



US Army Corps
of Engineers®
Seattle District

NOTICE OF PREPARATION/CLEAN WATER ACT PUBLIC NOTICE

Planning, Environmental and Cultural
Resources Branch
4735 East Marginal Way South, Bldg. 1202
Seattle, WA 98134
ATTN: Melissa Leslie (PMP-C)

Public Notice Date: April 14, 2022
Expiration Date: May 5, 2022
Reference: PMP-22-04
Name: Shoalwater Bay Shoreline Erosion Repair

Interested parties are hereby notified that the U.S. Army Corps of Engineers, Seattle District (Corps) plans to prepare, pursuant to the National Environmental Policy Act (NEPA), a supplemental environmental assessment (SEA) for proposed emergency repair to a barrier dune located near the City of Tokeland, Pacific County, Washington. The repair is intended to rehabilitate existing flood control works and address damage caused during extraordinary coastal storm events occurring in November 2020 and January 2021. The purpose of this Notice is to solicit comments from interested persons, groups, and agencies on the Corps' proposed action under NEPA.

A further purpose of this Notice is to solicit comments on the proposed disposal of fill material into the waters of the U.S. under the Clean Water Act. This Public Notice is being issued in accordance with rules and regulations published as 33 CFR 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 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 337 "*Practice and Procedure*"; and 33 CFR 338 "*Other Corps Activities Involving the Discharge of Dredged Material or Fill into Waters of the U.S.*"

AUTHORITY

The Shoalwater Bay Shoreline Erosion, Washington, 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). Construction of the barrier dune was completed in 2013 and was 100 percent federally funded.

The proposed emergency repair would be accomplished under the authority of 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. Repair/restoration to a pre-storm condition is necessary to allow for adequate functioning of the project.

PROJECT LOCATION AND DESCRIPTION

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 Bay Indian Reservation (Shoalwater Reservation) is located on the northern shore of Willapa Bay in northwestern Pacific County, Washington (Figure 2). The Shoalwater Bay Shoreline Erosion Repair Project is located on and adjacent to the Shoalwater Reservation.

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 above, 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 Environmental Assessment 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 barrier dune restoration project was constructed on Empire Spit by the Corps in 2013 with 709,000 cubic yards 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 linear feet project length with 937,000 cubic yards of dredged material. This proposed repair is focused on the northern damaged portion of the dune (approximately 4,000 linear feet).

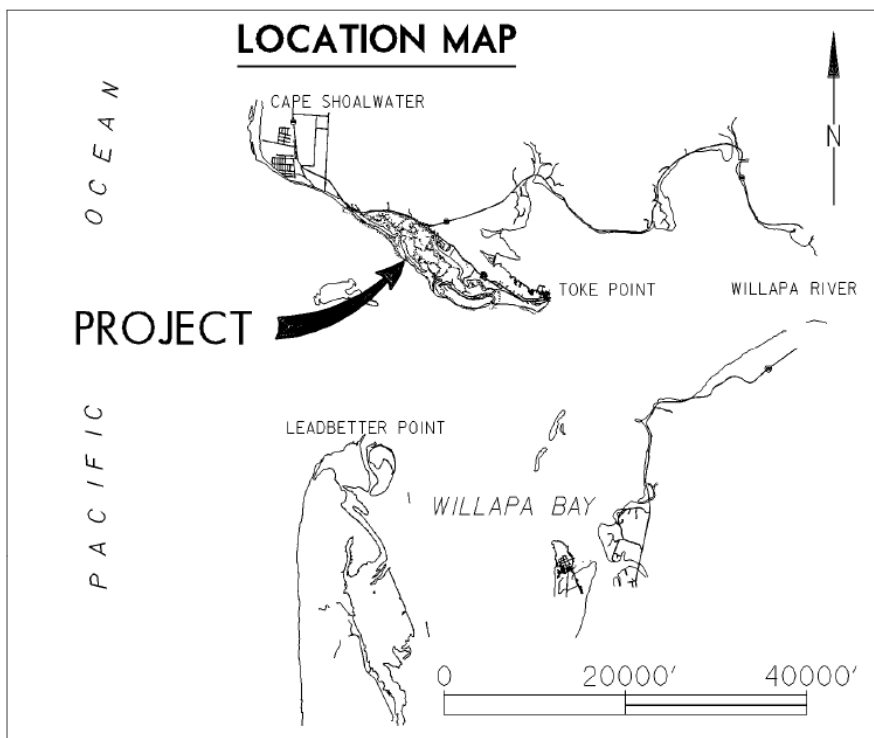
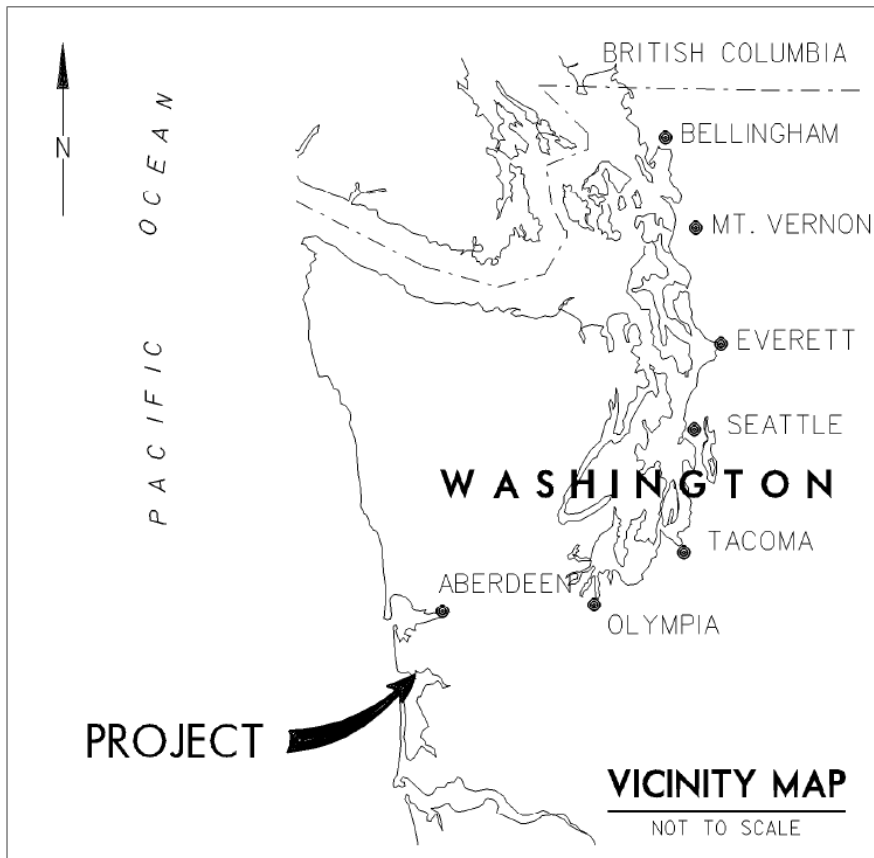


Figure 1. Project Location.

SHOALWATER BAY SHORELINE EROSION, WASHINGTON FLOOD AND COASTAL STORM DAMAGE REDUCTION

AREA MAP

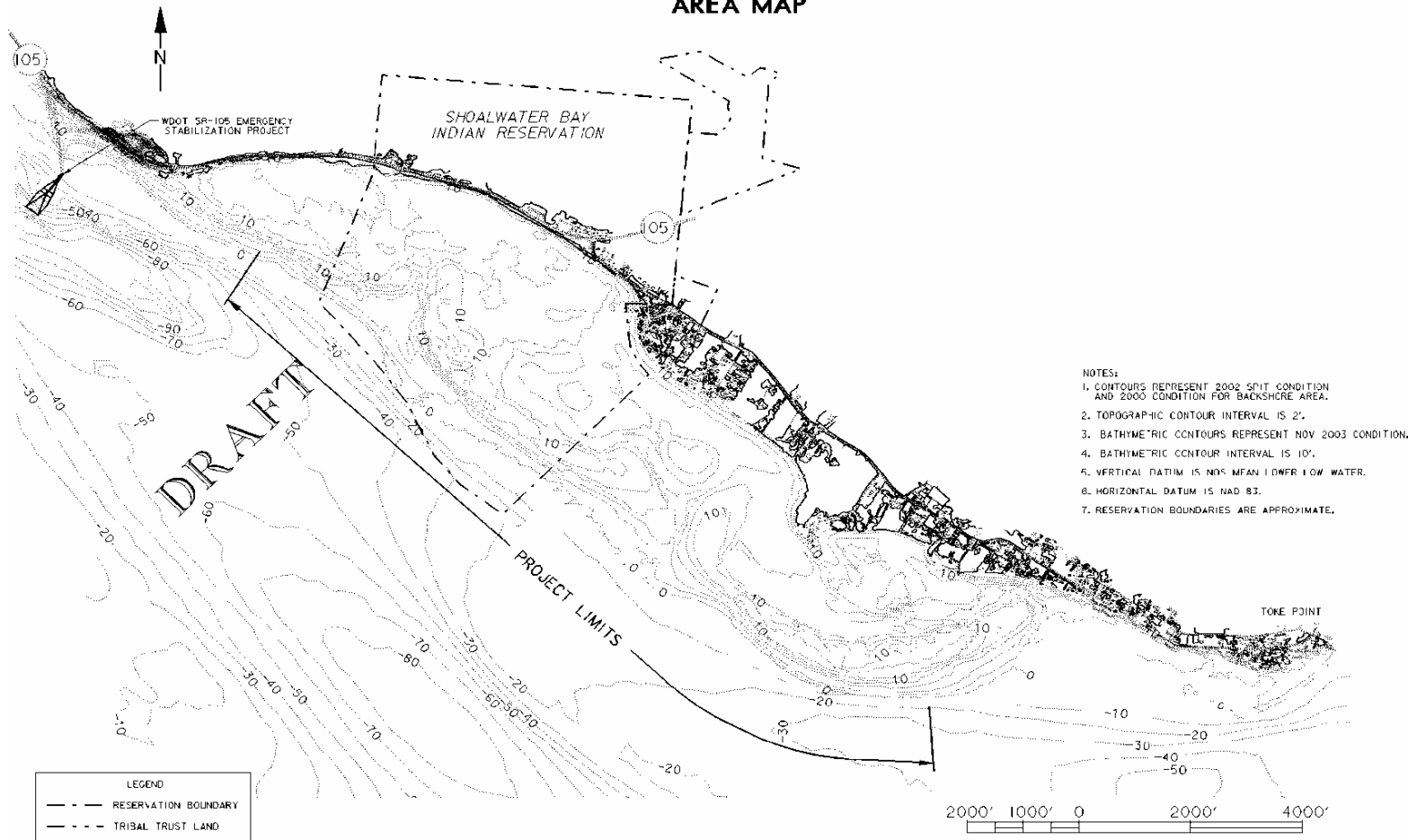


Figure 2. Shoalwater Reservation

PURPOSE AND NEED

Storms occurring in 2020 and 2021 generated 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 northern section of the protective barrier dune has been eroded down to an elevation of 10 to 12 feet above mean lower low water (MLLW). 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. 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 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 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).

ACTIONS ADDRESSED UNDER NEPA

For the proposed barrier dune repair, two alternatives are being considered as follows:

- **Alternative 1 – No Action Alternative**

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 protected homes, businesses, and public infrastructure during future flood events.

The No Action Alternative is not recommended because it presents unacceptable risk to life and property. It does not meet the project purpose. 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.

- **Alternative 2 – Barrier Dune Restoration Alternative (Preferred Alternative)**

This alternative involves barrier dune repair, including a cobble berm, to renourish only the highly damaged northern section of dune to the full design template and requires about 460,000 cubic yards (CY) of in-place sand volume from station 00+00 to 40+00 as well as an approximate 216,000 tons of cobble spread between stations 3+00 and 40+00. Exact fill requirements along the dune would vary and would be calculated during development of plans and specifications for the project, which would be based on full profile surveys. Due to the dynamic nature of this coastal environment, any fine-tuning of the barrier dune alignment would be based on updated topography data acquired by survey just prior to construction. Dune alignment may shift landward (set back) by the necessary distance in order to avoid or minimize fill below the high tide line. This concept includes construction equipment and material access by land and sea.

The Corps proposes implementing the Barrier Dune Restoration Alternative. Design plans for repair under this alternative are in Appendix A.

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 MLLW. The 2018 dune repair project plans included cobble placement to provide additional protection from wave action at the northern third of the dune (3,500 linear feet) but was not implemented. The current repair includes an increased quantity of 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 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 northern 3,700 feet of the project. This dynamic revetment structure would be placed on the oceanside sideslope 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 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 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 top 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. This is required to prevent undermining when the beach profile lowers during the winter storm season. Typical height would vary from 13 feet to 15 feet above the existing grade.

A two and a half lane 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 quarry spalls and would be removed post-construction. The temporary road would be constructed above high tide line to the greatest extent practicable. Temporary road alignment would require pre-construction surveys and environmental surveys prior to construction. The 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 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. 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.

Sand fencing would be installed in 75 feet segments perpendicular to the shoreline on the back side (landward) of the dune to help retain sand in the northern repair area. Each section of fence would be spaced approximately 25 feet apart. The sand fencing would provide immediate erosion control. Revegetation is not proposed 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 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 (Appendix A). Due to the threat of coastal storms and hazardous working conditions, temporary causeway construction over Cannery Slough could begin 1 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 months. Best management practices (BMPs) would be employed to minimize project impacts.

Conservation Measures

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

- Temporary causeway construction may start no earlier than 1 June.
- Dredging would occur during the 16 July through 1 October work window.
- All work on Empire and Graveyard spit would 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.

- To reduce entrainment and the generation of turbidity, the hydraulic dredge would only be operated with the intake at or below the surface of the material being removed, and the intake would only be raised a maximum of three feet above the bed for brief periods of purging or flushing of the intake system.
- The contractor would coordinate 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 would 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 and USFWS.
- Monitoring by the contractor and/or Corps and Tribal biologists would be conducted daily throughout construction to locate active western snowy plover and streaked horned lark nests and determine location of broods.
- All trash would be contained, and a spill control plan would be implemented to reduce the risk of contaminants entering the water.
- 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.
- If temporary mooring dolphin(s) are used, they would be pile supported and be driven by vibratory hammer. Piling would be fitted with pointed caps to prevent perching by piscivorous birds to minimize opportunities for avian predation on listed species. The dolphin(s) would be removed, and conditions restored to pre-existing conditions within the duration of the construction schedule.
- 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.
- Temporary haul road and channel crossing materials would be removed at construction completion and the area fully restored to pre-existing conditions.

Best Management Practices

BMPs would be employed to minimize project impacts. Environmental enhancements would be assessed further during the NEPA analysis, including full consideration of those proposed by agencies during NEPA coordination. Appropriate enhancements would be incorporated into the project. Environmental enhancements already incorporated into the design concept include BMPs to protect water quality. Any recommendations that emerge from the ESA and Clean Water Act (CWA) Section 401 evaluations would be considered.

IMPACTS OF THE PROJECT

The Corps' preliminary analyses of the anticipated impacts are summarized below. All potential impacts will be disclosed in greater detail in the SEA.

Wetlands: 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. 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.

Water Quality: Impacts to water quality are not expected to result from the proposed project 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.

Turbidity during temporary causeway installation and project construction would be monitored. If state water quality standards for maximum turbidity are exceeded, project work would be halted until the standards are met and construction methods changed to avoid future exceedances.

Biological Resources:

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 1 October. During dredging and pumping activities, most fish would likely re-locate to other areas of Willapa Bay, with negligible impacts to their fitness or survival. The work would still be 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 and aquatic species is expected to be minimal.

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.

Twenty-three species protected by the ESA of 1973, as amended, are potentially found in the vicinity of the project. 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.

Prior to initiating the dune restoration work, the area would be surveyed for nesting western snowy plovers and streaked horned larks. Surveys and monitoring would continue throughout the nesting season. Nest surveys and 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. If biologists find snowy plover or streaked horned lark nests the Corps would coordinate work with the USFWS, WDFW, and Tribe to avoid or modify work in the immediate area so that direct effects to the species are unlikely. 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. Environmental monitors would ensure construction equipment does not operate near non-fledged snowy plover chicks and physical barriers (empty dredge pipes) would be used to prevent chicks from moving into active construction areas. Biologists would also be present during equipment moves to guide equipment operators away from nests and broods.

Air Quality: 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.

Cultural Resources: The Corps is working to identify historic properties that may be affected by the proposed action as required by Section 106 of the National Historic Preservation Act. The Corps is consulting with the Washington State Historic Preservation Officer, Indian tribes, and other consulting parties about the project and will complete identification of historic properties as well as make agency findings of effect for Section 106 prior to construction of the proposed action. As of this time, the Corps has not identified any historic properties within the area of

potential effect and does not anticipate that the proposed project would affect historic properties.

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

Traffic: Construction-related traffic may cause temporary increases to, and disruption of, local traffic. Flaggers and signs would be used to direct traffic safely where the haul road connects with SR 105. No long-term change in traffic would occur as a result of the project.

Recreation: Public access for recreation may be temporarily limited during the active construction period. No long-term impacts to recreational opportunities are expected as a result of the project.

EVALUATION

The Corps has made a preliminary determination that the environmental impacts of the proposal can be adequately evaluated under the NEPA through preparation of a SEA. Preparation of a SEA addressing potential environmental impacts associated with the barrier dune repair project is currently underway.

The purpose of the Federal Water Pollution Control Act (33 U.S.C § 1252 et seq.), commonly referred to as CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. The proposed emergency repair would involve a discharge of fill material into waters of the United States that will be evaluated for substantive compliance with guidelines promulgated by the Environmental Protection Agency (EPA) under authority of Section 404(b)(1) of the CWA.

The Corps does not issue permits for its own Civil Works activities. Nevertheless, the Corps accepts responsibility for the compliance of its Civil Works project with Sections 401 and 404 of the Federal Water Pollution Control Act. If it is determined individual Water Quality Certifications are required, the Corps would prepare and submit requests to the Washington Department of Ecology (Ecology) and to the EPA. Water Quality Certifications from both agencies may be necessary because the project encompasses Tribal Reservation lands held in Federal trust as well as non-tribal lands. The Corps would abide by the conditions of the Federal and State-issued Water Quality Certifications to ensure compliance with Federal and State water quality standards.

The Corps has determined that the proposed repair is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Management Program. Coordination with Ecology is ongoing.

The Corps is coordinating the proposed repair with the USFWS and the NMFS concerning effects of the emergency repair activities on threatened and endangered species and their critical habitat and will request consultation re-initiation pursuant to Section 7(a)(2) of the ESA.

The Corps is consulting with the Washington SHPO, Indian tribes, and other consulting parties about the project in accordance with Section 106 of the NHPA as implemented in the regulations at 36 CFR Part 800.

In preparation of the environmental documentation for this project, coordination is ongoing with the following public agencies:

- (1) USFWS;
- (2) NMFS;
- (3) EPA;
- (4) Ecology; and
- (5) SHPO.

No significant unmitigated impact to Tribal Treaty Rights is expected as a result of the proposed activities. The emergency repair will be analyzed with respect to its effects on the Tribal Treaty Rights or rights reserved to tribes through Executive Order or other legal instrument. As this project was specifically authorized for the protection of the Shoalwater Reservation, the Corps is coordinating and consulting with the Shoalwater Tribe prior to making final project decisions.

PUBLIC INTEREST EVALUATION

The decision to proceed with this action involving the discharge of dredged or fill material would be preceded by a determination of whether the proposed activity would be in the public interest. All factors which may be relevant to the proposal's public interest will be considered; among those are navigation and the Federal standard for dredged material disposal; water quality; coastal zone consistency; wetlands; endangered species; historic resources; scenic and recreation values; fish and wildlife; marine sanctuaries; applicable state/regional/local land use classifications, determinations, and/or policies; conservation; economics; shoreline erosion and accretion; safety; and considerations of property ownership.

As a foundation for its public interest determination the Corps would consider, on an equal basis, all alternatives that are both reasonable and practicable, i.e., available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. The Corps typically selects the alternative that represents the least costly alternative, constituting the discharge of dredged or fill material into waters of the United States in the least costly manner and at the least costly and most practicable location, that is consistent with sound engineering practices, and that meets the environmental standards established by the CWA Section 404(b)(1) evaluation process.

COMMENT AND REVIEW PERIOD

The Corps invites submission of comments on the environmental impact of the proposed action. Comments would be considered in determining whether it would be in the best public interest to proceed with the proposed project. The Corps would consider all submissions received before the expiration date of this notice. The nature or scope of the proposal may be changed upon consideration of the comments received. The Corps would initiate an Environmental Impact Statement (EIS) and would afford all the appropriate public participation opportunities attendant to an EIS, if significant effects on the quality of the human environment are identified and cannot be mitigated.

PUBLIC HEARING

Any person may request within the comment period specified in this Notice, that a public hearing be held to consider this proposal. Requests for a public hearing must clearly set forth the following: the interest that may be affected, the manner in which the interest may be affected by this activity, and the particular reason for holding a public hearing regarding this activity.

COMMENTS TO THE U.S. ARMY CORPS OF ENGINEERS

Submit comments to this office, Attn: Planning, Environmental, and Cultural Resources Branch, 4735 East Marginal Way South, Bldg. 1202, Seattle, WA, 98134, no later than 21 days after the posting of this notice to ensure consideration. Comments not received within the comment period are deemed unexhausted and therefore forfeited. In addition to sending comments via mail to the above address, comments may be e-mailed to melissa.l.leslie@usace.army.mil.

This Notice of Preparation can be found online at the link below.

Project Name: Shoalwater Bay Shoreline Erosion Repair Project

<http://www.nws.usace.army.mil/Missions/Environmental/Environmental-Documents/>

Posting Date: April 14, 2022 End of Comment Period: May 5, 2022

Appendix A – Project Designs

Shoalwater Bay Barrier Dune - Coastal Storm Risk Management Project



Figure A-1. Location of Shoalwater Bay Coastal Storm Risk Management Project barrier dune (in red)

Shoalwater Bay Barrier Dune - Coastal Storm Risk Management Project



Figure A-2. Location of damaged region needing repair and approximate location setback alignment

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



Figure A-3. Landward pipeline route required to avoid ESA-listed species

Shoalwater Bay Barrier Dune - Access 1: Graveyard Spit Haul Road

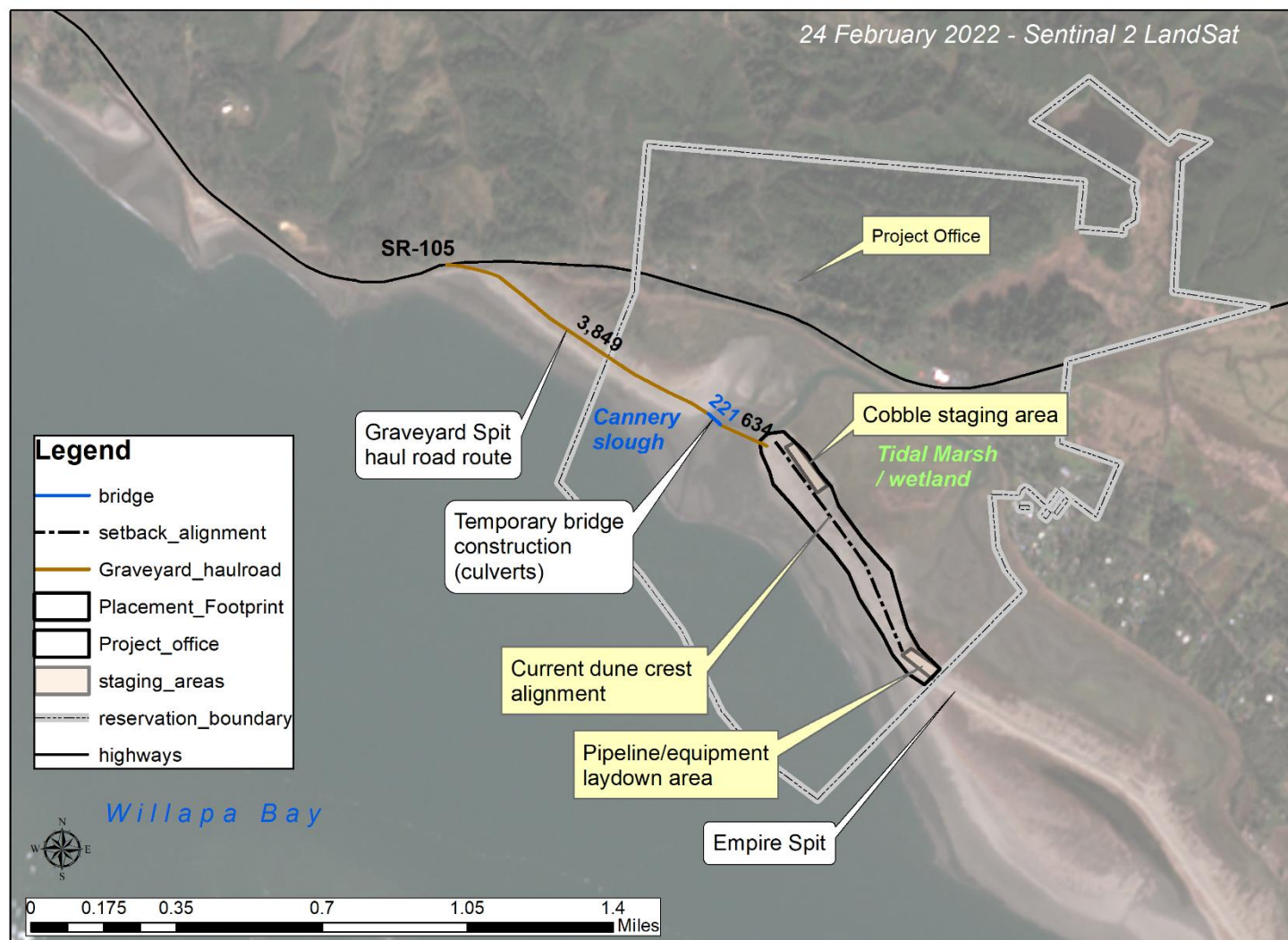


Figure A-4. Northern land access route along Graveyard Spit (haul road distances in feet)

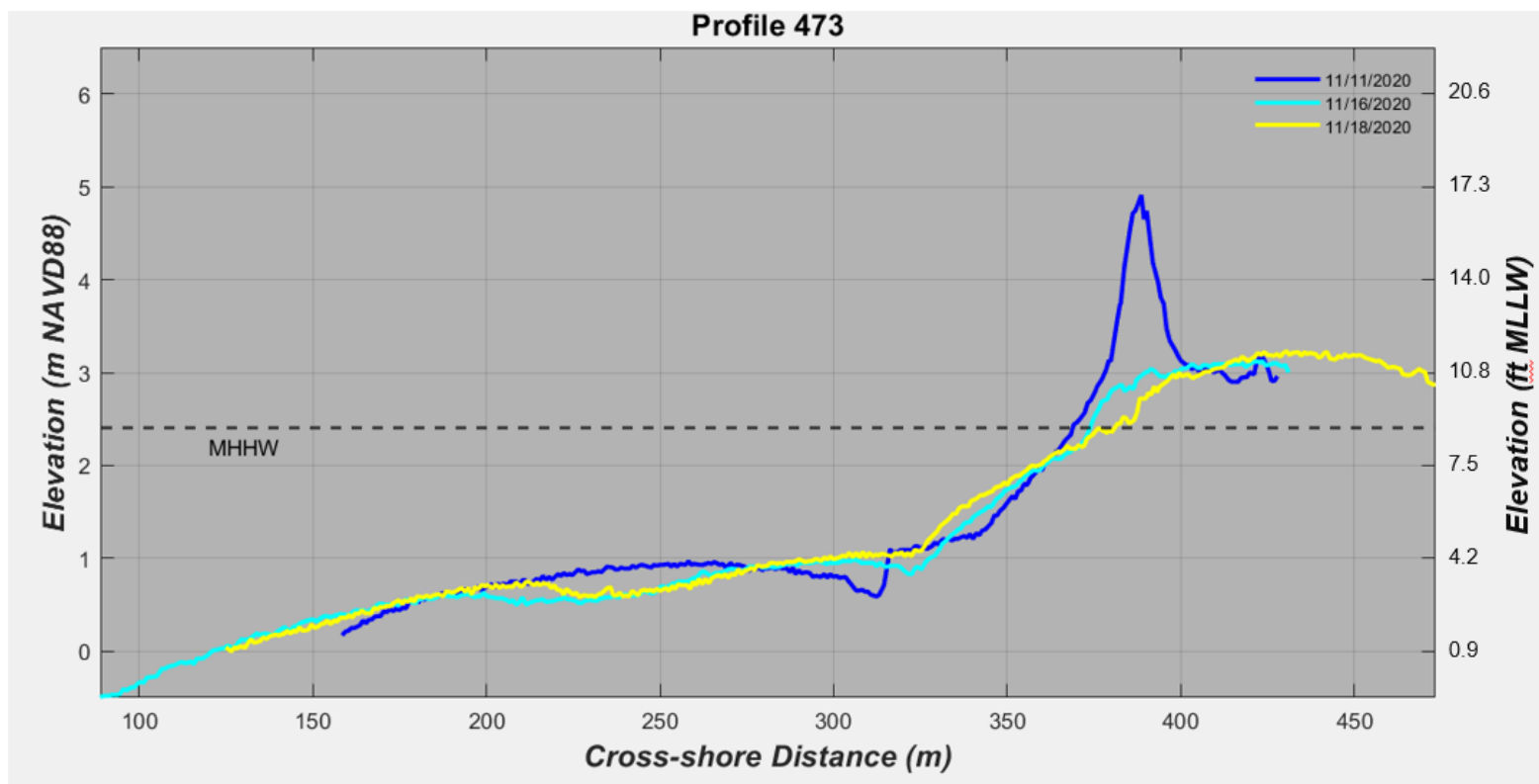


Figure A-5. Shoalwater Bay dune near Sta. 12+50. Nov. 2020 Pre storm survey (blue), and Nov. 2020 Post storm surveys (cyan/yellow).

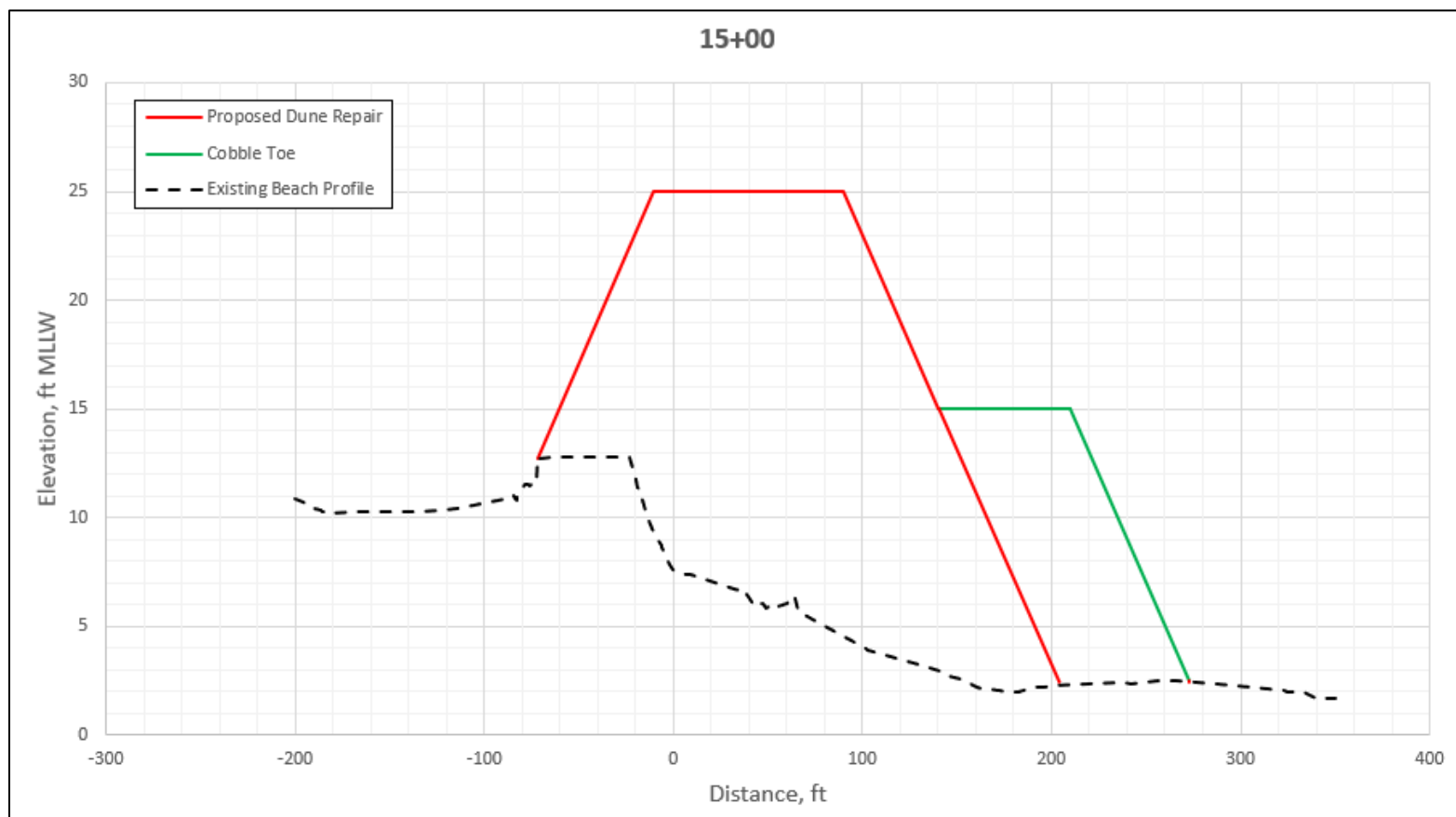


Figure A-6. Example template for barrier dune and dynamic revetment (cobble berm) construction