and other materials brought in for the project).
- Describe impacts to biota from the sand borrow areas (we note that changes to infaunal community structure may persist for several years, affecting food sources for commercially valuable marine species).
- Discuss the results of the Dungeness crab entrainment study that was conducted during the 2018 project repair.

Air Quality
Project activities (e.g., use of heavy equipment) have the potential to impact air quality. To address these environment impacts, EPA recommends the NEPA analysis:

- Discuss ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards, and criteria pollutant non-attainment areas in the analysis area and vicinity, if applicable.
- Specify all emission sources and quantify related emissions; estimate criteria pollutant emissions for the analysis area; and discuss mitigation measures, including BMPs associated with diesel exhaust from construction equipment to minimize air quality impacts from this project.

Tribal Consultation
EPA encourages the Corps to continue to consult with the Tribe and incorporate their feedback when making decisions regarding the project.

[1] Noise reduction measures may include mufflers, enclosures, curtains, insulation, and vegetative barriers, and minimizing engine idling during construction and operations. Commonly used construction equipment has the potential to generate noise well above 55 dBA, which has the potential to create cumulative impacts. The Federal Highway Administration Highway Construction Noise Handbook provides tables of noise estimates for common construction equipment: https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook10.cfm.

Climate Change, Sea Level Rise, and Reasonably Foreseeable Impacts

To address the environmental impact associated with climate change and sea level rise, EPA recommends that the NEPA analysis:

- Include a discussion of reasonably foreseeable effects that climate change may have on the proposed action and the planning area. This information could help inform the development of measures to improve the resilience of the barrier dune.
- If projected changes could notably exacerbate the environmental impacts of the project, identify measures to be taken to minimize the impacts.
- Consult NOAA's 2022 Sea Level Rise Technical Report[2] and consider multiple sea-level rise scenarios (low, intermediate, and high) and their implications for the long-term functionality of the barrier dune. NOAA's models estimate that by 2050, increases in tide and storm surge heights will cause "major" flooding to occur five times as often as it does today, which is likely to impact rates of erosion.
- Include steps for developing a plan for regular adaptive management of the barrier dune. This may include planning for routine beach/dune nourishment, and for maintenance of project features like sand fencing over time.
- Include a discussion of the littoral cell sediment transport context and cumulative impacts related to other planned and existing shoreline erosion protection projects north of the proposed repair area, including work done by federal, state, local and tribal entities.

[2] https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report.html.

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APPENDIX B

ENDANGERED SPECIES ACT COORDINATION

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
Oregon and Washington Coastal Area Office
510 Desmond Drive SE, Suite 103
Lacey WA, 98503

Refer to NMFS No:
WCRO-2-22-01197

May 27, 2022

Laura A. Boerner, Chief,
Planning, Environmental,
and Cultural Resources Branch
U.S. Army Corps of Engineers
4735 E. Marginal Way S. Bldg. 1202
Seattle, WA 98134-2388

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Shoalwater Bay Shoreline Erosion Project, Pacific County, Washington (4th Field HUC 17100106, Willapa Bay)

Dear Ms. Boerner:

On May 12, 2022, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the Seattle District Corps of Engineers (Corps) proposal to address Shoalwater Bay Shoreline Erosion under section 404 of the Clean Water Act is not likely to adversely affect (NLAA) the following species listed as threatened or endangered under the Endangered Species Act (ESA):

- Southern green sturgeon (*Acipenser medirostris*) or its designated critical habitat
- Eulachon (*Thaleichthys pacificus*)
- Lower Columbia Chinook salmon (*Oncorhynchus tshawytscha)*
- Upper Willamette River Chinook salmon (*Onchorhynchus tshawytscha)*
- Columbia River chum salmon (*Onchorhynchus keta)*
- Central America and Mexico DPSs of humpback whale (*Megoptera novaeangliae)*
- Southern Resident killer whale (*Orcinus orca*)

This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

Thank you also for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action. NMFS reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson-

Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)), and concluded that the action would adversely affect the EFH of Pacific Coast Salmon (PFMC 2021a), coastal pelagic species (PFMC 2021b) and groundfish (PFMC 2020). Therefore, we have included the results of that review in this document. No EFH conservation recommendations are offered at this time.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at Oregon Washington Coastal Office

Consultation History

This proposed action has a long consultation history. Consultation under Section 7(a)(2) of the Endangered Species Act (ESA) of 1973 was completed previously with NMFS concurrence letters dated December 12, 2007, September 20, 2011, June 18, 2012, April 3, 2013, January 10, 2018, and January 18, 2018.

On March 22, 2022, NMFS was contacted by email by the Corps to ascertain NMFS point of contact to discuss future project due to loss of approximately 3,500 feet of dune at Shoalwater Dune.
On April 14, 2022, NMFS received electronic copy of a Notice of Preparation (NOP) for the Shoalwater Bay Shoreline Erosion Repair Project in Pacific County, Washington from the Corps. It describes the proposed action as an emergency repair.

On May 6, 2022, the Corps provided an email request for emergency consultation for repair to forestall continued erosion at Shoalwater Dune, to provide protection to the Shoalwater Bay Tribe. The request was logged in on May 9, 2022, and a technical assistance reply was provided on the same date, indicating best practices to minimize adverse effects if the project proceeded as an emergency, and a statement that, based on the history of consultation at the site, a request for informal consultation, if received, would likely be completed before work was slated to begin.

On May 12, 2022, the Corps submitted a request to re-initiate informal consultation, along with a Biological Assessment (BA) and a BA addendum.

On May 13, 2022, NMFS logged in the request for informal consultation and issue a new tracking number: WCRO-2022-01197. The consultation was initiated on that date.

Proposed Action and Action Area

In 2012-2103, the Corps constructed a 9,800 linear-foot barrier dune restoration project on Graveyard/Empire Spit with 709,000 cubic yards (cy) of dredged material from a designated borrow site approximately 1 mile offshore. For the 2018 emergency repair, construction consisted of dredging at one borrow area off-shore of Tokeland Peninsula for the purpose of

obtaining 849,673 cy of sand to restore the dune to its authorized length of 12,500 feet, with a crest elevation of +25 feet mean lower low water (MLLW).

Following winter storms, in 2019, 2020, and 2021, the barrier dune has eroded. The proposed action is to dredge approximately 460,000 cy of sand that would be used to replenish the dune, and to construct the previously authorized, but not constructed dynamic revetment. The dynamic revetment is slightly modified from the original proposal, and now would incorporate more angular rock with the round cobble to enhance stability.

This dynamic revetment structure would be placed on the oceanside sideslope of the repaired dune from +5 to +15 feet MLLW. The dynamic revetment would have a maximum width of 50 feet and slope down to the existing beach at 1 vertical on 5 horizontal grade. The proposed borrow area is still located in the adjacent Willapa Bay entrance and channel, but has been shifted southeast to an area that has experienced higher rates of accretion than previously used sites.

A new temporary two and a half lane (30 -foot wide) land access haul road to the repair area along Graveyard Spit would be constructed, including a culvert supported causeway to cross the tidal inlet (Cannery Slough) separating Graveyard Spit from Empire Spit for safe transportation of all resources and personnel into and out of the project site. The design would allow daily tidal flow to be maintained from Willapa Bay to the backshore embayment. The culverts would be corrugated metal, sized to minimize head differential and scour. Intended material is aluminum-galvanized metal to avoid zinc and lead leachate.

Temporary causeway construction could begin in June; dredging occurring July 16 through October 1. Dune repairs are expected to take approximately 5 months, with all construction completed by January 28 and the site restored by February 28.

We considered, under the ESA whether or not the proposed action would cause any other activities and determined that it would not.

The action area is the vicinity of the borrow area, near the entrance of Willapa Bay to the west of Toke Point, and Cannery Slough. The action area is within designated critical habitat for the southern distinct population segment (DPS) of green sturgeon. The action area is also designated as EFH for Pacific Coast salmon, Pacific Coast groundfish, and coastal pelagic species. Habitat

areas of particular concern (HAPC) that are present include “estuary” which is HAPC both for groundfish and for Pacific Coast salmon.

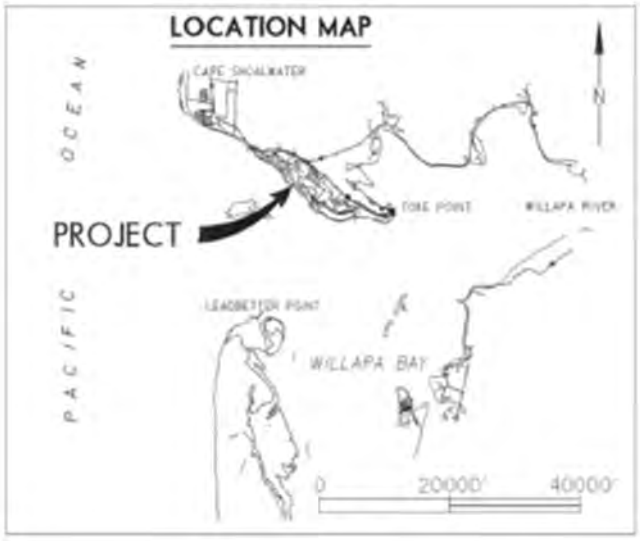

Figure 1. Project Location, Shoalwater

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

The effects of the proposed action include:

- Noise and turbid conditions during dredging, with possible risk of entrainment of fishes, and temporary loss of benthic prey communities;
- Modified bathymetry post-dredging;
- Noise and turbid conditions during construction of the temporary access road (~June/July 2022), with temporary reduction in aquatic habitat and associated prey communities until the temporary road is removed; and
- Noise and turbid conditions during removal of the temporary road (~February 2023).

Effects on Green Sturgeon Critical Habitat, and Green Sturgeon

The features of designated estuarine areas are sediment quality, food resources, water flow, water quality, water depth, and migratory corridor. These features support growth and development of juvenile, subadult lifestages, and survival and reproductive capacity of adults, and passage to and from the habitat areas.

Dredging at the borrow area is the only activity likely to modify green sturgeon critical habitat. The dredging would occur in an area of high shoaling, and the increased depth post dredging does not impair migratory corridor. Juveniles and subadults utilized a variety of depths, including shallow areas (1-3 meters). The pre-dredge depth is roughly -20 MLLW and the estimated post dredge depth would be approxiately -40 MLLW. Adjacent areas contain preferred depth range for green sturgeon, and the dredged site would likely recruit sediment and re-establish the shallower, preferred depths over time. The dredged area would also have a period of reduced prey, however prey is not considered limiting in Willapa Bay, and this reduction is also expected to ameliorate over a period of weeks to months.

All other activity occurs above MLLW, which is the upper extent of critical habitat, and both sound and suspended sediment, if they reach critical habitat, are expected to be insignificant. Both suspended sediment, and construction noise are temporary effects, which briefly disrupt water quality; neither suspended sediment or noise is not expected to modify the suitability of the water in a degree that degrades oversummering habitat values for growth, development, or survival of the species. All habitat effects are temporary, and expected to regain their baseline level without causing or increasing any limiting factors. The effects on critical habitat are all considered insignificant.

Only that work which occurs in June through October would overlap with green sturgeon presence. Dredging includes a risk of entrainment, particularly among juveniles and subadults. However, data indicates that entrainment rate of green sturgeon is very low (Stanford et al. 2009). Because that data is from a known natal area with juvenile green sturgeon, we believe that entrainment during dredging in Willapa is even less likely (extremely unlikely) as these fish are larger subadults and adults. Entrainment of any individual during the proposed dredging is considered a discountable effect.

Effects on Salmonids

Juvenile Chinook salmon and chum leaving the Columbia River may enter Willapa Bay because they are younger/smaller fish upon arrival in the marine environment than other salmonids entering from the Columbia River/Snake system, and more likely to have nearshore dependence in the marine environment. The juvenile Chinook salmon emigration period from the Columbia includes the months of June (LCR Chinook) and July (UWR Chinook), and CR chum emigration is typically finished by June. This suggests that individuals of these three species could enter the action area during work.

Juvenile salmonids are able to detect and avoid areas of high turbidity, and both noise and visible activity during work is expected to elicit avoidance behavior, reducing the duration and intensity of exposure to sound and suspended sediment, and to decrease the likelihood of entrainment.

Within Cannery Slough, some aquatic habitat will be temporarily unavailable while the causeway/access road is in place (up to 8 months), however the causeway will be supported by culverts that retain tidal flushing, allowing good movement of water, fish, and prey species. Exposure to all habitat effects are ephemeral and expected to create an insignificant response. Exposure to prey diminishments from dredging are also not expected to produce significant response because the adjacent areas are not prey limited, these fish are in a lifestage that is foraging broadly. We expect no meaningful increase in bioenergetic expenditure or decrease in growth, maturation, or fitness, indicating insignificant response to this habitat reduction. The Corp's use of a hydraulic dredge includes operational practices to limit the amount of time the suction head is operating in the water column (rather than below the surface of the sediment) to a very brief period and within 1-3 feet above the bottom, only when clearing the head is necessary (pers comm. Melanie Leslie, Corps of Engineers, by electronic email 5/24/22). This operational practice (limited duration of suction in water), and fact that the dredging is occurring in depths of -25 to -40 MLLW (lower than typically utilized by small juvenile salmonids) suggest that exposure to entrainment is unlikely. We consider the likelihood of entrainment to be discountable.

Effects on Eulachon

Eulachon are not expected to occur in Willapa Bay or Cannery Slough, and no critical habitat is designated for them in the action area. Presence, if it were to occur, is likely to be in low numbers, however based on lifehistory behaviors, spawning would have occurred before the start of work, larvae would likely have drifted out of the system by the time work begins, with possible overlap of species presence at the close of the project when the causeway/access road is being removed. Turbid conditions associated with the removal of the temporary access road is not expected to alter spawning behavior, or survival of eggs or larvae. Exposure to the project effects is considered discountable, but if exposure to project effects were to occur, response would be insignificant.

Effects on Marine Mammals and their Designated Critical Habitat

Critical Habitat for 3 DPSs of marine mammal (Central America DPS and Mexico DPS of humpback whale, and the Southern Resident DPS of killer whale (SRKW)) was designated along the Washington Coast. The designated area for SRKW includes coastal water off the entrance to Willapa Bay, but does not include Willapa Bay itself. The designated area for humpbacks extends southward from the U.S. EEZ to 46°50′ N, just north of Willapa Bay, WA. The borrow area for dredging is near the mouth of Willapa Bay

Humpback whales are not known to enter Willapa Bay. In 2021 a dead humpback washed up on the shore between Westport and Willapa Bay. Orcas (killer whales), like humpbacks, travel along the coastline, but are not expected to enter Willapa Bay. Orcas sighted along the coast have included members of the listed Southern Resident Killer Whale DPS, including L and J pods, off the entrance of Willapa Bay. In 2021, those sightings occurred in April. If presence were similar in 2022, these species would not be present at the time work is scheduled.

Conclusion

Based on this analysis, all potential effects are insignificant or discountable to ESA-listed species and to designated critical habitat, and NMFS concurs with the Corps that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Corps or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.905(b)).

NMFS determined the proposed action would adversely affect EFH (water quality, substrate, prey) and HAPCs (estuary) of Pacific salmon, Pacific Coast groundfish, and pelagic species as follows:

- Temporary (weeks to months) reduction in the suitability of habitat for settlement and recruitment of early life history stages in the areas of the dredging area and channel crossing footprints.
- Temporary (hours) reduction in the quality of habitats adjacent to the adjusted borrow area and temporary channel crossing footprints through brief increases in turbidity.

• Possible temporary (minutes to hours) decreases in dissolved oxygen (DO). Reductions in DO would likely be short lived if they occur at all.
• Temporary (weeks to months) reduction in the availability of prey resources through disturbance to the benthic invertebrate community.

NMFS has determined that because the adverse effects are temporary, no conservation recommendations are available to further avoid, minimize, mitigate, or otherwise offset the impact of the proposed action on EFH.

The Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600. 920(l)). This concludes the MSA consultation.

Please direct questions regarding this letter to Bonnie Shorin, Acting Branch Chief, Washington Coast/Lower Columbia Branch, at Bonnie.Shorin@noaa.gov.

Sincerely,

Bonnie Shorin,
Acting Branch Chief, WCLC Branch
Oregon Washington Coastal Office

cc: Melissa Leslie, USACE
Aurora Deangelis-Caban, USACE
Scott Pozarycki, USACE

Literature Cited

PFMC. 2020. Pacific Coast Salmon Fishery Management Plan for The California, Oregon, And Washington Groundfish Fishery.

PFMC. 2021a. Pacific Coast Salmon Fishery Management Plan for Commercial And Recreational Salmon Fisheries Off The Coasts Of Washington, Oregon, And California As Revised Through Amendment 21.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
510 Desmond Dr. S.E., Suite 102
Lacey, Washington 98503

In Reply Refer to:
FWS/R1/2022-0039531
X-Ref: 01EWFW00-2018-F-0253
13410-2007-F-0420-R002
13410-2007-F-0420-R001
13410-2007-F-0420

Laura Boerner
Chief, Planning, Environmental and Cultural Resource Branch
ATTN: Melissa Leslie
Seattle District, U.S. Army Corps of Engineers
P.O. Box 3755
Seattle Washington 98124-3755

Dear Ms. Boerner

Subject: Reinitiation of Section 7 Consultation for the Shoalwater Bay Shoreline Erosion Control Project, Willapa Bay, Washington

This letter transmits our reissued U.S. Fish and Wildlife Service (USFWS) Biological Opinion (Opinion), based on our review of your requested reinitiation for the proposed Shoalwater Bay Shoreline Erosion Control Project located in Pacific County, Washington, and its effects on the western snowy plover (*Charadrius nivosus nivosus*), streaked horned lark (*Eremophila alpestris strigata*), and designated critical habitat for the western snowy plover and streaked horned lark. This consultation (reinitiation) was conducted in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). Your request for reinitiation of formal consultation was received via email on May 12, 2022.

The enclosed Opinion is based on information provided in a November 2021 Supplemental Environmental Assessment, telephone conversations, field investigations, and other sources of information cited in the Opinion. A complete record of this consultation is on file at the Washington Fish and Wildlife Office in Lacey, Washington.

The Addendum to your Biological Assessment (received May 2022) also included a request for Service concurrence with "no effect" determination(s) for certain listed resources. Our 2018 Opinion (XRef No. 01EWFW00-2018-F-0253) included concurrence sections for bull trout (*Salvelinus confluentus*) and its designated critical habitat, and the marbled murrelet (*Brachyramphus marmoratus*). For effects to bull trout, designated bull trout critical habitat, and the marbled murrelet, please refer to our 2018 Opinion.

The U.S. Army Corps of Engineers has determined that the action will have "no effect" on additional listed species and designated critical habitat that are known to occur in Pacific County. The Service has no regulatory or statutory authority for concurring with "no effect" determinations, and no consultation with the Service is required. Your determinations that the action will have no effect on these listed species and designated critical habitat rest with the federal action agency. We recommend that the federal action agency document their analyses and maintain that documentation as part of their project file.

If you have any questions regarding this reinitiation, our response to your concurrence request(s), or our shared responsibilities under the ESA, please contact Mitchell Dennis at 564-669-0716 or Martha Jensen at 360-481-4784.

Sincerely,

for Brad Thompson, State Supervisor
Washington Fish and Wildlife Office

cc:
Shoalwater Bay Tribe, Tokeland, WA (L. Pfleeger)

Endangered Species Act - Section 7 Consultation

BIOLOGICAL OPINION

U.S. Fish and Wildlife Service Reference
01EWFW00-2022-0039531

Shoalwater Bay Shoreline Erosion Control Project

Pacific County, Washington

Federal Action Agency:

U.S. Army Corps of Engineers

Consultation Conducted By:

U.S. Fish and Wildlife Service
Washington Fish and Wildlife Office
Lacey, Washington

for Brad Thompson, State Supervisor
Washington Fish and Wildlife Office

Date

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ACRONYMS AND ABBREVIATIONS

ATV	all-terrain vehicles
BA	Biological Assessment
CFR	Code of Federal Regulations
critical habitat	Critical Habitat
Corps	U.S. Army Corps of Engineers
cy	cubic yards
ESA	Endangered Species Act of 1973, as amended (16 U.S.C. l531 *et seq.*)
FR	Federal Register
MLLW	mean lower low water
Opinion	Biological Opinion
PCE	Primary Constituent Element
Reservation	Shoalwater Bay Indian Reservation
RPM	Reasonable and Prudent Measures
snowy plover	western snowy plover
SR	State Route
Tribe	Shoalwater Bay Tribe
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1 INTRODUCTION

This document represents the U.S. Fish and Wildlife Service's (USFWS) Biological Opinion (Opinion) based on our review of the proposed Shoalwater Bay Shoreline Erosion Control Project located on Tokeland Peninsula and in Willapa Bay, Pacific County, Washington, and its effects on the western snowy plover (*Charadrius nivosus nivosus*) (snowy plover), streaked horned lark (*Eremophila alpestris strigata*), and their designated critical habitat. This reinitiation of our previous 2018 formal consultation and Opinion (X-Ref No. 01EWFW00-2018-F-0253) has been conducted in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). Your request for reinitiation of the formal consultation was received via email on May 12, 2022. This expedited consultation was completed in response to an emergency declaration by the U.S. Army Corps of Engineers (Corps), to address rapid erosion that is threatening the Shoalwater Bay Indian Reservation (Reservation), important tribal natural resources, and listed species.

The Corps proposes to conduct emergency repairs to the existing shoreline protection dune (also referred to as the Graveyard Spit or Shoalwater Bay barrier dune) under the authority of Public Law 84-99, the Flood Control and Coastal Emergency Act. Rehabilitation assistance under Public Law 84-99, for a coastal storm risk management project or facility/features damaged by an extraordinary storm, includes all repairs to hard structures and the replenishment of sacrificial features lost or damaged due to the extraordinary storm event(s). Previous major repairs to the barrier dune were last completed in 2018. Repair/restoration to pre-storm conditions is necessary, to allow for adequate functioning of the project as a coastal barrier dune, to protect the Reservation.

This Opinion is based on information provided in the Biological Assessment (BA, received on May 12, 2022; USACE 2022a), the 2018 Opinion, telephone conversations, field investigations, and other sources of information as detailed below. A complete record of this consultation is on file at the Washington Fish and Wildlife Office in Lacey, Washington.

- The USFWS has consulted on this project several times in the past: 13410-2007-F-0420, 13410-2007-F-0420-R001, 13410-2007-F-0420-R002, and 01EWFW00-2018-F-0253.
- The Corps' 2018 consultation package, including a BA and request for consultation, was received on November 16, 2017.
- The 2018 Opinion was completed on January 29, 2018. Construction began in June and was completed in late September 2018.
- Severe winter storm events in conjunction with king tides triggered another emergency declaration on November 12, 2020, resulting in the installation of 10,000 tons of quarry spalls along the damaged northern portion of the dune.

2 REINITIATION CRITERIA

As provided in 50 CFR §402.l6, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained or is authorized by law, and if:

1. The amount or extent of incidental take is exceeded.

2. New information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in the previous Opinion.

3. The agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the previous Opinion. Or,

4. A new species is listed or critical habitat has been designated that may be affected by the action.

3 CONSULTATION HISTORY

Previous repairs included all of the project design elements analyzed in the 2018 Opinion, except that the planned cobble dynamic revetment along the northern portion of the dune was never constructed. During construction it was determined that delivering the cobble by barge, offloading the material onto the beach, and transporting it for placement was not feasible and would be cost prohibitive. The dynamic revetment (rock toe and cobble berm) was designed to provide additional protection, and without it the other shoreline protection features were left vulnerable to erosion. Severe winter storms in 2020 and 2021 caused significant damage to the unprotected northern portion, prompting the Corps to declare another emergency and receive funding for emergency repairs to the Shoalwater Bay coastal barrier dune (Disaster Relief Supplemental Appropriations Act, 2022).

Previous repairs to the dune are helping to reduce shoreline erosion that is threatening infrastructure around North Cove. All of the previous and current actions were/are accomplished under the authority of Public Law 84-99. Rehabilitation assistance under Public Law 84-99 program will restore the protections to the original design level/criteria. Without these repairs, the limited wave protection currently afforded by the coastal barrier dune will continue to decrease, increasing the threat of severe flooding on the Reservation and lands adjoining North Cove.

The Corps and prospective contractors met with the Shoalwater Bay Tribe (Tribe) on March 23, 2022, to discuss the proposed action and changes in project elements. The Corps contacted the USFWS via email on March 22, 2022, notifying us of the project. Regular biweekly coordination calls were held between the Corps (Melissa Leslie), Tribe (Larissa Pfleeger-Ritzman), USFWS (Martha Jensen and Mitch Dennis), and Washington Department of Fish and Wildlife (WDFW) (Cyndie Sundstrom) to provide a forum for project updates and discuss

options for minimizing impacts to snowy plovers and streaked horned larks. On April 14, 2022, the Corps posted a Public Notice referencing a Supplemental Environmental Assessment for additional emergency repairs to the barrier dune.

The Corps submitted a request for reinitiation of formal consultation and a BA Addendum on May 12, 2022 (USACE 2022a), describing potential impacts to listed species not addressed in the previous consultation. The following is a summary of important events associated with this consultation:

- On March 23, 2022, the Corps held a pre-consultation meeting with prospective contractors and the tribal council at the Shoalwater Bay Tribal Center. The meeting was followed by a site visit to the dune and project. The meeting was led by the Corps' Civil Works Department and included key tribal members, Corps project managers and engineers.
- On April 14, 2022, the Corps published a Public Notice announcing the proposed emergency response and opened the public comment period for input on the preferred alternative.

  The BA Addendum (USACE 2022a), providing information to describe a new temporary overland access/haul road and culvert/bridge crossing at Cannery Slough, a revised layout for the pipeline, and revised cobble dynamic revetment, was received on May 12, 2022. Additional information, including specifics on meeting dates and questions, a Biological Monitoring Plan, and estimates for timing and duration of equipment use and dredging operations were received on May 31, 2022, and June 6, 2022.

In their letter dated May 12, 2022, the Corps requested reinitiation of formal consultation for the following reasons:

1. The amount of incidental take exempted in the 2018 Opinion will be exceeded.

2. The action has been modified and may cause effects in a manner or extent not considered in the previous (2018) Opinion.

4 BIOLOGICAL OPINION

5 DESCRIPTION OF THE PROPOSED ACTION

A federal action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas (50 CFR 402.02). The purpose of this project is to provide coastal erosion protection for the Reservation. In 2012 and 2013, the Corps constructed the sand barrier dune on Graveyard Spit (also known as the Shoalwater Bay barrier dune. The Corps also refers to it as "Empire Spit," though this name is not used by the tribe or anyone else). The completed dune was 9,800 feet (1.9 miles) long and had a crest elevation of 25 feet above mean lower low water (MLLW). The dune was constructed with 709,000 cubic yards (cy) of dredged material from a designated borrow site

approximately one mile offshore. Since the original dune was constructed, winter storms and erosion have severely damaged the westernmost portions of the dune, requiring previous repairs in 2018. The revised design included the addition of a cobble dynamic revetment along the western and northern third of the dune, which is most vulnerable to erosion. However, this project element was not constructed or completed because methods for bringing material to the site were found to be not feasible.

The term of the previous consultation(s) was for the design life of the structure, which was estimated at approximately five years. The 2018 Opinion stated, it may be possible that maintenance will be needed prior to the end of the five-year period. Because the cobble dynamic revetment was not installed in 2018, erosion accelerated and prompted the need for this current emergency action.

5.1 New or Changed Design Elements

A new temporary access road will extend from State Route (SR) 105, across the western part of the spit and Cannery Slough. Cobble material for the dynamic revetment will be trucked to the damaged portion of the dune and installed, similar to as was proposed previously and described in the 2018 Opinion. The new temporary access road, additional material needed for the repairs, and an additional season of construction are changes that triggered reinitiation of the consultation; these changes will or may result in additional effects to listed species, which were not addressed in the 2018 Opinion. However, only the western and northern portion of the dune will be repaired/rebuilt, to the original design profile, and inclusive of the cobble dynamic revetment (as described in the 2018 Opinion). The current, proposed action is principally a modification to the methods for bringing cobble material to the repair site(s), and additional timing and duration to complete the project as described in the 2018 Opinion.

5.1.1 Dune Repairs and Cobble Protection/Dynamic Revetment

The current action includes repairs to the barrier dune and installation of the cobble dynamic revetment (which was proposed and evaluated, but not implemented in 2018), to renourish and stabilize the highly damaged portions at the western and northern end of the spit. This will require the placement of approximately 460,000 cy of sand and approximately 216,000 tons of cobble on the face of the dune. Three times as much cobble-sized material is proposed compared to the 2017 designs, due to changed conditions and increased erosional forces at the western and northern end of the dune. Exact fill requirements could vary based on full profile surveys just prior to construction. One designated borrow site in Willapa Bay, approximately 800 feet offshore, would be dredged for the purpose of obtaining sand.

The toe of the dune would be stabilized with approximately 216,000 tons of 10-inch minus rounded streambed cobble or angular quarried spall placed along the western and northern 3,700 feet. The cobble toe or berm would have a top width of 50 feet and slope down to the existing beach at 1:5 (1 vertical on 5 horizontal) grade or slope (Figure 1). Some excavation will be necessary to embed the cobble toe into the beach at the base of the sand dune. This is required to prevent undermining when the beach profile lowers. Typical dune height would vary from 13 feet to 15 feet above the existing grade.

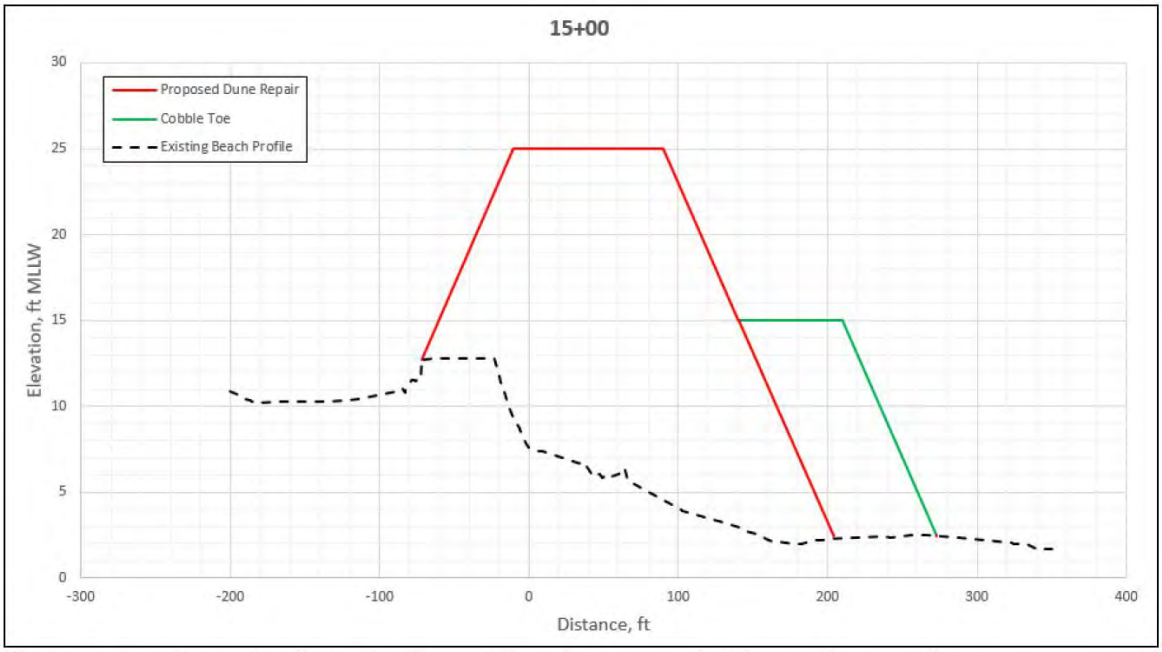

Figure A-6. Example template for barrier dune and dynamic revetment (cobble berm) construction

Figure 1. Profile of dune repair and cobble berm dynamic revetment along the ocean side.

The dynamic revetment would be placed and constructed on the oceanside slope or face of the repaired dune from +5 to +15 feet MLLW. The individual cobbles would be dynamic (or mobile) in the wave zone (i.e., along the upper part of the beach at the surf zone, where intense erosion occurs during storms), allowing the cobble berm to reshape itself over time and provide protection for the repaired and nourished sand dune. The dynamic revetment is designed to allow infiltration through the void spaces between the cobbles and to absorb and dissipate wave energy more effectively than a traditional static rock revetment. This engineered natural dune and dynamic revetment design was identified as the preferred alternative to protect natural and cultural resources important to the Tribe.

The new temporary access road (i.e., haul road) will provide for safe transportation of materials, equipment, and personnel into and out of the repair site(s) and will require a temporary tidal channel crossing (i.e., across Cannery Slough). Light equipment and supplies will be brought in overland by all-terrain vehicles (ATV) (no heavy equipment) from the pipeline work area and access route, as was done in 2018.

The pipeline from the offshore borrow site to the southern portion of the dune will be buried between the low tide line and the seaward toe of the dune. A trench of sufficient depth will be excavated to bury the pipeline and match the surrounding grade. Burying the pipeline will avoid blocking and maintain access to foraging areas for snowy plover broods. To further avoid creating a barrier to access along the wrackline, the pipeline will be placed/laid along the landward (backside) of the dune, between the existing dune and North Cove marsh (Figure 2).

Figure 2. Dune repair area, pipeline equipment access route, and borrow site.

5.1.2 Temporary Access Road

The new temporary access road (i.e., haul road), approximately 30 feet wide and 4,700 feet long, would be constructed of quarry spalls, and would be removed after the repairs are completed. The temporary access road would be constructed above the high tide line to the greatest extent practicable. The temporary access road alignment would require pre-construction surveys and environmental surveys prior to construction.

A temporary causeway and tidal channel crossing, comprised of several corrugated metal pipe culverts and quarry rock fill material, would be constructed to cross the Cannery Slough tidal inlet. The tidal inlet is approximately 950 feet wide at high tide; at low tide, the inlet channel is approximately 200 feet wide. One- to three-ton riprap will be placed on the seaward side of the haul road tidal channel crossing, to prevent wave generated scour and damage to the most exposed section(s) of the crossing. Daily tidal flow would be maintained from Willapa Bay to the backshore embayment of the North Cove marsh, and a hydraulic analysis will be performed prior to construction to ensure the culverts are appropriately sized for the tidal prism so that significant head differential and excessive scour of the inlet does not occur. Additional figures showing stations, details of the design, and cross sections of the dune and cobble face, can be found in the 2018 Opinion and the 2022 BA Addendum (USACE 2022a), and are included here by reference.

5.1.3 Sand Fencing

Sand fencing would be installed in 75-foot segments, perpendicular to the shoreline on the back side (landward) of the dune, to help retain sand in the western and northern portion of the dune. Each section of fence would be spaced approximately 25 feet apart. The sand fencing will provide immediate erosion control. To maintain suitable habitat for snowy plovers and streaked horned larks, revegetation of the dune is not currently proposed.

Equipment will include the following: a hydraulic dredge, hydraulic excavators, dump trucks, bulldozers, and all-terrain vehicles. All heavy equipment and vehicles would be limited to the work area and construction staging areas, as identified on the design plans.

Due to the threat of coastal storms and hazardous working conditions, construction of the temporary causeway and tidal channel crossing at Cannery Slough could begin as early as June 1 and dredging of sand will likely occur between July 16 and October 1. Heavy equipment and materials would access the repair site(s) via the temporary haul road off of SR 105, and cobble would be stockpiled and staged within the construction footprint at designated staging areas (see Figure 3). Dune repairs will require approximately 4 months. Best management practices would be employed to minimize impacts to listed species.

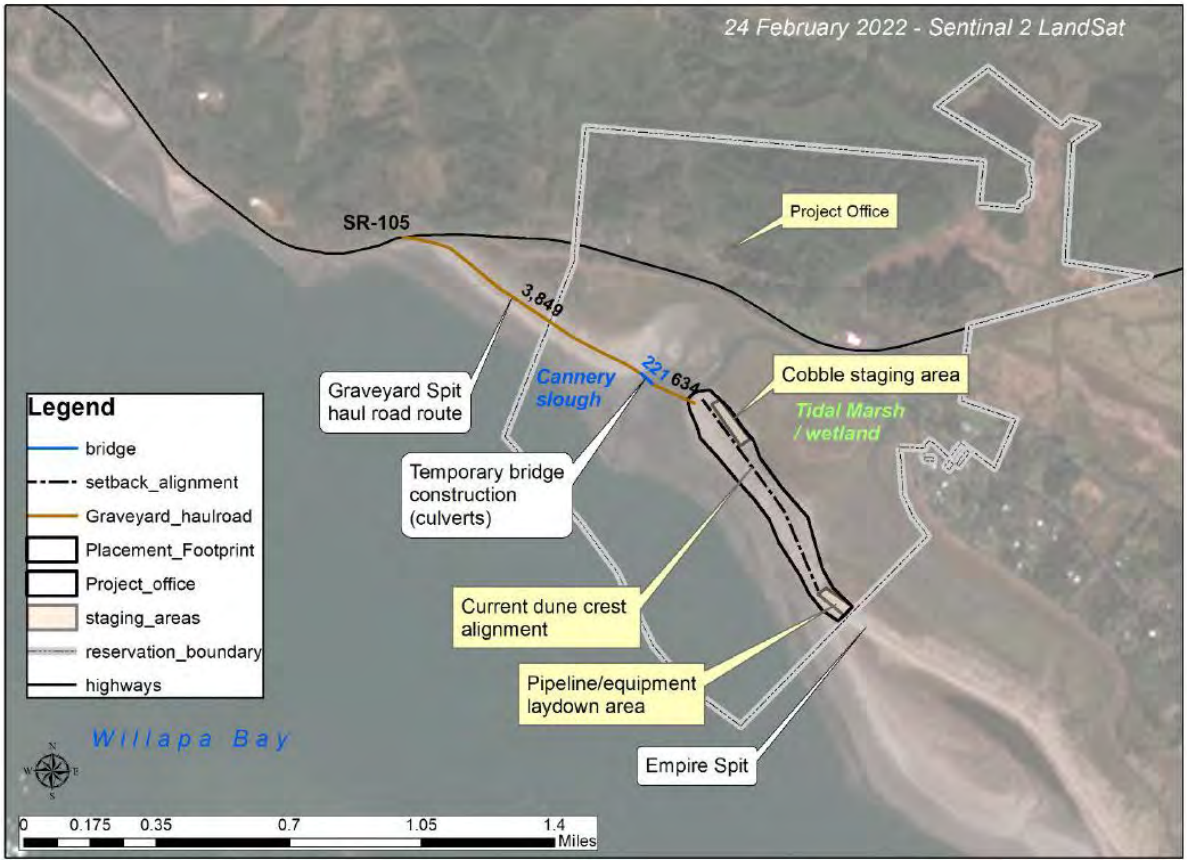

Figure 3. Temporary haul road route, tidal crossing, and cobble staging and pipeline/equipment laydown areas.

5.2 Conservation Measures

The Corps will work with WDFW and the Tribe to implement conservation measures, to reduce the potential for mortality and nest disturbance, for snowy plovers and streaked horned larks during construction. Many of the conservation measures are the same as those proposed and described in the 2018 Opinion. These include several measures provided in the Public Notice and BA Addendum (USACE 2022a):

1. Temporary causeway construction will start no earlier than June 1, 2022.

2. Construction of the temporary haul road (not including the tidal crossing structure) will start on June 1, 2022. Vehicle speeds on the haul road will be limited to 15 miles per hour. Dredging would occur during the July 16 through October 1 work window.

3. All work on Empire[1] and Graveyard spit would avoid and/or minimize impacts to snowy plover and streaked horned lark during the nesting season (April 1 through early September), through implementation of the *2022 Western Snowy Plover and Streaked Horned Lark Protection Plan* (see Appendix A).

4. Any nests found in close proximity of construction activity and at risk of being crushed may need to be relocated, left to hatch, collected and removed, or transported to the Oregon Coast Aquarium for captive rearing. At this time, neither the WDFW, Tribe, or the USFWS are supportive of captive rearing (email from C. Sundstrom, May 13, 2022). An additional option that may be implemented is to move the eggs from the doomed nest to a host nest if a host nest of the exact same stage of incubation is available.

5. Plastic construction or silt fences will be installed parallel to and along the landward side of the proposed road corridor as deterrents and/or prevent snowy plover broods from accessing or crossing the haul road. This will also be done at the dune repair area to prevent broods from entering the work zone.

6. The contractor would coordinate with the Corps, WDFW, USFWS, and Tribal staff to conduct nesting surveys for both snowy plovers and streaked horned larks prior to construction. Construction timing and implementation would be adjusted as necessary to avoid impacts to these listed species based on survey results and coordination with WDFW and USFWS.

7. Monitoring by the contractor and/or Corps and Tribal biologists would be conducted daily or once a week, as needed, throughout construction, to locate active snowy plover and streaked horned lark nests and determine location of and threat to broods.

8. Signs will be posted at either end of the dune repairs (SR 105 and the equipment/pipeline route) to keep the public and spectators out of the construction area.

[1] The Corps Notice also refers to the name "Empire" spit. Because that name does not appear on any maps and is not used by the tribe or WDFW in any species survey or monitoring reports, it is not referred to in this or any previous consultations.

9. Laying pipe from the borrow site in Willapa Bay to the work area on the Reservation is expected to take approximately three to four weeks and will be completed by late July. The pipeline from the offshore borrow site will be buried between the low tide line and the seaward toe of the current sand dune, to prevent the pipeline from blocking young snowy plovers from foraging and moving along the beach. The pipes will be removed after the 2022 snowy plover and streaked horned lark breeding seasons but before their 2023 breeding seasons.

10. All trash would be contained and removed on a daily basis to reduce the potential for predators to be attracted to the work area. A spill control plan (USACE 2022b) would be implemented to limit impacts to environmental quality.

11. If night work is required, light towers located on the beach would be pointed towards the immediate work area, mitigating light intrusion to other areas of the beach.

12. Existing large wood would be stockpiled and placed at the landward toe of the restored barrier dune to provide habitat and nutrients for establishing plants and invertebrate species.

13. Temporary haul road and channel crossing materials would be removed at completion of construction, and the area will be fully restored to pre-existing conditions.

The following summarizes construction sequencing and other information provided by the Corps in their BA and in follow-up information provided on June 6, 2022:

- Work will start June 1, 2022, and all construction will be completed prior to March 2023.
- Initial work schedule will be Monday-Saturday, 12 hours per day (daytime only) for construction of the haul road and causeway crossing. Construction of the dynamic revetment will also occur 6 days a week, 12 hours per day.
- Trucks delivering material to the work site will only operate during daylight hours.
- Dredging and dune reconstruction will take place 7 days a week/24 hours per day. Lights will be used onsite once dune shaping begins.
- Dredge crews will change out twice daily and access the work area from the southern end of the pipeline corridor. Pipeline will be inspected daily.
- Equipment used will include one bulldozer, one loader for laying and joining pipe, a gator and booster/pump for the pipeline, and several dump trucks for delivery of material from the temporary access/haul road to the work site.

Construction will be timed to minimize impacts to nesting snowy plovers and streaked horned larks. Although timing and construction sequencing will reduce the likelihood of construction occurring in close proximity to active snowy plover nests, it may not be adequate to fully protect streaked horned lark nests. However, based on the available survey information for this site, streaked horned larks (adults and fledglings) have been almost exclusively observed in the central and eastern portions of the dune. Due to the low quality of habitat (i.e., either too densely

or too sparsely vegetated) and lack of observations, it is unlikely that streaked horned larks will be nesting at the western and northern end of the dune, where work will begin. See Figures 7-10 of the 2018 Opinion, showing snowy plover and streaked horned lark nest locations and primary use areas from prior years.

Nest surveys and buffers will also reduce the likelihood of construction activities occurring in close proximity to active snowy plover or streaked horned lark nests. Prior to work, all access, staging, stockpile and work areas will be surveyed for nesting snowy plovers and streaked horned larks. Biologists will conduct surveys on a weekly basis, and the Corps will maintain contact with WDFW and the Tribe to keep them apprised of any new developments. The Corps will also request that, should Tribal staff be onsite otherwise during this period and observe any signs of nesting, the Tribe should inform the Corps. If biologists find snowy plover or streaked horned lark nests, the Corps will coordinate with the USFWS, WDFW, and Tribe to avoid or modify work in the immediate area, so that direct effects to the species (adults, nests, eggs, and chicks) are reduced or avoided. A minimum buffer of approximately 360 feet from the nest(s) will be implemented, until the Corps, USFWS, WDFW, and the Tribe determine an appropriate buffer distance that minimizes disturbance. Since most of the northern section of the dune is only about 600 feet wide, the buffer may need to be significantly reduced, depending on the activity. Buffers will be demarcated with appropriate markers agreed upon by the group (e.g., construction fencing, brightly colored stakes, signs, anchored dredge pipeline, etc.). Buffers will remain in place until biologists have determined that the nest(s) is/are no longer active (broods have fledged or the nest has failed) or may not be needed if the fencing deterrent is working.

The pipeline will be laid along the landward side of the dune adjacent to North Cove where fewer nests have been observed or documented (see Figure 2). The vast majority of nests and foraging areas observed in the past have been on the ocean/Willapa Bay side of the dune. However, prior to the 2018 repairs, a few snowy plover nests were established in overwash areas at the western and northern end of the dune. If active nests are found along North Cove or the landward side of the dune, additional pipeline sections will be buried, to allow broods to access foraging areas along the shorelines. Biologists will also be present when equipment moves from the north end to the south end, to guide equipment operators away from nests and broods.

5.3 Action Area

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment. The action area for this proposed federal action is based on the geographic extent of water quality impacts, as depicted in Figure 11 of the 2018 Opinion.

6 ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

6.1 Jeopardy Determination

In accordance with regulation (see 84 FR 44976), the jeopardy determination in this Opinion relies on the following four components:

1. The *Status of the Species*, which evaluates the species' range-wide condition relative to its reproduction, numbers, and distribution, the factors responsible for that condition, and its survival and recovery needs; and explains if the species' current range-wide population is likely to persist while retaining the potential for recovery or is not viable;

2. The *Environmental Baseline*, which evaluates the condition of the species in the action area relative to its reproduction, numbers, and distribution without the consequences of the proposed action, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species;

3. The *Effects of the Action*, which evaluates all future consequences to the species that are reasonably certain to be caused by the proposed action, including the consequences of other activities that are caused by the proposed action, and how those impacts are likely to influence the conservation role of the action area for the species; and

4. *Cumulative Effects*, which evaluates the consequences of future, non-federal activities reasonably certain to occur in the action area on the species, and how those impacts are likely to influence the conservation role of the action area for the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the consequences of the proposed federal action in the context of the species' current range-wide status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild. The key to making this finding is clearly establishing the role of the action area in the conservation of the species as a whole, and how the effects of the proposed action, taken together with cumulative effects, are likely to alter that role and the continued existence (i.e., survival) of the species.

6.2 Adverse Modification Determination

A final rule revising the regulatory definition of "destruction or adverse modification" of critical habitat was published on August 27, 2019 (84 FR 44976). The final rule became effective on October 28, 2019. The revised definition states:

> "Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species."

In accordance with policy and regulation, the destruction or adverse modification determination in this Opinion relies on the following components:

1. The *Status of Critical Habitat*, which describes the range-wide condition of the critical habitat in terms of essential habitat features, primary constituent elements (PCE), or physical and biological features that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat as a whole for the conservation/recovery of the listed species;

2. The *Environmental Baseline*, which refers to the current condition of critical habitat in the action area absent the consequences to critical habitat caused by the proposed action, the factors responsible for that condition, and the conservation value of critical habitat in the action area for the conservation/recovery of the listed species;

3. The *Effects of the Action*, which represents all consequences to critical habitat that are reasonably certain to be caused by the proposed action, including the consequences of other activities that are caused by the proposed action, and how those impacts are likely to influence the conservation value of the affected critical habitat; and

4. *Cumulative Effects*, which represent the consequences to critical habitat of future, non-federal activities that are reasonably certain to occur in the action area and how those impacts are likely to influence the conservation value of the affected critical habitat.

For purposes of making the adverse modification determination, the USFWS evaluates if the consequences of the proposed federal action on critical habitat, taken together with cumulative effects, when added to the current range-wide condition of critical habitat, are likely to impair or preclude the capacity of critical habitat as a whole to serve its intended function for the conservation of the listed species. The key to making this finding is clearly establishing the role of critical habitat in the action area relative to the value of critical habitat as a whole, and how the effects of the proposed action, taken together with cumulative effects, are likely to alter that role.

7 STATUS OF THE SPECIES: Western Snowy Plover and Streaked Horned Lark

For a detailed account of both species, life history, threats, demography, and conservation needs, refer to Appendix B and D of the 2018 Opinion. Since 2018, there has been no appreciable change to the status of these species.

8 STATUS OF CRITICAL HABITAT: Western Snowy Plover and Streaked Horned Lark

For a detailed account of the status of designated critical habitat for the snowy plover and streaked horned lark, refer to Appendix C and D of the 2018 Opinion. Since 2018, there has been no appreciable change to the status of designated critical habitat.

9 ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

The Environmental Baseline remains the same as described in our 2018 Opinion, with the following exceptions. The repairs conducted in 2018 included the placement of approximately 937,000 cy of dredged material along 12,500 linear feet of dune. A flood fight in December 2019 and a second flood fight in January 2020 were conducted to place a quarry spall berm in front of the dune to reduce the rate of dune scarping or erosion. These efforts prevented a breach through the dune for the remainder of the 2019/2020 storm season, but there was not enough material placed during these flood fights to restore the full level of protection.

Extraordinary storms occurring in the 2020/2021 storm season generated additional dune overtopping and overwash causing severe erosion to the western and northern section of the dune. The effects of the recent extraordinary storms have resulted in an even greater threat to life, property, and safety for the Shoalwater Bay Tribe than existed prior to initial nourishment and restoration of the dune. In 2010, Graveyard Spit included approximately 229 acres with a slope of less than five percent. After initial dune nourishment and restoration in 2013, post-construction surveys identified approximately 263 acres with slopes of five percent or less, for a net increase of 34 acres (15 percent). In its current state, the dune includes approximately 375 acres with slopes less than five percent. The 2022 post-construction estimate of slopes less than five percent is 362 acres. The 2022 post-construction estimate represents a net increase of nearly 100 acres from post-construction 2014.

9.1 Current Condition of the Species and Critical Habitat in the Action Area

9.1.1 Western Snowy Plover

Please refer to the 2018 Opinion for a detailed description of the status of the species in the action area and the condition of suitable habitats in the project area.

In Washington, clutch initiation dates range from mid-March to mid-July with fledging occurring between June and mid-September (Pearson et al. 2017, p. 17). With their monitoring surveys for the Washington nesting sites, WDFW generally notes the date of the last known fledging of chicks. Each of the survey reports since 2006 identify few snowy plover chicks fledging on or after August 28, with last known fledging estimated to occur in early to mid-September.

Update on survey and status of snowy plovers prior to and after the 2018 dune repairs: Number of adults, nests, nest survival rates, total number of chicks fledged, and chicks per adult male have all increased since 2011, when the dune was originally built (pages 18-20 of the 2018 Opinion). The following table provides updated information from the WDFW and Willapa annual monitoring reports.

Table 1. Counts of adult snowy plovers at Graveyard Spit, Pacific County, Washington from 2015 through 2021*

Year	2015	2016	2017	2018	2019	2020	2021
Mean counts (range) of adults from 3 surveys	8 (3-11)	21 (18-25)	21 (18-24)	35 (28-42)	31	33 (30-35)	41 (35-44)

*Based on information provided in the 2021 Washington State Snowy Plover Monitoring Report (Table 6, p. 11)

9.1.2 Status of Critical Habitat for the Western Snowy Plover

Though vital to the species, snowy plover habitat on Reservation lands was not designated as critical habitat (due to tribal sovereignty). The 2018 repairs affected an approximately 9- to 10-acre area of low-elevation damaged section at the northern end of the dune on the Reservation. For the three years after the 2018 dune repairs, further erosion created approximately 13 acres of new habitat in the overwash area where sand from the dune was deposited into the wetland on the landward side. Although the construction and repair work that will be done on the dune in 2022 will be on the Reservation (not in designated critical habitat), habitat along the entire spit is contiguous. The tribal lands were exempted from critical habitat designation because the Shoalwater Bay Indian Tribe is maintaining Graveyard/Shoalwater Spit as a protective coastal barrier dune; maintaining habitat benefits snowy plovers and supports the function of critical habitat along the entire spit. Therefore, we refer to all habitat elements and PCEs contributing to the overall function of critical habitat, regardless of the Tribal jurisdiction and Reservation boundary lines.

Prior to the initial dune construction (measured in 2010), 269 acres of suitable habitat were available. After initial dune construction (measured in 2014), 263 acres were available. After the 2018 construction, there were approximately 375 acres of suitable habitat on Graveyard (Shoalwater) spit. Refer to the 2018 Opinion for a detailed description of the status of designated critical habitat in the action area. The status of designated critical habitat remains the same as described in our 2018 Opinion except as follows:

As described in the 2018 Opinion, areas within the Reservation boundary were excluded based on ongoing partnerships with the Tribe, and secretarial orders regarding government-to-government Tribal relations. Although much of the area currently being used by snowy plovers for nesting was excluded, more than half of the project area is within designated critical habitat. The proposed action will result in temporary effects to the PCEs of designated critical habitat, as

a result or consequence of repairs to the damaged portion of the dune, construction and use of the temporary access road, placement of the pipeline, and increased human activities and motorized vehicle use during construction.

The action area includes flat, bare, and sparsely vegetated sandy beaches between vegetated areas and the daily high tides. Additionally, the action area includes large portions of a long, narrow beach that currently supports the deposition of surf- and water-borne organic debris on sandy substrates. The condition of designated critical habitat (primarily areas southeast of the Reservation boundary) has not changed significantly and has not been degraded since 2018. The area between SR 105 and Cannery Slough has continued to erode, but the total amount of dry sand has remained largely the same since 2018 because sand eroding from the dune is filling the tidal wetland. Thus, the environmental baseline and condition of designated critical habitat for the snowy plover remain the same or very similar to that described in our 2018 Opinion.

9.1.3 Streaked Horned Lark

No official surveys have been conducted at Graveyard Spit since the species was listed, and all observations and records of streaked horned lark from the area were reported during snowy plover surveys. The overlap of streaked horned lark habitat and snowy plover habitat has resulted in numerous anecdotal observations of streaked horned larks by biologists conducting surveys for snowy plovers, and breeding has been confirmed annually when fledglings or young of the year were seen during the snowy plover surveys. WDFW recently reduced their survey efforts for these species to once every three years, and no official surveys were conducted in 2014 and 2015 (Keren and Pearson 2016; Stinson 2016).

No streaked horned larks were detected by snowy plover biologists in 2014 (Sundstrom, C., in litt. 2017). In 2015, one adult male streaked horned lark was detected on two different occasions and a young of the year again confirmed nesting (Sundstrom, C., in litt. 2017). In 2016, WDFW and Tribal biologists conducting surveys for snowy plovers located two streaked horned lark nests. Biologists also observed multiple adults, up to three at one time, during snowy plover surveys in 2017, and observations of flightless juveniles further confirm continued breeding and presence of streaked horned larks at this site (Pfleeger-Ritzman, L. and C. Sundstrom in litt. 2017).

In 2021, the USFWS completed a species status assessment for the streaked horned lark. According to this assessment, the number of individuals nesting at Graveyard Spit represents roughly a quarter of the total estimated population on the Pacific Coast in Washington. Although this assessment gave the coastal sites a low rating for resilience, species-specific surveys have only been conducted at Leadbetter and Midway Beach, leaving data for the remaining occupied nesting areas along the Washington coast extremely limited.

9.1.4 Status of Streaked Horned Lark Critical Habitat

Please refer to the 2018 Opinion for a detailed description of the status of designated critical habitat in the action area. Although the PCEs for these two species are somewhat different, designated critical habitat for the streaked horned lark is largely the same as the area designated as critical habitat for the snowy plover.

The physical and biological features within the action area include flat, open, sparsely vegetated areas with low-stature vegetation adjacent to areas with an open landscape context. As described above under condition of designated critical habitat for the snowy plover, there are approximately 365 acres of suitable habitat for these species in the action area. Overall, the condition of designated critical habitat for the streaked horned lark (primarily areas southeast of the Reservation boundary) has not changed significantly and has not been degraded since 2018. The area between SR 105 and Cannery Slough has continued to erode but is not sufficiently vegetated to provide all of the PCEs and is not designated as streaked horned lark critical habitat. Thus, the environmental baseline and condition of designated critical habitat for the streaked horned lark remain the same or very similar to that described in our 2018 Opinion.

Like snowy plovers, streaked horned larks are vulnerable to human disturbance during the nesting season. While dune construction and continued maintenance has provided consistently suitable habitat for these species in the action area, the Tribe and WDFW have noted an increase in human use (e.g., ATVs and pedestrians) over the past 5 years.

9.2 Conservation Role of the Action Area

9.2.1 Western Snowy Plover and Streaked Horned Lark

Please refer to the 2018 Opinion for a detailed description of the conservation role of the action area for both the snowy plover and streaked horned lark.

Graveyard Spit supports a significant number of snowy plovers, and this site is one of the most productive nesting areas in Washington. In 2017, the site supported 28 nests with 40 to 44 chicks fledged, more than Leadbetter Point and Midway Beach combined. This large population and high productivity make the site important to conservation of snowy plovers in Washington State and across the recovery unit. In 2019, the mean breeding population of snowy plovers in Washington was 93 adults (Range: 78-100) with 32 (one-third) of the population counted at Graveyard Spit. The number increased to just over 40 adult snowy plovers in 2021.

The number of streaked horned larks nesting at Graveyard Spit appears to have remained relatively constant at approximately three pairs; unfortunately, no species-specific surveys have ever been conducted at this site. Despite the lack of species-specific survey efforts, the Tribe and WDFW have consistently confirmed nesting and use of the area by streaked horned larks. The primary use areas appear to be focused along the more vegetated areas of the dune, and adults have been observed foraging along the shoreline of the North Cove marsh on the landward side of the dune.

This site is an important nesting area for larks along the Washington Coast and also important for maintaining representation of streaked horned larks across the region. Maintaining representation of streaked horned larks in each of the geographic regions is important to preserve the species' ability to adapt to changing environmental conditions. Coastal sites create a different set of conditions than those created by agricultural practices and prescribed fire at interior sites of Washington and Oregon or dredging along the Columbia River.

9.3 Climate Change

Please refer to the 2018 Opinion for template language on climate change. Various types of changes in climate can have direct or indirect effects on species and critical habitats. These effects may be positive, neutral, or negative, and they may change over time. The nature of the effect depends on the species' life history, the magnitude and speed of climate change, and other relevant considerations, such as the effects of interactions of climate with other variables.

WDFW evaluated vulnerability to climate change to special status species in the statewide action plan (WDFW 2015, chapter 5). They determined coastal species such as snowy plover exhibit high vulnerability due to sea level rise impacts on nesting and/or foraging habitat, as well as climate-driven changes in phenology resulting in timing mismatches with prey availability. They estimated streaked horned lark has a moderate level of vulnerability, although confidence was moderate for both species (WDFW 2015, p. 10).

10 EFFECTS OF THE ACTION

Effects of the action are all consequences to listed species or designated critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

10.1 Effects to Ecological Setting

Please refer to the 2018 Opinion for a detailed description of the effects to habitat over the years since the dune was initially constructed.

Open, flat sandy areas with sparse vegetation are characteristic features of both snowy plover and streaked horned lark habitat. Currently, the Corps estimates the dune area provides approximately 375 acres of suitable habitat for both species. The repair work will remove approximately 13 acres of suitable habitat but is expected to temporarily protect the remaining habitat from erosion and prevent permanent loss of the spit. Approximately 13 acres of new habitat has been created along the backside (landward side) of the dune since 2018 as a result of wave overwash at the western and northern end of the dune.

Despite the temporary impacts to habitat resulting from repeated repairs over the years, the current proposed repairs are expected to slow down erosion and maintain the profile of the spit, thereby protecting the available habitat for both snowy plovers and streaked horned larks over the next 5 years. Based on site conditions and responses seen after the dune was originally built and then repaired again in 2018, we anticipate that repairing and renourishing the eroded western and northern portion of the dune will provide exposed sand, a supply of material for continued accretion of sand in front of and along the length of the dune and will reduce the rate of erosion. Wind will continue to erode the dune, flattening features and creating sparsely vegetated areas of suitable habitat. As was described in the 2018 Opinion, the ocean-facing western and northern portion of the dune will be stabilized with a cobble dynamic revetment to reduce the rate of erosion.

10.1.1 Effects to Western Snowy Plover

For a detailed description of the effects of construction activities and human disturbance to nesting adults, eggs, and chicks, please refer to the 2018 Opinion. The following provides a summary of effects to snowy plovers that are expected to result from the proposed repairs and changed project elements that were not addressed in the previous Opinion.

The following effects to snowy plovers were and are extremely unlikely to occur (discountable) or are not considered measurable or appreciable: 1) exposure to fuel spills or contaminants from equipment, 2) effects to the sand budget for Willapa Bay, or to sources of material that form and maintain habitat, and 3) effects of a changed sand composition on the beach.

10.1.2 Fuel Spills or Contaminants

The use and operation of vehicles and heavy equipment may result in the potential for fuel spills and other releases of contaminants, if not maintained, fueled, or staged properly. Land-based construction vehicles and equipment will be transferred to the project site by barge and will operate in designated corridors and staging areas. The Corps will implement and enforce a *Spill Prevention and Containment Plan* (USACE 2022b) that includes a spill plan and spill response contingencies. Based on the proper implementation of these conservation measures, we believe it is extremely unlikely that snowy plovers would be exposed to chemicals or toxins during an accidental spill. Thus, effects from exposure to contaminants are considered discountable.

10.1.3 Sand Budget and Composition

The borrow site for the current proposed repairs is located slightly east of the site used in 2018 (Figure 2). The Corps reports that the borrow site is accumulating material at a rate of more than one million cubic yards per year, and that borrow site monitoring will be conducted to avoid significant impacts to the tidal flow patterns or channel migration. The volume of sediment that will be dredged from the borrow site for the proposed repairs in 2022 will be less than was removed in 2018, and far less than the estimated amount of material that accumulates in a single year. Thus, effects to the sand budget and composition in the action area, and the possible effects of dredging to sources of material that form and maintain habitat for the snowy plover, are considered insignificant.

Beach nourishment can affect the mobility, structural composition, and color of sand, which may affect the cryptic ability of snowy plovers (USFWS 2007, p. 35). A change in the ability of chicks or adults to blend in (camouflage) could increase the risk of predation to adult and juvenile snowy plovers. However, the borrow site and dredge material that is being used to repair and renourish the dune is the same parent material that is deposited onto Graveyard Spit and the other shallow sand islands at the entrance of Willapa Bay. Therefore, we do not expect measurable changes to the color or composition of the sand.

10.1.4 Adverse and Beneficial Effects

The proposed action includes repair and replenishment of the dune and completing the cobble dynamic revetment. Effects from the proposed action that are reasonably certain to occur include: 1) mortality of individual chicks and eggs, 2) disturbance to individual adults or chicks, 3) increased predation risk due to attraction of corvids and other predators of snowy plovers to the novelty and influx of organic materials from the dredge slurry, and 4) indirect effects to fitness and nesting success and beneficial effects to nesting and foraging habitat associated with temporary unavoidable impacts to habitat. We expect some of these effects to be adverse (e.g., injury or mortality; reduced fitness and nesting success), and some of these effects to be beneficial for snowy plovers (e.g., reduced rate of erosion, reduced permanent net loss of nesting habitat).

10.1.5 Mortality of Individual Chicks and Eggs

For details on construction of the cobble dynamic revetment and proximity of nests in that area, please refer to the 2018 Opinion.

Construction activities in 2022 could again result in mortality of snowy plover eggs, chicks and young plovers that are not able to fly. Nests with eggs or chicks and young chicks that are incapable of flight could be buried by placed sand material, stepped on by pedestrians, or crushed by placed cobble, heavy equipment, dredge pipeline sections, or light vehicles. To prevent such mortality, the Corps will follow the *2022 Snowy Plover and Streaked Horned Lark Protection Plan* (Appendix A), which was developed and updated from previous dune repairs. The plan includes nest monitoring, protective buffers around active nests, staging of construction in phases timed to reduce impacts to nesting snowy plovers and broods that are not flight-capable, approved locations for the pipeline, ATV trails, and equipment and material storage and stockpile areas (i.e., away from active nesting), and use of environmental monitors to inform, plan, and during equipment moves.

Nest monitoring and buffers are the primary conservation measures that will be implemented to avoid and reduce the risk of crushing nests, vulnerable broods, and chicks. The *Protection Plan* states that if a nest is found prior to commencement of construction, the Corps, USFWS, WDFW, and Tribal biologists will determine appropriate no-work/exclusion boundary (buffer) distances between nests and construction activities, on a case-by-case basis. It also states, if a nest is found after construction is underway, an appropriately large buffer will be implemented to protect nests until they hatch. These buffers are designed to prevent equipment and crews from

crushing any nests that were located during surveys, and to reduce the risk of adults abandoning nests due to disturbance. The buffers cannot be applied to individual broods or mobile young but can be large enough to encompass/protect active nesting and foraging areas.

The work scheduled to be conducted and completed during 2022 is west and north of the primary nesting area for both snowy plovers and streaked horned larks (see Figures 8-10 in the 2018 Opinion). This will significantly reduce the risk of mortality and/or nest failure for both snowy plovers and streaked horned larks. Given the tight construction timeline, and that it may take over a week for a nest to be discovered after the first egg is laid, it may not be possible to fully protect all of the nests where activities will be conducted. Based on monitoring data from 2015-2021 and monitoring in 2022 prior to construction, it is reasonable to assume that most of the nests initiated between SR 105 and the tidal channel and at the northern end of the construction site may be lost due to human activity (i.e., exposures resulting in nest failure, predation, injury or mortality of all eggs and chicks), during construction of the temporary haul road and repairs along the western and northern end of the dune. Nest failure due to predation or abandonment is highest during the early part of the nesting season and diminishes later in the season as snowy plovers relocate and renest in safer areas along the spit.

Contractors will start construction of the temporary equipment access road on the north side of Cannery Slough where very few nests have been observed in previous years. In 2019, two nests were found on the north side of Cannery Slough between Graveyard Spit and SR 105 in the area where the new temporary access road will be constructed; and in 2021 and 2022, three nests were found in the same general area (emails from L. Pfleeger, May 6 and 11, 2022, and C. Sundstrom, May 13, 2022). Although snowy plovers appear to be more interested in the overwash area at the northern end of the dune and have been frequently seen in that area over the past three years, none of the nests were successful. The spit is relatively narrow in this location and the amount of suitable habitat is limited. If a nest is established in the road alignment corridor prior to construction of the road, there is a high likelihood of nest failure and/or loss of broods due to high levels of human activity, traffic, and mortality from vehicles. To discourage snowy plovers from nesting in the vicinity of the haul road and active work areas, silt or construction fencing will be installed along the eastern edge of the road alignment and along the portion of the dune where repairs will be conducted.

The area where sand will be pumped onto the beach and used to repair the dune in 2022 is located northwest of the primary snowy plover nesting and foraging area. Although no nests have been observed in the area of the proposed dune repairs and cobble dynamic revetment at the western and northern end of the damaged dune, overwash of the dune has created attractive and suitable nesting habitat over the past few years, as confirmed by several nest initiation attempts in 2019 and 2021, and more frequent sightings of snowy plovers in the area where the temporary haul road will be constructed (emails from L. Pfleeger, May 6, 2022, and C. Sundstrom, May 13, 2022). None of the observed nests initiated on the north side of tidal channel (Cannery Slough) or the landward side of the dune at the far western and northern end were successful in previous years, likely due to higher levels of recreational use at that end of the spit.

Broods will also be susceptible to crushing because they are unable to fly and often crouch inside indentations in the sand or tire tracks. We expect a small number of broods to be present in the action area during construction because work will be conducted during the nesting season. To reduce the risk of chick mortality, the Corps will use environmental monitors, has agreed to lay the dredge pipeline along the landward side of the dune (adjacent to North Cove marsh), and will bury sections of pipeline to allow broods to easily cross over. We expect that these conservation measures, coupled with the fact that most of the construction work will occur west and north of the main nesting area, will greatly reduce the potential for mortalities.

Although broods are highly mobile and could occur anywhere on the spit, they have been consistently concentrated in foraging areas at the wide beach accretion area along Willapa Bay to the south and east of the planned construction site. Based on surveys conducted between 2015-2021 and previous actions, we do not expect very many snowy plovers to nest close to the work area. However, despite all efforts to keep the broods isolated from construction activities, we expect a small number of nests may fail or be depredated, escape detection by monitors, or broods may move around the deterrent barriers and be accidently crushed by equipment, separated from the adults, or injured or killed during placement or moving of dredge materials. We do not expect any adult snowy plovers or flight-capable fledglings to be injured or killed because they are able to avoid hazards.

Based on monitoring data from 2015-2021, it is reasonable to assume that approximately three snowy plover nests and a very small number of young chicks, will be lost (i.e., exposures resulting in nest failure; injury or mortality of eggs and chicks from accidental crushing or predation), associated with project-related activities between June and mid-September 2022.

10.1.6 Disturbance to Adults and Chicks

As described in the 2018 Opinion, and published studies and reports for both the snowy plover and the streaked horned lark, it has been well-documented that human activities and disturbance during the nesting season contributes to nest failure. Disturbance from nest surveys and monitoring has been evaluated in the prior consultations for dune construction and repairs, section 10 permits process (i.e., section 10(a)(1)(A) Scientific Take and Recovery Permits), and Section 6 Recovery Funding and agreements, including for the snowy plover and streaked horned lark.

We expect visual and sound disturbance from construction activities to result in a significant impairment of normal adult and brood behavior during the nesting season. Noise and visual disturbance from construction work, and physical barriers (such as the pipeline or deterrent fencing), are reasonably certain to affect the normal behaviors of all adult snowy plovers that are raising broods and foraging along the shorelines of Willapa Bay or North Cove marsh.

The average clutch size is three chicks, and eggs are incubated for approximately 27 days. The precocial chicks are led from the nesting territory shortly after hatching and quickly become mobile and elusive. The tending male does not feed the chicks but leads the broods to foraging areas along the surf or shoreline. Due to their limited mobility, very young/recently hatched chicks are more vulnerable and tend to huddle in depressions in the sand and remain motionless

at the approach of danger. Once stronger, the chicks can run surprisingly fast and keep up with the adults. Chicks sometimes become separated from the adults if they are in danger or disturbed by humans or pets; without the protection of the adult(s), a lost chick is unlikely to survive. It takes approximately a month for young snowy plovers to become fully flight capable.

Broods are highly mobile and could occur anywhere where suitable habitat is found on the spit. Based on observations, we expect most brood activities will be concentrated in foraging areas near the high-use nesting area east of the Reservation boundary and construction. Most disturbance to adults and young broods will affect non-fledged chicks between June and mid-September. In prior years, up to 12 broods were present in the primary nesting area and preferred foraging areas during that time of year.

Nest buffers and environmental monitors will prevent or reduce the risk of disturbance and adverse effects to most broods. We expect any snowy plovers attempting to nest, prevented from nesting by deterrent fencing, and broods that venture close to work areas to experience disturbance resulting in measurable adverse effects, either because construction near them could not be avoided, adults were excluded from areas by deterrent fencing deliberately installed to prevent them from nesting in high-risk areas, broods entered active construction zones, or chicks got separated from adults. These adults and chicks will experience a significant disruption to their normal behavior patterns, resulting in increased exposure to predation or fitness consequences associated with energetic costs (fleeing to avoid people or vehicles, interrupted foraging, interrupted ability to shelter and warm up under adults).

10.1.7 Predator Attraction

The hydraulic cutter head used to suction material from the borrow site also delivers organic material onto the beach. Broken clams, small crabs, fish, and other organic material in the sand-water slurry attracts gulls (*Larus* spp.). Gulls were observed feeding in an area where dredged materials were being dewatered during previous dune repairs. Gulls have only rarely been documented preying on adult snowy plovers (at sites in California) but are known to eat snowy plover eggs and chicks. The sand will be pumped along the landward side to the far western and northern end of the dune.

This area of Graveyard Spit has not been used much by snowy plovers for nesting in the past, but overwash at the western and northern end has created new areas of open sand and is attracting snowy plovers to the area. In 2019, two nest scrapes were documented in the area where sand will be pumped. Besides gulls, northern harriers (*Circus cyaneus*) can also be a threat to nesting, as they depredated half the nests on Graveyard Spit in 2018 (Stinson 2022, p. 3). While predation is the primary cause of nest failure, weather and human disturbance also contribute to nest failures.

The levels of human activity and construction noise in the area where dredge slurry will be pumped onto the beach and bulldozed onto the dune is high, making it unlikely that snowy plovers would attempt to nest near the active work area. Deterrent fencing will also be installed

around the construction site. Any attraction that the temporary food source in the dredge slurry provides may reduce the risk of gull predation on eggs or chicks by focusing some avian predators further away from the main snowy plover nesting area.

However, corvids, and ravens (*Corvus corax*) in particular, are incredibly intelligent and opportunistic birds and are known to use other species, including humans, to key in on forage resources, making them the primary predators of concern. Recent observations of raven tracks and loss of eggs in snowy plover nests (suspected depredation) that were being monitored is providing strong indications that this individual raven may be following footprints to find the nests (L. Pfleeger-Ritzman, pers. com. June 21, 2022). The west side of the channel generally receives more human activity and the recent extreme tides that same week also attracted a lot of people surf fishing in area. Although, the best available information is currently insufficient to determine whether the magnitude of these effects is reasonably certain to significantly disrupt or impair snowy plover behaviors, there are some indications that one project-related predation event resulted in the loss (mortality) of eggs in up to three snowy plover nests. Thus, we anticipate adverse effects to snowy plovers from predation due to human activities.

10.1.8 Beneficial Effects to Habitat

We expect repairs to the dune will temporarily decrease the amount of available habitat in the short-term but are expected to reduce the rate of erosion and permanent net loss of habitat in the long-term, as discussed in the 2018 Opinion and previously summarized in this Opinion (*Current Condition of the Species and Critical Habitat in the Action Area*). Because habitat for snowy plovers is not limiting at Graveyard Spit, we do not expect additional, measurable adverse effects to snowy plovers as a result of temporary habitat loss (i.e., from construction in 2022).

In Figure 4, the areas outlined in blue show portions of the spit that were above the tide line in 2010 and areas in black show the amount of area currently above the tide line. All lighter beige (less than 1 percent slope) and tan/brown color tones (1 to 3 percent slopes) areas are primary nesting areas for snowy plovers. Construction of the dune has created a significant amount of beach accretion in front of and at the tail end (eastern end and edge) of the dune over the past decade and is expected to continue into the future.

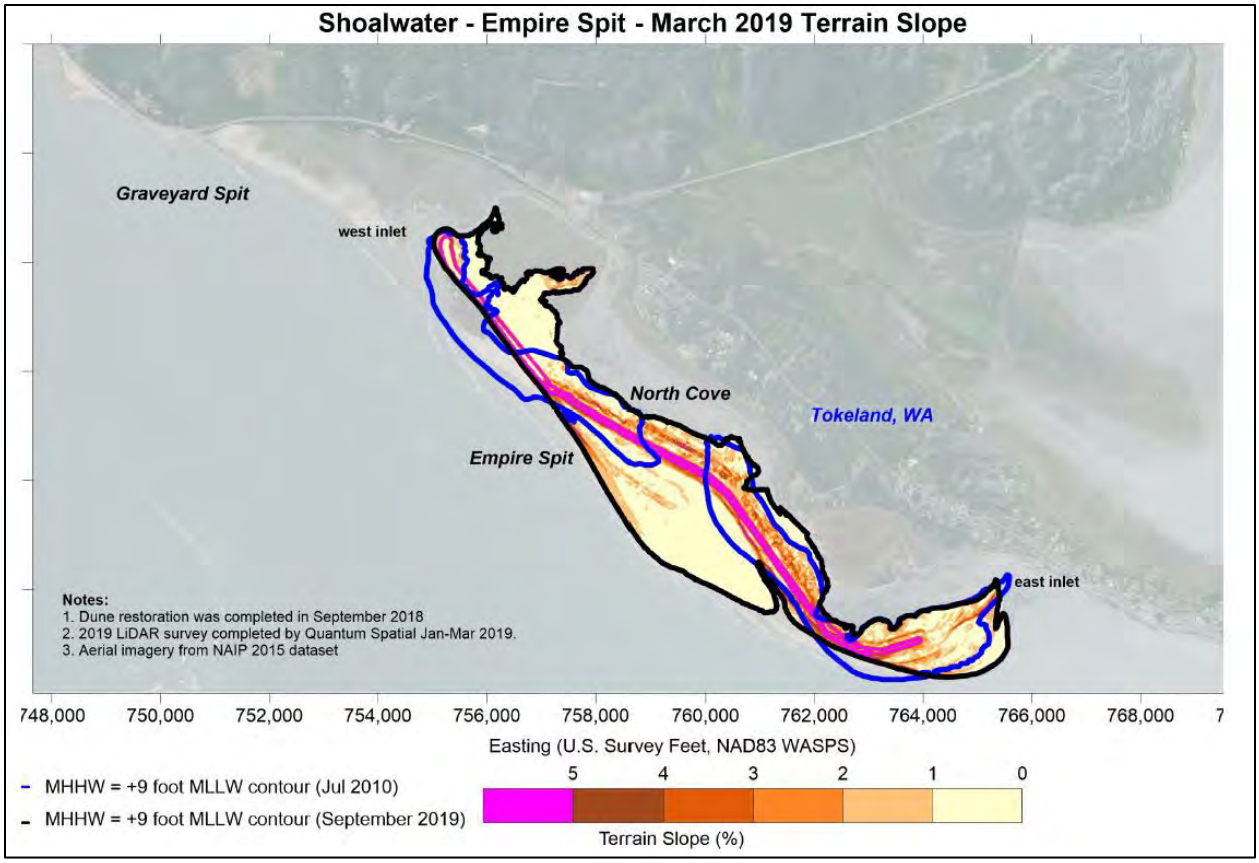

Figure 4. 2010 to 2021 preconstruction condition, showing distribution of slopes less than (brown/beige color tones) or over five percent (pink)
(USACE 2022a; Figure 7)

Replenishing sand on the dune and completing the dynamic cobble revetment (included in the 2018 Opinion but not completed), will not only temporarily abate the threat of habitat erosion, but will also reduce the threat of invasion by European (*Ammophila arenaria*) and American (*A. breviligulata*) beachgrasses. The dune is designed to protect the Reservation and surrounding communities from erosion by waves and storm surges. In doing so, it will also provide erosion protection to existing flat open areas landward of the dune, and temporarily abate this threat until the dune has completely eroded away. Covering and killing sparse areas of beachgrass on the dune will temporarily stop or slow the invasion of the open sandy areas used by both snowy plovers and streaked horned larks. We expect the creation of new ephemeral habitat for several years following dune replenishment and installation of the dynamic cobble revetment, reducing threats to breeding and foraging habitat from coastal erosion. The repair will allow individual snowy plovers to continue foraging and reproducing on the spit for several more years until repairs are needed again in the future.

In summary, we expect exposures and effects to snowy plovers from construction, that are reasonably certain to occur and include: 1) mortality of individual adults, chicks, or eggs from crushing by equipment, crews, or placed material, nest abandonment, or predation; 2) nest failure or fitness consequences as a result of disturbance to individual adults, from construction work

and intentional actions taken to prevent or reduce the risk of mortality (e.g. installation of exclusion deterrents or intervention by biologists); and 3) beneficial effects to fitness and nesting success associated with the improved protection and maintenance of suitable snowy plover nesting and foraging habitats.

10.2 Effects to Designated Critical Habitat for the Western Snowy Plover

With the exception of the new temporary access road, effects to the PCEs resulting from the proposed dune repairs, cobble dynamic revetment, and installation and removal of the pipeline are the same as those described in the 2018 Opinion. The proposed 2022 repairs include additional cobble material for the dynamic revetment. However, the entire section of the dune, where repairs and installation of the cobble dynamic revetment will be conducted in 2022, is located on the Reservation and was excluded from the critical habitat designation.

Significant effects to the PCEs of designated critical habitat will occur in the area between SR 105 and the Reservation boundary, where the new temporary access road will be constructed (and removed), and along the pipeline corridor at the eastern end or edge of the project area (see Figure 2). The PCEs that are present and will be affected include:

1. Sparsely vegetated areas that are below heavily vegetated areas or developed areas and above the daily high tides,

2. Shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low-water flow and annual high tide or high-water flow, subject to inundation but not constantly under water,

3. Surf- or water-deposited organic debris located on open substrates, and

4. Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators.

There are currently approximately 35 acres of designated critical habitat in the area between SR 105 and the western edge of the Reservation boundary. A 30-foot-wide, temporary haul road will be constructed across this portion of Graveyard Spit for transportation of equipment and materials to the repair site(s). The total length of the haul road is approximately 4,700 feet, of which approximately 1,900 linear feet is within designated critical habitat.

The conversion of sparsely vegetated open sand areas to a gravel roadbed will result in temporary adverse effects to PCE 1, and loss of function across 1.3 acres for the duration of construction but will not cause or result in significant or measurable effects to PCEs 2 or 3. The only project element that will be conducted close to the shoreline (North Cove marsh and Willapa Bay/ocean side of the dune) is the dredged material pipeline. The pipeline will extend from the barge to the work area, crossing perpendicular to the surf zone and wrack line on the ocean side at the eastern end of the dune nearest the borrow site, and will follow the shoreline (PCE 2) on the landward side of the dune to the work area). Temporary impacts to shoreline

habitat will be minor and will not alter the function or result in adverse effects to PCEs 2 and 3. Both the temporary access road and pipeline will be removed after construction and prior to the start of the 2023 nesting season.

The conversion of sparsely vegetated open sand areas to a gravel roadbed will result in temporary adverse effects to PCE 1 and temporary conversion or loss of 1.3 acres of suitable habitat for the duration of construction. Use of the haul road and increased human activities in the construction area on the dune will also result in temporary adverse effects to PCE 4 (disturbance). Normal background levels of human use and disturbance (PCE 4) includes pedestrians (e.g., people and pets) and ATVs. Use is greater during the summer months, but generally low compared to other areas on the Washington coast due to the lack of parking and access. Operation of the new temporary haul road will result in a significant increase in vehicle traffic in an area that currently only receives very limited public use. Heavy equipment will deliver materials, and crews will drive construction equipment into and out of the work areas on a daily basis (including at night), during the 5 months of construction and snowy plover nesting season. Equipment and vehicles will also travel along the entire length of the pipeline corridor as pipe is being delivered to the laydown area and welded together. People and equipment will be working in the construction areas 12 to 24 hours a day during the entire nesting season.

Activities along the new temporary access road, and the installation, operation, and removal of the pipeline, will result in a temporary but significant increase in human disturbance along the entire length of the spit, on and off (i.e., intermittently) for the duration of construction. Due to the remote location, we do not anticipate an appreciable increase in the numbers of people, pets, or vehicles using the spit after construction has been completed. Graveyard Spit is not a park or other recognized public use area. While local residents, Tribal members, and some visitors will continue to use the spit, its mixed ownership status and limited access control the numbers of visitors.

In summary, we expect a short-term, temporary loss of function across approximately 1.3 acres of designated critical habitat (PCE 1) and increased human disturbance and equipment and vehicle traffic (PCE 4) during the 2022 nesting season. The effects to the function of designated critical habitat may last for several months after construction has been completed, as habitat stabilizes again in the affected areas. The proposed action will not result in significant impacts to or preclude the PCEs of designated critical habitat in the Shoalwater/Graveyard critical habitat subunit from properly functioning over the long-term. Long-term effects to the PCEs resulting from the dune repairs and protection will benefit and improve the ability of designated snowy plover critical habitat to function and serve its conservation role.

10.3 Effects to Streaked Horned Lark

As described in the 2018 Opinion, construction of the dune repairs has the potential to affect streaked horned larks both directly, through effects to individuals, and indirectly, through impacts to nesting and foraging habitat. Each of these exposure pathways and anticipated effects were described in detail in the 2018 Opinion and will not be repeated again here except where activities or elements of the proposed action have changed.

The following effects to streaked horned larks are extremely unlikely to occur, are not considered measurable, or the best available information is currently insufficient to determine whether the magnitude of these effects is reasonably certain to significantly disrupt or impair normal behaviors or result in injury or mortality: 1) increased predation risk due to attraction of corvids and other predators of streaked horned larks to work areas or organic material in the dredge slurry, 2) exposure to fuel spills or contaminants from equipment, and 3) effects to the sand budget for Willapa Bay, or to sources of material that form and maintain habitat, from dredging of sediments as source material for the sand dune. These potential stressors, exposures, and effects are similar and potentially less likely for the streaked horned lark because all of the observations of this species have been further away from the work areas than snowy plovers. While human-related predator attraction may have contributed to the recent loss of exposed snowy plover nests in unvegetated areas west of Cannery Slough, it is extremely unlikely that the stressors and exposures to predators are reasonably certain to result in mortality or injury of streaked horned lark nests or fledglings in grassy areas along the dune east of the work area.

The following adverse exposures and effects to streaked horned larks, resulting from proposed repairs to the western and northern section of the dune (inclusive of the cobble dynamic revetment), are reasonably certain to occur: 1) mortality of individual fledglings and eggs from crushing by equipment, crews, or placed material, 2) disturbance to individual adults or chicks (adults incubating eggs and chicks in the nest, or feeding dependent young), and 3) indirect effects to fitness and nesting success associated with unavoidable impacts to nesting and foraging habitat. We expect some of these effects to be adverse (e.g., injury or mortality, reduced fitness and nesting success) and others to be beneficial for streaked horned larks (e.g., reduced rate of erosion, reduced permanent net loss of nesting habitat).

Information provided to the USFWS by the Tribe and WDFW indicate that there are approximately two or three pairs of streaked horned larks nesting at Graveyard Spit, though the exact number of pairs is unknown. The high use nesting area for streaked horned larks appears to be focused along the crest and shoreline areas on both the Willapa Bay and landward (North Cove saltmarsh) side of the dune, along the central and eastern portion of the high use area used by snowy plovers. All of the streaked horned lark nests and juveniles/fledglings detected during snowy plover surveys were located in the portion of the dune and beach in front of the Tradewinds by the Bay Motel and extending approximately 0.7 mile southeast of the Reservation boundary.

10.3.1 Mortality of Individual Chicks, Eggs, or Fledglings

In our 2018 Opinion, we analyzed the effects of construction activities and the potential to result in or cause mortality of streaked horned larks, by crushing eggs, chicks, or flightless fledglings with equipment and/or vehicles, by burying nests under dredge slurry or material bulldozed onto the dune, related to the laying of dredge pipeline segments, and/or related to construction crews working in the area. These same activities, when implemented during the 2022 repairs, will pose threats to eggs, chicks, and flightless fledglings, but are not expected to result in the direct mortality of adult streaked horned larks or juveniles that are fully capable of flight. Implementing the *2022 Snowy Plover and Streaked Horned Lark Protection Plan* (Appendix A)

will provide some protection for streaked horned larks but will not be as effective for this species because the level of surveys will only provide information on the general area of active territories, not actual nest locations.

No focused streaked horned lark surveys were conducted during the 2018 dune repairs. The Corps proposes to implement abundance survey protocols during the 2022 nesting season. These survey protocols are focused only on visual and vocal detections of adults and are not designed to locate nests or fledglings. However, even this level of survey effort is expected to miss some adults. Detection probabilities derived from distance sampling of streaked horned larks along the Columbia River, were approximately 64 percent for males. Probabilities of detecting males using repeated visits and site survey effort in the Puget lowlands, Washington coast, and Columbia River were 46 to 53 percent (Keren and Pearson 2015 in Pearson et al. 2016).

Streaked horned larks build nests at the base of vegetation and prefer areas higher up on the beach where grasses are a bit denser than in areas used by snowy plovers. Since nests and juveniles are harder to find and not the focus of the abundance surveys, they are even less likely to be detected than adults. Undetected nests and young fledglings are susceptible to crushing and disturbance because they will not have the same protection provided by the snowy plover buffers. Unprotected eggs and chicks are also more susceptible to predation when adults are away from the nest. Flightless young that have just recently left the nest rely on camouflage and hide, remaining motionless until almost touched. This puts them at risk of accidently being stepped on or run over by vehicles or heavy equipment.

All of the reported observations of streaked horned larks have been southeast of the Reservation, further away from the area where work will be conducted in 2022. Between 2015 and 2017, at least two to three pairs of adults were consistently detected and juveniles/young of the year were observed each nesting season. Snowy plover biologists observed six adult streaked horned larks in 2017. Although no nests were located, several juvenile streaked horned larks were seen later in the nesting season and a dead adult lark was found on the ATV and equipment access trail in late July 2017 (Pfleeger-Ritzman, L., in litt. 2017). In 2018, a nest was located during snowy plover surveys, while construction/repairs were underway indicating that both streaked horned larks and snowy plovers continued to nest in the area, even at times when there was much additional human activity. No streaked horned lark surveys were conducted during 2019 and 2020 because the Tribe closed access to the portion of the beach and dune on the Reservation. WDFW did not conduct any streaked horned lark surveys in 2021 because it was not an official survey year for the species (surveys are conducted once every 3 years for this species in Washington).

Because anecdotal observations of streaked horned larks during snowy plover surveys are insufficient to accurately determine the total number of pairs nesting at this site and the survey protocols implemented this year are not aimed at locating nests, it is possible that no streaked horned lark nests will be adequately protected during the 2022 repairs. Based on the available information and detections, we expect most of the streaked horned lark nests to be in the eastern portion of the construction area and, therefore, at lower risk of being crushed by equipment/vehicles, crews, or the placement of sand or cobble material. Although no major repairs on the dune will be conducted east of the Reservation boundary during 2022, the pipeline

will be laid through the area where streaked horned larks have been observed in previous years and will run along nearly the entire length of the North Cove shoreline from the borrow site to the work area at the western end of the dune. The pipe will be inspected every day and crews will drive the entire length of the pipeline equipment route to the worksite twice a day during shift changes.

Considering the low numbers of streaked horned lark pairs that use Graveyard Spit, we estimate that no more than one streaked horned lark nest will be within the work area or pipeline route and vulnerable to physical injury or mortality. Furthermore, there is the potential that a flightless fledgling that has left the nest may be accidently crushed. We expect the loss of eggs, chicks, and juvenile streaked horned larks to occur in the general vicinity of the snowy plover use area along the center and eastern portion of the dune and pipeline route.

10.3.2 Disturbance to Streaked Horned Larks from Construction Activities

For a detailed account of studies and the effects of disturbance on streaked horned larks, please refer to the 2018 Opinion. We expect that repairs may and likely will result in temporary increased visual and auditory disturbance that adversely affects streaked horned larks by significantly altering their normal behaviors (i.e., to reduce the perceived risk from the stimuli). Operation of heavy equipment, vehicles, and crew activities in close proximity to active territories will typically cause streaked horned larks to avoid the area, which may limit foraging and nesting opportunities. Adults may also alter their activity budgets, to spend more time in vigilance behaviors at the expense of activities such as foraging, establishing territories, or feeding young. Streaked horned larks may also fail to establish or maintain territories as a result of increased disturbance. Disturbance during the nesting season can contribute to or cause nest abandonment and may also increase predation risk because eggs and chicks are more vulnerable when the adult has been flushed and kept away from the nest (Stinson 2005, p. 59). Streaked horned larks may abandon a nest if the disturbance causes them to avoid the nest for more than an hour (Pearson and Altman 2005, pp. 9-10). In addition, decreased nest attendance by adults may contribute to nest failure.

As discussed in the 2018 Opinion, disturbance effects from construction are expected to significantly alter normal breeding behaviors during the nesting season to the extent that this creates a likelihood of injury for individual streaked horned larks. As is the case for snowy plovers, suitable streaked horned lark habitat is ephemeral and constantly changing at Graveyard Spit. Based on an estimated population of approximately two to three pairs, we expect that no more than one streaked horned lark nest will fail as a result of reduced provisioning by adults, increased energy budgets, and/or nest abandonment. Foraging may also be significantly affected due to construction-related disturbance. The primary activities that will be conducted in areas used by streaked horned larks is placement and welding sections of pipeline, use of a generator at the intermediate pumping station, and daily traffic along the pipeline corridor associated with inspections and crew changes. Stationary activities that could potentially be conducted in or near active streaked horned lark territories would be welding of pipe sections and bulldozing and shaping sand onto the dune along the eastern end of the project site and Reservation.

10.3.3 Effects to Fitness and Nesting Success via Impacts to Habitat

Repairing the damaged western and northern portion of the dune is expected to slow the rate of erosion and restore upland dune habitat lost during extreme storm events in 2019-2021. Changes in habitat conditions at Graveyard Spit were evaluated in the 2018 Opinion and are not repeated here. Most of the repairs on the dune will be conducted in areas where streaked horned larks have not been observed or documented during snowy plover surveys. Frequent overwash and damage during the recent storms has removed most, if not all, of the vegetation at the western end of the dune, making that area unsuitable for nesting. Streaked horned larks are reliant upon grasses and other low-statured vegetation to build their nests. Unlike snowy plovers, adult streaked horned larks feed their young and fledglings hide in vegetation to avoid detection. Because streaked horned lark nests are always hidden in vegetation, it is extremely hard to locate them.

Where repairs will be made at the western and northern portions of the dune, substrate characteristics will be altered due to the placement of cobble-sized material. The proposed repairs will change substrate characteristics and conditions on a portion of the dune but will not appreciably reduce the amount of available nesting habitat for streaked horned larks along the central and eastern half of the dune. Once sufficient vegetation becomes established, some of the repaired portions of the dune will also provide suitable habitat in the future. Repairing the dune is expected to create, maintain, and enhance suitable nesting habitat for streaked horned larks by delaying the rate of erosion and habitat loss. It is likely and foreseeable that without dune repairs and nourishment, the amount of suitable streaked horned lark habitat on Graveyard Spit would be significantly reduced by erosion. Dune repairs resulting in the creation and maintenance of suitable nesting habitat is expected to benefit streaked horned larks over the long-term.

It has been well documented that streaked horned larks have high site fidelity and will return to the same breeding areas and territories each year, as long as the site remains suitable. Because the species evolved and is adapted to ephemeral habitats in dynamic systems, streaked horned larks take full advantage of changing habitat conditions at breeding sites. As described in the 2018 Opinion, if preferred previously occupied nesting habitat is lost without replacement nearby, there is or would be a measurable effect to the displaced individuals. However, we do not expect this scenario to result from the proposed dune repairs because sufficient nesting habitat will remain along the length of the spit to support the number of pairs currently nesting at this site. Based on the high site fidelity exhibited by streaked horned larks, consistent patterns of occupancy prior to and after dune construction and multiple repairs, observations of young and nests, and the close proximity of suitable occupied habitat further to the north and south, it is extremely unlikely that streaked horned larks currently nesting at Graveyard Spit would abandon the site following the proposed repairs.

We expect that effects to suitable nesting habitat for streaked horned larks may be more pronounced along the pipeline/equipment route at the eastern end of the dune and spit, where there is more beachgrass and more suitable habitat. We expect any pair affected by changes in habitat conditions across their territory to merely shift their territories in response to changes in habitat conditions. As more sand accretes and more vegetation grows, we expect more suitable habitat to be available each year, until erosion again accelerates. If the proposed repairs are not

made, the net loss of nesting and foraging habitat will continue. The proposed action will also provide a temporary benefit by reducing the amount and extent of dense beachgrass thickets. At coastal sites, dense thickets of invasive perennial beachgrass can significantly reduce or eliminate the more sparsely vegetated preferred by streaked horned larks for nesting.

In summary, we expect exposures and effects to streaked horned larks from construction, that are reasonably certain to occur and include: 1) mortality of chicks or eggs in nests and fledglings that have left the nest but are not yet flight-capable from crushing by equipment, crews, or placed material; 2) nest failure as a result disturbance to individual adults tending nests or young; and 3) effects to fitness and nesting success associated with unavoidable impacts to nesting and foraging habitat. We expect one nest and one young fledgling will be lost during construction as a result of crushing, or as a result of disturbance to adults, nest failure (abandonment or predation), and/or reduced survival and fitness. We expect creation of new ephemeral habitat for three to seven years following dune repairs and nourishment, and abatement of threats to breeding and foraging habitat which will allow individual streaked horned larks to continue foraging and reproducing on the spit. The overall net effect of the proposed action is considered largely beneficial for streaked horned larks because it will reduce the rate of erosion and maintain suitable habitat.

10.4 Effects to Designated Critical Habitat for the Streaked Horned Lark

Please refer to the 2018 Opinion for a detailed analysis of effects to designated critical habitat for the streaked horned lark. The PCEs are areas having a minimum of 16 percent bare ground with sparse, low-stature vegetation composed primarily of grasses and forbs less than 13 in (33 cm) in height; found in:

1. Large (300-acre (120-ha)), flat (0-5 percent slope) areas within a landscape context that provides visual access to open areas such as open water or fields, or

2. Areas smaller than described in above, but that provide visual access to open areas such as open water or fields.

The proposed repairs are expected to result in temporary adverse effects to the quality and quantity of critical habitat (PCEs 1 and 2) at the western and northern end of Graveyard Spit. In its current state, there are currently approximately 375 acres of suitable habitat with slopes less than five percent on the spit (see Figure 4). As described in the effects to critical habitat for snowy plovers, most of the suitable habitat for streaked horned larks is on the Reservation and along the eastern portion of the spit. While most of the area affected by the project is not in designated critical habitat, the entire dune provides the open landscape context and PCEs of suitable habitat for streaked horned larks. There are currently less than 50 acres of designated critical habitat between SR 105 and the Reservation boundary. While most of that area is too sparsely vegetated and does not meet the definition of suitable habitat, the central and eastern end of the project along the pipeline corridor is suitable and designated critical habitat.

The dune repairs are expected to have temporary adverse effects on the quality and the amount of PCE 1 on Graveyard Spit. As described previously (Effects to Critical Habitat for the Western Snowy Plover), there are currently approximately 35 acres of designated streaked horned lark

critical habitat in the area between SR 105 and the western edge of the Reservation boundary. Construction of the temporary access road will affect approximately 1.3 acres that currently do not meet the definition of suitable streaked horned lark habitat (i.e., because this area lacks vegetation). The repaired and nourished dune will be approximately 25 ft high (relative to MLLW) and approximately 13 to 15 feet above grade. This height is expected to decrease over time as the dune erodes. Restoring the elevation of the dune is not expected to measurably affect or alter the PCEs of critical habitat (e.g., block sight lines or result in loss of habitat) because both the ocean and landward sides of the dune are surrounded by vast areas of open water and flat marsh which provide unobstructed views and an open landscape context.

The dredge pipeline will extend from the barge to the damaged portion of the dune, running along the landward side of the dune adjacent to the North Cove marsh. The pipeline is not tall enough to present a visual barrier or block the open landscape context. But, laying down sections of pipeline, burying sections of pipeline, and clearing the equipment access road along the pipeline will require the use of heavy equipment, removal and disturbance of vegetation, and excavation. Excavating a trench for the pipeline will result in temporary impacts to vegetation in suitable and occupied streaked horned lark habitat. The proposed repairs to the dune, laying of the pipeline, and construction and removal of equipment access routes along the pipeline corridor will result in short-term impacts to vegetation, but will not result in long-term adverse effects to the PCEs, or reduce the function of critical habitat for streaked horned larks in the action area.

The proposed dune repairs and nourishment (including the cobble dynamic revetment) will slow erosion of the spit and protect and maintain the proper function of the PCEs of designated streaked horned lark critical habitat. Each newly created open flat area will take some time to develop the sparse vegetation needed by nesting and foraging streaked horned larks. The growth of vegetation will cause a one- to three-year delay in the development of the PCEs for streaked horned lark. The proposed action will reestablish and maintain the proper function of the PCEs for a finite period of time, until erosion of the spit again accelerates and/or until vegetation becomes too tall and/or too dense to be suitable for streaked horned larks.

11 CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The action area is a rural portion of Pacific County, and the predominantly rural and small community characteristics are likely to be maintained into the foreseeable future. Future activities that would not require a federal permit or funding or otherwise have a federal nexus may include placement of rock or other materials above the low tide line, sand mining conducted on private property by cranberry growers, or other upland actions to prevent and/or repair flooding, overtopping, or other damage to existing structures. These actions may cause loss of habitat for the snowy plover and streaked horned lark landward of Graveyard Spit. Other likely actions include expansion of tourist facilities, which may cause increases in the amount of

pedestrian, equestrian, and ATV use of Graveyard Spit. And the Tribe may undertake various activities not subject to consultation under the ESA. These activities may include hazard mitigation.

12 INTEGRATION AND SYNTHESIS OF EFFECTS

The Integration and Synthesis section is the final step in assessing the risk posed to species and designated critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action and cumulative effects to the environmental baseline and, in light of the status of the species and designated critical habitat, formulate the USFWS's opinion as to whether the action is likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of designated critical habitat.

This section is a summary of the corresponding section from the 2018 Opinion.

12.1 Western Snowy Plover and Designated Critical Habitat for the Western Snowy Plover

The proposed action is to replenish a dune that was created in 2012 and 2013 to protect the Reservation and surrounding communities from erosion. The action includes adding sand to the existing dune to bring the height back up to 25 feet above MLLW, stabilizing the western and northern portion of the dune with a cobble dynamic revetment (proposed, but not implemented in 2018), and installing sand fencing to further slow erosion. Materials for the replenished dune will be dredged from the vicinity of the same offshore dredge borrow site used in 2018. Despite repairs and nourishment, the dune is expected to slowly erode, and sand from the dune is expected to accrete in the southeastern portion of Graveyard Spit.

The proposed action will result in short-term adverse effects and long-term beneficial effects to snowy plovers. The action will adversely affect individual snowy plovers in the short-term by causing mortality of eggs and juveniles, and by disturbing adults tending nests or broods. Disturbance during construction will cause reduced reproductive success. Adult snowy plovers may spend more time being vigilant or avoiding construction activities and less time foraging and tending nests or broods. Adult snowy plovers may also avoid otherwise suitable habitat, flush from nests, or abandon nests in response to disturbance. We expect three nests and one brood will be unsuccessful due to predation, accidental crushing, nest abandonment, chicks becoming separated from their parents, or reduced fitness.

The estimated number of breeding adult snowy plovers in Washington State and Recovery Unit 1 has been increasing over the last few years (Pearson et al. 2017, pp. 15-16). The estimated number of breeding adults in Washington has increased from 22-24 in 2013, to 43-57 in 2016. At Graveyard Spit, the numbers increased from 18-24 breeding adults in 2017, to 35-44 in 2021. In 2021, the total number of adults counted at all sites in Washington was 100 (approximately 50 pairs); 26 nests were found at sites being monitored, of which 19 were at Graveyard Spit. In Recovery Unit 1 (Oregon and Washington combined), the estimated number of breeding adults has gone up from 234 (231-236) in 2013, to 622 (614-632) in 2016 (Pearson et al. 2017, p. 15). The loss of a few early nests in an area where none have been successful in the past is a small

proportion of these numbers and, therefore, will not appreciably reduce the numbers of snowy plovers at the scale of the site (Graveyard Spit), the State, or the Recovery Unit beyond the year of construction.

Although we expect a small number of nests and one brood will be lost due to predation or construction and some of the adults tending nests and broods will experience significant disruption of breeding behavior (sublethal fitness consequences resulting in injury or mortality), this small number is not significantly higher than losses from natural causes (predation and weather-related causes) and will be limited to one breeding season (2022). Based on continued productivity at this site, we do not expect the project-related losses to affect the overall productivity of Graveyard Spit or Recovery Unit 1. The loss of three nests constitutes less than one quarter of the nests at the site in 2017, and a very small proportion of the nests in the Recovery Unit. Therefore, we do not expect the failure of these nests to appreciably reduce reproduction at the site, or within the Recovery Unit. The minor reduction of reproduction within one year at this one site will not appreciably reduce the likelihood of survival or recovery of the species rangewide. The site will continue to support reproduction of snowy plovers and, therefore, will continue to contribute to the distribution of the species across the State, the Recovery Unit, and rangewide. Over the long-term, the effects of the proposed action will be beneficial to snowy plovers at Graveyard Spit. Furthermore, we expect that the proposed action will maintain a population that contributes significantly to the survival and future recovery of snowy plovers across the State and Recovery Unit.

Similarly, effects to designated critical habitat will be adverse (PCEs 1 and 4), but also temporary and limited is physical extent and duration. In the long-term, the proposed action will have both adverse and beneficial effects on the PCEs. Beneficial effects include decreasing or slowing the loss of PCEs 1 and 2 due to erosion. At the scale of the critical habitat unit, taken as a whole, beneficial effects to the function of the PCEs at Graveyard Spit and will contribute to better function of habitat rangewide, because Graveyard Spit contains a large portion of the designated critical habitat in Washington and Recovery Unit 1.

In summary, we expect that the direct and indirect effects of the proposed action, considered together with the effects of any interrelated or interdependent actions, and the cumulative effects of future State, Tribal, local, and private actions, will not cause a measurable decline in snowy plover abundance (numbers) or productivity (reproduction), and will not affect distribution of the species, at the scale of Recovery Unit 1 or the entire range. In the long-term, we expect the action will contribute to recovery of the species by maintaining numbers and reproduction at Graveyard Spit, and across the range of the species. The proposed action will cause minor short-term reduction of habitat (PCE 1) and increased disturbance (adverse effects to PCE 4) during the year of construction, but will not adversely affect the current function or conservation role of critical habitat at the scale of the critical habitat unit or rangewide.

12.2 Streaked Horned Lark and Designated Critical Habitat for the Streaked Horned Lark

The proposed action will cause short-term and long-term adverse, as well as beneficial, effects to streaked horned larks. The action will adversely affect streaked horned larks in the short-term by causing loss of nests (eggs and chicks) and mortality of juveniles. We expect mortality of up to one nest and one fledgling, due to crushing of the nest or young fledglings (by equipment, vehicles, crews, or the placement of materials), or as a result of nest abandonment.

Over the long-term, we expect that effects to streaked horned lark habitat along Graveyard Spit will be primarily beneficial. Beneficial effects include decreasing the rate of erosion and associated loss of habitat, and creation of new habitat that will result in a net gain of habitat for foraging and nesting streaked horned larks.

Graveyard Spit is one of only six streaked horned lark sites on the outer coast of Washington and occupies a unique ecological setting (Stinson 2016, p. 5). Because streaked horned larks move around in response to changing availability of ephemeral habitat, maintaining a redundancy of occupied sites in each recovery unit is extremely important.

We expect the loss of no more than one nest because most of the repair work will be conducted away from areas where streaked horned larks have been observed in the past. We also expect that one pair of adult streaked horned larks may experience significant changes of behavior (i.e., as a result of disturbance), and these changes of behavior may result in loss of reproduction during the year of construction.

The loss of one nest and fledgling will adversely affect one breeding pair during the year of construction but will not appreciably reduce the numbers or reproduction of streaked horned larks at the scale of the overall population along the Washington Coast or the recovery unit. The number of streaked horned lark pairs on the Washington Coast ranged from 10 to 21 from 2011 to 2016 (Stinson 2016, p. 5) and has remained relatively stable at the coastal sites since the species was listed (USFWS 2021, Table 2, p. 14). There were an estimated 147 streaked horned lark pairs in Washington in 2015 (Stinson 2016, p. 4). A reduction or loss of productivity for one pair during a single construction season is a relatively small portion of the productivity for the species at the scale of the recovery unit and rangewide. Based on the continued occupancy at Graveyard Spit, despite erosion and recurring repairs to the dune, we conclude that streaked horned larks will continue to use Graveyard Spit for foraging and nesting. Therefore, the short-term adverse effects to numbers and productivity are not likely to eliminate the use of Graveyard Spit by streaked horned larks, and the site should continue to serve its role in maintaining the distribution of the species.

We expect significant streaked horned lark habitat gains from three to seven years after the repairs to the dune. We expect that these gains will beneficially affect reproduction as a result of expanded suitable nesting habitat and an increase to the number of nesting territories Graveyard Spit can support. Furthermore, the proposed action will reduce the rate of erosion and loss of habitat, thus providing long-term benefits to streaked horned lark numbers and reproduction at Graveyard Spit.

In the short-term, the proposed action will result in the temporary loss of approximately 1.3 acres of designated critical habitat at Graveyard Spit by removing low-statured vegetation along the pipeline route and temporary access or haul road. In the long-term, the action will have both adverse and beneficial effects on the PCEs of designated critical habitat. Beneficial effects include increasing the amount of suitable habitat in areas designated as critical habitat and reducing the threat of erosion over the long-term.

Graveyard Spit is one of the larger of 13 critical habitat subunits and represents approximately 16.5 percent of the Washington Coast and Columbia River Critical Habitat Unit. Therefore, the adverse and beneficial effects to designated critical habitat on Graveyard Spit will influence a large portion of the entire critical habitat unit. Because we expect the overall effects to designated critical habitat to be largely beneficial, we expect the proposed action will maintain and increase the amount and quality of critical habitat within the Washington Coast and Columbia River Critical Habitat Unit.

In summary, we expect that the direct and indirect effects of the proposed action, considered together with the effects of any interrelated or interdependent actions, and the cumulative effects of future State, Tribal, local, and private actions, will not cause a measurable decline in streaked horned lark abundance (numbers) or productivity (reproduction), and will not affect distribution of the species, at the scale of Recovery Unit 1 or the entire range. In the long-term, we expect the action will contribute to the recovery of the species by maintaining numbers and reproduction at Graveyard Spit, and across the range of the species. The proposed action will cause minor short-term reduction of habitat (PCE 1) and increased disturbance during the year of construction but will not adversely affect the current function or conservation role of critical habitat at the scale of the critical habitat unit or rangewide.

Over the long term, the project will maintain and eventually improve the ability of critical habitat at Shoalwater/Graveyard Spit to achieve its conservation function. These beneficial impacts to the critical habitat subunit are expected to benefit the Shoalwater/Graveyard Spit Subunit (Subunit 3-C), of the Washington Coast and Columbia River Islands Streaked Horned Lark Critical Habitat Unit.

13 CONCLUSION

After reviewing the current status of the western snowy plover, the environmental baseline for the action area, the effects of the proposed action and the foreseeable cumulative effects, it is the USFWS' Opinion that the proposed action, as proposed, is not likely to jeopardize the continued existence of the western snowy plover and is not likely to destroy or adversely modify designated western snowy plover critical habitat.

After reviewing the current status of the streaked horned lark, the environmental baseline for the action area, the effects of the proposed action and the foreseeable cumulative effects, it is the USFWS' Opinion that the proposed action, as proposed, is not likely to jeopardize the continued existence of the streaked horned lark and is not likely to destroy or adversely modify designated streaked horned lark critical habitat.

14 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. *Harm* is defined by the USFWS as an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). *Harass* is defined by the USFWS as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Corps 1) fails to assume and implement the terms and conditions or 2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the USFWS as specified in this Incidental Take Statement [50 CFR 402.14(i)(3)].

15 AMOUNT OR EXTENT OF TAKE

15.1 Western Snowy Plover

Incidental take of snowy plovers in the form of ***harm*** is anticipated during repair of the sand dune, as described in this and the previous Opinion:

1. A small, but unquantifiable number of snowy plover nests (eggs and/or nestlings) and broods (fledged young chicks unable to fly) may be killed, due to human-induced predation, nest abandonment, crushing by equipment, crews, or sand during construction at the northwestern end of the project area from June 1 through mid-September 2022. We estimate this number to be no more than three nests and fewer chicks.

2. All breeding snowy plovers tending nests (eggs and nestlings) or broods will experience a significant impairment of normal behaviors due to disturbance, decreased provisioning of broods, reduced reproductive success, or fitness consequences. The highest potential for these effects is at the northwestern end of the project area between June 1 through

mid-September (when all young are fully flight-capable) during the 2022 construction. Brood barriers and nest buffers will aid in reducing the potential for mortality. Most of these effects will be non-lethal and are not expected to result in the loss of nests or broods along the central and southern part of the dune.

15.2 Streaked Horned Lark

Incidental take of streaked horned larks in the form of ***harm*** is anticipated as a result of construction of the sand dune as described below:

1. A small, but unquantifiable number of streaked horned lark nest (eggs/nestlings) or young fledglings will be killed due to crushing by equipment, vehicles, crews, or sand, nest abandonment, or predation during construction in 2022. We estimate the lethal loss to be no more than one nest and one young fledgling. The risk of mortality of streaked horned lark nests or fledglings is greatest along the pipeline corridor on the landward side of the dune.

2. All adult streaked horned larks and nestlings in suitable habitat close to areas where activities are being conducted will experience a significant impairment of normal behavior (nonlethal injury) resulting in reduced reproductive success of adults, care, or provisioning of young due to disruption of parental behaviors resulting from surveys or avoidance of construction activities between June and September 2022.

The USFWS will not refer the incidental take of any migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-711), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

16 EFFECT OF THE TAKE

In this reinitiation of the 2018 Opinion, the USFWS determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

17 REASONABLE AND PRUDENT MEASURES

The measures described below are non-discretionary and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued by the Corps, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps: 1) fails to assume and implement the terms and conditions or 2) fails to require its staff and contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the USFWS as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The USFWS believes the following reasonable and prudent measure(s) (RPM) are necessary and appropriate to minimize impacts of incidental take of snowy plover and streaked horned lark:

17.1 Western Snowy Plover and Streaked Horned Lark

1. Monitor and report incidental take caused by construction activities.

2. Monitor and report incidental take caused by temporary loss or alteration of habitat.

3. Monitor and report effectiveness and potential impacts of the barrier/deterrent fencing and buffers.

18 TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

18.1 Western Snowy Plover and Streaked Horned Lark

The following Term and Condition is required for the implementation of RPM 1:

> The Corps shall submit a post-construction report describing implementation and effectiveness of the snowy plover and streaked horned lark protection plan and barriers/deterrent fencing. The report shall include, at a minimum, 1) any observations of snowy plovers and streaked horned larks, including nests and mortalities, during construction, and 2) any contingencies employed during construction per the snowy plover and streaked horned lark protection plan. The Corps shall notify the USFWS of completion of construction within 10 days of the last date of construction activities. The report shall be submitted to USFWS no later than 90 days after completion of construction.

The following Terms and Conditions are required for the implementation of RPM 2:

1. The Corps shall submit a post-construction report describing implementation of construction. The report shall include, at a minimum, 1) representative before and after photographs, and 2) as-built figures. The Corps shall notify USFWS of completion of construction within 10 days of the last date of construction activities. The report shall be submitted to USFWS no later than 120 days after completion of construction.

2. The Corps shall monitor the amount of suitable nesting habitat the year after construction. The monitoring results will be used in part to verify the Corps' model predictions of a net increase in suitable habitat. Monitoring will include, at a minimum, the following indices of potential habitat:
    a. The area of sandy areas with less than five percent slope

b. Approximate amount (acres or percent) of vegetation cover and open sand in areas where construction work was conducted in 2022.

3. All materials for submittal to the USFWS shall be sent to the Washington Fish and Wildlife Office (Attn: Assistant Field Supervisors for the Coastal, Lowland Aquatic, and Marine and Prairies and Islands Ecosystem Zones).

The USFWS believes that no more than the extent of take described above will occur as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Corps must immediately provide an explanation of the causes of the taking and review with the USFWS the need for possible modification of the reasonable and prudent measures.

The USFWS is to be notified within three working days upon locating a dead, injured, or sick endangered or threatened species specimen. Initial notification must be made to the nearest U.S. Fish and Wildlife Service Law Enforcement Office. Notification must include the date, time, precise location of the injured animal or carcass, and any other pertinent information. Care should be taken in handling sick or injured specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In conjunction with the care of sick or injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. Contact the U.S. Fish and Wildlife Service Law Enforcement Office at (425) 883-8122, or the USFWS' Washington Fish and Wildlife Office at (360) 753-9440.

19 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Coordinate with WDFW and USFWS prior to conducting surveys for both snowy plovers and streaked horned larks in 2022. Specifically, do not attempt to conduct streaked horned lark surveys at the same time as conducting surveys or nest monitoring for snowy plover. Avoid crushing streaked horned lark nests during surveys by surveying around the edge of streaked horned lark habitat.

2. We recommend that the Corps continue to work with the USFWS, WDFW, the Tribe, and other landowners to improve habitat conditions and monitor the population of snowy plovers and streaked horned larks to determine how repeated repairs may be affecting populations of these species at Graveyard/Shoalwater Spit.

3. Monitor vegetation density on the flat areas of the dune. The flat areas provide potential habitat for both snowy plovers and streaked horned larks but would cease to be suitable if vegetation becomes too dense or tall. Both western snowy plovers and streaked horned larks prefer sparsely vegetated areas with a minimum of 16 percent (and up to 30 percent) bare open ground. Vegetation monitoring would provide a means to check if the project is decreasing or increasing habitat for snowy plovers or streaked horned larks.

In order for the USFWS to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the USFWS requests notification of the implementation of any conservation recommendations.

20 REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request for formal consultation. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

21 LITERATURE CITED

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APPENDIX A
SHOALWATER DUNE BARRIER RESTORATION: WESTERN SNOWY PLOVER AND STREAKED HORNED LARK MONITORING PROTOCOL

Shoalwater Dune Barrier Restoration – Western Snowy Plover and Streaked Horned Lark Monitoring Protocol

Shoalwater Bay Tribe Reservation
Pacific County, Washington

June 2022

Prepared for:
U.S. Army Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, Nebraska 68102-4901

US Army Corps of Engineers®
Omaha District
In Support of
Seattle District

Document No.: PC-019.02
Contract No.: W9128F-20-D-0006
Task Order No.: W9128F-22-F0098

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Shoalwater Dune Barrier Restoration – Western Snowy Plover and Streaked Horned Lark Monitoring Protocol

Shoalwater Bay Tribe Reservation
Pacific County, Washington

June 2022

Prepared by:

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Challenging today.
Reinventing tomorrow.

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Contract No.: W9128F-20-D-0006
Task Order No.: W9128F-22-F0098

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Contents

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SECTION 1: INTRODUCTION

This Shoalwater Bay Dune Barrier Restoration Project Biological Monitoring Plan has been prepared in conjunction with ECC Environmental, LLC (ECC) under the Rapid Disaster Infrastructure Multiple Award Task Order (MATOC) Contract Number (No.): W9128F-20-D-0006, Task Order (TO) W9128F-20-F-0098, for the United States (U.S.) Army Corps of Engineers (USACE) Omaha and Seattle Districts.

The USACE solicited construction services to accomplish time-critical repairs and reconstruction of a critically compromised dune barrier, located within the Shoalwater Bay Tribe Reservation, in Pacific County, Washington. The Dune Barrier Restoration project is intended to prevent the further erosion of the existing dune, which protects the Shoalwater Bay Tribe and prevents flooding that would impact infrastructure in the area.

The area is one of the largest estuarine systems in Washington State and is host to certain species that are protected under the Endangered Species Act, most notably for this project are the Western Snowy Plover and the Streaked Horned Lark. The dune must be reconstructed before the severe winter storms cause further damage to the dune and surrounding area by overtopping and over washing leading to flooding and further ecological damage.

Project work will be performed in accordance with this plan, as well as other pre-construction planning documents, as required by the project Scope of Work (SOW) dated 27 April 2022, with revisions dated 3 May and 4 May 2022.

The purpose of this monitoring plan is to locate, identify, and monitor Western Snowy Plover (*Charadrius alexandrinus nivosus*) and Streaked Horned Lark (*Eremophila alpestris strigata*) nests and surrounding areas to avoid construction-related disturbances to nesting birds and broods during dune restoration work at Tokeland, Washington. These activities will occur during the Western Snowy Plover and Streaked Horned Lark nesting seasons—April 1 through early September—and during the fall when fledglings, juveniles, or adults of either species may be present.

This document outlines three types of surveys:

- Pre-construction surveys
- Complete nest inventories
- Daily monitoring

These monitoring and survey protocols are adapted from the Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus) (Western Snowy Plover Recovery Plan) (USFWS 2007) and Survey Protocols and Strategies for Assessing Streaked Horned Lark Site Occupancy Status, Population Abundance, and Trends (Pearson et al. 2016).

Monitoring activities will be coordinated with the U.S. Army Corps of Engineers (USACE), Washington Department of Fish and Wildlife (WDFW), U.S. Fish and Wildlife Service (USFWS), and Shoalwater Bay Tribe biologists.

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SECTION 3: TRAINING

The Western Snowy Plover Recovery Plan (USFWS 2007) recommends 4 hours of classroom training for those who have not conducted surveys for these species. Training will be led by biologists having experience with these species. Topics will include the following:

- Ecology/behavior of both species
- Identification of adults, young, and eggs
- Similar species that may be on site or that have similar vocalizations
- Vocalizations of Western Snowy Plovers and Streaked Horned Larks
- Survey protocol
- Appropriate steps to take when adults, young, or nests are located

Field experience will be gained by accompanying a trained surveyor during field surveys.

SECTION 4: QUALIFICATIONS OF SURVEYORS

Survey teams will be comprised of two people in accordance with Attachment G of the SOW, Team members will have the appropriate education requirements, minimum work experience, bird and/or wildlife survey experience. The team lead will be a biologist with species-specific experience.

After a week of surveying, it is anticipated that the lead biologist with species-specific experience will perform an assessment of the accompanying surveyor on their familiarity with Western Snowy Plover and Streaked Horned Lark identification and protocol. If successful, they can be cleared to lead a team in another survey period.

SECTION 5: SURVEY OVERVIEW

5.1 Survey Types

There will be three types of bird surveys:

- **Pre-construction Surveys** – Performed once in an area prior to construction disturbance, to determine that a specific area is free of Western Snowy Plover or Streaked Horned Lark nests.
- **Complete Nest Inventories** – Performed twice a week to monitor all Western Snowy Plover nests and Streaked Horned Lark sighting locations in the entire project corridor.
- **Daily Surveys/Monitoring** – Performed whenever construction activities are taking place that have potential to disturb birds.

5.2 Timing/Weather

The Western Snowy Plover Recovery Plan (USFWS 2007) recommends that pre-construction surveys and complete nest inventories should be conducted in periods of good weather and high visibility. Rainy, foggy, and excessively windy (>15 miles per hour) days are not suitable for these surveys. Days with a light drizzle or winds below 10 miles per hour are acceptable. High winds and rain are frequent in the survey area and these conditions might be difficult to achieve. Scan distances and scan points may be adjusted when wind and rain restrictions cannot be met. Adjustments would be coordinated with USACE, USFWS, and Tribal biologists daily as required to ensure surveys are conducted and construction can proceed. Daily monitoring will occur anytime construction work is taking place during daylight hours, regardless of conditions.

Timing restrictions on pre-construction surveys and complete nest inventories are as follows:

- Surveys can be started within a half hour of sunrise.
- Streaked Horned Lark surveys should be completed by 1100 as they are likely to be more easily detected during morning activity.
- Western Snowy Plover surveys can take place anytime during the day; however, on sunny days, surveys will be conducted in early morning when visibility is best. Visibility is good at any hour on overcast days.

SECTION 6: SURVEY METHODS

6.1 Pre-construction Surveys

The survey teams will survey the site prior to construction for nests or nesting activity. The surveys will be conducted the week of May 31, 2022 and coordinated with USACE, WDFW, USFWS, and Tribal biologists. USACE will be notified at least 14 days prior to initiation of surveys, or as soon as scheduled if less than 14 days. The surveys will be on foot and accompanied by the USACE and/or Tribal biologist.

6.1.1 Western Snowy Plover

There will be one careful pass through open sandy areas on the site each survey day. The general survey area is shown on Figure 1, but the survey team will need to locate specific habitat areas to be surveyed. The surveys will focus in the area of the haul road/causeway and laydown lot, the slough crossing, and the road segment to the dune repair area from the slough. The survey area then follows the pipeline route and includes the area from the top of the dune to the east in suitable habitat, including the booster pump location. The occupied nesting habitat to the northeast of the pipeline on the end of the spit will also be surveyed. Surveys are not needed in the deflation plain on the seaward side of the dune.

The surveyors will walk in unison along the entire length of the survey area. Surveyors should alternate between walking and scanning for Western Snowy Plovers. While walking slowly, the surveyors should scan 20 meters (approximately 65 feet [ft]) to the front and sides. The pace of the survey should be slow enough that the surveyors can watch the ground and make frequent short stops to look ahead for Western Snowy Plovers. There is a risk of stepping on a nest or chick, so care should be taken to avoid this. The survey scan distances and scanning points may be adjusted to account for inclement weather as discussed in the timing/weather section. Adjustments will be made in coordination with the USACE, USFWS, and Tribal biologists.

Every 50 meters (approximately 165 ft), the surveyors should stop and scan at least 100 meters (approximately 328 ft) ahead using binoculars. Visually mark the location of birds observed at a distance in case they hide as the surveyor approaches. Separation distance between the surveyors will be dependent on the width of the habitat area being surveyed. A zig-zag pattern may be appropriate in wider habitat areas to ensure complete survey coverage. The survey scan distances, and scanning points may be adjusted to account for inclement weather as discussed in the timing/weather section. Adjustments will be made in coordination with the USACE, USFWS, and Tribal biologists.

If Western Snowy Plovers or their nests are located, the observations will be recorded (see Data section below).

6.1.2 Streaked Horned Lark

Streaked Horned Larks have been recorded as incidental observations in the survey area. Lark surveys will focus on bare or sparsely vegetated areas dominated by short-statured grasses and forbs. Lark surveys will be performed separately from Western Snowy Plover surveys.

Strip transects will be used to survey for Streaked Horned Larks. Transects will be up to 150 meters wide (75 meters [250 feet] to each side of the centerline). Transects may be smaller depending on the width of the suitable habitat being surveyed. The surveyors will walk in unison along the entire length of the transect. Surveyors will walk a slow pace scanning the transect and stopping periodically to listen for singing or calling birds. Nests can be recorded if located, but priority will be on detecting adults and fledglings.

If Streaked Horned Larks are located, the observations will be recorded (see Data section below).

6.1.3 Data

The surveyors will use handheld electronic devices to record data. A backup field book and map will be used as needed in case of electronic device failure. Data collected for the Western Snowy Plover or Streaked Horned Lark will include the following:

- Date
- Time
- Species
- Number of individuals
- Sex if known
- Note plover band colors.
- Take nest photographs – 1 or 2 per nest (include direction of photographs, be consistent among all nest photographs that are taken).
- Life stage (adult, juvenile, fledgling). It may be possible to roughly age Western Snowy Plover chicks (see Appendix A).
- Location of the observation (Global Positioning System [GPS] coordinate). The cardinal direction and estimated distance from the observation point will be noted.

If a nest is observed, the number of eggs and the location (GPS) of the nest will be recorded during the first visit. Subsequent checks should be made from afar to avoid flushing adults from the nest.

6.2 Complete Nest Inventories

Two times a week, the bird survey crew will survey all potential nesting habitat in the project area for Western Snowy Plover sightings or nests. The crew will perform a separate transect sweep for Streaked Horned Lark sightings and nests.

The survey routes, methods, and data collection will follow the pre-construction protocols, except that scan distances and scanning points based on weather adjustments will not be made.

Survey timing will be at the discretion of the on-site team. For instance, these inventories may be best scheduled during good weather or during downtime when construction monitoring is not required.

Wherever possible, after the initial visit to GPS the nest location, surveyors should observe known nests from afar with binoculars or spotting scope, to avoid frequent disturbance or potential abandoning of the nest.

6.3 Daily Surveys/Monitoring During Construction

Monitoring will be conducted any time active construction is occurring on site that has potential to disturb Western Snowy Plover or Streaked Horned Lark. The environmental monitor shall conduct a visual survey

of the active construction site each day concurrent with heavy equipment movement to determine presence and behavior of Western Snowy Plovers and Streaked Horned Larks. Particular attention should be given around non-fledged nestlings, at exclusion fencing, and the pipeline until chicks have fledged.

The objectives of daily monitoring are to observe changes in bird behavior related to construction activities, identify new nesting behavior that may indicate initiation of a new nest, check up on broods to ensure they are not being disturbed, identify new bird locations, and other situations that require monitoring.

A monitor should also accompany any construction equipment being moved to guide equipment operators away from nests and broods. The existing nesting area on the end of the spit near the pipeline and borrow area will be monitored every day during the daily monitoring days.

The number of monitoring staff and survey teams may be adjusted as needed to ensure complete coverage of all construction activities.

6.3.1 Data

The surveyors will record data and location of any new nests per the Data section in the Pre-construction Methods section.

The surveyors will record incidental observations in daily log dataforms. These forms will list the following basic information:

- Location and type of daily construction activity
- Observations of Western Snowy Plovers or Streaked Horned Larks
- Disturbances encountered during construction
- Contingencies employed during construction

SECTION 7: CONSERVATION MEASURES BASED ON MONITORING

The following project conservation measures apply:

- If birds appear stressed or agitated near an active construction site, activity will be temporarily halted until the birds have moved from the area.
- No heavy equipment movement will occur until any and all Western Snowy Plovers and Streaked Horned Larks have left the active construction area or its vicinity.
- If a Western Snowy Plover or Streaked Horned Lark nest is found after construction is underway, a minimum buffer of 1,000 feet distance from the nest shall be immediately implemented until USACE, USFWS, WDFW, and the Tribe determine an appropriate buffer. Buffers will be marked with appropriate markers agreed upon by the group.
- Buffer widths may need to be increased if birds appear agitated or disturbed by construction, or decreased to accommodate required construction, in consultation with USACE, WDFW, USFWS, and Tribal biologists.

The following contingency plans were provided by the USFWS in their 2018 Biological Opinion for dune restoration work at Shoalwater (USFWS 2018):

1. Scenario 1: A nest is discovered in the northern section prior to commencement of construction. The course of action (e.g., begin construction, delay construction, transport viable eggs to the Oregon Coast Aquarium) will be coordinated by the USACE, USFWS, WDFW and the Tribe.

2. Scenario 2: Nonfledged chicks are present on one portion of the site when construction is scheduled to commence. The use of heavy equipment to place the pipeline or fence barrier is per missible if an environmental monitor is there to monitor for plover and lark presence.

   If plovers or larks approach the vicinity of the construction area, the environmental monitor will ensure that the activities will not result in injury to plovers and larks. This may require a brief suspension of work or other avoidance measures until the risk of injury has been avoided.

3. Scenario 3: If nests are established in numerous locations on the site and there is no way to exclude chicks from the construction area, all work will be delayed. Coordination with USACE. USFWS, WDFW, and the Tribe will determine when and where work can commence.

SECTION 8: REPORTING

Weekly memos and one final report will be submitted to the USACE. The reports will include the following:

- Observations of Western Snowy Plovers or Streaked Horned Larks, including nest locations (GPS points identified on a map)
- Disturbances encountered during construction
- Lark and Western Snowy Plover response to specific construction activity
- Construction activities that do not seem to disturb Streaked Horned Larks and Western Snowy Plovers
- Mortality resulting from construction
- Contingencies employed during construction

SECTION 9: DEAD, INJURED OR SICK LISTED SPECIES ACTION PLAN

The USFWS is to be notified within three working days upon locating a dead, injured or sick endangered or threatened species specimen. Initial notification must be made to the nearest U.S. Fish and Wildlife Service Law Enforcement Office. Notification must include the date, time, precise location of the injured animal or carcass, and any other pertinent information. Care should be taken in handling sick or injured specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In conjunction with the care of sick or injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. Contact the U.S. Fish and Wildlife Service Law Enforcement Office at (425) 883-8122, or the USFWS' Washington Fish and Wildlife Office at (360) 753-9440

SECTION 10: REFERENCES

Pearson, S.F., M. Linders, I. Keren, H. Anderson, R. Moore, G. Slater, and A. Kreager. 2016. *Survey Protocols and Strategies for Assessing Streaked Horned Lark Site Occupancy Status, Population Abundance, and Trends*. Wildlife Science Division. Washington Department of Fish and Wildlife. Olympia, Washington.

U.S. Fish and Wildlife Service (USFWS). 2007. *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus*); Appendix J-1 *Western Snowy Plover Breeding Window Survey Protocol.* Final Draft. Sacramento, California.

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Appendix A
Snowy Plover Aging Guide

[Note: Birds pictured are Gulf Coast subspecies that are paler overall than Western Snowy Plover.]

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Flight-capable Juvenile

28+days old*

- Birds are capable of short, erratic flights; may take short flights with parents
- Primary feathers fully developed and tail fully emerged
- Almost the same size as adult, with shorter tail, skinnier neck, and smaller head
- Do not have breeding plumage (e.g., dark collar)
- Older juveniles can be confused with worn females

Snowy Plover Breeding Information

Expect variability due to average temperatures, local disturbance, resource availability, and between years.

Average Clutch Size	3
Range Clutch Size	1-3
Days of Incubation	24-32
Days from hatch to Fledge	28-42

Nesting: February-August
Chicks: March-August
Flight-capable Juveniles: April-August

Report your observations:

Eggs and Nestlings→Shorebird Nest Form

Downy Chicks and older→Roving Chick Form

For more information:

The Florida Shorebird Alliance
FLShorebirdAlliance.org

The Florida Shorebird Database:
FLShorebirdDatabase.org

Snowy Plover Aging Guide

Adult female & male snowy plovers in breeding plumage

The snowy plover is a state-threatened shorebird that nests on Florida's Gulf Coast beaches from February-August. Florida Shorebird Alliance (FSA) partners monitor nests to assess population health, which includes assessing nesting outcomes. This guide aides monitoring partners with identifying age categories used in the Breeding Bird Protocol for Florida's Shorebirds and Seabirds.

www.flshorebirdalliance.org

Nestling **0-1 day old***

- Birds are still in nest cup
- Fuzzy body; possibly wet
- Spotted head & upper wing
- Egg tooth present
- Rare to find

Downy Chick **1-14 days old***

- About 1/3 the size of adult
- Fuzzy body
- Skinny neck and "all legs" appearance
- As pinfeathers grow, spotted back and wing pattern starts to diminish

Feathered Chick **14-27 days old***

- Short feathers on head and short tail give scruffy appearance
- Neck can still appear skinny and bare
- Feather pattern gives scaly appearance
- Primary feathers are not fully developed and not flight capable
- Noticeably smaller than adult

***The approximate age ranges in the guide are for chick development under ideal conditions; expect variability within each season and between years.**

APPENDIX B
STATUS OF THE SPECIES: WESTERN SNOWY PLOVER

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Appendix B
Status of the Species: Western Snowy Plover

Legal Status

The plover was federally listed as threatened on March 5, 1993, in California, Oregon, and Washington (Fish and Wildlife Service 1993). Primary threats to the species included loss and modification of habitat resulting from European beachgrass encroachment and human development, extensive recreational activity in plover habitat, and predation exacerbated by human disturbance. A draft recovery plan for the plover was published on August 4, 2001. Recent court cases have directed that the Service complete or conduct specific plover-related actions, including: revising the draft recovery plan (which is now final); conducting a 5-year review of the listing; completing a 12-month finding on two petitions to delist the plover; and updating critical habitat designations (Fish and Wildlife Service 2012). In August 2002, we received a petition from the Surf Ocean Beach Commission of Lompoc to delist the Pacific Coast western snowy plover population. The City of Morro Bay submitted substantially the same petition dated May 30, 2003, which was treated as a comment on the first petition received. On March 22, 2004, we published a notice that the petition presented substantial information to indicate that delisting may be warranted (Fish and Wildlife Service 2004a). Based on the best available scientific and commercial information, the Service determined that the petitioned action was not warranted on April 21, 2006 (Fish and Wildlife Service 2006). We published its final recovery plan on September 24, 2007 (Fish and Wildlife Service 2007).

Species Description

Taxonomy

The snowy plover (*Charadrius nivosus*) is a small shorebird of the family Charadriidae, which occurs in temperate and tropical sections of the Americas, Europe, Asia, and Africa. The snowy plover was formerly considered a subspecies of the Kentish plover (*C. alexandrinus*). In 2010, the American Ornithologist's Union (AOU), the recognized body on ornithological naming and scientific nomenclature, adopted a proposal (AOU 2010a) to recognize the snowy plover as a species separate from the Kentish plover (Chesser et al. 2011). The proposal cited genetic, morphological, and behavioral differences between *C. alexandrinus* and *C. nivosus* (Funk et al. 2007; Küpper et al. 2009). The Kentish plover now consists of Palaearctic populations (zoogeographical region consisting of Europe, Africa north of the Sahara, and most of Asia north of the Himalayas), and the snowy plover consists of the populations in Central and North America. There are three recognized subspecies, ranging in three distinct areas of the Americas: *C. nivosus nivosus* (all of the continental United States and portions of Mexico), *C. nivosus tenuirostris* (Cuba, Puerto Rico, the Caribbean and the Yucatan Peninsula) and *C. nivosus occidentalis* (South America).

The Pacific coast population of the western snowy plover is defined as those individuals nesting adjacent to tidal waters within 50 miles of the Pacific Ocean, including all nesting birds on the mainland coast, peninsulas, offshore islands, adjacent bays, estuaries and coastal rivers of the United States and Baja California, Mexico (Fish and Wildlife Service 1993).

Physical Description

The plover is a small shorebird with pale brown to gray upperparts, gray to black legs and bill, and dark patches on the forehead, behind the eyes, and on either side of the upper breast. In breeding plumage, males usually have black markings on the head and breast; in females one or more of these marking are dark brown. In non-breeding plumage the sexes cannot be distinguished because the breeding markings disappear. The plover weighs from 34 to 58 grams (1.2 to 2 ounces) and ranges in length from 15 to 17 centimeters (5.9 to 6.6 inches) (Page et al. 1995, pp. 1-4). For a complete discussion of the ecology and life history of this population, please see the final rule for listing the Pacific Coast western snowy plover as a threatened species, which was published in the Federal Register on March 5, 1993 (Fish and Wildlife 1993), the Service's August 13, 2007 Final Recovery Plan (Fish and Wildlife Service 2007).

Current and Historical Range

The federally threatened Pacific Coast population of the western snowy plover breeds from Southern Washington, to Bahia Magdalena, Baja California, Mexico (Palacios et al. 1994, p. 491), and winters mainly in coastal areas from southern Washington to Central America (Page et al. 1995, p. 1). Historically, five areas supported nesting plovers in Washington (Washington Department of Fish and Wildlife 1995, p. 14). In recent years they have nested at three primary sites (Stinson, 2016, p. 1). In Oregon, the majority of plovers breed at locations between Baker/Sutton Beach in Florence, and the New River/Floras Lake area. In California, the majority of plovers are present from San Francisco Bay southward.

Life History

Reproductive Biology

Along the west coast of the United States, the breeding period of the snowy plover extends from early March through late September (Page et al. 2009). Generally, the breeding season may be 2 to 4 weeks earlier in southern California than in Oregon and Washington (Page et al. 2009). Fledging (reaching flying age) of late-season broods may extend into the third week of September throughout the breeding range. Nests are a depression in the sand, usually with a clutch of three eggs. The eggs' small size and cryptic markings help to camouflage them on the sand. Incubation begins at the laying of the final egg and continues for 26 to 31 days, when hatching begins (Warriner et al. 1986). Snowy plover chicks are precocial, leaving the nest within hours after hatching to search for food. Adult plovers do not feed their chicks but lead them to suitable feeding areas. Fledging requires 28 to 33 days. During this time, broods and the attending male (sometimes female) may move away from the nesting territory; movement of up to 9.7 km (6 miles) from the natal area has been reported (Castelein *et al.* 2001, p.10).

Population Structure

Warriner et al. (1986, pp. 29-36) reported on the plovers' serially polygamous mating system. They suggested that males have slightly higher survival rates than females, estimated the male to female sex ratio to be 1.40:1 (p. 32), and discussed the possibility that female serial polyandry

may be a response to this skewed sex ratio (p. 34). Local hatching success rates (percentage of nests in a study area hatching at least one egg) have been reported to range from 0 to 80 percent (Fish and Wildlife Service 1993, p. 12865). Reported estimates of local reproductive success (young fledged per female, pair, or nest within a study area) vary from 0.05 to 2.40 (Fish and Wildlife Service 1993, p. 12865). While the use of different methods for estimating reproductive success may account for some of this variability, the range of these estimates is most likely due to differences in beach management, recreational pressure, predation pressure, and localized natural events such as high tides coinciding with heavy surf.

Breeding Population (Numbers, Distribution, and Reproduction)

Historical records indicate that nesting snowy plovers were once more widely distributed throughout the listed range. Five areas supported nesting snowy plovers in Washington (Washington Department of Fish and Wildlife 1995) and more than twenty locations were identified in Oregon (Oregon Department of Fish and Wildlife 1994). Annual surveys of snowy plovers began in Oregon in 1978, with counts prior to Federal listing ranging from a high in 1981 of 139 at 13 sites to a low in 1992 of 30 observed at nine sites (Fish and Wildlife Service 2007).

In California, coast-wide breeding period surveys in 1977-1980 totaled 1,593 adult snowy plovers (Fish and Wildlife Service 2007). Follow up surveys in 1989 and 1991 produced 1,371-1,376 snowy plovers (Fish and Wildlife Service 2007). A survey of breeding snowy plovers along the Pacific coast of Baja California, Mexico between 1991 to1992 found 1,344 adults, mostly at four coastal wetland complexes: Bahia San Quintin (25 percent), Lagunas Ojo de Liebre (28 percent), Laguna San Ignacio (28 percent), and Bahia Magdalena (7 percent) (Palacios et al. 1994). Annual window surveys are a one-time pass of a single surveyor or team of surveyors through potential snowy plover nesting habitat during May or June, and have been conducted across the U.S. Pacific coast range since 1993 (Fish and Wildlife Service 2007). The survey does not include the interior (greater than 80 km (50 miles) inland) population of the species (Fish and Wildlife Service 2007). Based on the annual breeding window survey, the estimated 2016 Pacific coast population was 2,284 (Fish and Wildlife Service unpublished data[1]).

Within the recovery plan, the recovery criteria recommend that the snowy plover be maintained at 3,000 breeding birds along the U.S. Pacific coast (Fish and Wildlife Service 2007). The Washington and Oregon coast populations are intensively monitored throughout the breeding period, with many of the adults and chicks being uniquely color-banded, and the breeding adult population can be estimated based on nesting records and daily observational data. Using these methods, an estimated 349 breeding adults were observed in Washington and Oregon in 2013 (Table 1).

[1] Arcata Fish and Wildlife Service website at: https://www.fws.gov/arcata/es/birds/wsp/plover.html for annual breeding and winter window surveys

Table 1. Estimated breeding adult population observed in Washington and Oregon (2006 to 2016); (Lauten et al. (Oregon Biodiversity Information Center) annual reports[2], Pearson *et al.* in Stinson, 2016, p. 3).

Year	Washington	Oregon	WA/OR combined
2006	59	177	236
2007	44	181	225
2008	47	188	234
2009	31	199	230
2010	36	232	268
2011	31	247	278
2012	33	293	326
2013	43	304	347
2014	41	338	379
2015	77	277	354
2016	93	375	468

The increase in the numbers of snowy plovers observed in recent years has corresponded with intensive management that began at the time of the federal listing (Fish and Wildlife Service 2007). Integrated predator management (lethal and non-lethal removal of species that target snowy plovers or their nests) is an essential component of snowy plover recovery. Productivity has improved following the implementation of integrated predator management across Oregon nesting sites. The overall mean productivity was 1.06 fledglings per male prior to integrated predator management and 1.2 fledglings per male after integrated predator management (Lauten et al. 2012, Stinson, 2016, p. 3).

The annual number of young fledged per adult male is an important measure of the reproductive success of the snowy plover. One of the primary recovery criterion is to maintain a yearly average productivity of at least one fledged chick per male in each recovery unit in the last five years prior to delisting (Fish and Wildlife Service 2007). Chicks are considered fledged at 28 to 33 days after hatching (Warriner et al. 1986). Males are used in measuring reproductive success because their population parameters can be estimated with greater certainty than for females. In addition, the availability of males limits reproductive success because they are responsible for post-hatching parental care, and females can lay clutches for more than one male (Warriner et al. 1986). Biologists monitored 410 nests in Washington and Oregon in 2013 that fledged a minimum of 125 chicks (Lauten et al. 2014, Pearson et al. 2014). In recent years, the overall number of fledglings per male within Washington and Oregon has come close to or exceeded the recovery goal of 1.0 fledgling per male in Recovery Unit 1.

[2] Available online at http://inr.oregonstate.edu/biblio

Table 2. Estimated number of snowy plover chicks fledged per adult male in Washington and Oregon (Lauten et al. 2014, Pearson 2015 in Stinson, 2016, p. 3, Pearson 2017).

Year	Washington	Oregon
2006	1.02	1.56
2007	0.92	1.49
2008	0.46	1.06
2009	0.71	1.29
2010	0.57	0.92
2011	1.70	1.37
2012	0.68	1.22
2013	1.04	0.93
2014	1.88	1.68
2015	1.74	1.5
2016	0.96	0.6

In addition to Oregon and Washington (Recovery Unit 1), Coastal northern California (Del Norte, Humboldt, and Mendocino counties (Recovery Unit 2) and Monterey Bay region (Recovery Unit 4) are two areas in California where snowy plovers are intensively monitored through long-term banding studies.

In northern California, monitoring occurs in Humboldt County at eight locations including: Big Lagoon, Clam Beach, Mad River Beach, Eel River Wildlife Area and Centerville Beach. The breeding population in northern California increased slightly from 2012 to 2013 (36 to 42 adults), and population size has increased over the past 12 years with the percentage of immigrants in the population (Colwell et al. 2013). Males fledged 20 chicks in 2013, averaging 0.85 fledged chicks per male, and continuing a pattern of low productivity over the past 13 years from a high of 1.7 chicks fledged per male observed in 2001 (Colwell et al. 2013). Snowy plovers nesting on river gravel bars consistently achieved greater fledging success in previous years (3.00 +/- 0.00) relative to those nesting on ocean beaches (0.31 +/- 0.63) (Colwell et al. 2010). Snowy plovers, however, have not nested on river gravel bars since 2010, and partially accounts for an overall lower productivity level in northern California (Colwell et al. 2013).

The Monterey Bay region staff and research associates of Point Blue Conservation Science (formerly Point Reyes Bird Observatory) have monitored nesting snowy plovers annually on the shores of Monterey Bay since 1984 and on small pocket beaches in northern Santa Cruz County since 1988. In 2013, at least 382 snowy plovers nested in the Monterey Bay area (Page et al. 2014). The 2013 fledging success rate of 0.58 young per male was less than the 1999-2012 average of 1.45 of the past 14 years, as well as below the level needed to prevent the population from declining (Page et al. 2014).

Population Viability

A population viability analysis was conducted to aid the recovery team in developing recovery criteria for the recovery plan (Nur et al. 1999). The analysis makes the following conclusions. "Under status quo scenarios, even with intensive management in some areas, the population is almost certain to decline. Without question, ceasing current management efforts (area closures, predator exclosures, and predator control) would be disastrous for the Pacific coast population….

Recovery is plausible. It will require, however, short-term intensive management and long-term commitments to maintaining gains." These conclusions emphasize the immediate need for intensive management. The most direct means to increase population size is to enhance reproductive success throughout the listed range (Fish and Wildlife Service 2007, p. 23).

The population viability analysis suggests that reproductive success between 1.2 to 1.3 fledglings per male per year, with adult survival of 76 percent and juvenile survival of 50 percent (Nur *et al.* p.7), provides a 57 to 82 percent probability of reaching a population of 3,000 or more plovers within 25 years (Nur *et al*. 1999, pp. 19–20). Enhancing productivity is critical to population growth. Once the population size criterion is met, a lower rate of productivity can sustain the population

Habitat Description

Nesting Habitat

The snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. Snowy plovers nest in depressions in open, relatively flat areas, near to tidal waters but far enough away to avoid being inundated by daily tides. Snowy plovers primarily breed above the high tide line on sandy or pebbly beaches, but may also lay their eggs in existing depressions on harder ground such as salt pan, cobblestones, or dredge tailings (Fish and Wildlife Service 2012). This habitat is variable because of unconsolidated soils, high winds, storms, wave action, and colonization by plants. Less common nesting habitat includes bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars (Fish and Wildlife Service 2004b, p. 75610).

Foraging Habitat

Snowy plovers typically forage in open areas by locating small invertebrates visually and capturing with their beaks (Page et al. 1995). Deposits of tide-cast wrack such as kelp or driftwood tend to attract certain invertebrates, and so provide important foraging sites for snowy plovers (Page et al. 1995). Snowy plovers forage both above and below high tide, but not while those areas are underwater. Therefore, foraging habitats consist of open, sandy areas which may contain tide-cast wrack or other vegetative debris to attract prey (Fish and Wildlife Service 2012).

Prey species include mole crabs (*Emerita analoga*), crabs (*Pachygrapsus crassipes*), polychaetes (Neridae, *Lumbrineris zonata*, *Polydora socialis*, *Scoloplos acmaceps*), amphipods (*Corophium* spp, *Ampithoe* spp., *Allorchestes angustus*, and sand hoppers [Orchestoidea]), tanadacians (*Leptochelia dubia*), flies (Ephydridae, Dolichopodidae), beetles (Carabidae, Buprestidae,Tenebrionidae), clams (Nutricola sp.[formerly Transennella]), and ostracods (Reeder 1951, pp.43-44; Tucker and Powell 1999, p. 45-46).

Wintering Habitat

In western North America, the snowy plover mainly winters (defined as late October to mid-February) in coastal areas from southern Washington to Central America (Widrig 1980, Page et al. 1986, Howell and Webb 1995, Pearson et al. 2014). Coastal individuals may migrate some years and not others (Page et al. 2009, D. Lauten, pers. comm., 2011). Both coastal and interior populations use coastal locations in winter and are found on many of the beaches used for nesting, as well as some beaches where they do not nest (Page et al. 1986, Stenzel et al. 2007). Coastal individuals may also migrate some years and not others (Page et al. 2009, p. 5-11; D. Lauten, pers. comm., 2010). Wintering plovers use many of the beaches used for nesting, but will also winter at several beaches where nesting does not occur (Page et al. 1986; Stenzel et al. 2007, p. 1024). They also visit human-made salt ponds, and estuarine sand and mud flats (Page et al. 1986, p.148). In Washington, Oregon, and California, the majority of wintering snowy plovers concentrate on sand spits and dune-backed beaches.

In the recovery plan (Fish and Wildlife Service 2007), we identified 130 wintering locations that are important for recovery. The Pacific coast population has experienced widespread loss and degradation of wintering habitat due to human disturbance, development, and encroachment of introduced European beachgrass. Small changes in the adult survival rate can have relatively large effects on population stability (Nur et al. 1999 in Final Recovery Plan), so the maintenance of quality overwintering habitat is important to conservation (Fish and Wildlife Service 2012).

Small numbers of snowy plovers winter at three locations in Pacific County on the Washington coast: Midway Beach, Graveyard Spit and Leadbetter Point (Pearson et al. 2014). Between 1990 and 2013, at least eleven Oregon locations have been used by wintering snowy plovers between the Columbia River in Clatsop County and New River in Coos/Curry County. In 2015, the first documented nesting in decades was recorded at Nehalem Spit State Park. The majority of wintering snowy plovers on the California coast are found from Bodega Bay, Sonoma County, southward (Page et al. 1986). The 2013 winter window survey numbers for Washington, Oregon, and California totals 3,762 individuals (Fish and Wildlife Service unpublished data).

Threats

Permanent or long-term loss of nesting habitat through destruction, modification, or curtailment of habitat or range has led to a decline in active nesting areas, as well as an overall decline in the breeding and wintering population. Development has resulted in the loss of many historic plover locations in Oregon. For example, of the nineteen historic locations listed in the recovery plan (Fish and Wildlife Service 2007, Table B-1, pp. B-7 – B-8), only six still support plovers and suitable nesting or wintering habitat. Many unoccupied historic locations are located near urban areas or have been developed to promote ATV use or camping.

Colonization of non-native plant species, particularly European beach grass, has eliminated habitat and continues to threaten the remaining nesting areas. Without treatment (hand pulling, disking, bulldozing, or herbicide application) beach grass quickly recolonizes open sand. In addition to losing critical nesting habitat, the constriction of the nesting areas forces birds to concentrate efforts within smaller areas, which increases competition, obscures predators, and

increases the likelihood of predation. Natural disturbance, such as inclement weather, have also affected the quality and quantity of plover habitat (Fish and Wildlife Service 2007, pp. 33-77). Poor reproductive success resulting from disturbance by humans and domestic animals and predation are described in detail below.

Pedestrians

Pedestrians can cause both direct and indirect mortality and harassment of plovers. The effects of human disturbance are not easily measured. According to the recovery plan, pedestrians have been known to inadvertently step on eggs and chicks, deliberately take eggs from nests, and remove chicks from beaches, erroneously thinking they have been abandoned (Fish and Wildlife Service 2007, p. 58). In one California study, three times as many chicks were lost on weekends and holidays as on weekdays, suggesting that increased recreational activity is linked to increased chick loss (Ruhlen et al. 2003, p. 303). At South Beach in Newport, the number of snowy plovers declined from more than 25 in 1969 to 0 in 1981 (ODFW 1994, pp. 21 and 57). During this time South Beach State Park was opened and that habitat became more accessible to people and vehicles (Hoffman 1972 *in* ODFW 1994, p. 21). No snowy plovers have used the area since the early 1980s.

People can disturb birds when they approach too closely or quickly (Lafferty 2001a, p. 1950), potentially chasing snowy plovers from their nests or favored feeding areas. Page et al. (1977, p. I-7) found that adult plovers flushed off the nest 78 percent of the time when humans approached on foot within 1 to 50 m (3 to 164 feet). The response was only slightly lower, with a 65-percent flush rate, when people approached to within 50 to 100 m (164 to 328 feet). Pedestrians who passed within 100 to 250 m (328 to 820 feet) flushed adult birds off the nest 34 percent of the time. Lafferty (2001b, p. 318) found that snowy plovers are most frequently disturbed when approached closely (within 30 m (98 feet)) by people and animals. The most intense disturbance (causing the bird to fly away) was in response to crows, followed by horses, dogs, humans, and other birds.

Repeated flushing of the adults from their nests in turn can cause mortality through exposure of eggs or chicks to heat, cold, blowing sand, and/or predators. Nests that are not continuously incubated may fail or take longer to hatch, making the nest and incubating adults vulnerable to predation for a longer period. Suspended feeding and the expenditure of energy during a flushing event (i.e., disturbance) may affect both reproduction and survival (Brown et al. 2000, p. 30; Lafferty 2001a, p. 1949).

Prolonged pedestrian disturbances may also prevent chicks from resting and foraging. Chicks separated from adults are more vulnerable to predators and trampling and have little chance of survival. In a study of piping plovers in Nova Scotia, chicks foraged less and were brooded less often when humans were within 160 m (525 feet), and significantly fewer chicks survived in areas with heightened levels of disturbance (Flemming et al. 1988, pp. 326-329).

Plover responses to pedestrians may vary between nesting locations and individuals. Snowy plovers nesting on beaches that experience low levels of pedestrian traffic may be highly sensitive to human intrusion. Snowy plovers may also flush off nests and stay off nests for

much longer periods than individuals nesting on beaches with higher levels of pedestrian traffic. Predators of snowy plovers may benefit from a decline in wariness in nesting populations that are subject to ongoing high levels of human disturbance (Persons and Applegate 1997, p. 14, Baudains and Lloyd 2007, p. 400).

Camping and Beach Fires

The effects of camping on the beach are similar to those described for pedestrian traffic and picnicking; however, effects may be increased if people remain in or near breeding areas for extended periods. Beach fires and camping may disrupt incubation and brooding for long periods, potentially causing temporary nest abandonment and increasing the exposure of nearby chicks and eggs to hypothermia. Garbage left behind by campers and abandoned beach fires may attract scavengers such as gulls (*Larus* spp.) and predators such as coyotes (*Canis latrans*), American crows (*Corvus brachyrhynchos*), and common ravens (*Corvus corax*). Also, human presence near nests may increase predator detection of nests or chicks.

Night-time collection of wood or other human movement increases the risk of direct mortality or injury from stepping on nests and chicks, which are difficult to see even during daylight hours. Beach fires and camping may be harmful to nesting plovers when valuable driftwood is removed or burned. Occasionally fires escape into nearby driftwood, and the resulting fire suppression activities may disturb and threaten plover nests and chicks.

Prolonged camping and beach fire activities near these areas can potentially impact nests, especially those that are close to the edge of protected areas (compared to those further from camping and beach fire activities). Since broods rarely stay in their nesting area until fledging and may travel along the beach as far as 9.7 km (6 miles) from their natal area (Castelein *et al.* 2001, p.10), camping and beach fires could also cause the harassment of feeding or resting plovers, or potentially crush adults and/or their broods.

Dog Exercising

Dogs are a significant threat to both breeding and wintering plovers (Fahy and Woodhouse 1995, pp. 1 and 33; Lafferty 2001a, pp. 1949-1962; Lafferty 2001b, pp. 315-325). Unleashed dogs may traverse a much larger area and thus disrupt a greater percentage of snowy plover nesting or foraging habitats than restrained dogs. Unleashed dogs can trample nests, chase adult plovers and chicks, and can cause chicks to become separated from adults. Repeated disturbances by leashed and unleashed dogs can interrupt brooding, incubating, and foraging behavior of snowy plovers.

Page et al. (1977, p. I-7) found that snowy plovers flushed more frequently and remained off their nests longer when a person was accompanied by a dog than when alone. Based on observational data collected at 15 nests over 156 hours at Point Reyes, California, people walking dogs within 50 m (164 feet) of nests caused flushing 100 percent of the time. People walking dogs at distances over 100 m (328 feet) only caused flushing 52 percent of the time (Page et al. 1977, p. I-7). Fahy and Woodhouse (1995, p. 33) found that joggers or walkers with unleashed dogs caused a significantly greater number of avoidance responses from snowy

plovers than other types of disturbances at Ocean Beach, Vandenberg Air Force Base, California. The flushing of adult plovers leaves the nest exposed for longer periods, making it vulnerable to predation, extreme temperatures, and risk of being buried by sand that is blown by wind. Brooding and incubating snowy plovers respond to dog presence with avoidance or active distraction displays, thus exposing chicks or eggs to inadvertent trampling or predation; these disturbances may lead to the eventual separation of chicks from adults. Lafferty's (2001b, pp. 321-322) management model predicted that intense disturbances could be dramatically reduced by removing dogs.

Driving

Motorized and non-motorized vehicles (including ATV and off-highway (OHV) vehicles) on beaches may adversely affect snowy plovers and their habitat. Use of motor vehicles on coastal dunes may be destructive to dune vegetation, especially sensitive native dune plants. Vehicles may affect remote stretches of beach where human disturbance would otherwise be slight if access were limited to pedestrians. The magnitude of this threat varies, depending on level of use and type of terrain covered.

Vehicles can displace and sometimes kill foraging, roosting, brooding, or incubating adult snowy plovers. Driving vehicles in breeding habitat may cause destruction of eggs, chicks, and adults, abandonment of nests, and considerable stress and harassment to plover family groups (Warriner et al. 1986, p. 25; Stern et al. 1990, p. 13; Fish and Wildlife Service 2007, p. 65). Since snowy plovers roost and spend time in sand depressions, including tire tracks (Fish and Wildlife Service 2007, p. 66), chicks that are unable to climb out of them are more vulnerable to the repeated use of tracks by vehicles. At wintering sites, disturbance from motorized vehicles may harass plovers and disrupt their foraging and roosting activities, thereby decreasing energy reserves needed for migration and reproduction (Fish and Wildlife Service 2007, p. 66).

Hoopes (1992, p. 8) found off-road vehicles caused piping plovers to flush or move an average distance of 40 m (131 feet). Off-road vehicles within 50 m (164 feet) of the birds caused piping plovers to stop feeding 77 percent of the time (Hoopes 1992, p. 8). Piping plover chicks also respond to some disturbances either by freezing in place or moving very short distances and then freezing until the disturbance passes (Hoopes 1993, p. 73). Because their behavior patterns and habitat use are similar, we anticipate that snowy plovers would exhibit similar responses to vehicles. Newly emerging, non-motorized recreation vehicles, such as kite buggies, land sailing, and others, are expected to have similar impacts on snowy plovers as motorized vehicles.

Beachcombing and Driftwood Collection/Removal

Driftwood can be an important component of plover breeding and wintering habitat. Driftwood contributes to dune-building and adds organic matter to the sand as it decays (Washington Department of Fish and Wildlife 1995, Fish and Wildlife Service 2007, p. 36). Additionally, driftwood provides plovers with year-round protection from wind and blowing sand. Often, plovers build nests beside driftwood, so its removal may reduce the number of suitable nesting

sites. Driftwood is also used to escape detection by predators. However, too much driftwood can change the open nature of the habitat and large driftwood provides perches for avian predators.

Driftwood removed for firewood or decorative items can result in destruction of nests and newly-hatched chicks that frequently crouch by driftwood to hide from predators and people. Chainsaw noise may disrupt nesting, and vehicles used to haul wood may crush nests and chicks. Removal of driftwood has been documented as a source of nest destruction at Vandenberg Air Force Base where two nests were crushed beneath driftwood dragged to beach fire sites (Persons 1994 *in* Fish and Wildlife Service 2007, p. 37). Also, driftwood beach structures built by visitors are used by avian predators of snowy plover chicks such as loggerhead shrikes (*Lanius ludovicianus*) and American kestrels (*Falco sparverius*), and predators of adults such as merlins (*Falco columbarius*), northern harriers (*Circus cyaneus*) and peregrine falcons (*Falco peregrinus*).

Kite Flying

In a study on snowy plovers, the reaction of plovers to kites "ranged from increased vigilance while continuing roosting in close proximity to the kite flying, to walking or running approximately 10 to 25 m (32.8 to 82.0 feet) away and resting again while remaining alert" (Hatch 1997, pp. 27-28). Hoopes (1993, p. 68) found that piping plovers, a closely related species with similar biological and behavioral traits to snowy plovers, are intolerant of kites. Compared to other human disturbances (i.e., pedestrian, off-road vehicle, and dogs), kites caused piping plovers to flush or move at a greater distance from the disturbance, to move the longest distance away from the disturbance, and to move for the longest duration. Piping plovers responded to kites at an average distance of 85 m (279 feet); moved an average distance of over 100 m (328 feet); and the average duration of the response was 70 seconds.

Biologists believe plovers perceive kites as potential avian predators (Hoopes 1993, p. 72; Hatch 1997, p. 27). Kites may disturb plovers when flown near nesting, feeding, or resting areas. Kites can cause adults to flush from nests, leaving eggs exposed extreme temperatures. Furthermore, the movement of flushed adults may draw the attention of predators to adults or their nest. Kites also may cause adults and broods to spend less time foraging and result in increased energy expenditure, which could result in reduced fitness and delayed ability to fledge.

It is expected that stunt-kites would cause a greater response from plovers than traditional, more stationary kites. Stunt kites include soaring-type, two-string kites with noisy, fluttering tails, which often exhibit rapid, erratic movements, similar to the behavior of falcons or other avian predators. As with kites, it is expected that model airplanes may also have a detrimental impact to plovers because plovers may perceive them as potential predators (Hatch 1997, pp. 27-28).

Horseback Riding

Horses can affect nesting and wintering plovers in ways similar to pedestrians. Additionally, horses may trample nests. Monitors have documented at least four plover clutches on Morro Spit, California that were destroyed by horses trampling the nests during the 2000 and 2001 breeding seasons (Persons and Ellison 2001 *in* ICF International 2010, p. 6-5; Ellison 2001, pp. 9 and 17).

Lafferty (2001b) observed plovers' response to people, pet dogs, equestrians, crows and other birds. Observations were made at Devereux Slough in Santa Barbara County, Santa Rosa Island, San Nicolas Island, and Naval Base Ventura County (Point Mugu). This study found that snowy plovers are most frequently disturbed when approached closely (within 30 m (98 feet)) by people and animals. The most intense disturbance (causing the plover to fly away) was in response to crows, followed by horses, dogs, humans, and other birds.

Other Recreational Activities (Picnicking, Nearshore Activities/Surf Sports)

Beach-related recreational activities that are concentrated in one location (e.g., sunbathing, picnicking, sandcastle building, birding, and photography) can negatively affect incubating adult plovers when these activities occur too close to their nests. Recreational activities that occur in the wet sand area (sand sailing) can adversely affect plovers when they disturb plover adults or broods, which feed at the edge of the surf along the wrack line.

Recreational activities that occur in or over deep water (such as the beach- and water-oriented activities of surfing, kayaking, wind surfing, jet skiing, and boating, and the coastal-related recreational activity of hang gliding) may not directly affect plovers; however, they can potentially be detrimental to plovers when recreationists use the beach to take a break from these activities, or as access, exit, or landing points.

Predation

Predation, by native and nonnative species, has been identified as a major factor limiting plover reproductive success at many Pacific coast sites. Known mammalian and avian predators of plover eggs, chicks, or adults are listed in Table 3. A more detailed description of the range-wide threats to plovers is available in the recovery plan for the species (Fish and Wildlife Service 2007).

Table 3. Native and non-native predators known to prey on snowy plover eggs, chicks, and adults (Fish and Wildlife Service 2007; Fancher et al. 2002, Powell et al. 2002).

Native Species	**Nonnative Species**
Gray fox (*Urocyon cinereoargenteus*)	Eastern red fox (*Vulpes vulpes regalis*)
Santa Rosa Island fox (*Urocyon littoralis santarosae*)	Norway rat (*Rattus norvegicus*)
Coyote (*Canis latrans)*	Virginia opossum (*Didelphis marsupialis*)
Striped skunk (*Mephitis mephitis*)	Domestic and feral dog (*Canis familiaris*)
Spotted skunk (*Spilogale putorius*)	Cat (*Felis domesticus*)
Raccoon (*Procyon lotor*)	Fire ant (*Solenopsis geminate*)
California ground squirrel (*Citellus beecheyi*)	Argentine ant (*Linepithema humile*)

Native Species	**Nonnative Species**
Long-tailed weasel (*Mustela frenata*) American crow (*Corvus brachyrhynchos*) Common raven (*Corvus corax*) Ring-billed gull (*Larus delawarensis*) California gull (*Larus californicus*) Western gull (*Larus occidentalis*) Glaucous-winged gull (*Larus glaucescens*) Gull-billed tern (*Gelochelidon nilotica*) American kestrel (*Falco sparverius*) Peregrine falcon (*Falco peregrinus*) Northern harrier (*Circus cyaneus*) Loggerhead shrike (*Lanius ludovicianus*) Merlin (*Falco columbarius*) Great horned owl (*Bubo virginianus*) Burrowing owl (*Speotyto cunicularia*) Great blue heron (*Ardea herodias*)	

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APPENDIX C
STATUS OF WESTERN SNOWY PLOVER CRITICAL HABITAT

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APPENDIX C
Status of Western Snowy Plover Critical Habitat

Previous Federal actions regarding the Pacific coast population of the snowy plover can be found in the December 7, 1999 Final Rule to designate critical habitat for the Pacific coast population of the western snowy plover (64 FR 68508). That rule was remanded and partially vacated by the United States District Court for the District of Oregon on July 2, 2003, in order to conduct a new analysis of economic impacts (Coos County Board of County Commissioners et. al. v. Department of the Interior et al., CV 02-6128, M. Hogan). The court set a deadline of December 1, 2004, for submittal of a new proposed critical habitat designation to the Federal Register. The court-established deadline for submittal of the final designation was September 20, 2005. We published the Final Rule designating critical habitat for the snowy plover on September 29, 2005 (70 FR 56970). In the 2005 Final Rule, we designated 32 units in Washington, Oregon, and California. A total of 12,145 acres (ac) of critical habitat were designated range-wide within the United States. The acreage breakdown by State is as follows: Washington, 2,526 acres; Oregon, 2,147 acres; and California, 7,477 acres.

On March 22, 2011, the U.S. Fish and Wildlife Service (Service) proposed to revise the critical habitat designation for the Pacific Coast population of the western snowy plover (76 FR 16045). The proposal included 68 critical habitat units totaling 28,261, acres along the coasts of California, Oregon, and Washington. Compared to the existing 2005 critical habitat designation, this proposal included more than twice as many total acres and more critical habitat units. In part, this is to offset anticipated adverse effects of rising sea level resulting from climate change. In addition, the Service's policy direction in 2005 emphasized the designation only of occupied habitat for critical habitat designations, while the current policy direction encourages more consideration of the role that unoccupied habitat can provide for the conservation of the species to better support recovery.

The Final Rule was published in the Federal Register on June 19, 2012 and includes 60 units totaling 24,526 acres along the coasts of California, Oregon, and Washington (77 FR 36727). Areas were excluded from designation in all three states based on partnerships with landowners. Recovery Unit 1 includes four units in Washington and nine units in Oregon. The four units in Washington are:

- WA 1 Copalis Spit (407 acres),
- WA 2 Damon Point (673 acres),
- WA 3 Midway Beach (697 acres) and Shoalwater/Graveyard Spit (696 acres), and
- WA 4 Leadbetter Spit (2,700 acres) and Gunpowder Sands Island (904 acres)

The PCEs and the resulting physical and biological features essential for the conservation of the Pacific Coast western snowy plover are derived from studies of this species' habitat, ecology, and life history. The primary constituent elements for the Pacific Coast western snowy plover habitat include:

1. Areas that are below heavily vegetated areas or developed areas and above the daily high tides;

2. Shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low water flow and annual high tide or high water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, and other essential food sources;

3. Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports and attracts small invertebrates described in PCE 2 for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and

4. Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators, which provide relatively undisturbed areas for individual and population growth and for normal behavior.

APPENDIX D
STATUS OF THE SPECIES AND STATUS OF CRITICAL HABITAT: STREAKED HORNED LARK

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Appendix D
Status of the Species and Status of Critical Habitat: Streaked Horned Lark

STATUS OF THE SPECIES

Streaked Horned Lark

Legal Status

The streaked horned lark (*Eremophila alpestris strigata*) was listed as a threatened species on October 3, 2013 (78 FR 61452), under the Endangered Species Act of 1973, as amended (16 U.S. C. 1531 *et seq.*). Critical habitat was also designated for the species at 16 sites (78 FR 61506).

Species Description

The streaked horned lark (lark) is endemic to the Pacific Northwest; historically, it was found in British Columbia, Washington, and Oregon (Altman 2011). Streaked horned larks are a subspecies of the wide-ranging horned lark (*Eremophila alpestris*) (Altman 2011). Horned larks are small, ground-dwelling birds, approximately 6–8 inches in length (Beason 1995). Adults are pale brown, but the degree of brown shading varies geographically among the subspecies. The male's face has a yellow wash in most subspecies. Adults have a black bib, black whisker marks, black "horns" (feather tufts that can be raised or lowered), and black tail feathers with white margins (Beason 1995). Juveniles lack the black face pattern and are shades of gray, varying from almost white to almost black (Beason 1995). The streaked horned lark's back is dark brown, it has yellowish underparts, a walnut brown nape, and a yellow eyebrow stripe and throat (Beason 1995). This subspecies is conspicuously more yellow beneath and darker on the back than almost all other subspecies of horned lark. The combination of small size, dark brown back, and yellow underparts distinguishes this subspecies from all adjacent forms.

Habitat and Biology

Habitat Selection

Habitat used by streaked horned larks is generally flat with substantial areas of bare ground and sparse low-stature vegetation, primarily composed of grasses and forbs (Pearson and Hopey 2004). Suitable habitat is approximately 17 percent bare ground and may be even more open at sites selected for nesting (Altman 1999; Pearson et al. 2005). Vegetation height is generally less than 13 inches (Altman 1999; Pearson et al. 2005). A key attribute of habitat used by larks is an open landscape context. Our data indicate that sites used by larks are generally found in open (i.e., flat, treeless) landscapes of 300 acres or more (Converse et al. 2010).

Some patches with the appropriate characteristics (i.e., bare ground, low stature vegetation) may be smaller in size if the adjacent areas provide the required open landscape context; this situation is common in agricultural habitats and on sites next to water (i.e., the lower Columbia River and the Puget Sound). For example, many of the sites used by larks on the islands in the Columbia

River are small (less than 100 acres), but are adjacent to open water, which provides the open landscape context needed. Streaked horned lark populations are found at many airports within the range of the subspecies, because airport maintenance requirements provide the desired open landscape context and short vegetation structure.

Although streaked horned larks use a wide variety of habitats, populations are vulnerable because the habitats used are often ephemeral or subject to frequent human disturbance. Ephemeral habitats include bare ground in agricultural fields and wetland mudflats (Altman 1999), and sand spits next to rivers within their channel migration zone. Habitats subject to frequent human disturbance include mowed fields at airports, managed road margins, agricultural crop fields, and disposal sites for dredge material (Altman 1999).

Foraging

Horned larks forage on the ground in low vegetation or on bare ground (Beason 1995). Larks eat a wide variety of seeds and insects (Beason 1995) and appear to select habitats based on the structure of the vegetation rather than the presence of any specific food plants (Moore 2008). Adults feed on a wide variety of grass and weed seeds, but feed insects to their young (Beason 1995).

Breeding and Nesting

Horned larks form pairs in the spring (Beason 1995) and establish territories approximately 1.9 acres in size (range 1.5 to 2.5 acres) (Altman 1999). Territory sizes range from approximately 4 to 15 acres at the 13th Division Prairie at Joint Base Lewis-McChord (Center for Natural Lands Management 2014). Horned larks create nests in shallow depressions in the ground and line them with soft vegetation (Beason 1995). Female horned larks select the nest site and construct the nest without help from the male (Beason 1995). Streaked horned larks establish their nests in areas of extensive bare ground, and nests are placed adjacent to clumps of bunchgrass (Pearson and Hopey 2004). Studies from Washington sites (the open coast, Puget lowlands and the Columbia River islands) have found that streaked horned larks have strong natal fidelity to nesting sites, returning each year to the place they were born (Pearson et al. 2008).

Historically, nesting habitat was found on grasslands, estuaries, and sandy beaches in British Columbia, in dune habitats along the coast of Washington, in western Washington and western Oregon prairies, and on the sandy beaches and spits along the Columbia and Willamette Rivers. Today, the streaked horned lark nests in a broad range of habitats, including native prairies, coastal dunes, fallow and active agricultural fields, wetland mudflats, sparsely-vegetated edges of grass fields, recently planted Christmas tree farms with extensive bare ground, moderately- to heavily-grazed pastures, gravel roads or gravel shoulders of lightly-traveled roads, airports, and dredge deposition sites in the lower Columbia River (Altman 1999; Moore 2008; Pearson et al. 2005; Pearson and Altman 2005). Wintering streaked horned larks use habitats that are very similar to breeding habitats (Pearson et al. 2005).

Male streaked horned larks arrive in the Puget lowlands in mid-February, and females arrive by early March (Wolf and Anderson 2014). The nesting season for streaked horned larks begins in early April and ends mid- to late August (Moore 2011; Pearson and Hopey 2004; Pearson and Hopey 2004; Pearson and Hopey 2004; Pearson and Hopey 2004; Pearson and Hopey 2004). Clutches range from 1 to 5 eggs, with a mean of 3 eggs (Pearson and Hopey 2004). After the first nesting attempt in April, streaked horned larks will often re-nest in late June or early July (Pearson and Hopey 2004). Young streaked horned larks leave the nest 8-10 days after hatching and are cared for by the parents until they are about four weeks old when they become independent (Beason 1995).

Nest success studies (i.e., the proportion of nests that result in at least one fledged chick) in streaked horned larks report highly variable results. Nest success on the Puget lowlands of Washington is low, with only 28 percent of nests successfully fledging young (Pearson and Hopey 2004; Pearson and Hopey 2005). According to reports from sites in the Willamette Valley, Oregon, nest success has varied from 23 to 60 percent depending on the site (Altman 1999; Moore and Kotaich 2010). At one site in Portland, Oregon, Moore (2011) found 100 percent nest success among 8 nests monitored.

Current and Historical Range

The current range and distribution of the streaked horned lark can be divided into three regions: (1) the south Puget Lowlands in Washington; (2) the Washington coast and lower Columbia River islands (including dredge spoil deposition and industrial sites near the Columbia River in Portland, Oregon); and (3) the Willamette Valley in Oregon.

The streaked horned lark's breeding range historically extended from southern British Columbia, Canada, south through the Puget lowlands and outer coast of Washington, along the lower Columbia River, through the Willamette Valley, the Oregon coast and into the Umpqua and Rogue River Valleys of southwestern Oregon (Altman 2011). The subspecies has been extirpated as a breeding species throughout portions of its range, including all of its former range in British Columbia, the San Juan Islands, the northern Puget Trough, the Washington coast north of Grays Harbor County, the Oregon coast, and the Rogue and Umpqua Valleys in southwestern Oregon (Pearson and Altman 2005).

Breeding Range

Streaked horned larks currently breed on eight sites in the south Puget Sound. Five of these sites are on Joint Base Lewis-McChord: 13th Division Prairie, Gray Army Airfield, McChord Field, and two locations on the 91st Division Prairie – Artillery Impact Area (Pearson and Altman 2005). At non-military locations, the largest population of streaked horned larks in Washington breeds at the Olympia Regional Airport (Stinson 2016). Smaller populations of larks also breed at the Tacoma Narrows Airport and the Port of Shelton's Sanderson Field airport (Stinson 2016).

On the Washington coast, there are four known breeding sites in Grays Harbor and Pacific Counties: Damon Point; Midway Beach; Graveyard Spit; and Leadbetter Point (Pearson and Altman 2005). On the lower Columbia River, streaked horned larks breed on several of the

sandy islands and river bank sites downstream of Portland, Oregon. Larks also breed at the Rivergate Industrial Complex and the Southwest Quad at Portland International Airport; both sites are owned by the Port of Portland, and are former dredge spoil deposition fields (Moore 2011).

In the Willamette Valley, streaked horned larks breed in Benton, Clackamas, Lane, Linn, Marion, Polk, Washington, and Yamhill Counties. Larks are most abundant in the southern part of the Willamette Valley. The largest known population of larks is resident at Corvallis Municipal Airport in Benton County (Moore 2008); other resident populations occur at the Baskett Slough, William L. Finley, and Ankeny units of the Service's Willamette Valley National Wildlife Refuge Complex (Moore 2008) and on Oregon Department of Fish and Wildlife's E.E. Wilson Wildlife Area (Oregon Department of Fish and Wildlife 2008). Breeding populations also occur at the Eugene Airport, Salem Airport, McMinnville Municipal Airport, and Independence State Airport in the valley (Moore 2008; Thompson, Pers. Comm. 2013). Much of the Willamette Valley is private agricultural land, and has not been surveyed for streaked horned larks, except along public road margins. In 2008, a large population of streaked horned larks colonized a wetland and prairie restoration site on M–DAC Farms, a privately owned parcel in Linn County; as the vegetation at the site matured in the following two years, the site became less suitable for larks, and the population declined (Moore and Kotaich 2010). This is likely a common pattern, as breeding streaked horned larks opportunistically shift sites as habitat becomes available among private agricultural lands in the Willamette Valley (Moore 2008).

Winter Range

Pearson et al. (2005) found that most streaked horned larks winter in the Willamette Valley (72 percent) and on the islands in the lower Columbia River (20 percent); the rest spend the winter on the Washington coast (8 percent) or in the south Puget Sound (1 percent). In the winter, most of the streaked horned larks that breed in the south Puget Sound migrate south to the Willamette Valley or west to the Washington coast; streaked horned larks that breed on the Washington coast either remain on the coast or migrate south to the Willamette Valley; birds that breed on the lower Columbia River islands remain on the islands or migrate to the Washington coast; and birds that breed in the Willamette Valley remain there over the winter (Pearson et al. 2005). Streaked horned larks spend the winter in large groups of mixed subspecies of horned larks in the Willamette Valley, and in smaller flocks along the lower Columbia River and Washington Coast (Pearson and Altman 2005; Pearson et al. 2005).

Threats / Reasons for Listing

The streaked horned lark was listed as a threatened species because of the following:

- The streaked horned lark has disappeared from all formerly documented locations in the northern portion of its range, the Oregon coast, and the southern edge of its range.
- There are currently estimated to be fewer than 1,600 streaked horned larks rangewide, and population numbers are declining.

- Their range is small and may be continuing to contract;
    - The south Puget Sound breeding population is estimated to be fewer than 170 individuals.
    - The Washington coast and Columbia River islands breeding population is fewer than 140 individuals.
    - Recent research estimates the number of streaked horned larks in Washington and on the Columbia River islands may be declining. This decline considered with evidence of inbreeding depression on the south Puget Sound indicates that the lark's range may contract further in the future.
- Their habitat is threatened throughout their entire range from loss of natural disturbance regimes, invasion of unsuitable vegetation that alter habitat structure, and incompatible land management practices.
- Large winter congregations are limited to one region, Oregon's Willamette Valley, which may put larks at risk from stochastic weather events.
- Most sites currently used by larks require some level of disturbance or management to maintain the habitat structure they need. The natural processes that previously provided this disturbance no longer operate.

In addition to the threats identified in 2013 when the lark was listed, three new potential threats have been identified: male-skewed sex ratio (Moore and Brown, pers comm 2016; Stinson 2016, p. 6), avian pox on the Puget Lowlands (Stinson 2016, p. 11), and potential poisoning by the rodenticide zinc phosphide at Corvallis Airport (Shearn-Bochsler and Bodenstein 2015, pp. 1-2).

Population Estimates and Current Status of the Streaked Horned Lark

The most recent rangewide population estimate for streaked horned larks is about 1,170–1,610 individuals (Altman 2011, p. 213); this analysis was based on 2008 to 2010 data collected at all known breeding sites in Washington and all accessible breeding sites and roadside point counts in Oregon (Altman 2011, p. 213).

Puget Lowlands

In the south Puget lowlands, the streaked horned lark is currently known to occur at eight sites; three of these sites are municipal airports (Olympia Airport, Shelton Airport, and Tacoma Narrows Airport), and five sites are on JBLM (13th Division Prairie, Gray Army Airfield, 91st Division Prairie – Range 76, 91st Division Prairie – Range 50/Artillery Impact Area, and McChord Airfield). Approximately 119 breeding pairs of streaked horned larks were detected at these 8 sites in 2015 (Stinson 2016, p. 5).

Washington Coast and Lower Columbia River

In the past decade, streaked horned larks have been found at six sites on the outer coast of Washington (Leadbetter Point, Graveyard Spit, Midway Beach, Damon Point, Oyhut Spit and Johns River Island). Lark populations appear to have been declining at all of these sites recently,

and in 2015, larks were found at only one site, Leadbetter Point, with just 11 pairs detected (Stinson 2016, p. 5) (Table 1). In 2016, two pairs of breeding larks were detected at Graveyard Spit, after several years of no detections (Sundstrom 2017).(Sundstrom, Pers. Comm 2016)

Along the lower Columbia River, streaked horned larks are found on islands and at mainland sites adjacent to the river. In the last several years, surveys have detected breeding larks on 12 islands (Rice Island, Miller Sands Spit, Pillar Rock Island, Welch Island, Tenasillahe Island, Wallace Island, Whites/Browns Island, Crims Island, Sandy Island, Lower Deer Island, Sand Island, Howard Island) and 6 mainland sites (Dibblee Point, North Port Kalama, Port of Longview, Columbia Gateway Vancouver, Rivergate and Portland International Airport's Southwest Quad) in Wahkiakum and Cowlitz Counties in Washington, and Columbia and Clatsop Counties in Oregon (Slater and Treadwell 2016, p. 3; Stinson 2016). Most of the Lower Columbia River sites with lark detections are active dredge material disposal sites, although the two sites farthest upriver (at the Port of Portland's Rivergate Industrial Complex and Portland International Airport Southwest Quad) are old fill sites that retain suitable habitat characteristics (Stinson 2016, p. 5). The most recent data indicate that there are at least 66 pairs of larks in the Lower Columbia River region.

When the lark was listed as threatened in 2013, a recently published analysis predicted a rapid decline in the Washington populations, including breeding sites on the Puget Lowlands, outer coast and Columbia River islands (Camfield et al. 2011, p. 8). One study of the lark population at 13th Division Prairie at Joint Base Lewis-McChord speculated that small population size, high nest site fidelity and low egg hatching rates indicated that the population is suffering from inbreeding depression (Anderson 2010, p. 33). Recent efforts at JBLM to manage habitat and reduce the adverse effects of airfield maintenance and military training, however, have resulted in an increased population of streaked horned larks and improved productivity (Wolf et al. 2015, p. 48). Recent data also indicate that the Puget Lowlands and Columbia River breeding sites have relatively stable or increasing lark populations (Stinson 2016, p. 6). A new concern has emerged in the south Puget Lowlands population, however; counts of males are increasing, but counts of females are declining (Stinson 2016, p. 6). The reason for the skewed sex ratios is not yet apparent. However, a skewed sex ratio affects the effective population size (the portion of the population reproducing), and bird species identified by the International Union for Conservation of Nature as Globally Threatened more often exhibit male-biased sex ratios; the skew toward males tends to increase with increasing threat status (McDonald et al. 2007, p. 675).

Willamette Valley

In Oregon, lark populations have not been surveyed as regularly or intensively as the populations in Washington, due to the lack of access to habitat on private agricultural lands. The most recent estimate of the streaked horned lark population in Oregon is about 900 to 1,300 breeding streaked horned larks in the Willamette Valley (Altman 2011, p. 213).

Data from the North American Breeding Bird Survey (BBS) indicate that most grassland-associated birds, including the horned lark species, have declined across their ranges in the past three decades (Sauer et al. 2014, pp. 7-9). The BBS can provide population trend data only for those species with sufficient sample sizes for analyses. There are insufficient data in the BBS for a rangewide analysis of the streaked horned lark population trend (Altman 2011, p. 214).

However, data from the BBS may provide additional insight into the trend of the streaked horned lark population in the Willamette Valley. Although the BBS does not track bird counts by subspecies, the streaked horned lark is the only subspecies of horned lark that breeds in the Oregon portion of the Northern Pacific Rainforest Bird Conservation Region, therefore it is reasonable to assume that counts of horned larks from the breeding season in the Willamette Valley are actually counts of the streaked horned lark. The BBS data regularly detect horned larks on several routes in the Willamette Valley, and counts from these routes show that horned larks in this Bird Conservation Region have been declining since 1960s, with an estimated annual trend of -5.41 percent (95 percent confidence intervals -7.60, -3.35) (Sauer et al. 2014, p. 4). The U.S. Geological Survey, which manages the BBS data, recommends caution when analyzing these data due to the small sample size, high variance, and potential for observer bias in the raw BBS data.

The best information on trends throughout the Willamette Valley comes from surveys by the ODFW; the agency conducted surveys for grassland-associated birds, including the streaked horned lark, in 1996 and again in 2008 (Altman 1999, p. 2; Myers and Kreager 2010, p. 2). Point count surveys were conducted at 544 stations in the Willamette Valley (Myers and Kreager 2010, p. 2); over the 12-year period between the surveys, measures of relative abundance of streaked horned larks increased slightly from 1996 to 2008, according to this report. Both detections at point count stations and within regions showed moderate increases (3 percent and 6 percent, respectively) (Myers and Kreager 2010, p. 11). Population numbers decreased slightly in the northern Willamette Valley and increased slightly in the middle and southern portions of the valley (Myers and Kreager 2010, p. 11). This is the best information currently available on the trend of the lark population in the Willamette Valley; additional studies are needed to understand the valley-wide and sub-regional trends of the lark in Oregon.

The largest known population of streaked horned larks breeds at the Corvallis Municipal Airport; depending on the management conducted at the airport and the surrounding grass fields each year, the population has been as high as 100 breeding pairs (Moore and Kotaich 2010, pp. 13-15). Surveys from 2007 to 2013 found 80 to 100 pairs in most years during the breeding season (Moore 2008; Moore and Kotaich 2010); the population dropped precipitously in 2014, when deep snow in the southern Willamette Valley apparently depressed the lark population. In June 2014, Moore detected only 23 mated pairs of larks and 16 unmated males (Moore 2015). The population may have begun to rebound; in 2015, Moore detected 30 mated pairs at the Corvallis Airport, and early season counts in 2016 indicate that the number of nests has increased to more than 65 pairs (Moore and Brown, pers comm 2016). It is unclear whether the troubling issue of declining female numbers that has been detected in Washington may also be occurring in Oregon. Outside of the breeding season, the resident breeding population at the Corvallis Airport is augmented by mixed flocks of wintering streaked horned larks and other subspecies of horned larks (Moore 2008, p. 9).

Streaked horned larks have been detected at four other airports in the Willamette Valley (Eugene Airport, Salem Municipal Airport, McMinnville Municipal Airport and Independence State Airport) (Moore 2008; Thompson, Pers. Comm. 2013). None of these airports have been comprehensively surveyed; our knowledge of the lark population at each site is the result of focused surveys done for pre-project clearances.

Streaked horned larks can are found on three units of the Willamette Valley National Wildlife Refuge Complex (Ankeny, Baskett Slough and W.L. Finley). Larks mainly use the refuge's agricultural fields, during both the breeding and winter seasons (US Fish and Wildlife Service 2016, p. 3). Portions of each of the three refuges have been designated as Critical Habitat for the lark (78 FR 61506); most of the Critical Habitat designations are on agricultural lands that produce green forage for wintering Canada geese (US Fish and Wildlife Service 2016).

On Ankeny National Wildlife Refuge (NWR), streaked horned larks primarily use the central farm fields. Of the three units, Ankeny consistently appears to have the smallest breeding population, generally from one to five pairs (Moore 2008, p. 8). Refuge staff conducted surveys for the last couple of years, and in 2015, Ankeny had six breeding pairs (Root, Pers. Comm. 2016). The consistently low numbers of breeding larks at Ankeny may reflect the landscape setting of this refuge unit; the farm fields are bordered by rows of tall trees, which limit the extent of suitable habitat for the lark (Moore 2008, p. 8).

At Baskett Slough NWR, larks use a wider range of the refuge's fields, including both agricultural fields and wetland edges (Moore 2008, p. 8). Surveys from 2006 to 2008 consistently found 18 to 20 pairs at Baskett Slough (Moore 2008, p. 8). In 2015, the count for Baskett Slough was about 15 breeding pairs of larks (Root, Pers. Comm. 2016).

At W.L. Finley NWR, larks inhabit portions of the southern and eastern agricultural fields (Moore 2008, p. 8). The number of territorial male larks at W.L. Finley NWR varied from 15 to 22 pairs over the 2006 to 2008 surveys (Moore 2008, p. 8). In 2015, Refuge staff detected six breeding pairs (Root, Pers. Comm. 2016).

We have limited data on other sites in the Willamette Valley. M-DAC Farms, a privately owned prairie and wetland restoration project in Linn County, illustrates the pattern of streaked horned lark colonization of ephemeral habitats. Early in the breeding season in 2007, Moore (Moore 2008, p. 10) detected a single pair of larks on the gravel road at the site; a controlled burn in June 2007 attracted 30 pairs of larks to the site during that breeding season. In 2008, the breeding population of larks grew to about 75 pairs (Moore 2008, p. 11). As the vegetation at the site matured in the following years, the site became less suitable for larks, and the population declined to just two to three pairs in 2012 {{17631 Moore, Randy 2012}}. This is likely a common pattern, as breeding streaked horned larks opportunistically shift sites as habitat becomes available among private agricultural lands in the Willamette Valley (Moore 2008, p. 9-11).

Much of the Willamette Valley is private agricultural land, and has not been surveyed for streaked horned larks, except along public road margins (Altman 1999, p. 2; Myers and Kreager 2010, pp. 2-3). There are numerous locations on private agricultural and industrial lands on which streaked horned larks have been observed in the Willamette Valley, particularly in the southern valley on grass seed fields. These lands may contain a large percentage of the population of streaked horned larks in Oregon, but no comprehensive survey has been conducted to date.

Umpqua and Rogue River Valleys

In the winter of 2015 to 2016, streaked horned larks were detected at the Lost Creek Lake reservoir in Jackson County, in the Rogue River Valley; other subspecies of horned larks have been detected at this location in the past, but this appears to be the first confirmed report of the *strigata* subspecies in about 40 years (Moore, pers. comm. 2016). Surveys the following spring did not find any breeding streaked horned larks in the Rogue Valley (Robinson, Pers. comm. 2016, p. 1).

STATUS OF CRITICAL HABITAT

Critical Habitat

Legal Status

In October 2013, the U.S. Fish and Wildlife Service designated critical habitat for the threatened streaked horned lark (78 FR 61506). Approximately 4,629 acres (1,873 ha) in Grays Harbor, Pacific, and Wahkiakum Counties in Washington, and in Clatsop, Columbia, Marion, Polk, and Benton Counties in Oregon, fall within the boundaries of the critical habitat designation for the streaked horned lark.

Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features: (a) essential to the conservation of the species, and (b) which may require special management considerations or protection; and (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary.

Primary Constituent Elements

Under the Act and its implementing regulations, the physical or biological features essential to the conservation of the streaked horned lark must be identified in areas occupied at the time of listing, focusing on the features' primary constituent elements. Primary constituent elements are the features that provide for the species' life-history processes and are essential to the conservation of the species. The primary constituent elements specific to the streaked horned lark are areas having a minimum of 16 percent bare ground that have sparse, low-stature vegetation composed primarily of grasses and forbs less than 13 inches (33 cm) in height found in: (1) Large (300-acre [120-ha]), flat (0–5 percent slope) areas within a landscape context that provides visual access to open areas such as open water or fields, or (2) areas smaller than described in (1), but that provide visual access to open areas such as open water or fields. All of the units designated as critical habitat are currently occupied by the streaked horned lark and contain the primary constituent elements to support the life-history needs of the subspecies.

Critical Habitat Units and Subunits

The Service designated two units of critical habitat for the streaked horned lark based on the presence of sufficient elements of physical or biological features to support life history processes during the breeding or winter seasons. (The two units are identified as Unit 3 and Unit 4; there are no Units 1 or 2. The reason for this is that critical habitat for the streaked horned lark was designated at the same time as critical habitat for Taylor's checkerspot butterfly [*Euphydryas editha taylori*]; Units 1 and 2 contain critical habitat only for the butterfly). The two units designated for the streaked horned lark are further divided into 16 subunits. The two units designated as critical habitat are: Unit 3 (Washington Coast and Columbia River, with 13 subunits), and Unit 4 (Willamette Valley, with 3 subunits) (Table B).

Table B. Critical Habitat Units for the Streaked Horned Lark. All units were occupied by larks at the time of designation.

Unit 3: Washington Coast and Columbia River Islands		**Federal**	**State**	**Private**	**Tribal**	**Other***
	Subunit name	Ac (Ha)	Ac (Ha)	Ac (Ha)	Ac (Ha)	Ac (Ha)
3–A	Damon Point	0	456 (185)	24 (10)	0	0
3–B	Midway Beach	0	611 (247)	0	0	0
3–C	Shoalwater Spit	0	377 (152)	102 (41)	0	0
3–D	Leadbetter Point	564 (228)	101 (41)	0	0	0
3–E	Rice Island	0	224 (91)	0	0	0
3–F	Miller Sands	0	123 (50)	0	0	0
3–G	Pillar Rock/Jim Crow	0	44 (18)	0	0	0
3–H	Welch Island	0	43 (18)	0	0	0
3–I	Tenasillahe Island	0	23 (9)	0	0	0
3–J	Whites/Brown	0	98 (39)	0	0	0
3–K	Wallace Island	0	13 (5)	0	0	0
3–L	Crims Island	0	60 (24)	0	0	0
3–M	Sandy Island	0	37 (15)	0	0	0
	Unit 3 Totals	564 (228)	2,209 (894)	126 (51)	0	0
Unit 4: Willamette Valley:		1,006 (407)	0	0	0	0
4–A	Baskett Slough NWR	264 (107)	0	0	0	0
4–B	Ankeny NWR	459 (186)	0	0	0	0
4–C	William L Finley NWR					
	Unit 4 Totals	1,729 (700)	0	0	0	0
	Grand Total—all Units	2,293 (928)	2,209 (894)	126 (51)	0	0
	GRAND TOTAL OF ALL UNITS, ALL OWNERSHIP.	.....	.....	4,629 (1,873)	.....	.....

* Other = Ports, local municipalities, and nonprofit conservation organizations.

Unit 3: Washington Coast and Columbia River

The Washington Coast and Columbia River Unit totals 2,900 acres (1,173 ha) and includes 564 acres (228 ha) of Federal ownership, 2,209 acres (894 ha) of State-owned lands, and 126 acres (51 ha) of private lands. On the Washington coastal sites, the streaked horned lark occurs on sandy beaches and breeds in the sparsely vegetated, low dune habitats of the upper beach. There are four subunits (Subunits 3–A, 3–B, 3–C and 3–D) and a total of 2,235 acres (904 ha) of critical habitat on the Washington coast. The coastal sites are owned and managed by Federal,

State, and private entities. The physical or biological features essential to the conservation of the streaked horned lark may require special management considerations or protection to reduce human disturbance during the nesting season, and the continued encroachment of invasive, nonnative plants requires special management to restore or retain the open habitat preferred by the streaked horned lark. Subunits 3–A, 3–B, 3–C and 3–D overlap areas that are designated as critical habitat for the western snowy plover. The snowy plover nesting areas are posted and monitored during the spring and summer to keep recreational beach users away from the nesting areas (Pearson et al. 2009); these management actions also benefit the streaked horned lark.

In the lower Columbia River, there are nine island subunits (Subunits 3–E through 3–M) for a total of 665 acres (269 ha). The island subunits are owned by the States of Oregon and Washington. On the Columbia River island sites, only a small portion of each island is designated as critical habitat for the streaked horned lark; most of the areas mapped are used by the U.S. Army Corps of Engineers for dredge material deposition in its channel maintenance program. Within any deposition site, only a portion is likely to be used by the streaked horned lark in any year, as the area of habitat shifts within the deposition site over time as new materials are deposited and as older deposition sites become too heavily vegetated for use by streaked horned larks. All of the island subunits are small, but are adjacent to open water, which provides the open landscape context needed by streaked horned larks. The main threats to the essential features in the critical habitat subunits designated on the Columbia River islands are invasive vegetation and direct impacts associated with deposition of dredge material onto streaked horned lark nests during the nesting season. In all subunits, the physical or biological features essential to the conservation of the streaked horned lark may require special management considerations or protection to manage, protect, and maintain the PCEs supported by the subunits.

Unit 4: Willamette Valley

The Willamette Valley Unit totals 1,729 acres (700 ha) and is entirely composed of Federal lands. There are three subunits (4–A, 4–B and 4–C) for the streaked horned lark in the Willamette Valley, all on the Willamette Valley National Wildlife Refuge Complex. These subunits at the Basket Slough, Ankeny and William L. Finley refuge units are managed for restored native prairie habitat and as agricultural land to provide forage for wintering dusky Canada geese (*Branta canadensis occidentalis*). This management is compatible with maintaining the essential habitat features for the streaked horned lark. The refuge complex has incorporated management for streaked horned lark into its recently completed comprehensive conservation plan (USFWS 2011), and streaked horned lark habitat conservation is being implemented in the refuge units. In all subunits, the physical or biological features essential to the conservation of the streaked horned lark may require special management considerations or protection to manage, protect, and maintain the PCEs supported by the subunits.

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APPENDIX C

CLEAN WATER ACT DOCUMENTS

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CENWS-PMP-C **May 2022**

Shoalwater Bay Shoreline Erosion Control Project
Continuation of Construction and Emergency Storm Damage
Repair Pacific County, Washington

Substantive Compliance for
Clean Water Act Section 404 and Rivers and Harbors Act

1. INTRODUCTION

The purpose of this document is to record the U.S. Army Corps of Engineers (Corps) compliance evaluation of the Shoalwater Bay Erosion Control Project (Project) emergency repair pursuant to the Clean Water Act (CWA). Specifically, Section 404 of the CWA requires an evaluation of impacts for work involving discharge of fill material into the waters of the U.S., and evaluation guidance can be found in the CWA 404(b)(1) Guidelines [40 CFR §230.12(a)].

404 (b)(1) analysis was originally conducted in 2008 prior to the initial construction of this project. Subsequent repairs, as discussed below, have occurred on this project with updated 404(b)(1) analysis. This document is meant to cover emergency repair actions to restore the Project to its initial operating level and address design changes since the previous 404(b)(1) analysis was conducted (November 2017). The main body of this document summarizes the information presented in Attachments A and B and includes relevant information from the 2009 Environmental Assessment (EA), and EA Supplements (2013, 2018), and 2022 Notice of Preparation (NOP) for the Project prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC §4321 et seq.]. Attachments A and B provide the specific Corps analysis of compliance with the CWA 404(b)(1).

2. PROJECT BACKGROUND

The Shoalwater Bay Indian Reservation (Shoalwater Reservation) has a recent history of flooding and storm damage. On March 3, 1999, a combined storm and high tide caused severe flooding of the Shoalwater Reservation shoreline and surrounding community. The Shoalwater Reservation also experienced severe flooding and debris damage from winter storms in February 2006. The flooding was believed to be a direct result of the erosion and breaching of the barrier dune on Empire Spit that fronts the Tokeland Peninsula.

Congress authorized the Corps to study the erosion problem at the Shoalwater Reservation (P.L. 106-545 of the Water Resource Development Act of 2000) and construct an erosion protection project. In 2012 and 2013, the Corps constructed a 9,800 linear foot barrier dune restoration project on Graveyard/Empire Spit with 709,000 cubic yards (cy) of dredged material from a designated offshore borrow site. The barrier dune is located at the mouth of Willapa Bay near Tokeland, Washington and provides flood protection for the Shoalwater

Bay Indian Tribe (Shoalwater Tribe), the Shoalwater Tribe's cultural lands, and ecologically significant wetlands (Figures 1 and 2). During the winter of 2015/2016 the dune was severely damaged by the strongest El Niño year in the El Niño-Southern Oscillation cycle since 1997/1998. A 2018 emergency repair restored the dune to the fully authorized 12,500 linear feet project length with 937,000 cy of dredged material. A flood fight in December 2019, and a second flood fight in January 2020 were conducted to place a quarry spall berm in front of the dune to reduce the rate of dune scarping. These efforts prevented a breach through the dune for the remainder of the 2019/2020 storm season, but there was not enough material placed during these flood fights to restore the full level of protection. Coastal storms occurring in 2020/2021 storm season generated additional dune overtopping and overwash causing severe erosion to the northern section of the dune. Without the proposed emergency repair, the limited wave protection currently afforded by the eroded barrier dune would continue to decrease, and flooding of the Shoalwater Reservation and adjoining lands would occur at increasingly frequent intervals.

3. PROJECT NEED

Prior to completion of dune construction in 2013, the Shoalwater Reservation was increasingly susceptible to damaging wave energy during storm events due to the continued erosion of the Graveyard/Empire Spit barrier dune. This increased wave energy, in turn, led to an alarming increase in the severity and frequency of flooding and storm damage to the Shoalwater Reservation uplands in the late 1990s through 2013. The flooding was a direct result of erosion and breaching of the barrier dune that fronts the Shoalwater Reservation. In contrast to historical conditions, the fragile line of barrier dunes no longer receives sand supply from the eroding beach plain to the west, due to the interruption of the longshore transport of sediment. The lack of sand supply means that, in the absence of actions to nourish the dunes, the spit would remain in very low relief and would continue to erode and move landward into North Cove. Infilling of North Cove with sand due to storm overwash of the eroded barrier dune would transform more area to high salt marsh, resulting in further loss of tide flat and intertidal habitat. Barrier dune restoration is the most appropriate long-term solution to the coastal erosion and storm damage problems facing the Shoalwater Reservation, which is situated on the northern shore of Willapa Bay. This was accomplished in 2013 by restoring the breached dune system with sand dredged from the adjacent Willapa Bay entrance and channel.

Storms occurring in 2020 and 2021 caused severe erosion to the northern section of the dune. Based on the recorded water levels and wave heights, these extratropical cyclones are considered extraordinary storms due to their measured offshore wave height and coincidence with large spring tide events. In its current damaged state, the dune barrier provides protection from approximately the 1-year coastal storm event (100% Annual Chance of Exceedance [ACE]). Without repair the dune would continue to be vulnerable to direct wave attack on the northern end of dune at approximately the 1- year storm recurrence interval. Implementation of the dune repair is expected to provide 50-year (2% ACE) level of protection. The work needs to be implemented as soon as possible as the coastal storm season begins in October. If the Shoalwater Bay Dune is not repaired before the next upcoming coastal storm season, then damage to the Shoalwater Reservation, specifically

Tribal homes, Medical Clinic, and main Tribal Operation facilities, could occur for any event greater than 1-year. Immediate action is needed to repair the northern damaged portion of the dune before next storm season (fall 2022) from station 40+00 to station 0+00 for a total repair length of 4,000 linear feet.

4. PROJECT PURPOSE

The purpose of the proposed emergency repair is to reduce coastal erosion and the resulting flooding and coastal storm damage to the Shoalwater Reservation and to the Shoalwater Tribe in a manner that is cost-effective; environmentally acceptable, and technically feasible; and that would improve the economic and social conditions of the Shoalwater Tribe. The Shoalwater Reservation includes a portion of the barrier dune along North Cove, intertidal areas in North Cove, and areas landward of the high tide line of North Cove. Tribal uplands, upon which development must take place, exist only as a narrow band of land along the shoreline, including State Route (SR) 105 which traverses the Shoalwater Reservation. Due to significantly diminished dune protection, the Shoalwater Reservation uplands, which total only 440 acres, are increasingly vulnerable to shoreline erosion and flooding associated with storm-generated ocean waves, particularly during periods of elevated water conditions. The repair would bring the Project to full protection as originally designed (50-year storm event).

5. PROPOSED ACTION AND ALTERNATIVES

5.1 No Action

The "No Action" alternative assumes that no measures would be undertaken to repair the existing structure and to address the ongoing erosion of the barrier dune located in North Cove fronting the Tokeland Peninsula. This alternative also assumes that tidal currents and storm waves would continue to erode the barrier dune which has afforded protection to the Shoalwater Reservation and Tokeland Peninsula.

Currently, approximately 4,000 feet of the 12,500-foot Project does not currently provide the design level of protection. Berm width within this region of the Project has been completely lost, while dune heights have been reduced to elevations that are overtopped by a 1-year water level event.

5.2 Barrier Dune Restoration (Preferred Alternative)

The proposed emergency repair consists of dredging at one potential borrow area offshore of Tokeland Peninsula for the purpose of obtaining approximately 460,000 cy of sand to restore the northern 4,000 feet of dune, with a crest elevation of +25 feet mean lower low water (MLLW). The most recent repair prior to this proposed action was in 2018. The 2018 dune repair project plans as described in the 2018 Supplemental Environmental Assessment (SEA) and Finding of No Significant Impact (FONSI), which supplemented the original 2009 Environmental Assessment (EA) and amended the 2009 FONSI, included rounded cobble placement to provide additional protection from wave action at the northern end of the dune. Cobble placement was not ultimately implemented due to contracting and funding constraints. Given the damage and erosion to the Project since the 2018 repair, the current proposed alternative includes an increased quantity of rounded cobble and/or angular quarry

stone (cobble placement) in the northern damaged section that would function as a dynamic revetment structure to protect the sand dune from direct wave attack and erosion. New construction measures, not described in the 2018 SEA and 2018 FONSI, include a land access route (haul road) to the repair area along Graveyard Spit for safe transportation of all resources and personnel into and out of the Project site and a temporary tidal channel crossing to reach the repair area. The dynamic revetment, temporary haul road and channel crossing are described further below.

The toe of the dune would be stabilized with approximately 216,000 tons of 10-inch minus rounded streambed cobble and/or angular quarried spall placed along the northern 3,700 feet of the Project. This dynamic revetment structure would be placed on the oceanside side slope of the repaired dune from +5 to +15 feet MLLW. The cobble sized material would function as a dynamic revetment. The individual cobbles would be dynamic (or mobile) in the wave swash zone (i.e., upper part of the beach between the back beach and surf zone, where intense erosion occurs during storms) allowing the cobble berm to reshape itself over time based on the wave environment. Infiltration of water through the void space between cobbles would reduce the wave runup on the dune face, thereby reducing the risk of waves overtopping the dune. Through these processes the dynamic revetment would absorb wave energy more effectively than a traditional static rock revetment and reduce the wave runup that would occur on an unprotected sandy beach.

The cobble berm would have a maximum width of 50 feet and slope down to the existing beach at 1 vertical on 5 horizontal grade. Some excavation would be necessary to embed the toe in the beach to prevent undermining when the beach profile lowers during the winter storm season. The embedded toe material would become mobile during the winter months as the beach profile is lower than in summer. Typical finished construction height would vary from 13 feet to 15 feet above the existing grade.

A two and a half lane, 30-foot-wide temporary haul road would be constructed across Graveyard and Empire Spit to support the safe transportation of all resources into and out of the project site. The elevated road would be composed of 40,000 tons of quarry spalls and would be removed post-construction. The 4,700-foot temporary road would be constructed above high tide line to the greatest extent practicable. Temporary road alignment would require pre-construction topographic, wetland, and Endangered Species Act (ESA) listed bird surveys prior to construction to avoid and/or minimize impacts to sensitive species and habitat. Revegetation is not proposed on the repaired dune or along the haul road in order to provide habitat for western snowy plover and streaked horned lark.

A temporary causeway comprised of several corrugated metal pipe culverts and quarry rock fill material would be constructed to cross the tidal inlet (Cannery Slough) separating Graveyard Spit from Empire Spit. The distance between the high tide line between Graveyard Spit and Empire Spit is presently 950 feet; however, the inlet channel thalweg below the low tide line is only 100-200 feet. One-to-three-ton riprap would be placed on the seaward side of the haul road/culvert channel crossing to prevent wave generated scour and damage to the

most exposed section of the crossing. Daily tidal flow would be maintained from Willapa Bay to the backshore embayment. A hydraulic analysis would be performed to ensure the culverts are appropriately sized for the tidal prism so that significant head differential and excessive scour of the inlet does not occur.

Equipment utilized in the repair would be similar to those employed during previous barrier dune construction and repair projects and include: hydraulic dredge, hydraulic excavators, dump trucks, bulldozers, and all-terrain vehicles. All heavy equipment and vehicles would be limited to the work area and construction staging areas, as identified on the design plans (Figures 3-6). Due to the threat of coastal storms and hazardous working conditions, temporary causeway construction over Cannery Slough could begin in June, with dredging occurring 16 July through 1 October. Construction vehicles would access the site by the proposed haul road off of SR 105. Cobble would be staged within the construction footprint at designated staging areas. Dune repairs are expected to take approximately 4 to 7 months, with all construction completed by 28 January and the site restored by 28 February. Some maintenance of the road may be necessary if it's damaged by storms prior to completing the repair.

5.3 Alternative Evaluation

The February 2008 404(b)(1) analysis contains information on all the alternatives that were considered but rejected. The Corps rejected the No Action alternative (Section 5.1 above) because it would not meet the project purpose or address the project need. Barrier dune restoration, the Preferred Alternative, is the least environmentally damaging, practical alternative that meets the Project purpose and need.

6. POTENTIALLY ADVERSE EFFECTS (INDIVIDUALLY OR CUMULATIVELY) ON THE AQUATIC ENVIRONMENT

1. **Effects on Physical, Chemical, or Biological Characteristics of the Aquatic Ecosystem.** Intertidal and subtidal habitats on and adjacent to Graveyard/Empire Spit would be disturbed by the barrier dune restoration and temporary haul road/channel crossing. The Corps is assessing potential impacts from the dredging operations, barrier dune restoration, temporary haul road, and channel crossing and has initially determined that they would be highly localized in nature, short in duration, and minor in scope (see the 2009 Shoalwater Bay Erosion Control Project EA, 2017 SEA, and 2022 NOP). Impacts from the work on salmonids would be reduced and/or avoided through implementation of timing restrictions though some work (channel crossing between 1 June and 15 July) would occur outside of the standard fish windows. Due to these measures, impacts to these important resources should not be significant either individually or cumulatively.

2. **Evaluate Impacts on Recreational, Aesthetic and Economic Values.** Restoration of the dune would maintain recreational access to the dune and would likely increase recreational opportunities in the Project area. Because the Project would provide increased coastal storm protection to the neighboring communities, it would allow for continued access to the Shoalwater Reservation during storm events where access to the community otherwise might be limited. Aesthetically, views of the ocean from the Shoalwater

Reservation and in the Dexter-by-the-Sea community were limited or non-existent following barrier dune construction in 2013. As such, implementation of the repair would not adversely affect aesthetic values. Since restoration of the barrier dune is expected to reduce flooding and storm damage to the Shoalwater Reservation lands and surrounding areas, the economic and social conditions on the Shoalwater Reservation and in the Dexter-by-the-Sea community should improve through continued economic growth and development in the area.

Construction of the dynamic revetment would change the visual characteristics of the beach from pure sand to sand mixed with cobble-sized rock. While not typical of this particular area, the appearance of the beach would not be different from other Washington Pacific Ocean beaches which are fed by feeder bluffs.

No significant adverse effects on recreation, aesthetics, or the economy are anticipated.

3. **Findings.** The Corps has determined that there would be no significant adverse impacts to aquatic ecosystem functions and values.

7. ALL APPROPRIATE AND PRACTICABLE MEASURES TO MINIMIZE POTENTIAL HARM TO THE AQUATIC ECOSYSTEM

a. Impact Avoidance Measures. Potential impacts of the proposed work on salmonids would be reduced and/or avoided through implementation of timing restrictions as much as possible. However, there would be an overlap with the normal periods when waterward work is restricted: the juvenile outmigration period, 1 March through 14 June and for the protection of bull trout, 16 February through 15 July. Due to the threat of coastal storms and hazardous working conditions, temporary causeway construction over Cannery Slough could begin in June, with dredging occurring 16 July through 1 October. A hydraulic analysis would be performed to ensure the culverts used in the crossing are appropriately sized for the tidal prism so that significant head differential and excessive scour of the inlet does not occur and that daily tidal flow is maintained from Willapa Bay to the backshore embayment.

b. Impact Minimization Measures.

1. All provisions of the Washington State Department of Ecology (Ecology) and the Environmental Protection Agency (EPA) Section 401 Water Quality Certifications (WQC) will be implemented to minimize turbidity and dissolved oxygen impacts, as well as impacts to commercially important species.

2. To reduce entrainment and the generation of turbidity, the hydraulic dredge will only be operated with the intake at or below the surface of the material being removed, and the intake will only be raised a maximum of three feet above the bed for brief periods of purging or flushing of the intake system.

3. Dredged sediments will remain within the coastal environment, which will allow

coastal processes to continue to form habitat for aquatic species and their food sources.

4. The Corps will coordinate with the Washington Department of Fish and Wildlife (WDFW), U.S. Fish and Wildlife Service (USFWS), and Shoalwater Tribe staff to conduct nesting surveys for western snowy plovers and streaked horned larks at the Project site prior to construction. The construction timing and implementation will be adjusted as necessary to avoid impacts to nesting western snowy plovers and streaked horned larks based on these survey results and coordination with WDFW, USFWS, and the Shoalwater Tribe.

5. All work on Empire and Graveyard spit will avoid and/or minimize impacts to western snowy plover and streaked horned lark during the nesting season of 1 April through August/early September, through implementation of a Western Snowy Plover and Streaked Horned Lark Protection Plan used during initial dune construction and the 2018 repair project.

6. As an alternative to planting dune vegetation, sand fencing will be installed in 75 ft segments perpendicular to the shoreline on the backside (landward) of the dune to help retain sand in the northern 3,700 linear feet of the dune. Each section of fence would be spaced approximately 25 feet apart.

7. Monitoring by the contractor and/or Corps and Tribal biologists will be conducted daily throughout construction to locate active western snowy plover and streaked horned lark nests and determine location of broods.

8. All trash will be contained, and a spill control plan will be implemented to reduce the risk of contaminants entering the water.

9. If night work is required, light towers located on the beach will be pointed towards the immediate work area, mitigating light intrusion to other areas of the beach.

10. Existing large woody debris will be stockpiled during construction and placed at the landward toe of the restored barrier dune to provide habitat and nutrients for establishing plants and invertebrate species.

11. Temporary haul road and channel crossing materials will be removed at construction completion and the area fully restored to pre-existing conditions.

c. Compensatory Mitigation Measures. Because this is a dune restoration project and the Project will preserve interdunal and estuarine wetlands, the Corps considers the action to be self-mitigating. This is consistent with the interpretation applied by the Corps Regulatory Branch for similar projects.

Findings. The Corps has determined that all appropriate and practicable measures have been taken to minimize potential harm.

8. OTHER FACTORS IN THE PUBLIC INTEREST.

a. Fish and Wildlife. The Corps is coordinating with State and Federal agencies to assure careful consideration of fish and wildlife resources. The Corps prepared a Biological Assessment (BA) Addendum in accordance with the ESA. The BA Addendum was intended specifically to supplement prior consultation to cover the effects of new and revised project features on western snowy plover, streaked horned lark, southern green sturgeon, Lower Columbia River Chinook, Upper Willamette River Chinook, Columbia River chum; and critical habitat for western snowy plover, streaked horned lark, and southern green sturgeon. The Corps commits to fully funding and performing all Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction or adverse modification of designated critical habitat, as well as Reasonable and Prudent Measures necessary and appropriate to minimize the impact of Incidental Take that are described if documents concluding consultation are received from USFWS and the National Marine Fisheries Service (NMFS).

b. Water Quality. A joint NEPA NOP and CWA Public Notice was drafted and released for public review and comment on 14 April 2022. The Corps has had ongoing coordination with the EPA and Ecology with regards to §401 with initial coordination starting on 10 March 2022. On 22 April 2022, the Corps requested a pre-filing meeting per the 'Clean Water Act Section 401 Certification Rule' (Final Rule) (effective 11 September 2020) in anticipation of needing §401 WQCs from both certifying authorities. EPA and Ecology met with Corps staff on 12 May 2022 and stated that §401 WQC requests could be submitted on or after 22 May 2022. The Corps will has prepared and submitted requests for Section 401 WQC to Ecology and EPA. WQCs from both agencies are necessary because the Project encompasses Tribal Reservation lands held in Federal trust as well as non-tribal lands. The Corps will abide by the conditions of the Federal and State-issued WQCs to ensure compliance with Federal and State water quality standards.

c. Historic and Cultural Resources. Section 106 of the National Historic Preservation Act (NHPA, 36 CFR PART 800) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. As required under Section 106 of the NHPA, the Corps is coordinating with the Washington State Department of Archeology and Historic Preservation (DAHP) and the Shoalwater Tribe. The Corps determined and documented the area of potential effects for both direct and indirect effects, as required at 36 C.F.R § 800.4, in a letter transmitted to the Washington State Historic Preservation Office (SHPO) on 4 April 2022. The Washington SHPO office concurred with our APE determination on the same day. Additionally, a Corps archaeologist conducted reconnaissance preliminary-level surveys on 8 March 2022 and 23 March 2022. The Corps has completed research and reviewed literature and records relevant to this project

area. The Corps has determined the probability of finding intact cultural resources is negligible, since the APE is located on the sandy, tidal area that is inundated by water between daily tidal episodes. The Corps is finalizing the preliminary-level cultural resources survey report that will be submitted to Washington SHPO. The Corps anticipates making a determination of no historic properties affected for the emergency repair and is drafting the Corps' determinations and findings letter as provided at 36 C.F.R.§ 800.4(d) requesting concurrence that no historic properties or archaeological sites are in the APE. The Corps continues to remain engaged with the Shoalwater Tribe to identify any concerns about properties of religious or cultural significance that might be affected by the Project. The Tribe has not expressed any concerns to date and has stated that this repair would be in fact protecting the Tribe's cultural lands.

d. Activities Effecting Coastal Zones. The proposed action will restore the barrier dune to its historic and authorized height and condition that existed prior to the depletion of its feeder sand supply and the subsequent breaching of the barrier dune. The Coastal Zone Management Act of 1972, as amended, requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved state Coastal Zone Management Program (CZMP).

Pursuant to Chapter 90.58 of the Revised Code of Washington, which has been adopted and further defined by the Pacific County Board of County Commissioner's Ordinance No. 183, the Corps determined that this proposal is consistent to the maximum extent practicable with the Pacific County Shoreline Master Program as well as the five other enforceable policies in Washington's CZMP. Reference the Corps' Coastal Consistency Determination dated April 2022 for additional details.

e. Environmental Benefits. The proposed repair of the barrier dune would protect the habitat of the North Cove embayment from further degradation due to storm wave overwash of the Graveyard/Empire Spit barrier dune. The erosion and breaching of the barrier dune has resulted in a severe degradation of the habitat diversity and productivity of the Shoalwater Reservation's North Cove embayment. Winter storm waves at high tide frequently overtop the eroded dune, resulting in infilling of the tide flats with sand eroded from the dune. Due to storm overwash of the eroded and lowered barrier dune and the resulting infilling of North Cove with sand, the habitat in the cove is being transformed into high salt marsh. There has been a significant loss of habitat that previously supported Tribal subsistence shellfish growing and harvesting upon which the Tribe has relied heavily, both historically and in recent times. The barrier dune restoration would reduce the transport of sand into North Cove and the resultant infilling and conversion of the area to high salt marsh. Dune restoration would also help to maintain nesting areas for two bird species protected under the ESA.

f. Navigation. Navigation may experience temporary and minor inconveniences during the actual dredging and construction process, but no long-term adverse effects to navigation would occur as a result of the proposed work.

Findings. The Corps has determined that this project is within the public interest.

9. CONCLUSIONS.

Based on the analyses presented in this 404(b)(1) evaluation and general policies for the evaluation of permit applications analysis, the Corps finds that this project complies with the substantive elements of Section 404 of the Clean Water Act.

ATTACHMENT A

404(b)(1) Evaluation [40 CFR §230]

Potential Impacts on Physical and Chemical Characteristics (Subpart C)

1. **Substrate [230.20]** The existing surface substrate consists of sand. The main source of material for the dune restoration would be sand dredged from the entrance to Willapa Bay and therefore, similar in character to the material currently comprising the barrier dune. Sediments from prior dredge borrow sites, located in the North Channel and in close proximity to the current proposed borrow site, have been tested and characterized as suitable for beneficial uses such as this barrier dune restoration. The **e**xisting subtidal habitat in the proposed borrow site would be dredged to a greater depth than that which currently exists, but the sediment remaining after the proposed dredging would be generally similar to that which would be removed. The borrow site, located near the terminal end of Empire Spit (the southeast end), has historically been a reliable deposition area. Longshore sediment transport typically supplies sediment to this region at quantities sufficient to repair the damaged dune. Therefore, the proposed dredging would not alter the sediment quality in the dredged area. Re-distribution of sediment during dredging activities is expected to be minimal and localized.

   In the northern repair area, the substrate characteristics would change due to the introduction of rounded and/or angular cobble-sized material to construct a dynamic revetment. Dynamic revetments are engineered structures constructed to mimic natural composite sand and cobble beaches. These are analogous to bluff backed beaches found on the Pacific Northwest shorelines (e.g., Olympic Peninsula and coastal headlands on the Oregon Coast). Dynamic revetments dissipate wave energy by reflection, absorbing energy through water infiltration, and cross-shore movement of individual cobble units in the beach profile. They also adapt to the seasonal wave environment. In the summer months sand stored in the offshore bar would migrate up the beach and often bury the cobble Over time, material transported by currents to the south would be the smaller size fraction of cobble (<3 inches) and be located in a thin band in the upper intertidal area. There is not anticipated to be impacts to the substrate to a degree that would deter plover nesting in the southern section of the Project area, given that this is an accretion area for sand as well.

2. **Suspended Particulate/Turbidity [230.21]** Turbidity is not expected to increase substantially above ambient conditions due to the predominately sandy nature of the dredged material, and the large quantities of suspended sand currently transported via longshore drift in the project area. Dynamic revetment material placed in the northern repair area would be relatively clean and not a source of turbidity. Any sediment plumes attributable to the Project would be temporary, localized, and equivalent to those created by natural sediment transport processes.

3. **Water Quality [230.22]** No significant water quality effects are anticipated (see number 2. above).

4. **Current Patterns and Water Circulation [230.23]** Well defined inlets located at the southeastern and northwestern edges of the North Cove embayment would be left intact. The temporary causeway over Cannery Slough would maintain daily tidal flow from Willapa Bay to the backshore embayment. A hydraulic analysis would be performed to ensure the culverts are appropriately sized for the tidal prism so that significant head differential and excessive scour of the inlet does not occur. Circulation in the intertidal area is not expected to be adversely affected.

5. **Normal Water Fluctuations [230.24]** The discharge of the barrier dune restoration materials would not impede normal tidal fluctuations.

6. **Salinity Gradients [230.25]** The discharge of nourishment materials would not affect salinity gradients. The flows into and out of North Cove (behind the barrier dune) would be maintained through tidal channels that existed prior to the 1995 barrier dune breach.

Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)

1. **Threatened and Endangered Species [230.30]** Table 1 lists the species in the action area that are protected under ESA. For the dredging and placement action, they were addressed in the 2007, 2012, 2013, and 2018 consultations (NMFS dated 12 December 2007, 20 September 2011, 18 June 2012, 3 April 2013, 10 January 2018, and 18 January 2018; USFWS concurrence letter dated 30 August 2007 and Biological Opinions dated 24 July 2012, 31 May 2013, and 29 January 2018). The Corps has determined that previous effect determinations and consultations for ESA protected listed species and critical habitat remain unchanged for the proposed modified action (Table 1). Pursuant with Section 7 of the Endangered Species Act, the Corps prepared a BA Addendum to specifically cover effects of the modified project to western snowy plover (*Charadrius alexandrinus nivosus*) and its critical habitat, streaked horned lark (*Eremophila aipestris strigata*) and its critical habitat, southern green sturgeon (*Acipenser medirostris*) and its critical habitat, Lower Columbia River Chinook (*Oncorhynchus tshawytscha*), Upper Willamette River Chinook (*O. tshawytscha*), Columbia River chum (*O. keta*), and pursuant to the Magnuson–Stevens Fishery Conservation and Management Act, essential fish habitat (EFH).

Table 1. Effect determination summary.

Species	Jurisdiction	Effect Determination	Critical Habitat Determination
Oregon silverspot butterfly	USFWS	No effect	No effect
Marbled murrelet	USFWS	Not likely to adversely affect	No effect
Western snowy plover	USFWS	Likely to adversely affect	Not likely to adversely affect
Northern spotted owl	USFWS	No effect	No effect
Short-tailed albatross	USFWS	No effect	Not applicable
Streaked horned lark	USFWS	Likely to adversely affect	Not likely to adversely affect
Yellow billed cuckoo	USFWS	No effect	Not applicable
Coastal-Puget Sound bull trout	USFWS	Not likely to adversely affect	No effect
Southern green sturgeon	NMFS	Not likely to adversely affect	Not likely to adversely affect
Lower Columbia Chinook, Upper Willamette River Chinook, and Columbia River chum	NMFS	No effect	No effect
Eulachon	NMFS	Not likely to adversely affect	No effect
Loggerhead, green, and olive Ridley sea turtles	NMFS/ USFWS	No effect	Not applicable

Leatherback sea turtle	NMFS	No effect	Not likely to adversely affect
Humpback whale	NMFS	Not likely to adversely affect	Not applicable
Sperm, sei, fin, and blue whales	NMFS	No effect	Not applicable
Southern resident killer whale	NMFS	Not likely to adversely affect	No effect

2. Fish, crustaceans, mollusks and other aquatic organisms in the food web [230.31]

Organisms in the benthic community are important prey items for a variety of aquatic species, including salmonids and crabs. Given the magnitude of the sediment movement at the borrow site, the benthic community that exists is likely to be one that responds quickly to disturbance events. Based on the results of studies (McCauley *et al.* 1977, Swartz *et al.* 1980, Albright and Borithilette 1981, Romberg *et al.* 1995, Wilson and Romberg 1996, Jones and Stokes 1998, all of which are in Pacific International Engineering and Pentec Environmental 1999), the subtidal benthic community within the dredge footprint is expected to recover within 1 to 3 years following dredging. The reproductive biology of this community provides for some spawning in all seasons. Re-colonization by some species would occur immediately following the dredging activity. Adjacent undisturbed habitat would provide a continuing source of organisms to colonize the newly disturbed subtidal substrate through migration and spawning (Pacific International Engineering and Pentec Environmental 1999).

Impacts from the dune restoration would likely include the initial burial of sessile or slow-moving epibenthic and infaunal organisms in the immediate placement areas. Re-colonization of these sites is expected to be relatively rapid (about 1 to 2 years) as they can be easily accessed and colonized by nearby species. Most of the organisms that exist on the face of the barrier dune should be acclimated to a high energy, sand-shifting environment, so that these species should quickly recolonize the new dune face. Finally, no net change to the quality or quantity of available habitat is expected as a result of the sand placement. Dredged sand placed on the intertidal beach would be similar in composition to sand that currently comprises the dune construction beach area. Although 6.5 acres of area below high tide line (HTL) would be permanently covered as a result of the sand and dynamic revetment material, the beach profile would simply be shifted further to the west as wave action reshapes the beach. For the haul road and channel crossing, 3.5 acres of temporary fill below HTL would be removed at project completion. Consequently, a similar benthic community to that existing at present is expected to be present within 1-3 years following the proposed emergency repair.

Forage fish are important prey items for a variety of wildlife, including commercially fished salmonid species. The placement of sand and dynamic revetment material is not expected to impact forage fish spawning. Surf smelt and sand lance spawning has not been documented on Empire Spit. During dredging and pumping activities, fish would likely re-locate to other areas of Willapa Bay, with negligible impacts to their fitness or survival. The work would be

done with a hydraulic dredge, and some fish are likely to be entrained, or suctioned into the dredge with the sediment slurry. In a review of ten years (1979-1989) of entrainment data from Grays Harbor, McGraw and Armstrong (1990) identified 28 species of fish in entrainment samples. Pacific sand lance were entrained at the highest rate (up to 594 per 1000 cy dredged), followed by Pacific staghorn sculpin (up to 92 per 1000 cy) and Pacific sanddab (up to 76 per 1000 cy).

Dredging could therefore result in the loss of high numbers of sand lance, but the rate of entrainment varies by season and time of day. The maximum observed rate of entrainment (594 per 1000 cy) would not be sustained throughout the entire dredging period, if it is met at all. Entrainment rates for sand lance would be highest between dusk and dawn, as they burrow into sandy sea floor habitat at night to hide from predators then emerge to feed during daylight (Hobson 1986). McGraw and Armstrong (1990) found that sand lance entrainment rates in Grays Harbor display some seasonality, increasing during the summer months and declining in the fall and winter. An entrainment study on the Columbia River found that the average number of sand lance entrained was low in the month of May, increased in the summer months to a peak in August, then declined to near zero during October (Larson and Moehl 1990). Although no comprehensive biological studies of outer coast sand lance stocks have been undertaken to determine if the observed mortality rates have a significant effect on the population dynamics of sand lance in Willapa Bay, the Corps expects that cumulative impacts to the forage fish resource would be relatively minor given the temporary nature of the dredging and the limited geographic extent of the borrow site. Furthermore, a 2004 study in the Fraser River found no consistent sand lance catch rate differences between control and dredge sites before and after dredging activities, indicating that population effects are short term, with rapid recruitment into the dredged sites after disturbance (Fraser River Estuary Management Program 2006).

Localized conditions for most forage fish species may be temporarily degraded by turbidity associated with dredging and disposal operations but would likely return to baseline conditions upon completion of the dredging work.

The proposed action is not expected to have a significant effect on the aquatic food web.

3. **Wildlife [230.32]** Noise associated with the dredging, pumping, sand placement, and haul road operations may have an effect on birds and marine mammals in the Project vicinity. The impacts of any sound disturbance would likely result in displacement of animals rather than injury. Project operations are not expected to result in a long-term reduction in the abundance and distribution of any prey items. In summer of 2021, there were 21 snowy plover nests and one streaked horned lark nest observed on Empire Spit. The Corps will coordinate with WDFW, USFWS, and Shoalwater Tribe staff to conduct nesting surveys for western snowy plovers and streaked horned lark at the Project site prior to construction. The construction timing and implementation would be adjusted as practicable to avoid impacts to nesting western snowy plovers and streaked horned larks based on these survey results and coordination with WDFW, USFWS, and Shoalwater Tribe. As part of the dune restoration, the Corps would create and enhance suitable nesting habitat for western snowy plovers and

streaked horned larks in the Project area. In addition, sand fencing would be installed only on the backside of the dune in the northern project area, instead of planting, to maintain barren nesting conditions preferred by western snowy plovers. If listed species are found to be nesting, the Corps would coordinate work with USFWS, WDFW, and the Shoalwater Tribe to avoid or modify work in the immediate area so that direct effects to the species are minimized.

Potential Impacts to Special Aquatic Sites (Subpart E)

1. **Sanctuaries and Refuges [230.40]** The proposed project would not impact any designated sanctuary or refuge area.

2. **Wetlands [230.41]** Wetlands are located immediately adjacent to the project area. The temporary haul road alignment and staging areas are not located in jurisdictional wetlands. The placement of sand in the northern repair area may impact mosaic wetland, thus a wetland delineation would be conducted prior to construction. Impacts would be minimized by adjusting the project alignment where possible to move closer to the ocean side. Unavoidable fill of mosaic wetlands would allow for the protection of the Class 1 estuarine wetlands landward of the dune system to be better protected and preserved. Sand fencing would be installed on the backside of the repair area to aid in sand retention and maintain habitat for ESA-listed species. Sand fencing would provide immediate erosion control, whereas dune grass plantings could take years to help stabilize the dune.

3. **Mudflats [230.42]** There would be 3.5 acres of temporary fill in areas below HTL, including mudflat areas. Temporary haul road and channel crossing materials would be removed at construction completion and the area fully restored to pre-existing conditions

4. **Vegetated Shallows [230.43]** No vegetated shallows would be impacted by the proposed project.

5. **Coral Reefs [230.44]** Not applicable.

6. **Riffle and Pool Complexes [230.45]** Not applicable.

Potential Effects on Human Use Characteristics (Subpart F)

1. **Municipal and Private Water Supplies [230.50]** Not applicable.

2. **Recreational and Commercial Fisheries [230.51]** Anecdotal information from local crab fishermen indicates that adult crabs do not move into the North Channel until after the fall freshet has occurred (Mike Shipman and Doug Davis, personal communication, November 2007), which is typically in late October or November. The proposed dredging would occur between June and October. Crab trawls in 2012 showed overall crab density in the borrow area increased monthly, with the highest concentration of total crab captures occurring in October. Subadult crabs were more abundant in September and October than in August. Impact minimization and avoidance measures in 2012, 2013, and 2018 included timing the dredging to occur during periods of less crab abundance, and the use of techniques that minimize potential crab entrainment during dredging. Similar measures would be employed in 2022, with dredging scheduled to begin mid-July.

   Organisms in the benthic community are important prey items for a variety of aquatic species, including salmonids and crabs. Based on the results of studies (McCauley *et al.* 1977, Swartz *et al.* 1980, Albright and Borithilette 1981, Romberg *et al.* 1995, Wilson and Romberg 1996, Jones and Stokes 1998, all in Pacific International Engineering and Pentec Environmental 1999), the subtidal benthic community within the dredge footprint is expected to recover within 1 to 3 years following dredging. The reproductive biology of this community provides for some spawning in all seasons. Re-colonization by some species would occur immediately following the dredging activity. Adjacent undisturbed habitat would provide a continuing source of organisms to colonize the newly disturbed subtidal substrate through migration and spawning (Pacific International Engineering and Pentec Environmental 1999). Likewise, the epibenthic and infaunal populations in the immediate placement areas to restore the barrier dune are expected to re-colonize the area quickly. Re-colonization of these sites is expected to be relatively rapid (about 1 to 2 years) as they can be easily accessed and colonized by nearby species.

   Forage fish are important prey items for a variety of wildlife, including commercially fished salmonid species. The placement of sand and cobble-sized material for the barrier dune restoration is not expected to impact forage fish spawning. Surf smelt and sand lance spawning has not been documented on Empire Spit. No impact to the commercial salmon fishery is expected as a result of project implementation.

   No other recreational or commercial fisheries would be impacted by the implementation of the proposed project.

3. **Water-Related Recreation [230.52]** Use of the repair area and haul road would be precluded during construction for safety reasons. However, these impacts would be temporary and highly localized, so no significant adverse effects on recreation are anticipated. Restoration of the dune would maintain the current level of recreational access to the dune.

4. **Aesthetics [230.53]** Localized, temporary increases in noise and turbidity would occur while equipment is operating. Views of the ocean from the Shoalwater Reservation and in the Dexter-by-the-Sea community would be limited or non-existent once the barrier dune is restored to its historic height. However, ocean views did not exist prior to the erosion of the barrier dune or since the initial dune construction; as such, the implementation of the project would not adversely affect aesthetic values. The impact of the project on aesthetics is therefore not expected to be significant.

5. **Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves [230.54]** Not Applicable.

Evaluation and Testing (Subpart G)

1. **General Evaluation of Dredged or Fill Material [230.60]** The dredged fill material (approximately 460,000 cy) would be composed of sand from a borrow source located directly offshore of the barrier dune. Approximately 6.5 acres of sand/dynamic revetment material would be placed below HTL. Dynamic revetment material (216,000 tons) would be obtained from existing commercial sources.

2. **Chemical, Biological, and Physical Evaluation and Testing [230.61]** Sediments from the proposed dredge borrow site would be characterized as suitable for beneficial uses such as this barrier dune restoration. Prior to the start of dredging, the Contractor would collect soil samples (borings) in the borrow site to ensure material is suitable for dune repair. The Corps would approve the sample results prior to construction. The Corps would also review and approve the contractors cobble gradation and rock quality testing results, certification, procurement, and placement plan for the dynamic revetment.

Action to Minimize Adverse Effects (Subpart H)

1. **Actions Concerning the Location of the Discharge [230.70]** The effects of the discharge would be minimized by placing the dredged and dynamic revetment materials in a setback alignment from the original dune alignment to minimize encroachment of the northern repair footprint to the greatest extent practicable into the intertidal and subtidal areas. Well defined inlets located at the southeastern and northwestern edges of the embayment would be left intact. Circulation in the intertidal area is not expected to be adversely affected. The discharge would not create standing bodies of water. The location and timing of the proposed discharge has been planned to minimize impacts to marine organisms.

2. **Actions Concerning the Material to be Discharged [230.71]** All appropriate chemical and biological testing would be applied to the sediment proposed to be dredged. The proposed dredged material is suitable for beneficial use. No treatment substances nor chemical flocculates would be added to the dredged materials before placement on the barrier dune. The dredged materials are similar in composition to those that currently comprise the barrier dune. Any suspended sediments are expected to quickly drop out of suspension due to the coarse grain size. Dynamic revetment material would be durable stone as approved by the Corps and of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. It shall be free from cracks, seams, and other defects that would tend to increase unduly its deterioration from natural causes. The inclusion of objectionable quantities of dirt, sand, clay, and rock fines would not be permitted.

3. **Actions Controlling the Material after Discharge [230.72]** Methods for reducing the potential for erosion, slumping, or leaching would not be employed, as the intent of the action is to restore and maintain a naturally occurring barrier dune and associated coastal processes. The dynamic revetment would dissipate wave energy by reflection, absorbing energy through water infiltration, and cross-shore movement of individual cobble units in the beach profile. It would also adapt to the seasonal wave environment. In the summer months sand stored in the offshore bar would migrate up the beach and often bury the cobble.

4. **Actions Affecting the Method of Dispersion [230.73]** Dredged material would be pumped directly onto the beach and shaped with bulldozers. Because the material is sand and is similar to that comprising the beach, turbidity increases associated with the material placement are expected to be minor. Any suspended material would quickly drop out of suspension. The repaired barrier dune and dynamic revetment would allow natural coastal processes, including erosion and accretion due to currents and waves, to continue unabated while providing protection to the Shoalwater Reservation and surrounding communities.

5. **Actions Related to Technology [270.74]** Appropriate machinery and methods of transport of the material for discharge would be employed. All machinery would be properly maintained and operated to minimize the risk of releasing contaminants such as fuel and lubricants into the environment.

6. **Actions Affecting Plant and Animal Populations [270.75]** The Corps is coordinating construction activities with the Shoalwater Tribe and state and federal resource agencies to ensure that minimal impacts to fishery and wildlife resources would occur. The project would take place between 1 June and 28 February, to minimize adverse impacts to fish, particularly bull trout and out-migrating juvenile salmonids. The northern repair area is sparsely vegetated with dune grass, primarily European dune grass (*Ammophila arenia)* but with some American dune grass *(Elymus mollis)* intermixed. The barrier dune restoration would result in approximately 38 acres of sand placement above the MHHW; the majority of this area is unvegetated.

7. **Actions Affecting Human Use [230.76]** Without the barrier dune repair, the risk to life, human health, and safety is significant, as direct wave attack is causing severe erosion to the northern section of the dune and is likely to bypass the remaining dune and impact the safety of the Shoalwater Tribe and millions of dollars of infrastructure. The proposed action is considered an emergency due to the high risk of dune failure during the upcoming flood season, which would create an increase in the risk to life, property, and safety from subsequent flooding, particularly to the Shoalwater Bay Tribal community, the Tribe's cultural lands, and other local residences.

   The original restoration of the barrier dune eliminated or at a minimum, reduced ocean views from the Shoalwater Reservation and in the Dexter-by-the-Sea community. Prior to the initial dune restoration in 2013, ocean views existed only due to the erosion of the barrier dune. Ocean views after the proposed renourishment of the dune would not be substantially different from existing conditions; as such, the implementation of the Project would not adversely affect aesthetic values. The impact of the Project on aesthetics is therefore not expected to be significant. The discharge would not increase incompatible human activity in remote fish and wildlife areas. The dredging and sand/cobble placement are not expected to adversely affect human uses of the area. During the dredging and dune repair process, access to portions of the barrier dune and haul road would be limited for safety reasons. However, any closures would be temporary. Upon completion of the Project, full access to Graveyard/Empire Spit would be restored

8. **Other Actions [230.77]** Not applicable.

ATTACHMENT B

General Policies for the Evaluation of Permit Applications [33 CFR §320.4]

1. **Public Interest Review [320.4(a)]** The Corps finds these actions to be in compliance with the 404(b)(1) guidelines and not contrary to the public interest.

2. **Effects on Wetlands [320.4(b)]** Temporary haul road alignment, staging areas, and dune repair areas are not projected to be located in jurisdictional wetlands. A topographic survey would be completed prior to construction and the alignment for the dune repair, haul road, and staging areas would be adjusted to the greatest extent possible to avoid impacts to wetlands.

3. **Fish and Wildlife [320.4(c)]** USFWS and NMFS are being consulted to ensure that direct and indirect loss and damage to fish and wildlife resources attributable to the proposed barrier dune restoration would be minimized.

4. **Water Quality [320.4(d)]** The Corps would abide by the conditions of the Section 401 WQCs issued by the EPA and Ecology to ensure compliance with Federal and State water quality standards.

5. **Historic, Cultural, Scenic, and Recreational Values [320.4(e)]** No wild and scenic rivers, historic properties, National Landmarks, National Rivers, National Wilderness Areas, National Seashores, National Recreation Areas, National Lakeshores, National Parks, National Monuments, estuarine and marine sanctuaries, or archeological resources would be affected by the proposed repair work. The existing recreation values would be maintained by the restoration of the barrier dune.

6. **Effects on Limits of the Territorial Sea [320.4(f)]** The proposed maintenance work would not alter the coastline nor baseline from which the territorial sea is measured for the purposes of the Submerged Lands Act and international law.

7. **Consideration of Property Ownership [320.4(g)]** All entry rights would be obtained prior to project implementation.

8. **Activities Affecting Coastal Zones [320.4(h)]** The proposed work complies substantively with the policies, general conditions, and general activities specified in the Pacific County Shoreline Management Master Plan and Washington Administrative Code to the maximum extent practicable.

9. **Activities in Marine Sanctuaries [320.4(i)]** Not applicable.

10. **Other Federal, State, or Local Requirements [320.4(j)]**
    a. National Environmental Policy Act. A supplemental Environmental Assessment (SEA) will be prepared to satisfy the requirements of NEPA.

b. Endangered Species Act. In accordance with Section 7(a)(2) of the ESA, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. Consultation under Section 7(a)(2) of the ESA was completed previously (National Marine Fisheries Service [NMFS] concurrence letters dated 12 December 2007, 20 September 2011, 18 June 2012, 3 April 2013, 10 January 2018, and 18 January 2018; U.S. Fish and Wildlife Service [USFWS] concurrence letter dated 30 August 2007 and Biological Opinions dated 24 July 2012, 31 May 2013, and 29 January 2018). Consultation is currently ongoing with NMFS and USFWS concerning the current emergency repair proposal.

c. Clean Water Act. The Corps must demonstrate compliance with the substantive requirements of the CWA. This document records the Corps' evaluation and findings regarding this project pursuant to Section 404 of the Act. The Corps will request Section 401 WQCs from Ecology and the EPA. WQCs from both agencies are necessary since the Project occurs partially on Shoalwater Reservation lands (EPA's jurisdiction) and partially on publicly owned lands (Ecology's jurisdiction). The Corps will abide by the conditions of the WQCs to ensure compliance with State and Federal water quality standards.

d. Coastal Zone Management Act. The CZMA, as amended, requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program. Pursuant to Chapter 90.58 of the Revised Code of Washington, which has been adopted and further defined by the Pacific County Board of County Commissioners Ordinance No. 183, the Corps determined that this proposal is consistent to the maximum extent practicable with the Pacific County Shoreline Master Program along with the five other enforceable policies of the Washington Coastal Zone Management Program.

e. National Historic Preservation Act. The NHPA (16 USC 470) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. As required under Section 106 of the NHPA, the Corps is coordinating with DAHP and the Shoalwater Tribe. On June 14, 2006, The DAHP concurred with the Corps' finding of No Historic Properties Affected for the original proposed project of the dune restoration combined with flood berm extension. The Corps is currently coordinated with the SHPO on the current emergency repair proposal.

f. Fish and Wildlife Coordination Act. The FWCA (16 USC 470) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. This goal is accomplished through Corps funding of USFWS habitat surveys evaluating the likely impacts of proposed actions, which provide the basis for recommendations for avoiding or minimizing such impacts. A FWCA Report was prepared by the USFWS in August 2006 for the existing project and maintenance/repair actions.

11. Safety of Impoundment Structures [320.4(k)] Not applicable.

12. Floodplain Management [320.4(l)] The proposed maintenance work would not directly alter any floodplain areas. Executive Order 11988 requires federal agencies to evaluate the potential effects of actions on floodplains and to avoid undertaking actions that directly or indirectly induce growth in the floodplain or adversely affect natural floodplain values. This Executive Order also directs that proposed projects consider how natural moderation of floods may be attained and promotes the restoration of environmental features that act to modify floods (e.g., wetlands). The proposed project may enable additional development of the Shoalwater Reservation because it would result in less severe flooding of the low-lying areas. However, the barrier dune would only be rebuilt to its historic height. The Corps would not be providing additional protection beyond the historic level that it offered in its pre- eroded state. In addition, the restoration of the barrier dune is a "natural" method of moderating the flood hazard on the Shoalwater Reservation and in the nearby Dexter-by-the-Sea community. Therefore, the Project is in compliance with this order.

13. Water Supply and Conservation [320.4(m)] Not applicable.

14. Energy Conservation and Development [320.4(n)] Not applicable.

15. Navigation [320.4(o)] Navigation may experience temporary and minor inconveniences during the actual dredging process, but no long-term adverse effects to navigation would occur as a result of the proposed work.

16. Environmental Benefits [320.4(p)] The proposed barrier dune restoration project would protect the habitat of the North Cove embayment from further degradation due to storm wave overwash of the Graveyard/Empire Spit barrier dune. The erosion and breaching of the barrier dune has resulted in a severe degradation of the habitat diversity and productivity of the Shoalwater Reservation's North Cove embayment. Winter storm waves at high tide frequently overtop the eroded dune, resulting in infilling of the tide flats with sand eroded from the dune. Due to storm overwash of the eroded and lowered barrier dune and the resulting infilling of North Cove with sand, the habitat in the cove is being transformed into high salt marsh. There has been a significant loss of habitat that previously supported Tribal subsistence shellfish growing and harvesting upon which the Tribe has relied heavily, both historically and in recent times. The barrier dune restoration would reduce the transport of sand into North Cove and the resultant infilling and conversion of the area to high salt marsh. The initial placement of sand has resulted in an increase in the population of nesting threatened western snowy plover and streaked horned lark. Repair of the dune structure would help maintain this new nesting habitat for these ESA-listed species.

17. Economics [320.4(q)] Section 545 of the Water Resources Development Act (WRDA) of 2000 (Public Law 106-541), as amended by Section 5153 of WRDA 2007 (Public Law 110-114), authorized a study and authorized a project, subject to Secretarial approval, for coastal

erosion protection and ecosystem restoration for the tribal reservation of the Shoalwater Tribe. The Congressional authorization specifically cites that the selected project should be a cost-effective means of providing erosion protection. Through the Corps planning process, it has been determined that barrier dune restoration is the most cost- effective means of providing coastal erosion protection to the Shoalwater Reservation.

18. **Mitigation [320.49(r)]** As a restoration project, the Corps considers the action to be self-mitigating. In addition, potential impacts of the proposed project on ESA-listed fish would be minimized through implementation of timing restrictions. For the protection of these species, work would occur between 1 June and 15 February. Impacts to ESA-listed birds would be avoided and/or minimized through implementation of the 2022 Western Snowy Plover and Streaked Horned Lark Protection Plan. The use of material (sand) of similar size and composition to the substrate presently on the beach would minimize habitat impacts of the proposed action. The dynamic revetment structure would protect the sand dune from direct wave attack and erosion, allowing natural coastal processes, including erosion and accretion due to currents and waves, to continue unabated while providing protection to the Shoalwater Reservation. Sand fences would be constructed on the backside of the northern section of the dune to aid in sand retention and maintain habitat for ESA-listed bird species.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

WATER
DIVISION

July 21, 2022

Ms. Laura Boerner
Planning, Environmental and Cultural Resources Branch Chief
Seattle District – U.S. Army Corps of Engineers
4735 East Marginal Way South, Bldg. 1202
Seattle, Washington 98134

Dear Ms. Boerner,

The U.S. Environmental Protection Agency (EPA) has reviewed the Seattle District U.S. Army Corps of Engineers' (Corps) Civil Works Clean Water Act (CWA) section 401, 33 U.S.C. § 1341, water quality certification (WQC) request for the Shoalwater Bay Shoreline Erosion Repair Project ("project") for emergency repair of a barrier dune, located in part within the Shoalwater Bay Indian Tribe Reservation and Pacific County, Washington, near the city of Tokeland. The timeline below outlines milestones of the CWA section 401 WQC process for this project:

- On April 22, 2022, EPA received a pre-filing meeting request from Seattle District, Corps' Civil Works for the proposed project.
- On May 24, 2022, EPA received a valid 401 WQC request from the Corps, the Joint Aquatic Resources Form, and a list of "means and methods to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge." The transmittal also included the Joint Aquatic Resources Form (JAR), the CWA 404 substantive compliance memo and 404(b)(1) evaluation, and other technical support documents. The Corps designated a 60-day reasonable period of review stating that EPA and Washington State Department of Ecology (Ecology) must issue a WQC by July 23, 2022, or the Corps would issue a waiver of the certification requirement.
- On May 26, 2022, EPA received a draft Water Quality Monitoring Plan (WQMP) (version 1) for the project. EPA submitted several iterations of comments on the WQMP to the Corps on the following dates: July 11, 2022 (version 1; written); July 14, 2022 (version 2; meeting); July 18, 2022 (version 3; written, follow-up call). On July 19, 2022, EPA approved the Final WQMP (version 4), dated July 18, 2022.
- On May 31, 2022, EPA issued a 21-day public notice comment period on the request for CWA section 401 WQC; no comments were received.
- On June 1, 2022, a pre-filing meeting was held between EPA, the Corps, Ecology, and the Shoalwater Bay Indian Tribe.
- On June 15, 2022, the Corps submitted the following draft plans to EPA: 1. Dredging and Sand Placement Plan, 2. Environmental Protection Plan, 3. Spill Prevention and Containment Plan, and 4. Proposed Dredging Company Ingress/Egress Plan.
- On July 6, 2022, the Corps contractor's pre-construction topographic survey revealed the need for a revised dune/dynamic revetment project design.
- On July 11, 2022, the Corps e-mailed a revised dune/dynamic revetment project design description to EPA and Ecology.
- On July 14, 2022, the Dredged Material Management Program signed a Tier 1 Suitability Determination for the material at the borrow site.
- On July 20, 2022, the Corps e-mailed a revised Cannery Slough crossing design description to EPA and Ecology.

CWA section 401(a)(1) requires applicants for Federal permits and licenses that may result in discharges into waters of the United States to obtain CWA section 401 WQC that potential discharges will comply with applicable provisions of the CWA, including sections 301, 302, 303, 306 and 307. Where no state agency or tribe has authority to give such CWA section 401 WQC, EPA is the certifying authority. In this case, the Shoalwater Bay Indian Tribe does not have treatment in a similar manner as a state; therefore, the EPA is the certifying authority. This WQC is based on and relies upon information obtained through this process and contained in the documents and communications listed in Table 1.

Table 1. Documents and project design communications reviewed by EPA for consideration in issuance of 401 water quality certification.

Document Name	Document Date
Notice of Preparation	14-Apr-22
401 Request – Letter and Attachments/Package	24-May-22
Washington State Joint Aquatic Resources Form	24-May-22
Spill Prevention and Containment Plan	26-May-22
Dredging and Sand Placement Plan (June 2022)	12-Jun-22 (email date)
Proposed Dredging Company Ingress/Egress Plan	6-Jun-22
Environmental Protection Plan	17-Jun-22
Dune Design and Specs Update (email)	14-Jul-22
Water Quality Monitoring Plan	18-Jul-22
Tier 1 Suitability Determination	14-Jul-22
Slough Crossing Design and Specs Update (email)	20-Jul-22

EPA considered the applicable sections of the CWA when reviewing the potential water quality impacts from the proposed project. EPA has determined that there is a reasonable assurance that any discharge from the proposed project will comply with the requirements of CWA section 401(a)(1) and CWA section 401(d), provided the project is implemented as specified in the referenced documents and project communications (Table 1). **Therefore, on behalf of the Shoalwater Bay Indian Tribe, EPA grants CWA section 401 WQC with no conditions.** A summary of the final project design/details as of the date of this certification are provided below.

Project Location

This CWA section 401 WQC applies to any potential point source discharges from the Shoalwater Bay Shoreline Erosion Repair Project into waters of the U.S. within the Shoalwater Bay Indian Reservation, on the north side of the entrance to Willapa Bay near the city of Tokeland, Pacific County, Washington (46.721166 N latitude, -124.028557 W longitude).[1]

Project Overview

The proposed project is focused on the northern damaged portion (approximately 4,000 feet (ft) long) of the full length (12,500 ft long) of the Empire Spit barrier dune constructed in 2018. The proposed repair includes replacement of sand that has been eroded from the original dune alignment, and construction of a cobble/quarry spall dynamic revetment along the ocean side of the repaired barrier spit dune. A smaller dynamic revetment was included in the 2018 project design but not constructed in 2018 due to cost and logistics at that time.

The current repair requires up to 460,000 cubic yards (cy) of sand dredged from an approximately 180 acre offshore borrow site located up to 3 miles from the placement site. Washington Department of Ecology is the certifying authority for dredging activities at the borrow site. A Tier 1 Suitability Determination was issued by the

[1] Washington State Department of Ecology is also issuing a 401 water quality certification to cover all project activities located outside of the Shoalwater Bay Tribe Reservation. This EPA-issued 401 water quality certification does not cover those activities outside of the Reservation.

Dredged Material Management Program on July 14, 2022, finding that based on existing information, all 460,000 cy of borrow area sediments are suitable for dredging and placement on site.

Dredged sand will be dewatered using large settling cells within the dune repair alignment, with effluent released to Willapa Bay via a weir system and pipe. Sand placement will occur from approximately +5 (depending on current variable elevations) to a constructed final dune height of +25 ft mean lower low water (MLLW), with a 1 vertical to 5 horizontal side slope. The constructed dune crest will be 150 to 200 ft in width, with the crest wider at the northern, more erosive terminus. A pipeline with booster pump will be installed along the landward side of the existing dune to transport the dredged material to settling cells constructed along the dune repair alignment. Once dewatered, the sand will be moved and graded using heavy equipment. The project design includes 3,700 ft of sand fencing placed on the landward side of the dune to hold the sand and prevent loss into important adjacent intertidal wetlands.

The fortified dynamic revetment will be constructed using up to 183,000 tons (up to 131,000 cy) of 10 inch-minus cobble/quarry spalls, stabilizing the toe and western edge of the dune. The dynamic revetment will have a top elevation of +20 ft MLLW and a maximum crest width of 75 ft, with a 1 vertical to 7.5 horizontal side slope. Some beach excavation will be needed to bury the toe of the revetment in the beach.

A 30-ft-wide, 4700-ft-long temporary haul road constructed using 40,000 tons of 10 inch-minus quarry spalls will cross Graveyard and Empire Spits to transport materials and personnel to the project site on Empire Spit. A temporary causeway comprised of 9 corrugated metal pipe (CMP) culverts and quarry rock fill material will be constructed to span the tidal inlet (Cannery Slough) separating Graveyard Spit from Empire Spit. The high tide line distance between Graveyard Spit and Empire Spit is presently 1000 ft; however, the inlet channel thalweg below the low tide line is 100 ft. A series of 3 trenches will be installed, each with 3 CMPs to convey tidal flows through a 200 ft long portion of the causeway. Up to 4000 cy of excavation will be required to prepare the two southern-most trenches. Following trench and culvert installation, backfill material composed of crushed quarry rock will be paced around the culverts. Total fill below the HTL for the causeway is 14,000 cy. The total disturbance over the 1000 ft causeway length is 1.6 acres. Large one to three-ton sized riprap will be placed between the trenches and on the seaward side of the channel crossing to prevent wave-generated scour and damage to the most exposed section of the crossing. All haul road and channel crossing materials below the high tide line (HTL) will be removed at construction completion and the area fully restored to pre-existing conditions.

Aquatic Resource Impacts

Preliminary Corps' contractor work included pre-construction topography, wetland delineation, and hydraulic flow (Cannery Slough) studies to adapt the final design to current site conditions. Based on the early surveys, project design details including footprints, quantities, and dune width have changed since the initial WQC request package was received in May. Narrative requirements in Corps documentation including, for example, staking and avoidance of wetlands, restricting contractor laydown areas and equipment to areas outside of wetlands and in the dune repair footprint, etc. are required elements of project design and contractor implementation. EPA expects that the Corps' inspectors and contractors will meet the intent and requirements of the Corps environmental documentation which will avoid and minimize impacts to aquatic resources.

Willapa Bay is categorized as excellent for water quality and beneficial uses, and categorization criteria apply as described in Washington Administrative Code (WAC) 173-201A-210 (1). Specific work impacting aquatic resources is proposed in the project documents listed in Table 1. While significant discharges are not expected from these activities, increased turbidity is the most likely water quality impact. With respect to this 401 WQC, EPA anticipates that effluent discharged from the settling ponds during dredged material dewatering, and construction of the Cannery Slough crossing, pose the greatest risk for turbidity discharge. The project will follow the EPA-approved site-specific Water Quality Monitoring Plan (dated July 18, 2022), which includes instrumented and visual turbidity monitoring during these activities to detect significant turbidity discharges. Temporary turbidity exceedances caused by these activities on the Shoalwater Bay Indian Tribe Reservation are permitted under this certification but are not to exceed the limits established in WAC 173-201A-210(1)(e)(i). The WQMP provides clear direction should instrumented or visual monitoring reveal a turbidity concern/exceedance.

Work causing distressed or dying fish and discharges of oil, fuel, or chemicals into state waters or onto land with a potential for entry into state waters is prohibited. While significant discharges are not expected from these activities, the WQMP and other project documents outline clear steps to respond to discovery of distressed or dying fish, or discharges of oil, fuel, or chemicals.

Although the dune construction footprint in the final project plans does not extend into delineated wetlands, there is long-term risk of sand migration beyond the placement area. The project design includes 3,700 ft of sand fencing placed on the landward side of the dune to prevent sand loss into important intertidal wetlands. EPA supports this measure to help mitigate risk of water quality degradation to wetlands from sediment placement within the dune construction footprint.

Project Work Timeframe

Due to the threat of coastal storms and hazardous working conditions, the Corps has obtained emergency authorization to proceed with this civil works project before the issuance of Ecology and EPA certifications. Specifically, temporary causeway construction began on July 12, and dredging began July 16, 2022.

Dune repair construction must be completed by January 28, 2023, and the site must be restored by February 28, 2023, though it is likely work will be completed well before those dates. Current contractor timeframes aim to complete the project prior to the usual onset of severe winter storms (early November), both for safer operations and to protect critical habitat and infrastructure on the landward side of the dune.

General Information

The Seattle District U.S. Army Corps of Engineers' Civil Works is responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, or tribal authorities, including but not necessarily limited to an EPA general CWA section 402 stormwater permit notice of intent for authorization under EPA's Construction Stormwater General Permit. The Corps' contractor correctly obtained their section 402 Construction General Permit (Permit No. WAR10I02L) under the EPA National Pollution Discharge Elimination System General Permit for Discharge from Construction Activities in Indian country within the State of Washington (Permit No. WAR10I000).

This CWA section 401 WQC should be retained in your files as documentation of EPA certification for the above-referenced project. Copies of this CWA section 401 WQC must be kept on the job site and made readily available for reference. This CWA section 401 WQC is specifically associated with the Corps' authorization for emergency action and will expire on February 28, 2023.

If you have any questions regarding this certification, please contact Justine Barton by email at barton.justine@epa.gov; (206) 553-6051) or Annie Whitley by email at whitley.annie@epa.gov; (206) 553-0058).

Sincerely,

for

David Croxton, Manager
Wetlands and Oceans Section

cc: Penny Kelley, Washington Department of Ecology, pkel461@ecy.wa.gov
Larissa Ritzman, Shoalwater Bay Indian Tribe, lpfleeger@shoalwaterbay-nsn.gov
Melissa Leslie, Seattle District Corps of Engineers, melissa.l.leslie@usace.army.mil

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

July 19, 2022

U.S. Army Corps of Engineers
ATTN: Melissa Leslie
4735 E. Marginal Way South Bldg. 1202
Seattle, WA 98134

Re: Water Quality Certification Order No. **21226** for Shoalwater Bay Shoreline Erosion Control Project Emergency Repair in Pacific County, Washington

Dear Melissa Leslie:

On May 25, 2022 the Corps of Engineers (Corps) submitted a request for a Section 401 Water Quality Certification (WQC) under the Federal Clean Water Act for the Shoalwater Bay Shoreline Erosion Control Project Emergency Repair in Pacific County, Washington.

On behalf of the state of Washington, the Department of Ecology certifies that the work described in the Water Quality Certification Request and supplemental documents complies with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, as amended, and applicable state laws. This certification is subject to the conditions contained in the enclosed Water Quality Certification Order (WQC Order).

Please ensure that anyone doing work under this WQC Order has read, is familiar with, and is able to follow all of the provisions within the attached WQC Order.

If you have any questions about this decision, please contact Penny Kelley at (360) 280-8856. The enclosed WQC Order may be appealed by following the procedures described within.

Sincerely,

Brenden McFarland, Section Manager
Environmental Review & Transportation Section
Shorelands and Environmental Assistance Program

Enclosure

E-cc: Justine Barton, EPA
Lauren Bauernschmidt, WDFW
Loree' Randall, Ecology
ECYREFEDPERMITS@ecy.wa.gov – Aquatics No. 141640

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO U.S. Army Corps of Engineers pursuant to 33 U.S.C. 1341 (FWPCA § 401), RCW 90.48.120, RCW 90.48.260 and Chapter 173-201A WAC	)))))	**WQC ORDER No. No.21226** Shoalwater Bay Shoreline Erosion Control Project Emergency Repair in Willapa Bay located in Pacific County, Washington.

U.S. Army Corps of Engineers
Attn: Melissa Leslie
4735 E. Marginal Way South, Bldg. 1202
Seattle, WA 98134

On May 25, 2022, the U.S. Army Corps of Engineers (Corps) submitted a request for a Section 401 Water Quality Certification (WQC) under the federal Clean Water Act for the Shoalwater Bay Shoreline Erosion Control Project Emergency Repair in Pacific County, Washington. The following required processing dates are referenced below:

- On the April 25, 2022, the Corps submitted a pre-filing meeting request.
- On May 25, 2022, the Corps submitted additional information, and the Department of Ecology (Ecology) considered the Request valid on this date.
- On June 8, 2022, Ecology issued a public notice for the project.

The Corps of Engineers is proposing to dredge approximately 460,000 cubic yards (CY) of sand offshore of the Tokeland Peninsula to restore an existing barrier dune on Empire Spit. This barrier dune was constructed in 2013 utilizing 709,000 cy of dredge material from a borrow area one mile off shore and then repaired in 2018 utilizing 937,000 cy of dredge material in two borrow areas adjacent to the Willapa Bay entrance and channel. The current borrow location is still adjacent to the Willapa Bay entrance and channel but has been shifted southeast to an area that has higher accretion rates of sand. To access the barrier dune, a 30-foot wide temporary haul road will be constructed across Graveyard and Empire Spit. The road will be composed of 40,000 tons to quarry spalls and either removed post construction or left in place.

This project is an emergency repair aimed at reducing coastal erosion and flooding to the Shoalwater Reservation. The Corps of Engineers has also requested a Section 401 WQC from the Environmental Protection Agency (EPA) for the following work on the Shoalwater Reservation:

- 4000 linear feet of sand placement
- 4000 linear feet of cobble placement

- Construct a portion of the access road where it crosses the Shoalwater Reservation
- Install 3700 linear feet of sand fencing on the back or landward side of the dune

The placement of sand will repair the section of barrier dune that has eroded and the toe of the dune will be stabilized with approximately 216,000 tons of quarried spall.

This Section 401 WQC Order authorizes:

- dredging of approximately 460,000 cubic yards of sand
- Constructing an access road across Graveyard Spit from SR 105 to the boundary of the Shoalwater Reservation.
- Installing a section of pipeline from the borrow dredging location to the edge of the Shoalwater Reservation boundary.

The project site is located on the Shoalwater Bay Tribal Reservation near Tokeland and in Willapa Bay in Pacific County, Washington, Sections 2, 3, 4, Township 14N. Range 11W., within Water Resource Inventory Area (WRIA) 24, Willapa

AUTHORITIES

In exercising authority under 33 U.S.C. § 1341, RCW 90.48.120, and RCW 90.48.260, Ecology has reviewed this WQC request pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. §§1311, 1312, 1313, 1316, and 1317.
2. Conformance with the state water quality standards contained in Chapter 173-201A WAC and authorized by 33 U.S.C. §1313 and by Chapter 90.48 RCW, and with other applicable state laws; and
3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.
4. Conformance with Washington's prohibition on discharges that cause or tend to cause pollution of waters of the state of Washington. RCW 90.48.080.

5. The project proponent of the project authorized is responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, local or tribal authorities.

With this Water Quality Certification (WQC) Order, Ecology is granting with conditions, the Corps request for a Section 401 Water Quality Certification for the Shoalwater Bay Shoreline Erosion Control Project Emergency Repair in Willapa Bay located in Pacific County. Ecology has determined that the proposed discharges will comply with all applicable state water quality requirements, provided the project is conducted in accordance with the Section 401 Water Quality Certification request that Ecology received on May 25, 2022, the supporting documents referenced in Table 1 below, and the conditions of this WQC Order.

Table 1. Supporting Documents

Date Received	Document Type	Title & Date	Author
May 25, 2022	Joint Aquatic Resources Permit Application (JARPA) Form	JARPA (dated May 25, 2022)	Corps
May 25, 2022	Drawings	Shoalwater Bay Barrier Dune – Coastal Storm Risk Management Project (dated February 24, 2022)	Corps
	Water Quality Monitoring Plan	Water Quality Monitoring Plan (dated July 18, 2022)	ECC Environmental LLC Ross Island Sand & Gravel Co. Rognlin's Inc.
June 15, 2022	Environmental Protection Plan	Shoalwater Dune Barrier Restoration Environmental Protection Plan (dated June 2022)	ECC Environmental LLC Ross Island Sand & Gravel Co. Rognlin's Inc. Jacobs, Inc.
June 15, 2022	Spill Prevention and Containment Plan	Draft Shoalwater Dune Barrier Restoration Spill Prevention and Containment Plan (dated May 2022)	ECC Environmental LLC Ross Island Sand & Gravel Co. Rognlin's Inc. Jacobs, Inc.

June 15, 2022	Dredge Plan	Shoalwater Dune Barrier Restoration Work Plan, (dated June 2022)	ECC Environmental LLC Ross Island Sand & Gravel Co. Rognlin's Inc. Jacobs, Inc
June 15, 2022	Project Site Access Plan	Shoalwater Barrier Dune Restoration Project, Dune Site Ingress/Egress Estimation (dated June 6, 2022)	Ross Island Sand & Gravel Co.
June 24, 2022	Suitability Determination	Memorandum for Record Tier 1 Determination (dated January 11, 2018)	Dredge Materials Management Program

Issuance of this Section 401 Water Quality Certification for this proposal does not authorize Corps to exceed applicable state water quality standards (Chapter 173-201A WAC), ground water quality standards (Chapter 173-200 WAC) or sediment quality standards (Chapter 173-204 WAC). Furthermore, nothing in this Section 401 Water Quality Certification absolves the Corps from liability for contamination and any subsequent cleanup of surface waters, ground waters, or sediments resulting from project construction or operations.

Water Quality Certification Conditions

The following conditions strictly adhered to by the Corps. Specific condition justifications and citations required by 40 CFR 121.7(d)(1) are provided below each condition in italic text.

A. General Conditions

1. In this WQC Order, the term "Project Proponent" shall mean the Corps and its agents, assignees, and contractors.

    - *Justification - Ecology needs to identify that conditions of this WQC Order apply to anyone conducting work on behalf of the Project Proponent to ensure compliance with the water quality standards and other applicable state laws.*

    - *Citation - 40 CFR 121.1(j), Chapter 90.48 RCW, Chapter 90.48.080 RCW, Chapter 90.48.120 RCW, Chapter 90.48.260 RCW, Chapter 173-200 WAC, Chapter 173-201A WAC, and Chapter 173-225-010 WAC.*

2. All submittals required by this WQC Order shall be sent to Ecology's Headquarters Office, Attn: Federal Permit Manager, via e-mail to fednotification@ecy.wa.gov and cc to penny.kelley@ecy.wa.gov. The submittals shall be identified with WQC Order **No. 21226** and include the Project Proponent's name, Corps permit number, project name, project contact, and the contact phone number.

    - *Justification - Ecology needs to identify where information and submittals are to be submitted to be in compliance with the requirements of this WQC Order.*

    - *Citation - 40 CFR 121, Chapter 90.48 RCW, Chapter 90.48.120 RCW, Chapter 90.48.260 RCW, Chapter 173-201A WAC, and Chapter 173-225-010 WAC.*

3. Work authorized by this WQC Order is limited to the work described in the WQC request package received by Ecology on May 25, 2022 and the supporting documentation identified in Table 1.

    - *Justification - Ecology has the authority to prevent and control pollution of state waters. By authorizing a discharge into a water of the state, through a WQC, Ecology is certifying the project as proposed will not negatively impact our state's water quality. Therefore, it is imperative the project is conducted as it was presented during the review process. Any deviations from information within the WQC Request package and this WQC Order must be disclosed prior to the initiation of the planned work.*

    - *Citation - 40 CFR 121.5, Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.120 RCW, Chapter 90.48.260 RCW, Chapter 173-200 WAC, Chapter 173-201A WAC, Chapter 173-204 WAC, and Chapter 173-225-010 WAC.*

4. The Project Proponent shall keep copies of this WQC Order on the job site and readily available for reference by Ecology personnel, the construction superintendent, construction managers and lead workers, and state and local government inspectors.

    - *Justification - All parties (including on-site contractors) must be aware of and comply with the WQC Order for the protection of water quality.*

    - *Citation - 40 CFR 121.3, Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 173-201A WAC, and Chapter 173-225-010 WAC.*

5. The Project Proponent shall provide access to the project site and all mitigation sites upon request by Ecology personnel for site inspections, monitoring, and/or necessary data collection, to ensure that conditions of this WQC Order are being met.

- *Justification - Ecology must be able to investigate and inspect construction sites and facilities for compliance with all state rules and laws.*

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.090 RCW, Chapter173-201A WAC, and Chapter 173-225-010 WAC.*

6. The Project Proponent shall ensure that all project engineers, contractors, at the project site with authority to direct work have read and understand relevant conditions of this WQC Order and all permits, approvals, and documents referenced in this WQC Order. The Project Proponent shall provide Ecology a signed statement (see Attachment A for an example) before construction begins.

    - *Justification - Ecology needs to ensure that anyone conducting work at the project, on behalf of the Project Proponent, are aware of and understand the required conditions of this WQC Order to ensure compliance with the water quality standards and other applicable state laws.*

    - *Citation - 40 CFR 121.1(j), Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 173-201A WAC, and Chapter 173-225-010 WAC.*

7. This WQC Order does not authorize direct, indirect, permanent, or temporary impacts to waters of the state or related aquatic resources, except as specifically provided for in conditions of this WQC Order.

    - *Justification - Ecology has the authority to prevent and control pollution of state waters, and to protect designated uses. By authorizing a discharge into a water of the state, through a water quality certification, we are certifying the project as proposed will not negatively impact our state's water quality and will comply with the state's water quality requirements. Therefore, it is imperative the project is conducted as it was presented during the review process, and as conditioned herein.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 173-200 WAC, Chapter173-201A WAC, Chapter 173-201A-300(2)(e)(i) WAC, Chapter 173-201A-310 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

8. Failure of any person or entity to comply with the WQC Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the state's water quality standards.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life*

and beneficial uses. Civil penalties and other enforcement actions are the primary means of securing compliance with water quality requirements.

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.037 RCW, Chapter 90.48.080 RCW, Chapter 90.48.120 RCW, Chapter 90.48.142 RCW, Chapter 90.48.144 RCW, and Chapter 173-225-010 WAC.*

9. The Project Proponent shall provide Ecology documentation for review before undertaking any major changes to the proposed project that could significantly and adversely affect water quality, other than those project changes required by this WQC Order.

    - *Justification- Ecology has independent authority to enforce our 401 certification conditions issued through this WQC Order pursuant to RCW 90.48. In order to ensure the project will comply with water quality standards in the event of any major changes, Ecology must be able to review the scope of work involved in the construction and operation of the project, otherwise all work must stop and a new 401 certification pre-filing meeting, followed by a new 401 request (after requisite 30-days) is required.*

    - *Citation- 40 CFR 121.1(k) & (n), 40 CFR 121.3, Chapter 90.48 RCW, and Chapter 173-201 WAC.*

B. Notification Requirements:

1. The following notification shall be made via phone or e-mail (e-mail is preferred) to Ecology's Federal Permit Manager via e-mail to fednotification@ecy.wa.gov and cc to penny. kelley@ecy.wa.gov. Notifications shall be identified with WQC Order **No. 21226** and include the Project Proponent name, project name, project location, project contact and the contact phone number.

    a) Immediately following a violation of state water quality standards or when the project is out of compliance with any conditions of this WQC Order.

    b) At least ten (10) days prior to conducting initial in-water work activities.

    c) Within seven (7) days of completing in-water work activities.

    - *Justification - Ecology must be aware of when a project starts and ends and whether there are any issues. This allows Ecology to evaluate compliance with the state water quality requirements.*

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204 WAC, and Chapter 173-225-010 WAC.*

2. In addition to the phone or e-mail notification required under B.1.a. above, the Project Proponent shall submit a detailed written report to Ecology within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

    - *Justification - Ensure the Project Proponent remains in full compliance with state water quality requirements for the duration of the project.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.120 RCW, Chapter 173-201A WAC, and Chapter 173-225-010 WAC.*

C. Timing

1. This WQC Order will expire May 25, 2027.

    - *Justification - Certifications are required for any license or permit that authorizes an activity that may result in a discharge. Ecology needs to be able to specify how long the WQC Order will be in effect.*

    - *Citation - Chapter 90.48 RCW, Chapter 173-201A, and Chapter 173-225-010 WAC.*

2. All activities within the wetted perimeter of Willapa Bay may be conducted between July 15th and February 15th of any year.

    - *Justification - This condition is reaffirming the project will take place during a time period that will not harm fish or other aquatic species.*

    - *Citation - Chapter 77.55 RCW, Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300 WAC, Chapter 173-201A-330 WAC, Chapter 173-225-010 WAC, and Chapter 220-660 WAC.*

D. Water Quality Monitoring and Criteria

1. This WQC Order does not authorize the Project Proponent to exceed applicable water quality standards beyond the limits established in WAC 173-201A.

- *Justification - This condition provides citation to the appropriate water quality standard criteria to protect surface waters of the state. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

2. If water quality exceedances for turbidity are observed outside the point of compliance, work shall cease immediately and the Project Proponent or the contractor shall assess the cause of the water quality problem and take immediate action to stop, contain, and correct the problem and prevent further water quality turbidity exceedances.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and know if there are exceedances of the water quality standards that protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

3. Visible turbidity anywhere beyond the temporary area of mixing (point of compliance) from the activity, shall be considered an exceedance of the standard.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and know if there are exceedances of the water quality standards that protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

4. The Project Proponent shall conduct water quality monitoring as described in the approved Water Quality Monitoring Plan as identified in Table 1 (hereafter referred to as the WQMP)

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and know if there are exceedances of the water quality standards that protect aquatic life and beneficial uses.*

- *Citation - RCW 90.48, RCW 90.48.030, Chapter 173-201A WAC, 173-201A-300-330 and Chapter 173-225-010 WAC.*

5. Monitoring results shall be submitted monthly to Ecology's Federal Permit Manager, per condition A.2.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and know if there are exceedances of the water quality standards that protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

6. Ecology may ask or could use its discretionary authority to require the Project Proponent to provide mitigation and/or additional monitoring if the monitoring results indicate that the water quality standards have not been met.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and know if there are exceedances of the water quality standards that protect aquatic life and beneficial uses.*

    - *Citation - RCW 90.48, 90.48, RCW 90.48.030Chapter 173-201A WAC, 173-201A-300-330 WAC, Chapter 173-204 WAC.*

E. Dredging & Dune Construction

<u>Establishing Pipeline</u>

1. Upland travel routes to lay pipeline and conduct maintenance inspections of the pipeline, once assembled, shall be clearly marked and maintained until all work is complete.

    - *Justification – Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

2. Any material laid down to stabilize upland routes for pipeline maintenance shall be removed at the end of construction.

- *Justification – Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

- *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

3. Geotextile fabric, other fabric, or tarping used for stabilizing construction entrances and/or roads shall be removed and properly managed or disposed in an approved upland site.

    - *Justification – Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

4. No equipment, stockpiling or staging of pipeline materials shall occur at or below the OHWM of any waterbody or in wetlands.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

5. Removal of native bank line vegetation for establishing the pipeline shall be limited to the minimum amount needed.

    - *Justification - Vegetation removal or disturbance can contribute to erosion and turbidity issues. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

- *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC.*

6. All natural habitat features on the beach larger than twelve inches in diameter, including trees, stumps, logs and rocks shall be retained on site. The natural habitat features may be moved during laying and connecting pipeline but should be placed near the pre-project location after the pipeline is removed.

    - *Justification - Vegetation removal or disturbance can contribute to erosion and turbidity issues. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC.*

7. Construction debris shall be stored upland of the ordinary high water mark so that it cannot enter the water or cause water quality degradation. All debris shall be properly disposed of on land in an approved upland facility.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

8. Garbage, plastic and other debris encountered during construction shall be removed from the site and disposed in an approved upland facility.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

Equipment & Maintenance

9. All equipment being used below the ordinary high water mark shall utilize biodegradable hydraulic fluid.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

10. Equipment used for this project shall be free of external petroleum-based products while used around the waters of the state, including wetlands. Accumulation of soils or debris shall be removed from the drive mechanisms (wheels, tires, tracks, etc.) and the undercarriage of equipment prior to its use around waters of the state, including wetlands.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

11. No equipment shall enter, operate, be stored or parked within any sensitive area except as specifically provided for in this WQC Order.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

12. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters.

- *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 173-200, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

13. Wash water containing oils, grease, or other hazardous materials resulting from washing of equipment or working areas shall not be discharged into state waters. The Project Proponent shall set up a designated area for washing down equipment.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

14. Barges shall not be allowed to ground out during in-water construction.

    - *Justification - This condition is necessary to protect shallow water habitat and prevent suspension of sediment. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 173-201A-300(2)(e)(i) WAC, Chapter 173-201A-310 WAC, and Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

15. Anchors and/or spuds shall not be deployed in eel grass, kelp or forage fish spawning

    - *Justification – This condition is necessary to protect shallow water habitat and prevent suspension of sediment. Ecology must protect waters of the state from all discharges and potential discharges of pollution that affect water quality to protect aquatic life and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 173-201A WAC, 173-201A-300-300 WAC, and Chapter 173-204 WAC*

16. Barges shall be kept free of material that could be blown into the water.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation -Chapter 70A-200 RCW, Chapter 79.02-300 RCW, and Chapter 90.48 RCW, and Chapter 173-225-010 WAC.*

<u>Dredging</u>

17. All dredging is to be done using a hydraulic dredge. Use of any other type of dredge requires preapproval from Ecology.

    - *Justification - Ecology has reviewed the project and the BMPs for a specific type of dredging. Changes to the dredging method would require different BMPs. If new dredging methods are proposed, a new WQC pre-filing meeting request, followed by a new WQC request (after requisite 30-days) is required.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.52-040 RCW, Chapter 90.54.020(2)(b) RCW, Chapter 173-201A WAC, Chapter 173-201A-240(5)(b) WAC, and Chapter 173-204-400(2) WAC, and Chapter 173-225-010 WAC.*

18. The dredge shall only be operated with the intake at or below the surface of the sand being removed. The intake shall only be raised a maximum of three feet along the bed for brief periods of purging or flushing the intake system.

    - *Justification – This condition would limit re-suspension of sediment that could cause water quality exceedances. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

19. Dredging operations shall be conducted in a manner that minimizes the disturbance and siltation of adjacent waters and prevents the accidental discharge of petroleum products, chemicals or other toxic or deleterious substances into state waters.

- *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

20. The Project Proponent shall follow the approved Dredge and Disposal Workplan as identified in Table 1.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC.*

21. A pre-dredge meeting is required to be convened prior to the start of dredging.

    - *Justification - Ecology would like to meet with the Project Proponent and contractor to go over the Workplan prior start of work to ensure that the plan reflects the project that has been authorized by this WQC Order. If there has been major changes work must not proceed and a new WQC pre-filing meeting request, followed by a new WQC request (after requisite 30-days) is required.*

    - *Citation -Chapter 70A-200 RCW, Chapter 77.55 RCW, Chapter 79.02.30040 RCW, Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.52-040 RCW, Chapter 90.54.020(2)(b) RCW, Chapter 173-201A WAC, Chapter 173-201A-240(5)(b) WAC, Chapter 173-201A-300 WAC, Chapter 173-201A-330 WAC, Chapter 173-204-400(2) WAC, Chapter 173-225-010 WAC, and Chapter 220-660 WAC.*

22. All dredging and disposal shall have a valid suitability determination prior to in-water work. This area ranks very low in potential for contamination and the recency determination extends through January 2028. Contact the DMMO for a possible extension on this suitability determination.

    - *Justification - The DMMP process confirms that material is suitable for in-water disposal and that the project meets state antidegradation regulations.*

- *Citation - Chapter 173-201A WAC, Chapter 173-201A-230 WAC, Chapter 173-201A-240(1) WAC, Chapter 173-201A-240(2) WAC, Chapter 173-204 WAC, Chapter 173-204-110-120 WAC, Chapter 173-204-400(2) WAC, Chapter 173-204-410(7) WAC, Chapter 173-204-350(d), and Chapter 173-225 WAC.*

Temporary Mooring Dolphin

23. The applicant shall not use treated wood piling for temporary mooring dolphins

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

24. Piles used to construct the temporary mooring dolphin shall be removed at the end of construction.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

25. Piles removed from the substrate shall be moved immediately from the water onto a barge or onto upland.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

26. The pile shall not be shaken, hosed off, left hanging to drip or any other action intended to clean or remove adhering material form the pile.

- *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

- *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

27. If a barge is used to remove piles, the work surface on the barge deck shall include low walls or other containment devices for piles and sediment removed during pulling of the piling. Any water on the barge shall be contained and filtered using BMPs before being discharged back to waters of the state.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC*

28. Sediments spilled on work surfaces during pile removal shall be contained and disposed of at an approved upland disposal site.

    - *Justification – Ecology must be assured that the Project Proponent is managing and disposing of sediment to protect water quality and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.*

29. The temporary mooring dolphins shall not be located in any eel grass, kelp or forage fish spawning beds.

    - *Justification – This condition is necessary to protect shallow water habitat and prevent suspension of sediment. Ecology must protect waters of the state from all discharges and potential discharges of pollution that affect water quality to protect aquatic life and beneficial uses.*

    - *Citation – Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 173-201A WAC, 173-201A-300-300 WAC, and Chapter 173-204 WAC*

F. Emergency/Contingency Measures

1. The Project Proponent shall develop and implement a spill prevention and containment plan for this project.

    - *Justification - Ecology must ensure that the Project Proponent has a plan to prevent pollution from entering waterways. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 90.56.280 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC, and Chapter 173-303-145 WAC.*

2. The Project Proponent shall have adequate and appropriate spill response and cleanup materials available on site to respond to any release of petroleum products or any other material into waters of the state.

    - *Justification - Ecology must have assurance that the Project Proponent has the material readily available in WQC Order to address any spills that might occur to protect waters of the state. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 90.56.280 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC, and Chapter 173-303-145 WAC.*

3. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters.

    - *Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 90.56.280 RCW, Chapter 173-201A WAC, Chapter*

173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC, and Chapter 173-303-145 WAC.

4. Work causing distressed or dying fish and discharges of oil, fuel, or chemicals into state waters or onto land with a potential for entry into state waters is prohibited. If such work, conditions, or discharges occur, the Project Proponent shall notify Ecology's Federal Permit Manager per condition A2 and immediately take the following actions:

    a. Cease operations at the location of the non-compliance.

    b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and prevent further environmental damage.

    c. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.

    d. Immediately notify Ecology's Regional Spill Response Office and the Washington State Department of Fish & Wildlife with the nature and details of the problem, any actions taken to correct the problem, and any proposed changes in operation to prevent further problems.

    e. Immediately notify the National Response Center at 1-800-424-8802, for actual spills to water only.

        - *Justification - This condition is necessary to prevent oil and hazardous materials spills from causing environmental damage and to ensure compliance with water quality requirements. The sooner a spill is reported, the quicker it can be addressed, resulting in less harm. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

        - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 90.56.280 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC, and Chapter 173-303-145 WAC.*

5. Notify Ecology's Regional Spill Response Office immediately if chemical containers (e.g. drums) are discovered on-site or any conditions present indicating disposal or burial of chemicals on-site that may impact surface water or ground water.

    - *Justification - Oil and hazardous materials spills cause environmental damage. The sooner a spill is reported, the quicker it can be addressed, resulting in less harm. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.*

    - *Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 90.56 RCW, Chapter 90.56.280 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, Chapter 173-225-010 WAC, and Chapter 173-303-145 WAC.*

Your right to appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt. The appeal process is governed by RCW 43.21B and WAC 371-08. "Date of receipt" is defined in RCW 43.21B.001(2). More information is available at https://eluho.wa.gov/content/11.

To appeal, you must do all of the following within 30 days of the date of receipt of this Order:

- File your notice of appeal and a copy of this Order with the PCHB (see filing options below). "Filing" means actual receipt by the PCHB during regular business hours as defined in WAC
  371-08-305 and -335. "Notice of appeal" is defined in WAC 371-08-340.

- Serve a copy of your notice of appeal and this Order on the Department of Ecology, in paper form, by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in RCW 43.21B and WAC 371-08.

Filing an appeal with the PCHB:

For the most current information regarding filing with the PCHB, visit:
https://eluho.wa.gov/content/11

Filing by mail
Mailing Address:
Pollution Control Hearings Board
PO Box 40903
Olympia, WA 98504-0903

Filing in person (or by certified mail/courier)
Street Address:
Pollution Control Hearings Board
1111 Israel RD SW
STE 301
Tumwater, WA 98501

Filing electronically
Email address:
pchb-shbappeals@eluho.wa.gov

Serving a copy of the appeal on Ecology:

Electronic copies of appeals are not accepted at the Department of Ecology per WAC 371-08-305(10).

Filing by mail
Mailing Address:
Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, WA 98504-7608

Filing in person (or by certified mail/courier)
Street Address:
Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, WA 9850

CONTACT INFORMATION

Please direct all questions about this WQC Order to:

Penny Kelley
Department of Ecology
360-280-8856
penny.kelley@ecy.wa.gov

MORE INFORMATION

- **Pollution Control Hearings Board Website**

http://www.eluho.wa.gov/Board/PCHB

- **Chapter 43.21B RCW - Environmental and Land Use Hearings Office – Pollution Control Hearings Board**

http://app.leg.wa.gov/RCW/default.aspx?cite=43.21B

- **Chapter 371-08 WAC – Practice and Procedure**

http://app.leg.wa.gov/WAC/default.aspx?cite=371-08

- **Chapter 34.05 RCW – Administrative Procedure Act**

http://app.leg.wa.gov/RCW/default.aspx?cite=34.05

- **Chapter 90.48 RCW – Water Pollution Control**

http://app.leg.wa.gov/RCW/default.aspx?cite=90.48

- **Chapter 173.204 WAC – Sediment Management Standards**

http://apps.leg.wa.gov/WAC/default.aspx?cite=173-204

- **Chapter 173-200 WAC – Water Quality Standards for Ground Waters of the State of Washington**

http://apps.leg.wa.gov/WAC/default.aspx?cite=173-200

- **Chapter 173-201A WAC – Water Quality Standards for Surface Waters of the State of Washington**

http://apps.leg.wa.gov/WAC/default.aspx?cite=173-201A

SIGNATURE

Dated this 19th day of July 2022 at the Department of Ecology, Olympia, Washington

_____

Brenden McFarland, Section Manager
Environmental Review & Transportation Section
Shorelands and Environmental Assistance Program

Attachment A

Statement of Understanding
Water Quality Certification Conditions
Shoalwater Bay Shoreline Erosion Control Project Emergency Repair
Water Quality Certification WQC Order **No. 21226**

As the Project Proponent for Shoalwater Bay Shoreline Erosion Control Project Emergency Repair, I have read and understand the conditions of Washington State Department of Ecology WQC Order **No. 21226**, and any permits, plans, documents, and approvals referenced in the WQC Order. I have and will continue to ensure that all project engineers, contractors, and other workers at the project site with authority to direct work have read and understand the conditions of this WQC Order and any permits, plans, documents, and approvals referenced in the WQC Order.

_____ _____
Signature Date

_____ _____
Title Phone

_____
Company

APPENDIX D

COASTAL ZONE CONSISTENCY DETERMINATION AND CONCURRENCE LETTER

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Shoalwater Bay Tribe Dune Barrier
Rehabilitation of Coastal Storm Risk Management Project
Pacific County, Washington

Coastal Zone Management Act Consistency Determination

The Coastal Zone Management Act of 1972, as amended, requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved state Coastal Zone Management (CZM) Programs.

1. PROJECT DESCRIPTION

In 2012 and 2013, the U.S. Army Corps of Engineers (Corps) constructed a 9,800 linear foot barrier dune restoration project on Graveyard/Empire Spit with 709,000 cubic yards (cy) of dredged material from a designated borrow site approximately 1 mile offshore. The barrier dune is located at the mouth of Willapa Bay near Tokeland, Washington and provides flood protection for the Shoalwater Bay Tribe, the Tribe's cultural lands, and ecologically significant wetlands. During the winter of 2015/2016 the dune was severely damaged by the strongest El Niño year in the El Niño-Southern Oscillation (ENSO) cycle since 1997/1998. A 2018 emergency repair restored the dune to the fully authorized 12,500 linear feet project length with 937,000 cy of dredged material. A flood fight in December 2019, and a second flood fight in January 2020 were conducted to place a quarry spall berm in front of the dune to reduce the rate of dune scarping. These efforts prevented a breach through the dune for the remainder of the 2019/2020 storm season, but there was not enough material placed during these flood fights to restore the full level of protection. Extraordinary storms occurring in 2020/2021 storm season generated additional dune overtopping and overwash causing severe erosion to the northern section of the dune. Based on the recorded water levels and wave heights, these extratropical cyclones are considered extraordinary storms due to their measured offshore wave height and coincidence with large spring tide events. The immediate effect of erosion of the barrier dune results in life safety concerns for the Shoalwater Bay Indian Tribe (Shoalwater Tribe) and flooding risk to millions of dollars of infrastructure in the area. The effects of the recent extraordinary storms have resulted in an even greater threat to life, property, and safety for the Shoalwater Tribe than existed prior to initial construction of the dune barrier. Therefore, immediate action is needed to repair the northern damaged portion of the dune before next storm season (fall 2022) from station 40+00 to station 0+00 for a total repair length of 4,000 linear feet.

The proposed emergency repair consists of dredging at one potential borrow area offshore of Tokeland Peninsula for the purpose of obtaining approximately 460,000 cy of sand to restore the northern 4,000 feet of dune, with a crest elevation of +25 feet mean lower low water (See Attachment – Figures). The 2018 dune repair project plans included rounded cobble placement to provide additional protection from wave action at the northern end of the dune (3,500 linear feet). Cobble placement was not ultimately implemented due to contracting and funding constraints. Given the damage and erosion to the project since the last repair, the current

repair includes an increased quantity of rounded cobble or angular quarry stone (cobble placement in the northern damaged section that would function as a dynamic revetment structure to protect the sand dune from direct wave attack and erosion. New construction measures include a land access route (haul road) to the repair area along Graveyard Spit for safe transportation of all resources and personnel into and out of the project site and a temporary tidal channel crossing to reach the repair area.

The entire project occurs on Graveyard/Empire Spit in Willapa Bay near Tokeland in Pacific, County, Washington. A portion of the project will be constructed on the Shoalwater Bay Tribal Reservation. The dune repair footprint, temporary tidal channel crossing, and part of the temporary haul road are located on the Shoalwater Tribe Reservation (Shoalwater Reservation). Elements of the project not located on the Shoalwater Reservation include a portion of the temporary haul road, dredge pipeline alignment to the repair area, and the borrow area.

Given the urgency of the repair, it is anticipated that required surveying and site planning will occur no later than May 2022 with temporary haul road construction to begin in June 2022 to protect the Shoalwater Tribe ahead of the next storm season without being left with a dune barrier that currently only provides a 1-year level of protection.

The determination of this action's consistency with the Coastal Zone Management Act is based upon review of the Washington's CZM Program, *Managing Washington's Coast: Washington State's Coastal Zone Management Program* (Ecology Publication 00-06-029, February 2001); the Washington Administrative Code (WAC) Shoreline Management Act Titles; and the policies and standards of the adopted Pacific County Shoreline Management Master Program. Applicable sections of these documents are presented below, with the Corps' consistency indicated in ***bold italics***.

2. PACIFIC COUNTY SHORELINE MANAGEMENT MASTER PROGRAM

The Shoreline Management Act of 1972 (RCW 90.58) is the core of authority of Washington's CZM Program. Primary responsibility for the implementation of the SMA is assigned to local government. Pacific County implemented the SMA through the preparation of a Shoreline Master Program (SMP). Their shoreline policies are contained in the 2017 Pacific County Shoreline Master Program (Ordinance No. 183). Applicable sections of the Pacific County SMP are presented below, with the project's consistency indicated in ***bold italics***.

SECTION 2 – DEFINITIONS

AQUATIC AREAS - Aquatic areas include the tidal waters and wetlands of the Pacific Ocean and estuaries, and non-tidal sloughs, streams, lakes and associated wetlands, and their associated beds waterward of the ordinary high water mark. ***The project area is in Pacific County, on the northern shore of Willapa Bay, and therefore meets this standard. The sand will be dredged from the Willapa Bay entrance and channel; therefore, is also in the Aquatic Areas of Pacific County.***

AQUATIC LANDS - The bed-lands (submerged at all times) and tidelands (submerged lands and beaches that are exposed and submerged with the ebb and flow of the tides) beneath the

waters of lakes, rivers and marine waters and along their shores. ***The proposed project will require temporary fill in aquatic lands for the temporary haul road during construction. Please see 5.11 Fill, Excavation, Grading for additional information.***

ARMORING - The addition of structures or material along the shoreline to decrease the impact of waves and currents or to prevent the erosion of banks or bluffs. ***The proposed project includes a dynamic revetment composed of cobble-sized rock that would absorb wave energy more effectively than a traditional static rock revetment and reduce the wave runup that would occur on an unprotected sandy beach. This project feature is located on the Shoalwater Reservation.***

ASSOCIATED WETLANDS - Wetlands that are in proximity to and either influence or are influenced by a shoreline stream, lake, or tidal water. This influence includes, but is not limited to, one or more of the following: periodic inundation, location within a floodplain, or hydraulic continuity. ***Wetlands are located immediately adjacent to the project area. The temporary haul road alignment and staging areas are not projected to be located in jurisdictional wetlands. The placement of sand in the northern section of the project may impact mosaic wetland. This potential impact would be minimized by adjusting the project alignment where possible to move closer to the ocean side. Unavoidable fill of mosaic wetlands would allow for the protection of the Class 1 estuarine wetlands landward of the dune system to be better protected and preserved.***

DEVELOPMENT - The construction or exterior alteration of structures; dredging; drilling; dumping; filling; removal of any sand, gravel, or minerals; bulkheading; driving of piling; placing of obstructions; or any project of a permanent or temporary nature which interferes with the normal public use of the surface of the waters overlying lands subject to this Master Program at any state of water level***. The proposed project includes dredging approximately 460,000 cy of sand to be used for barrier dune restoration. The toe of the dune in the northern 3,700 feet will be stabilized with approximately 210,000 tons of 10" cobble-sized rock, brought in from a commercial source. In addition, sand fencing will be installed on the landward side of the dune in the northern 3,700 linear feet to help anchor the dune in place. The dredged sand will be placed on the northern 4,000 linear feet of deteriorated barrier dune to restore it to its intended height and function.***

FILL – The addition of soil, sand, rock, gravel, sediment, earth retaining structure, or other material to an area waterward of the ordinary high water mark, in wetlands, or on shorelands in a manner that raises the elevation or creates dry land. ***The proposed project is intended to rebuild and maintain the deteriorated northern section of dune with sand dredged from the adjacent Willapa Bay entrance and channel. The restored 4,000 linear feet of dune are located on the Shoalwater Reservation. Temporary fill below high tide line may occur on state land for a portion of the haul road.***

HAZARDOUS AREA – Any shoreline area which is hazardous for intensive human use or structural development due to inherent and/or predictable physical conditions such as, but not limited to, geologically hazardous areas, frequently flooded areas, and coastal high hazard areas. ***The proposed project is repairing a federally authorized flood control work that is dual***

purposed for coastal erosion protection and ecosystem restoration in order to protect the Shoalwater Tribe. The proposed project is intended to protect the Tribe's hazardous areas from flooding via the barrier dune.

INUNDATION – Spreading of water over land that is not normally submerged.

MEAN HIGHER HIGH TIDE or MEAN HIGHER HIGH WATER - The elevation determined by averaging each day's highest tide over a period of 18.6 years. ***The proposed project will result in approximately 6.5 acres of permanent sand and cobble placement below high tide line and 3.3 acres of temporary fill below high tide line for the haul road.***

MITIGATE - To alleviate the negative impacts of a particular action. ***Because this is a dune restoration project, the Corps considers the action to be self-mitigating. This is consistent with the interpretation applied by the Corps Regulatory Branch for similar projects.***

OCEAN MINING - Mining of metals, minerals, sand, and gravel resources from the sea floor. ***The proposed project includes dredging approximately 460,000 cy of sand from the Ocean Environment to be used for barrier dune restoration.***

SHORELANDS or SHORELAND AREAS - Those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes and tidal waters which are subject to the provisions of Chapter 90.58 RCW. ***The dune repair area will occur on Shoalwater Reservation shorelands. The haul road and dredge pipeline alignment will occur on Shoalwater Reservation, public, and private shoreland areas.***

TIDELANDS - Those tidal marshes, tidal mudflats and other submerged lands that are inundated by the Highest Astronomical Tide, as defined in official tide tables. Tidelands, as defined herein, do not include the additional areas inundated by storm surges or heavy runoff that raise the levels above predicted elevations. ***No permanent fill will occur below high tide line on public and private land. Approximately 6.5 acres of permanent fill will occur below high tide line on the Shoalwater Reservation.***

SHORELINES OF STATEWIDE SIGNIFICANCE – shall have the meaning defined by RCW 90.58.030(2)(f). ***The proposed project will occur on a shoreline of Statewide Significance.***

RESTORATION - The reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures, and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions. ***The proposed project is consistent with Pacific County's definition of active restoration.***

SECTION 4 – GENERAL POLICIES AND REGULATIONS

4.1 Historic/Cultural/Scientific/Educational Policies

1. Identify, protect, preserve, and restore important archaeological, historical, and cultural sites located in shorelands. ***The Shoalwater Tribe is the local project sponsor and proponent. The Tribe has been an active participant on the design and evaluation team. Tribal biological and cultural resources staff have supported field surveys and provided documentation in support of the analyses of environmental and cultural effects of the proposed action. The Corps is evaluating the project and preparing documentation necessary pursuant to compliance with Section 106 of the National Historic Preservation Act (NHPA). The Corps' determinations of effects to historic properties, the investigation report, and monitoring plan will be coordinated with the appropriate state and/or tribal historic preservation officers to obtain compliance with Section 106 of the NHPA prior to initiation of construction.***

3. Prevent public or private uses and activities from destroying or damaging any site having historic, cultural, scientific or educational value without appropriate analysis and mitigation. ***The recreational uses which will occur on the barrier dune are not expected to destroy or damage the historic, cultural, scientific or educational values of the project site.***

4.2 Environmental Protection and Critical Areas Policies

1. Preserve, protect, enhance and restore unique and nonrenewable shoreline resources, environments and features through the development and implementation of best management practices. ***The proposed project will restore the barrier dune system that historically protected the Shoalwater Reservation and portions of the Tokeland peninsula from erosive and damaging storm waves.***

2. Reclaim and restore areas that are biologically and aesthetically degraded to the greatest extent feasible. ***The proposed project will restore the barrier dune and associated biological processes offshore of the Tokeland Peninsula.***

3. Preserve scenic vistas, aesthetics, and vital estuarine areas for fisheries and wildlife protection. ***The proposed dune restoration will restore the eroded northern section of barrier dune to its design height of +25 feet MLLW. At this height, it is not possible to view the ocean waves entering the bay. Therefore, there will be a reduction in ocean views from some of the associated properties that fall within the project area. However, these views did not exist prior to the erosion of the barrier dune. The proposed restoration is expected to benefit two ESA-listed bird species, western snowy plover and streaked horned lark. Following dune restoration in 2013, the spit has been highly successful in creating foraging and nesting habitat for plovers and larks. Loss of the dune would hinder recent population increases in the species.***

5. Shoreline ecological functions that should be protected include, but are not limited to: fish and wildlife habitat, food chain support, and water quality maintenance. ***Western snowy plovers and streaked horned larks are known to utilize the eroded barrier dune. The Corps will coordinate with Washington Department of Fish and Wildlife (WDFW), US Fish and Wildlife Service***

(USFWS), and Shoalwater Tribe staff to conduct nesting surveys for western snowy plovers and streaked horned larks at the project site prior to construction. The construction timing and implementation will be adjusted as necessary to avoid and minimize impacts to nesting western snowy plovers and streaked horned larks based on these survey results and coordination with these two agencies. No vegetation will be planted on the barrier dune in order to allow for preferred nesting conditions by western snowy plovers and streaked horned larks. Therefore, restoration of the barrier dune may further attract snowy plovers and larks to nest on the dune in subsequent years after completion of the project.

Restoration of approximately 4,000 linear feet of barrier dune will provide protection to the Shoalwater Reservation and Tokeland Peninsula shoreline from erosive storm generated waves, and will slow the degradation of the tide flats and marsh habitat in North Cove. In the absence of a project, North Cove is expected to continue its transformation from historic tidal flats to a high salt marsh through erosion of the existing dune materials into the cove during storm events that overtop the spit.

4.3 Public Access Policies

1. Ensure that developments, uses, and activities on or near the shoreline do not impair or detract from the public's access to the water. Where practicable, public access to the shoreline should be expanded and/or enhanced. ***The proposed project will not alter the public's ability to utilize the barrier dune and to access the beach and water.***

2. Design public access projects such that they provide for public safety and minimize potential impacts to private property and individual privacy. ***The barrier dune restoration will improve the level of safety during storm events for the residents of the Shoalwater Reservation and adjacent communities.***

4.5 Vegetation Management

2. Invasive, noxious weeds causing irreparable damage to the shoreline environment should be removed with all due diligence. ***Non-native invasive beach grasses located in the dune footprint will be buried by dredged material.***

4.6 Water Quality

1. Locate, design, construct, and maintain shoreline uses and activities to minimize adverse impacts to water quality and fish and wildlife resources. ***Short-term impacts to water quality, primarily turbidity, will result during dredging activities at the borrow site. A variety of best management practices will be implemented to reduce the potential for harm (e.g., most grading and material placement will occur above the MHHW, and construction will occur during a time of the year when sensitive aquatic species are not present). To reduce the generation of turbidity, the hydraulic dredge will only be operated with the intake at or below the surface of the material being removed, and the intake will only be raised a maximum of three feet above the bed for brief periods of purging or flushing of the intake system.***

SECTION 5 – SHORELINE USES, DEVELOPMENTAND MODIFICATION

5.3 General Shoreline Uses

1. Maintain areas within the shoreline jurisdiction with unique attributes for specific long-term uses, including agricultural, commercial, industrial, residential, recreational, and open space uses. ***Fishing, bird watching, and beach combing are major outdoor recreational activities conducted within the project area. The preferred alternative will likely increase recreational opportunities in the project area. Restoration of the dune will maintain recreational access to the dune. The site does not have attributes conducive to commercial, industrial, or residential uses.***

b. Ensure that proposed shoreline uses are distributed, located and developed in a manner that will maintain or improve the health, safety and welfare of the public when such uses occupy shoreline areas. ***The Shoalwater Reservation has a recent history of flooding and storm damage. The limited wave protection currently afforded by the eroded barrier dune will continue to decrease, and flooding of the Shoalwater Reservation and adjoining lands will occur at increasingly frequent intervals unless the northern section is repaired. The primary purpose of the project is to provide coastal erosion protection and to reduce associated storm event flooding and damage for the tribal reservation of the Shoalwater Tribe on Willapa Bay, Washington. Implementation of the emergency repair will improve the safety and welfare of the residents of the Shoalwater Reservation and adjacent communities.***

c. Ensure that activities and facilities are located on the shorelines in such a manner as to retain or improve the quality of the environment. ***The proposed project consists of restoration of a deteriorated barrier dune system. During initial project development, multiple structural alternatives were examined, including the construction of sea dikes, flow diversion structures, and shoreline revetments, but all other alternatives would result in extensive environmental impacts. The barrier dune restoration will return the northern portion of the eroded barrier dune to its design height of +25 feet MLLW and will result in less flooding and associated storm damages like shoreline erosion on the Shoalwater Reservation and adjacent communities that would occur during combined high tides and storm events in the absence of the proposed work.***

d. Ensure that proposed shoreline uses do not infringe upon the rights of others or upon the rights of private ownership. ***To the extent required, easements necessary to complete the project will be obtained prior to construction.***

e. Minimize the adverse impacts of shoreline uses and activities on the environment during all phases of development (e.g., design, construction, management and use). ***The design of the project centered on restoring the dune profile while reducing the impacts of construction. The proposed dune restoration will bury any existing vegetation and will help maintain sparsely vegetated areas preferred by ESA-listed western snowy plovers and streaked horned larks. Finally, construction will occur in accordance with the USFWS and National Marine Fisheries Service approved construction window to minimize impacts to fish and wildlife species during sensitive life stages.***

5.9 Dredging and Dredge Material Disposal

1. Site and regulate dredging and dredge material disposal in a manner which minimizes adverse effects on natural resources. ***Dredged material for the barrier dune restoration will come from the entrance to Willapa Bay. A bathymetric survey will be completed prior to dredging to confirm that this is the optimum borrow site location, and that the volume of material being removed would not significantly alter the tidal flow patterns or change the general trend of the channel thalweg movement away from the North Cove area. Material will not be removed from the proposed borrow site if bathymetric surveys indicate that the rate of natural accretion has decreased significantly. In the event that material cannot be obtained from the proposed borrow site, an alternate (secondary) borrow site will be used.***

b. Ensure that dredging operations are planned and conducted in a manner that will minimize interference with navigation and that will lessen adverse impacts to other shoreline uses. ***The proposed borrow site is located immediately offshore of the proposed barrier dune restoration. A hydraulic dredge and pumping system will be used to pump dredged sand directly onto the barrier dune. Because the dredge and pipeline will be close to the shore using the proposed borrow site, there should be little interference with navigation. The Corps will make every effort to coordinate dredging and pumping activities in such a manner as to minimize impacts to navigation and other shoreline uses to the greatest extent possible.***

5.11 Fill, Excavation and Grading

1. Allow landfills waterward of ordinary high water mark only when necessary to facilitate water-dependent and/or public access uses, or to support public road or bridge construction or maintenance, provided such uses are consistent with this Master Program. ***The project is considered water-dependent because it can only be carried out in or adjacent to water as its primary function is to reduce flooding associated with combined extreme high tide/storm events. Its purpose is to provide a physical barrier to storm generated waves that currently overwash the eroded barrier dune and cause damage and flooding on the Shoalwater Reservation and a portion of the Tokeland Peninsula. The barrier dune restoration will allow for natural coastal processes to occur while still providing protection to the nearby shoreline. During initial project development, multiple structural alternatives were examined, including the construction of sea dikes, flow diversion structures, and shoreline revetments, but all other alternatives would result in extensive environmental impacts. The barrier dune restoration will return the northern 4,000 linear feet of eroded barrier dune to its design height of +25 feet MLLW and will result in less flooding and associated storm damages like shoreline erosion that occurs during combined high tides and storm events on the Shoalwater Reservation and adjacent communities. The project is consistent to the maximum extent practicable with this requirement.***

2. Design the perimeter of fills to avoid or minimize erosion and sedimentation impacts. Encourage natural appearing and self-sustaining control methods over structural methods. ***The dune restoration will be constructed along the crest of the now deteriorated dune, but part of the restored dune will extend below high tide line. Localized turbidity will be generated, but is anticipated to be temporary and short duration. Immense volumes of sand are moved by tidal currents in the vicinity of the Willapa bar and entrance, and it is likely that***

background turbidity levels are high. The turbidity generated by the sand placement should quickly blend to background levels.

The dredged sand will be graded and sand fencing will be installed on the landward side of the northern 3,700 linear feet of dune. No plantings are proposed in order to provide habitat for western snowy plover and streaked horned lark, two ESA-listed bird species.

3. Design, locate, and implement fill and excavation projects to ensure no net loss of shoreline ecological functions through site planning, construction timing, bank stabilization, and the use of erosion and damage control methods. ***Temporary haul road fill below high tide line will be completely removed upon construction completion.***

5.21 Shoreline Stabilization

2. Use structural shoreline stabilization measures only when nonstructural methods are infeasible. Nonstructural methods include building setbacks, structure relocation, drainage management, and other measures. ***Although the restoration of the barrier dune is a structural solution to reducing shoreline damage and flooding at the Shoalwater Reservation, it is an environmentally sensitive approach. The barrier dune restoration will allow for natural coastal processes to occur while still providing protection to the nearby shoreline. During initial project development, multiple structural alternatives were examined, including the construction of sea dikes, flow diversion structures, and shoreline revetments, but all other alternatives would result in extensive environmental impacts. The barrier dune restoration will return the eroded barrier dune to its historic height of +25 feet MLLW and will result in less flooding and associated storm damages like shoreline erosion that occurs during combined high tides and storm events on the Shoalwater Reservation and adjacent communities.***

SECTION 8 - ADMINISTRATION

8.9 Federal Agency Review

Whenever a project conducted on the shorelines of Pacific County requires review and approval by federal agencies, or otherwise involves a federal agency, Pacific County shall follow the requirements of WAC 173-27-050 and WAC 173-27-060, as amended. ***Please see applicable portion of the referenced WAC titles below.***

WAC 173-27-060 - Applicability of chapter 90.58 RCW to federal lands and agencies.
(1) Within Coastal Counties
Direct Federal agency actions and projects shall be consistent to the maximum extent practicable with the approved Washington State coastal zone management program subject to certain limitations set forth in the Federal Coastal Zone Management Act, 16 U.S.C. 1451 et seq. and regulations adopted pursuant thereto. Other applicable Federal law governing the Federal agency actions may determine whether the permit system of chapter 90.58 is applicable. The Corps will not obtain a shoreline permit from Pacific County because applicable Federal law prohibits application of a local permit system to Federal agencies. The Federal government cannot be regulated or required to obtain a permit by a State or local government unless the Federal government has waived its sovereign immunity (reference

Supremacy Clause of the U.S. Constitution, article VI, clause 2). The Coastal Zone Management Act does not contain such a waiver.

Based on the above evaluation, the Corps has determined that the proposed project complies to the maximum extent practicable with the policies, general conditions, and general activities specified in the Pacific County SMP.

3. OTHER WASHINGTON CZM PROGRAM ENFORCEABLE POLICIES

State Environmental Policy Act
The Corps will prepare a Supplemental Environmental Assessment pursuant to the National Environmental Policy Act to determine if the proposed project will or will not have a significant adverse impact on the natural or human environments.

Ocean Resources Management Act
Not applicable.

Clean Water Act
To satisfy the substantive requirements of Section 404 of the Clean Water Act, the Corps has prepared a 404(b)(1) evaluation. The 404(b)(1) evaluation is available from the Seattle District upon request.

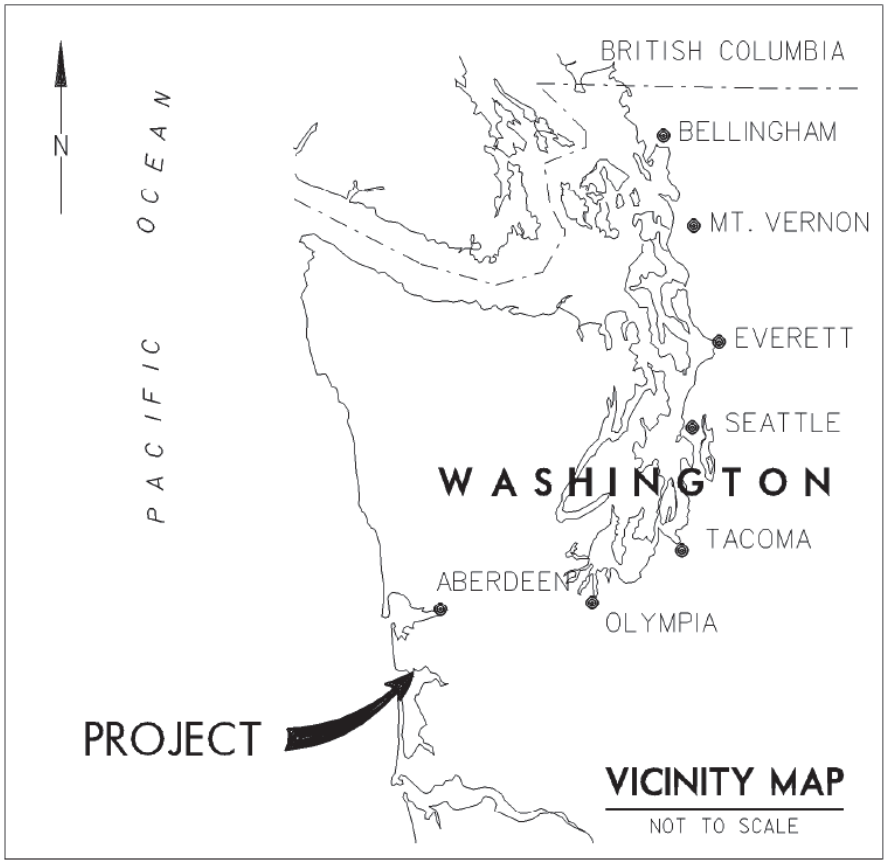
The Corps will prepare a Joint Aquatic Resources form to support requests for 401 certifications for the proposed barrier dune restoration from the Environmental Protection Agency (EPA) and Washington State Department of Ecology (Ecology). The Corps will not proceed with in-water work for the project until 401 Water Quality Certifications have been issued by Ecology (for non-tribal portions of the project) and EPA (for the Shoalwater Reservation portion of the project).

Clean Air Act
The proposed project does not involve a new regulated source requiring an air operating permit, and the project site is not located in a non-attainment area.

Washington State Energy Facility Site Evaluation Council
Not applicable.

4. STATEMENT OF CONSISTENCY
Based upon the preceding evaluation, the Corps considers the proposed Federal activities consistent to the maximum extent practicable with the State of Washington Coastal Zone Management Program.

FIGURES



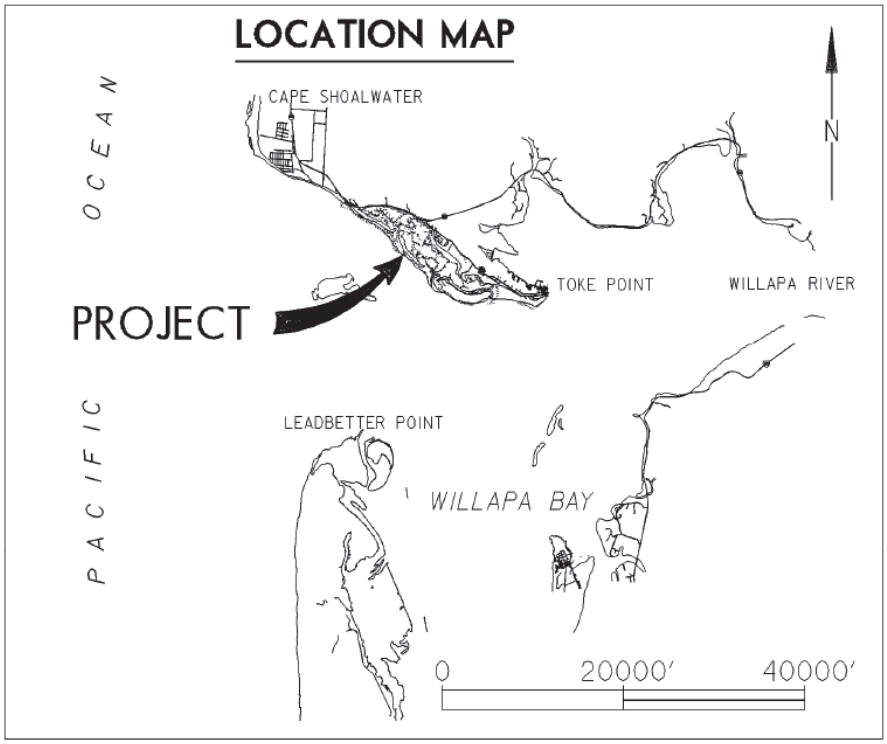


Figure 1. Project Location.

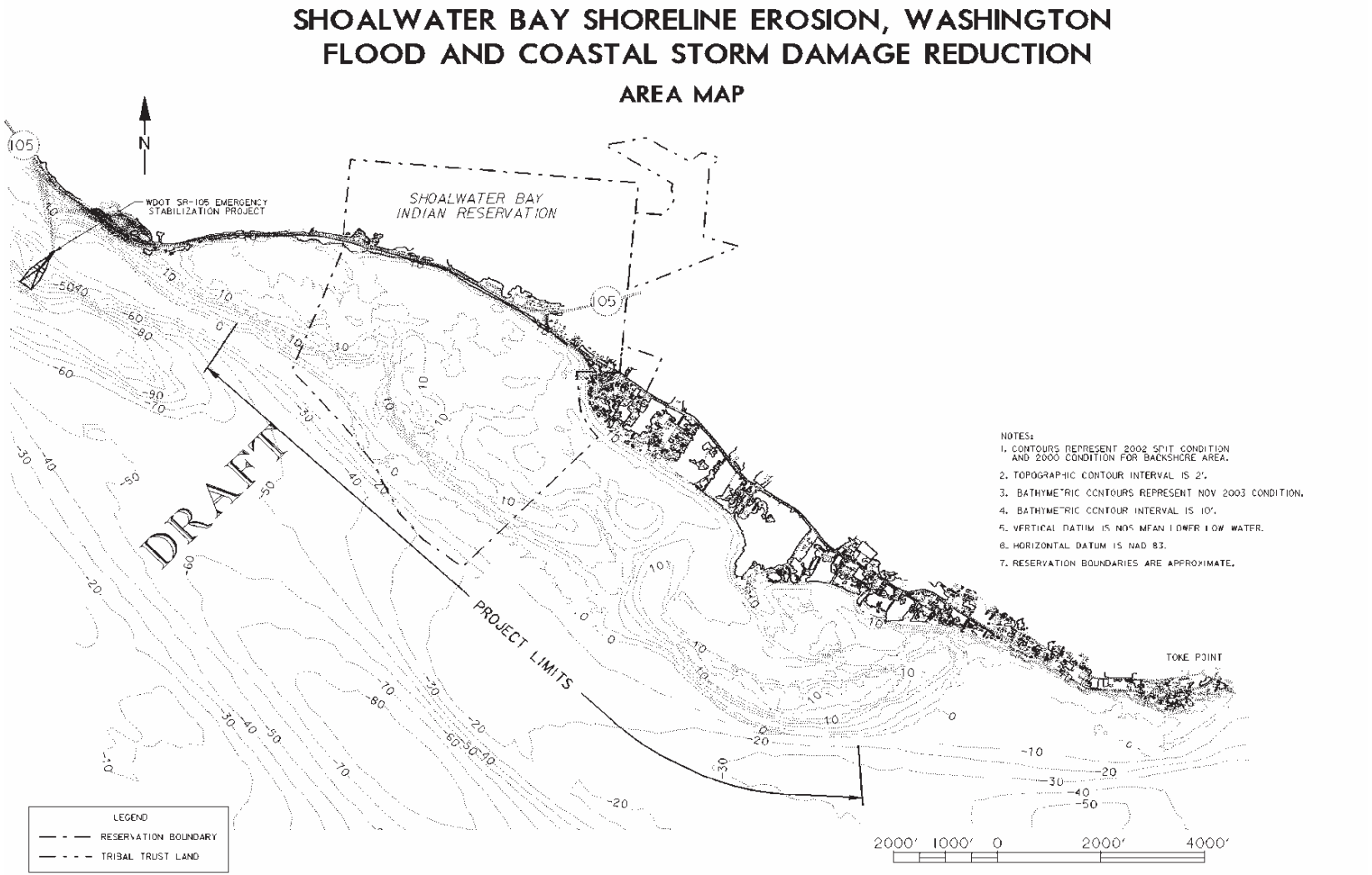


Figure 2. Shoalwater Reservation

Figure 3. Location of Shoalwater Bay Coastal Storm Risk Management Project barrier dune (in red)

Figure 4. Location of damaged region needing repair and approximate location setback alignment

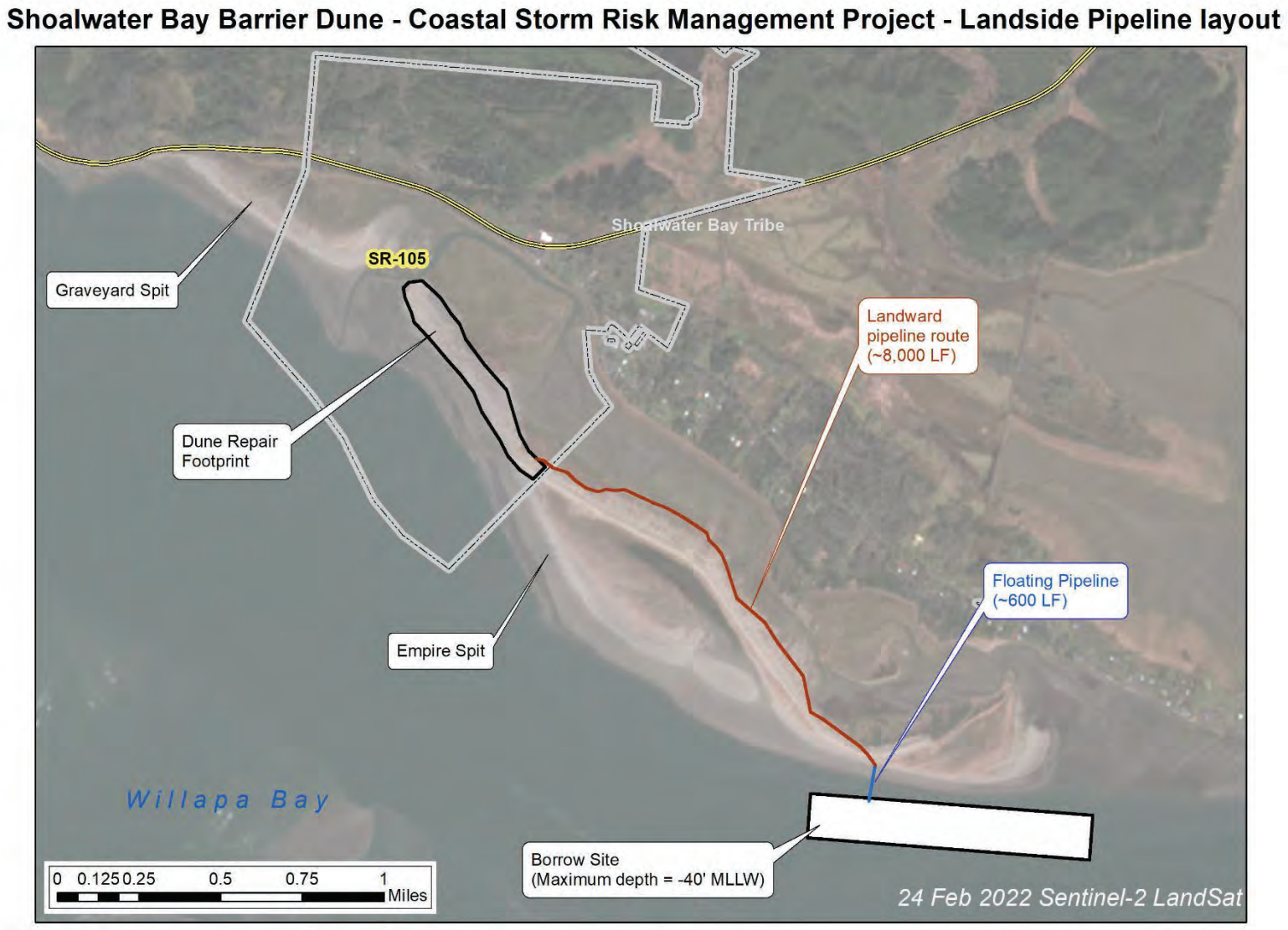


Figure 5. Landward pipeline route required to avoid ESA-listed species

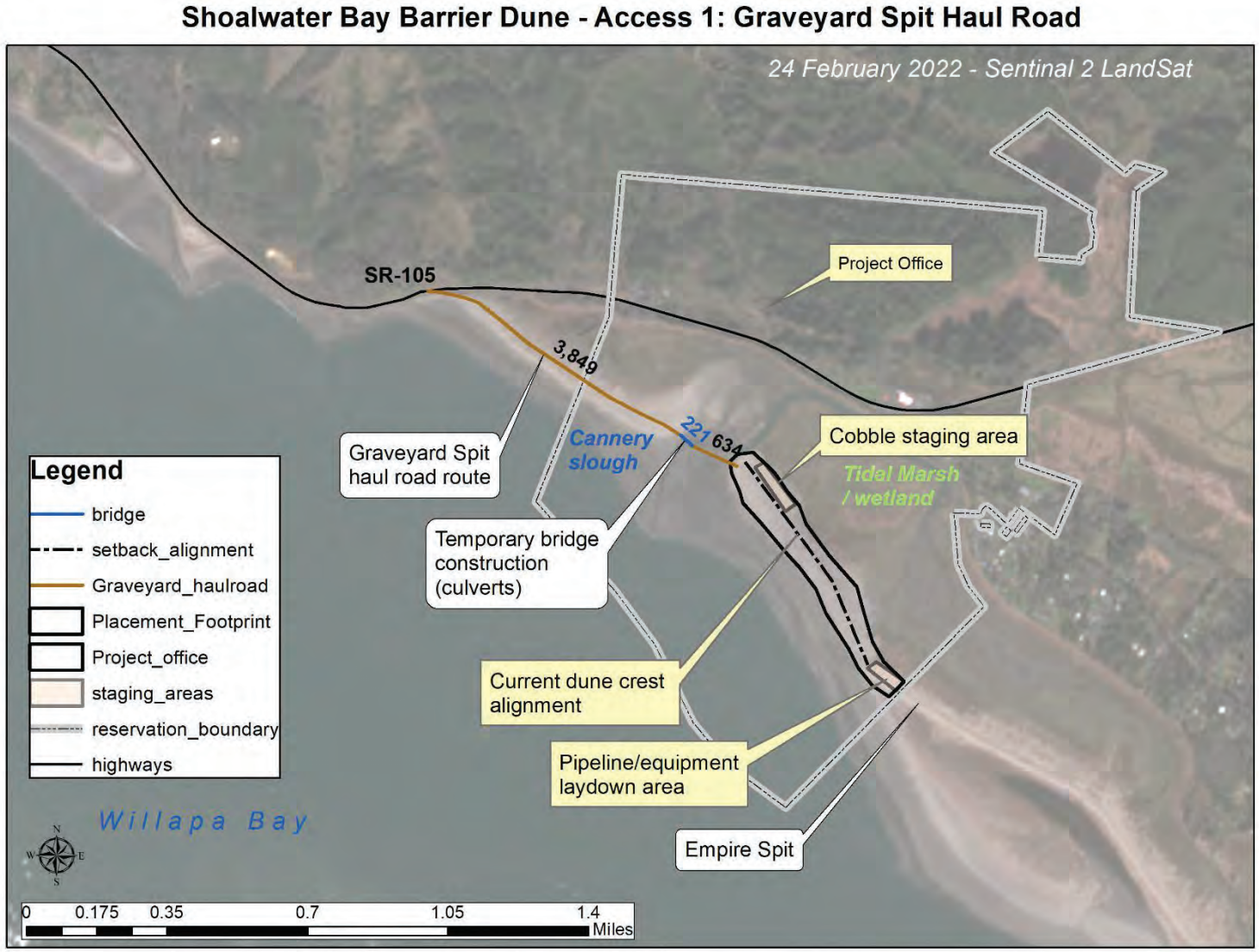


Figure 6. Northern land access route along Graveyard Spit (haul road distances in feet)

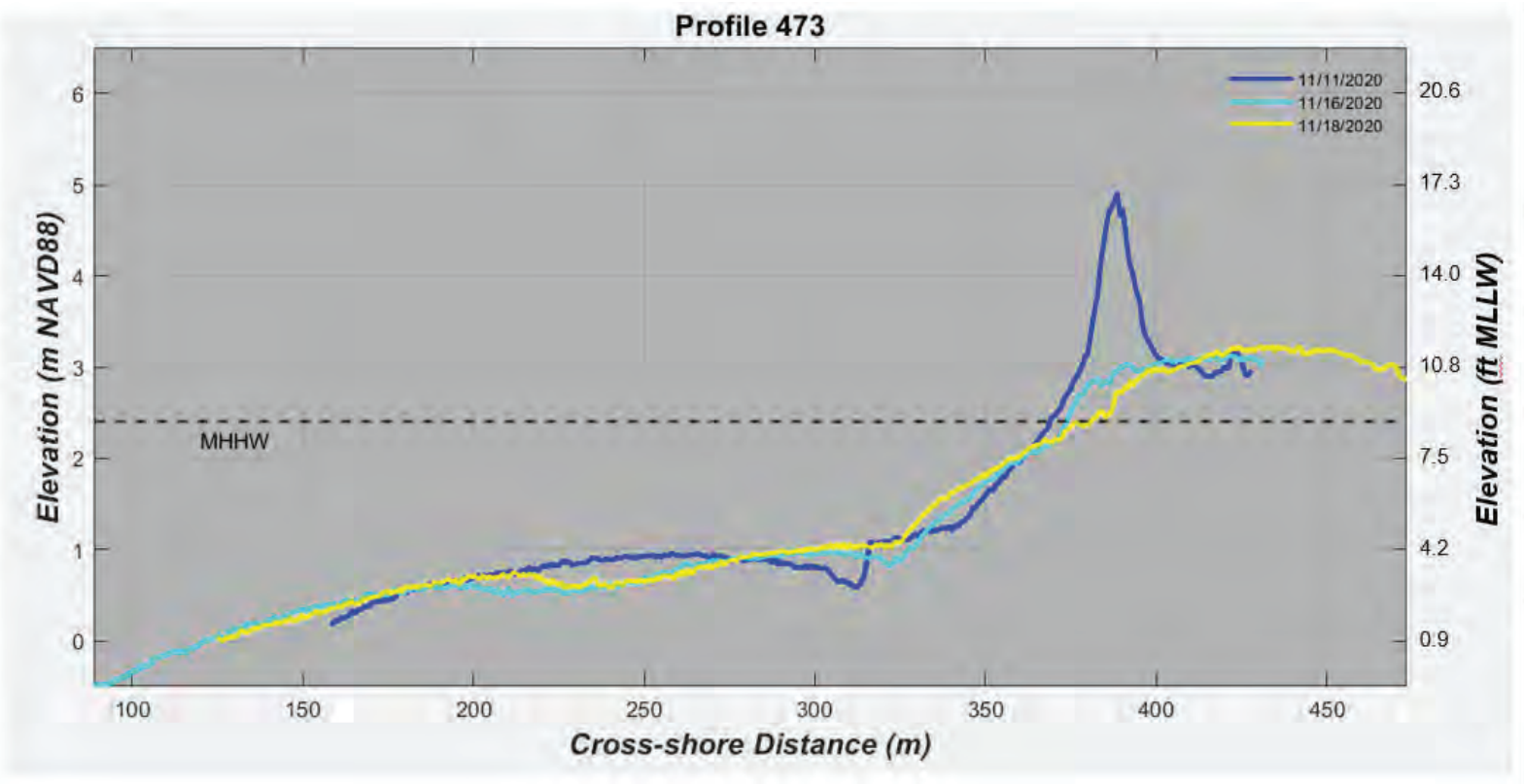


Figure 7. Shoalwater Bay dune near Sta. 12+50. Nov. 2020 Pre storm survey (blue), and Nov. 2020 Post storm surveys (cyan/yellow).

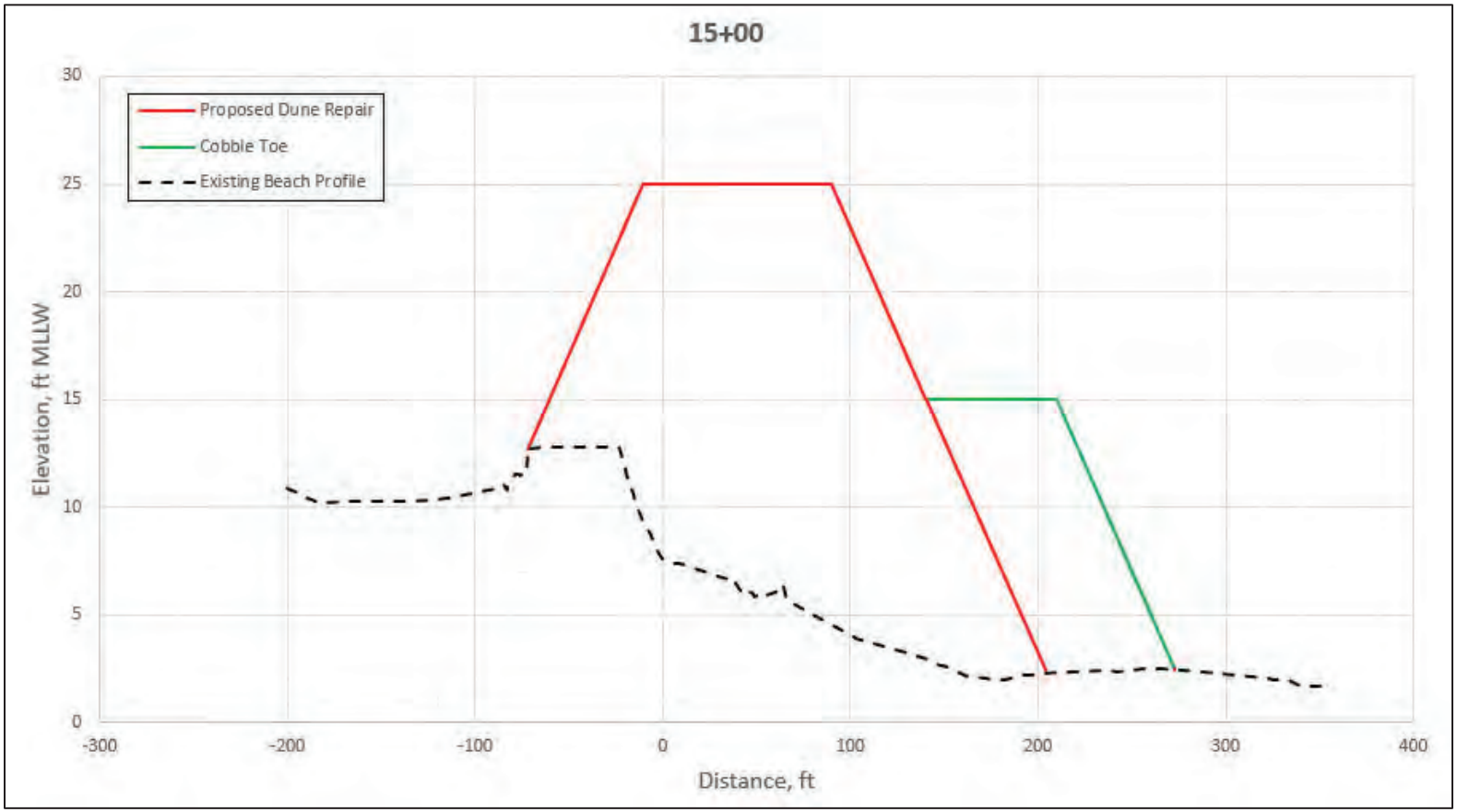


Figure 8. Example template for barrier dune and dynamic revetment (cobble berm) construction

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

July 21, 2022

U.S. Army Corps of Engineers
Attn: Melissa Leslie
4735 E. Marginal Way South Bldg. 1202
Seattle, WA 98134

RE: Coastal Zone Consistency for Activity Undertaken by a Federal Agency
Shoalwater Bay Shoreline Erosion Control Project Emergency Repair,
Pacific County, Washington

Dear Melissa Leslie:

On May 2, 2022, the Corps of Engineers (Corps) submitted a Certification of Consistency with the Washington State Coastal Zone Management Program (CZMP). On June 22, 2022, the Corps agreed to stay (extend) CZM review until July 30, 2022. The proposed federal activity includes dredging approximately 460,000 cubic yards (CY) of sand offshore of the Tokeland Peninsula to restore an existing barrier dune on Empire Spit. This barrier dune was constructed in 2013 utilizing 709,000 cy of dredge material from a borrow area one mile off shore and then repaired in 2018 utilizing 937,000 cy of dredge material in two borrow areas adjacent to the Willapa Bay entrance and channel. The current borrow location is still adjacent to the Willapa Bay entrance and channel but has been shifted southeast to an area that has higher accretion rates of sand. To access the barrier dune, a 30 foot wide temporary haul road will be constructed across Graveyard and Empire Spit. The road will be composed of 40,000 tons of quarry spalls and either removed post construction or left in place. The project is located in Willapa Bay in Pacific County, Washington.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972 as amended, Ecology concurs with Corps‘ s determination that the proposed work is consistent with Washington’s CZMP.

If you have any questions regarding Ecology’s consistency determination, please contact Penny Kelley at 360-280-8856.

Your right to appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt. The appeal process is governed by RCW 43.21B and WAC 371-08. "Date of receipt" is defined in RCW 43.21B.001(2). More information is available at https://eluho.wa.gov/content/11.

To appeal, you must do all of the following within 30 days of the date of receipt of this Order:

- File your notice of appeal and a copy of this Order with the PCHB (see filing options below). "Filing" means actual receipt by the PCHB during regular business hours as defined in WAC 371-08-305 and -335. "Notice of appeal" is defined in WAC 371-08-340.
- Serve a copy of your notice of appeal and this Order on the Department of Ecology, in paper form, by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in RCW 43.21B and WAC 371-08.

Filing an appeal with the PCHB:

For the most current information regarding filing with the PCHB, visit: https://eluho.wa.gov/content/11

Filing by mail
Mailing Address:
Pollution Control Hearings Board
PO Box 40903
Olympia, WA 98504-0903

Filing in person (or by certified mail/courier)
Street Address:
Pollution Control Hearings Board
1111 Israel RD SW
STE 301
Tumwater, WA 98501

Filing electronically
Email address:
Pchb-shbappeals@eluho.wa.gov

Serving a copy of the appeal on Ecology:

Electronic copies of appeals are not accepted at the Department of Ecology per WAC 371-08-305(10).

Filing by mail
Mailing Address:
Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, WA 98504-7608

Filing in Person (or by certified mail/courier)
Street Address:
Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, WA 98503

Sincerely,

Brenden McFarland, Section Manager
Environmental Review & Transportation Section
Shorelands and Environmental Assistance Program

E-cc: Justine Barton, EPA
Sarah Burgess, EPA
Lauren Bauernschmidt, WDFW
Penny Kelley, Ecology-HQ
Loree' Randall, Ecology-HQ
ecyrefedpermits@ecy.wa.gov

APPENDIX E

NATIONAL HISTORIC PRESERVATION ACT
CONCURRENCE LETTERS

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Allyson Brooks Ph.D., Director
State Historic Preservation Officer

June 2, 2022

Laura A. Boerner
Planning, Environmental & Cultural Resources
Seattle District
Corps of Engineers
PO Box 3755
Seattle, Washington 98124

Re: Shoalwater Berm Repair Project
Log No.: 2022-03-01465-COE-S

Dear Laura A. Boerner:

Thank you for contacting our department. We have reviewed the information and professional cultural resources survey report you provided for the proposed Shoalwater Berm Repair Project, Tokeland, Pacific County, Washington

We concur with your Determination of No Historic Properties Affected with the stipulation for for an unanticipated find plan.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4). In the event that archaeological or historic materials are encountered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

July 28, 2022

Laura A. Boerner
Planning, Environmental & Cultural Resources
Seattle District
Corps of Engineers
PO Box 3755
Seattle, Washington 98124

Re: Shoalwater Berm Repair Project
Log No.: 2022-03-01465-COE-S

Dear Laura A. Boerner:

Thank you for contacting our department. We have reviewed the information you provided for the proposed Shoalwater Berm Repair Project at the Shoalwater Reservation in Tokeland, Pacific County, Washington.

We concur with your Determination of No Historic Properties Affected with the stipulation for an unanticipated find plan.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4). In the event that archaeological or historic materials are encountered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*