

23 September 2011

STATEMENT OF FINDINGS
Keystone Harbor Navigation Project
2011-2012 Maintenance Dredging and Disposal
Island County, Washington

1. Project Description: This statement concerns a proposal by the Seattle District, U.S. Army Corps of Engineers (Corps) to conduct maintenance dredging at the Keystone Harbor Federal Navigation project and place the dredged material onto a beach nourishment site to the east of the channel. The purpose of this project is to provide necessary safe navigation conditions for the Washington State Ferry System vessels to dock at Keystone Harbor for uninterrupted service on the Port Townsend/Coupeville ferry route, and to ensure continuity of the sediment transport processes along the shoreline in the project area. The purpose of the beach disposal component of the project is to prevent erosion to the point of undermining the jetty and losing park infrastructure. Maintenance of the entrance channel to ensure safe navigation is required every four to six years. The Final Environmental Assessment (EA) describes the effects to the environment of the proposed dredging and disposal for the 2011-2012 dredging event.

The proposed dredging will take approximately 60 days to complete and will occur during a fisheries work window of 16 July 2011 through 15 February 2012. Channel maintenance will consist of dredging 50,000 cubic yards (CY) to return the Federal navigation channel to its authorized depth of 25 feet below mean lower low water, plus two feet overdepth. Dredging will occur either by mechanical (clamshell) dredge from a barge, or by a hydraulic (cutterhead with a pipeline) dredge. The type of dredge employed is the choice of the dredging contractor.

Beach nourishment is necessary to replenish the sand normally deposited by littoral drift on the east side of the channel. With a mechanical dredge, the dredger would place all material from the navigation channel onto the adjacent beach on the east side of the channel. A frontloader would then place the material in dump trucks to be hauled to the beach nourishment site at Fort Casey State Park to the east of the breakwater. If a hydraulic dredge is used, the pipeline would deposit the material dredged from the channel directly onto the beach nourishment site. Disposal of the coarse-grained dredged material provides the necessary protection of the jetty and recreation facilities. In addition, beach replenishment prevents erosion from outflanking and causing deterioration of the jetty.

2. Factors for Consideration: I have reviewed the proposed work in light of the overall public interest as described in the enclosed Final EA (Exhibit B), Finding of No Significant Impact (FONSI) (Exhibit A), the enclosed Biological Evaluation (Exhibit C) with Endangered Species Act concurrence letters from the National Marine Fisheries Service (NMFS) dated 18 August 2011 and U.S. Fish and Wildlife Service (USFWS) dated 24 June 2011, Water Quality Certification (WQC) dated 16 September 2011, evaluation under Section 404(b)(1) of the Clean Water Act, Coastal Zone Management Act Consistency Determination with concurrence letter from Washington Department of Ecology dated 16 September 2011, and Public Notice CENWS-OD-TS-NS-40 (Exhibit D).

All factors relevant to the proposed work were considered in accordance with applicable regulations and Federal policy on the effect of Corps activities on wetlands. These factors include, but are not limited to, conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use, navigation, recreation, water supply, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

3. Evaluation Points: In coordinating the project, the Corps received no comments on the public notice. The Final EA provides an analysis of the effects of the proposed work.

a. Federal Agencies: No comments on the public notice were received from Federal agencies.

(1) The United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), concluded informal consultation for the maintenance dredging work proposed in FY11 pursuant to section 7(a)(2) of the Endangered Species Act for the project by letter dated 18 August 2011. The NMFS provided a concurrence letter with a determination that the dredging and disposal "may affect, but is not likely to adversely affect" Puget Sound Chinook salmon; Puget Sound steelhead; Hood Canal summer chum salmon; Puget Sound bocaccio, yelloweye, and canary rockfish; Steller sea lion; and southern resident killer whale. The NMFS also concurs with the Corps determination that the dredging and disposal "may affect, but is not likely to adversely affect" Puget Sound Chinook salmon critical habitat.

(2) The USFWS concluded informal consultation for the maintenance dredging work proposed in FY11 by letter dated 24 June 2011. The USFWS concurs with the Corps determination that the dredging and disposal "may affect, but is not likely to adversely affect" bull trout and marbled murrelet.

(3) The Corps received a WQC from the Washington State Department of Ecology (Ecology) dated 16 September 2011. The Certification is valid through 16 September 2018. Dredging and placement operations must begin after 16 July and must cease on 15 February in any year, and all dredged material shall be used as beach nourishment on site. Ecology requires that a Dredging Plan be submitted for approval two weeks prior to the required pre-dredge meeting. Additionally, the Corps shall notify Ecology at least 7 days prior to the commencement of dredging and 14 days after dredging is complete. The area of turbidity mixing in marine waters is a 150-foot radius surrounding the in-water activity.

b. State and Local Agencies: No comments on the public notice were received from state or local agencies.

(1) The Corps provided a Coastal Zone Management Act Consistency Determination to Ecology on 24 May 2011 with a comment period concurrent with the Corps public notice. The Corps' determination states that the project is consistent to the maximum extent practicable with the Island County Shoreline Master Program. Ecology provided their concurrence with the Corps' finding on 16 September 2011.

c. Treaty Indians: Treaty Tribes received the public notices and the Corps received no comments from the Tribes. The proposed dredging will not interfere with Treaty fishing rights.

d. Other Considerations: The proposed work has been evaluated in accordance with the objectives of the EPA guidelines in the Code of Federal Regulations (CFR), 40 CFR 230, on the discharge of dredged or fill material. All of the considerations and objectives of 40 CFR 230.5 were examined with respect to the proposed action (see: Appendix A of the EA).

4. Summary Conclusion: I have concluded that the proposed 2011-2012 work conforms to objectives by minimizing or avoiding impacts on the environment and by not significantly affecting fish and wildlife, water quality, or the ecology of the area. No wetland areas will be affected by the proposed work. The plan is consistent with the general proposal disclosed in the Final EA and Findings of No Significant Impact.

5. Summary of Findings: I find that there are no major adverse environmental effects. The work is consistent with National policy, statutes, and administrative directives. The total public interest would be served by the dredging of the Federal navigation channel and associated disposal activities by the Corps. The proposed action shall proceed according to parameters described in Section 1 of this document.

27 Sep 2011
Date



BRUCE A. ESTOK
Colonel, Corps of Engineers
District Commander



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

22 September 2011

FINDING OF NO SIGNIFICANT IMPACT

**2011-2012 MAINTENANCE DREDGING
KEYSTONE HARBOR, WASHINGTON**

1. Background: Keystone Harbor, an artificial harbor constructed by the U.S. Army Corps of Engineers in 1948, is a dredged basin located on the west side of Whidbey Island and is connected to Admiralty Bay on Puget Sound by a Federal navigation channel. The basin provides a harbor of refuge, a boat launching ramp, and a terminal for the Washington State ferry between the city of Port Townsend and Whidbey Island. Construction of the basin, entrance channel, and rock jetty interrupted the natural eastward transport of beach material. Consequently, shoaling of the entrance channel and erosion of the beach to the east of the jetty has resulted. Maintenance of the entrance channel to ensure safe navigation is required every four to six years. Disposal of the coarse-grained dredged material nourishes the beach east of the basin and provides the necessary protection of the harbor features and related recreation facilities. Maintenance dredging last occurred in Fiscal Year 2006.

2. Proposed Action: The Corps is proposing to perform one event of routine maintenance dredging of Keystone Harbor to return the Federal navigation channel to its authorized depth of 25 feet below mean lower low water. The work proposed to occur in 2011-2012 consists of dredging approximately 50,000 cubic yards of shoaled material with disposal for beach nourishment east of the jetty. The work will take roughly 60 days and is proposed to occur during the Washington Department of Fish and Wildlife approved in-water work window, July 16 through February 15.

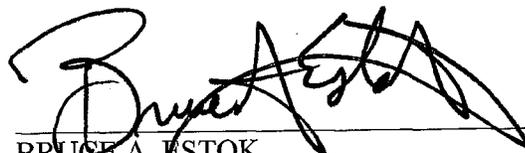
3. Environmental Effects: Environmental effects associated with the proposed action include a minimal effect on water quality due to turbidity increases for less than an hour at a time, very slight degradation of air quality and minor increase in noise levels from operation of machinery involved in dredging and disposal activities, low-intensity stress to aquatic organisms due to turbidity increases, burial of small areas of benthic invertebrates, and minor effects to the aesthetics of the area during disposal activities. All of these effects will only endure for the roughly 60 days of dredging and disposal activities. Water quality, air quality, noise, and aesthetics will return to normal immediately upon completion of the work. The benthic fauna populations are expected to rebound within several months.

The water area below the disposal site, including the jetty and the abandoned wharf, is designated as an underwater park by the State of Washington. Diverse and abundant marine life inhabits the jetty, wharf pilings, and submerged rock outcrops of the park. A diver observation program in the underwater park during 1976 dredging operations indicated no behavioral effects to, or mortality of, park fauna due to maintenance dredging and beach disposal of dredged

material. To minimize the potential for adverse environmental effects, the proposed action will be conducted in a manner similar to previous dredging and disposal operations to keep material within a prescribed area. The spatial scale, duration, and intensity of environmental effects of the proposed action will be no different from previous maintenance dredging events, which have not resulted in degradation of the project area. The proposed action has been analyzed for its conformance to all applicable environmental laws. Consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service concluded with their letters of concurrence with the Corps' findings that the action is not likely to adversely affect species listed under the Endangered Species Act. The Washington State Department of Ecology provided a Water Quality Certification and concurrence with the Corps' finding that the action is consistent to the maximum extent practicable with the Coastal Zone Management Act. Additionally, the action is in compliance with the National Historic Preservation Act, Clean Air Act, and applicable Executive Orders.

4. Finding: For the reasons described above, I have determined that maintenance dredging and the beneficial use of dredge material on the east beach at Keystone Harbor will not result in significant adverse impacts on the human environment. The proposed action is not a major Federal action significantly affecting the quality of the human environment and therefore does not require preparation of an environmental impact statement.

27 Sep 2011
Date


BRUCE A. ESTOK
Colonel, Corps of Engineers
District Commander

Final Environmental Assessment

Keystone Harbor Maintenance Dredging Admiralty Inlet, Island County, Washington

September 2011



**US Army Corps
of Engineers®**
Seattle District

Keystone Harbor Maintenance Dredging Draft Environmental Assessment September 2011

Responsible Agency: The responsible agency for this navigation project is the U.S. Army Corps of Engineers, Seattle District.

Abstract:

This Environmental Assessment (EA) evaluates the environmental effects of the proposed maintenance of the Keystone Harbor Navigation Project. Keystone Harbor is located on the west side of Whidbey Island, in Island County, Washington. This artificial harbor is a dredged basin constructed by the U.S. Army Corps of Engineers in 1947-48 and is connected to Admiralty Bay by a Federal navigation channel. The basin provides a harbor of refuge, a boat launch ramp, and a terminal for the Washington State ferry run between the city of Port Townsend and Whidbey Island. Construction of the basin, entrance channel, and adjacent rock jetty interrupted the natural eastward transport of beach material. Consequently, shoaling of the entrance channel requires maintenance dredging every four to six years to ensure safe navigation. Maintenance dredging last occurred in 2006. The recommended plan for 2011-2012 consists of maintenance dredging approximately 50,000 cubic yards within the approved Washington Department of Fish and Wildlife in-water construction window 16 July to 15 February by either mechanical or hydraulic dredge. All the dredged sand and gravel shall be used beneficially to nourish a section of the beach to the east of the breakwater. The proposed project will not constitute a major Federal action significantly affecting the quality of the human environment and preparation of an environmental impact statement is not required.

This document is available online at <http://www.nws.usace.army.mil/ers/envirdocs.html> under Keystone Harbor Maintenance Dredging.

The public comment period was 26 May 2011 through 27 June 2011.

Please send questions and requests for additional information to:

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1. PROPOSAL FOR FEDERAL ACTION

The Council on Environmental Quality (CEQ) regulations, 40 CFR § 1500.1(c) and 40 CFR § 1508.9(a)(1), interpreting the National Environmental Policy Act of 1969 (as amended) (NEPA) require Federal agencies to “provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact” on actions authorized, funded, or carried out by the Federal government to ensure such actions adequately address “environmental consequences, and take actions that protect, restore, and enhance the environment.” This Environmental Assessment (EA) evaluates the environmental effects of proposed maintenance of the Keystone Harbor Navigation Project.

Keystone Harbor is located on the west side of Whidbey Island in Island County, Washington. This artificial harbor is a dredged basin originally constructed by the U.S. Army Corps of Engineers (Corps) in 1947-48 and modified in 1971 and 1993. The Corps constructed the harbor by dredging a triangular shaped bay from an existing barrier beach, and connected the harbor to Admiralty Bay with a navigation channel. The Corps built a stone breakwater on the eastern side of the harbor. The basin provides a harbor of refuge, a boat launch ramp, and a terminal for the Washington State ferry run between the city of Port Townsend and Whidbey Island. Construction of the basin, entrance channel, and adjacent rock jetty interrupted the natural eastward transport of beach material. Consequently, shoaling of the entrance channel requires maintenance dredging every four to six years to ensure safe navigation. Maintenance dredging last occurred in 2006. The channel is designed to be 1,800 feet long, 200 feet wide, and 25 feet below Mean Lower Low Water (MLLW), herein notated as -25 feet, with authorized overdepth to 27 feet below MLLW, or -27 feet. This allows safe navigation for the ferries to dock during tides as low as -4.5 feet. When the channel and ferry slip become too shallow, the ferry must cancel sailings, and the ferry has run aground during landings at low tide. This limits service on the Port Townsend/Coupeville run.

The proposed project consists of removing enough material from the navigation channel and ferry slip to ensure safe navigation. To return the navigation channel to design depth and dimensions with authorized overdepth to -27 feet would require dredging approximately 154,000 cubic yards; however, the Corps may be able to achieve safe navigation with less quantity, as discussed in the alternatives analysis. Dredging will occur either by mechanical (clamshell) dredge from a barge, or by a hydraulic (cutterhead with a pipeline) dredge. The type of dredge employed is the choice of the dredging contractor. Dredging may take 60 to 120 days, depending on total quantity to be removed from the channel. Since the navigation channel disrupts the littoral drift on the east side of the channel, beach nourishment is necessary to replenish the sand normally deposited by littoral drift. With a mechanical dredge, the dredger would place all material from the navigation channel onto the adjacent beach on the east side of the channel. Then a frontloader would place the material in dump trucks, which would haul it to the beach nourishment site at Fort Casey State Park to the east of the breakwater. If a hydraulic dredge is used, the pipeline would deposit the material dredged from the channel directly onto the beach nourishment site. Disposal of the coarse-grained dredged material provides the necessary protection of the jetty and recreation facilities. In addition, beach replenishment prevents erosion from outflanking and causing deterioration of the jetty. The Corps will complete the work within the approved Washington Department of Fish and Wildlife in-water construction window 16 July to 15 February.

Previous NEPA environmental documentation includes the following:

- Fiscal Year 1976 Lake Crockett – Keystone Harbor Environmental Assessment for Maintenance Dredging
- Fiscal Year 1987 Supplemental Environmental Assessment for Maintenance Dredging
- Keystone Harbor Channel Deepening, Admiralty Inlet, Washington. Final Definite Project Report and Final Environmental Assessment 1991
- Fiscal Year 1992 Supplemental Environmental Assessment for Maintenance Dredging

- Fiscal Year 1998 Environmental Assessment and Finding of No Significant Impact for Maintenance Dredging
- Fiscal Year 2006 Environmental Assessment and Finding of No Significant Impact for Maintenance Dredging

1.1 Location of Proposed Action

The Keystone Harbor Navigation project is located on the west side of Whidbey Island on the shores of Admiralty Inlet, Island County, Washington (T31N, R1E, Sections 22, 23, and 24). Keystone Harbor is the eastern terminal of the Port Townsend/Coupeville ferry route (Figure 1). The navigation channel connects Admiralty Inlet to the Washington State Ferry terminal (Figure 2). The Harbor is surrounded by Ebey's Landing National Historic Reserve and by Fort Casey State Park. Lake Crockett lies to the northeast across State Route 20, and is connected hydraulically to the harbor through a culvert with a tidegate.

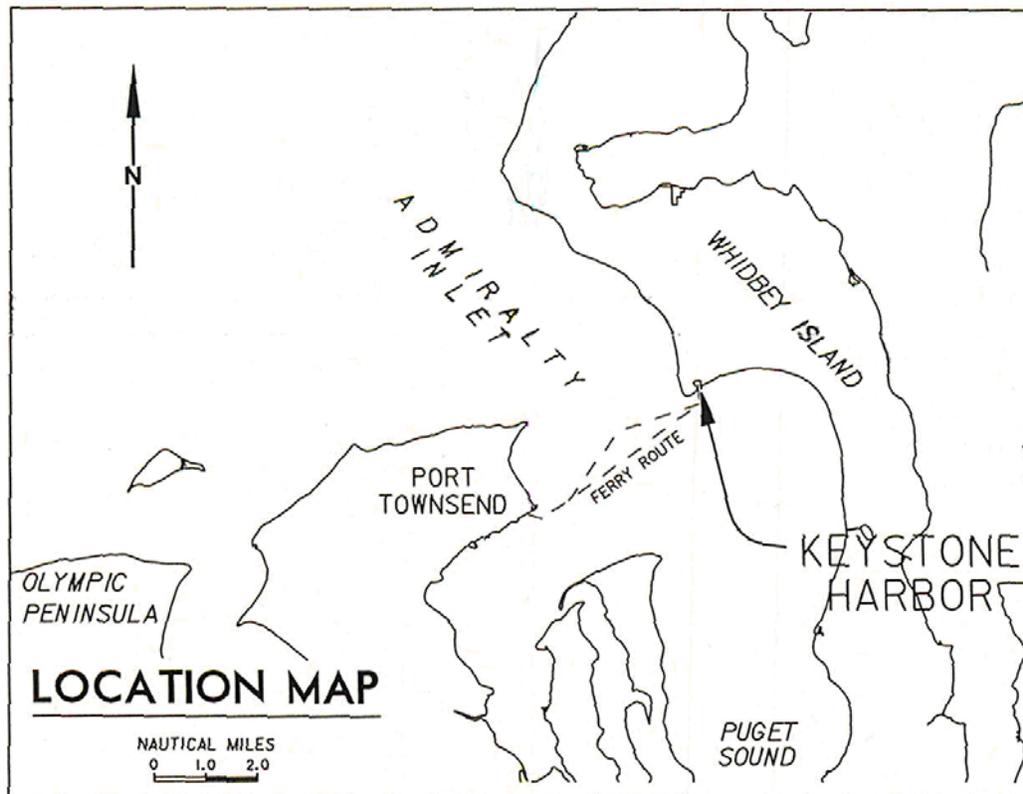


Figure 1. Project location.



Figure 2. Aerial photograph of Keystone Harbor taken 5 May 1993 (photo courtesy of the Washington Department of Ecology).

Ebey’s Landing National Historical Reserve

The Federal navigation channel and dredged material disposal site are located within the boundaries of the Ebey’s Landing National Historical Reserve (NHR), which was created by Congress in 1978 as a unit of the National Park System (Pub. L. 95-625, title V, Sec. 508, Nov. 10, 1978, 92 Stat. 3507, as amended Pub. L. 96-87, title IV, Sec. 401(k), Oct. 12, 1979, 93 Stat. 666). The purpose of the national park system is “to conserve the scenery and the natural and historic objects and the wild life” in the parks and to “leave them unimpaired for the enjoyment of future generations” (16 U.S.C. § 1). Ebey’s Landing NHR is managed by the National Park Service (NPS) in partnership with a 9-member Trust Board composed of representatives of Island County, the Town of Coupeville, the NPS, and the Washington State Parks and Recreation Commission. The purpose of Ebey’s Landing NHR is to preserve and protect a rural community that provides an unbroken historical record from nineteenth century exploration and settlement in Puget Sound to present time.

Fort Casey State Park

Fort Casey State Park is a 467-acre marine camping park with a lighthouse and sweeping views of Admiralty Inlet and the Strait of Juan de Fuca. A coast artillery post features two historic guns on display. The park features 10,810 feet of saltwater shoreline on Puget Sound (Admiralty Inlet), and includes Keystone Spit, a two-mile-plus stretch of land separating Admiralty Inlet and Lake Crockett. An underwater park for SCUBA diving is located within the State Park, immediately east of the jetty.

1.2 Authority

The Keystone Harbor Project is authorized by several acts that together created the current authorized project scope. The Lake Crockett navigation project and maintenance dredging by the Department of the Army was authorized by the River and Harbor Act of 2 March 1945 (House Document 303, 77th

Congress, 1st Session). In 1971, the project was widened under authority of Section 107 of the 1960 Water Resources Development Act. In 1993, the project was deepened by authority of Section 107 of the 1960 Water Resources Development Act as amended by Section 915 of the Water Resources Development Act of 17 November 1986 (Public Law 99 662). The finished project is named Keystone Harbor.

1.3 Project Purpose and Need

The purpose of this project is to provide necessary safe navigation conditions for the Washington State Ferry System vessels to dock at Keystone Harbor for uninterrupted service on the Port Townsend/Coupeville ferry route, and to ensure continuity of the sediment transport processes along the shoreline in the project area. The purpose of the beach disposal component of the project is to prevent erosion to the point of undermining the jetty and losing park infrastructure.

Navigation Conditions

Strong cross-currents, narrow channel width, and wind-generated waves combine to make Keystone Harbor the most difficult of all Washington State ferry terminals to enter. Vessel operators typically bring a ferry into the channel at full speed and, after the stern of the vessel is out of the influence of the cross current, apply full reverse to begin the docking maneuver. At low tide, there is insufficient water under the hull of a 13.5-foot-draft ferry to maintain vessel control. Propeller cavitation can occur with resulting loss of thrust and rudder “bite,” and the vessel may drift and run aground. Propeller clearance requires at least 7 feet for vessel control. With continued shoaling of the channel, the risk of ferry vessel groundings at moderate and lower tides increases dramatically. In addition, continued shoaling could limit the ability of Keystone Harbor to serve as a harbor of refuge.

Beach Erosion

The navigation project interrupts the natural littoral drift process. This results in gradual erosion of the harbor features and related recreation facilities. Continued erosion risks undermining the east jetty, an essential feature of the Federal navigation project. Over several years, severe erosion can occur on the adjacent beach to the east and can undermine the Washington State Park’s restroom facilities, picnic areas, parking lot, and recreational boat launch (Figure 3).



Figure 3. Dredged material disposal area for beach nourishment to protect park infrastructure at risk of damage from shoreline erosion.

2. ALTERNATIVE ACTIONS

2.1 Alternative 1 – Maintenance Dredging with Beach Nourishment

Alternative 1 consists of maintenance dredging of up to 154,000 cubic yards of material from the Keystone navigation channel to the authorized overdepth of -27 feet. The area that may be dredged is approximately ten acres in Keystone Harbor; the navigation channel is 1,800 feet long and 200 feet wide, widening to 670 feet at the north end (Figure 4). Dredging will occur with either a hydraulic dredge or mechanical dredge. Dredging this quantity would take approximately 120 days. This alternative includes the areas of the harbor adjacent to the ferry mooring dock that have not been dredged for many years. Even if these areas are dredged in the next maintenance event, this would not reduce the frequency of the dredging cycle that is required every four to six years to keep the main channel clear for navigation.

Disposal of the dredged material will occur on the adjacent previously used beach disposal site, which is approximately 2.5 acres. All the dredged sand and gravel will be used beneficially to re-nourish a section of the beach to the east of the breakwater (Figure 4). The method used to deposit material on the beach depends on the dredge equipment. With hydraulic dredging, the material will be pumped to the beach area. To minimize effects on the diving park below the nourishment site, should a hydraulic dredge be used, berms will be pushed up with local material to preclude effluent from flowing directly into receiving water without ponding/settling or filtering through the berm. With mechanical dredging, the sediment will be loaded onto barges and rehandled onto trucks for placement on the beach. Dredging and disposal will occur within the approved Washington Department of Fish and Wildlife (WDFW) in-water construction window of 16 July to 15 February.

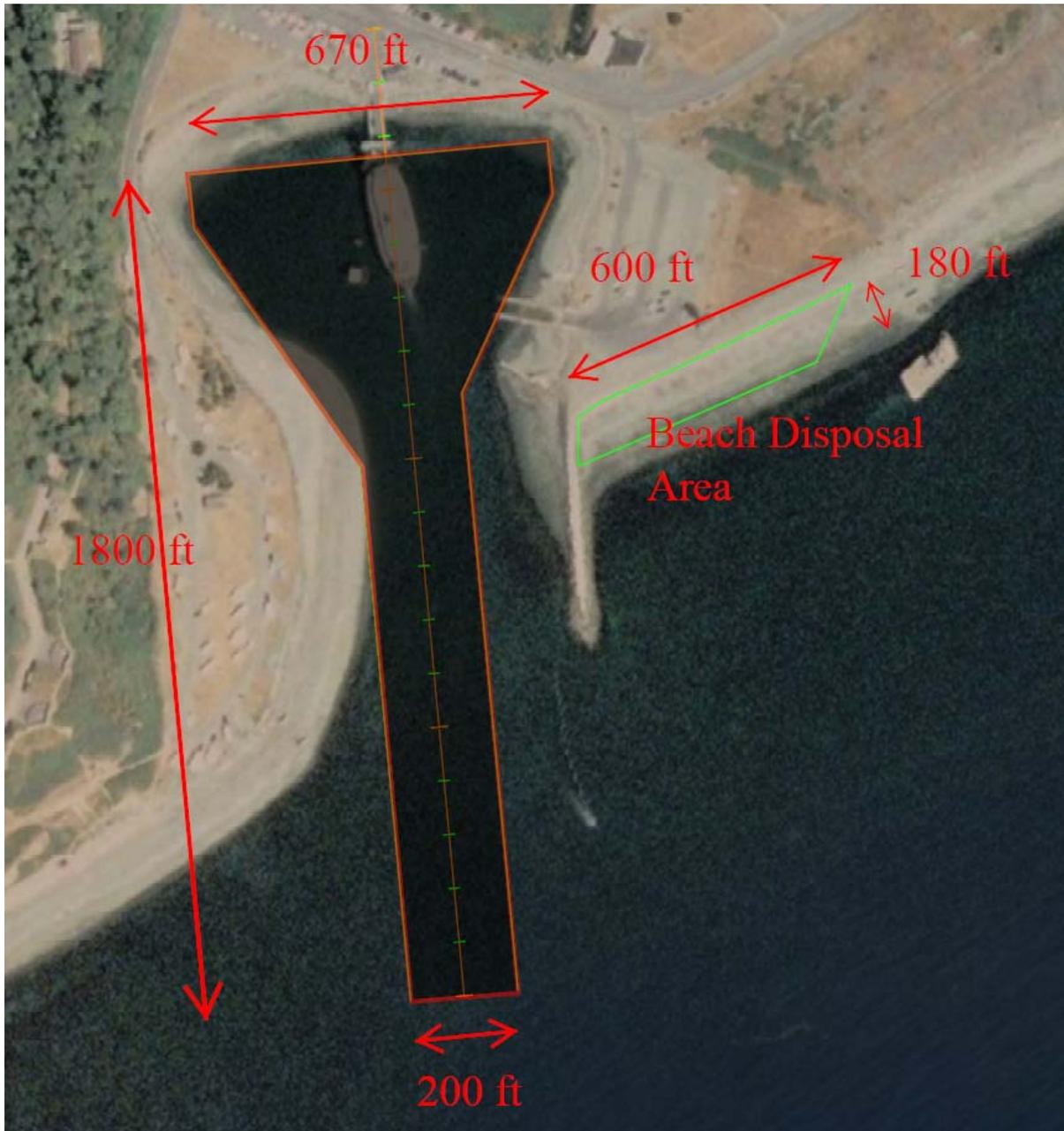


Figure 4. Plan view for Alternative 1.

2.2 Alternative 2 – No Action

The No Action Alternative provides a basis for comparison of the effects of future conditions with and without taking the proposed Federal action. Under the no action alternative, the Corps would not take any actions to maintain the Keystone Harbor navigation channel. The Corps would not dredge the harbor or address the continuing erosion of the neighboring beach. The likely result is that the ferry vessels would increasingly cancel sailings at low tides, and may run aground to the point of making this ferry landing unusable. Cancelled sailings cost time and money to the Washington State Ferries system, and decreased serviceability can harm the local economy of Coupeville, Port Townsend, and other towns in the area due to lost tourism money. Sailing cancellations would continue to cause delays, inconvenience, and extra cost to private and commercial traffic travelling to and from the northern Olympic Peninsula. Additionally, the beachfront area of the State Park would erode to the point of loss of the restroom

building and other park features. Washington State Parks may opt to install a bank stabilization structure; however, this is not an environmentally preferable method to maintain the nearshore habitat.

2.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

The Corps is considering reducing the quantity to be dredged in 2011 because a portion of the authorized channel does not require dredging for safe navigation. Reducing the quantity can be achieved by dredging a smaller area, dredging to a shallower depth, or a combination of these two options. Based on bathymetric surveys of the shoaled material in the navigation channel, the Corps is proposing to reduce the total area of dredging to a smaller section of the authorized navigation channel (Figure 5). The authorized channel is 200 feet wide and 1,800 feet long, with a wider area at the north end of the channel; however, reducing the dredging to 300,000 square feet, which is just under seven acres (200 feet wide and 1,500 feet long) will still achieve safe navigation. The Corps has estimated that dredging approximately 50,000 cubic yards of material will achieve safe navigation conditions for the ferry vessel. The duration of dredging will be roughly 60 days. Disposal method will be the same as for Alternative 1. Environmental effects of this alternative will be the same as for Alternative 1, but with a shorter duration due to reducing the total quantity to be dredged. This option is analyzed further because it will meet the purpose and need of the proposed Federal action. Additionally, this alternative is the least cost and least environmentally damaging alternative and is therefore the recommended plan.



Figure 5. Plan view for Alternative 3.

2.4 Alternative 4 – Maintenance Dredging with Open Water Disposal

Under Alternative 4, dredging would occur as in Alternative 1 or Alternative 3; however, the Corps would place dredged material on a barge and transport it 14 miles away to an open-water dredged material disposal site (Figure 6). The Puget Sound Dredged Disposal Analysis (PSDDA) Port Townsend site is one of eight multi-user disposal sites located in Puget Sound and the Strait of Juan de Fuca.¹ If

¹ The PSDDA program is a multi-agency effort to manage dredged material disposal in Puget Sound, and has been renamed the Dredged Material Management Program (DMMP). DMMP manages eight multi-user disposal sites, evaluates suitability of dredged material for disposal at those sites, and monitors effects of disposal at each site. Responsible agencies include the U.S. Army Corps of Engineers, Seattle District; the U.S. Environmental Protection Agency, Region 10; the Washington Department of Natural Resources; and Washington Department of Ecology.

Alternative 4 were selected, no additional environmental compliance requirements would apply to the disposal component of the proposed project except for the Water Quality Certification from Washington Department of Ecology. All required permits and approvals have been obtained for all disposal activities at the eight PSDDA sites. Disposal activities at the Port Townsend site were evaluated in a 1989 programmatic environmental impact statement (PSDDA 1989), and the Biological Evaluation was updated in 2005. Those documents are incorporated by reference herein.

While the Open-water Disposal Alternative would result in the necessary channel maintenance and disposal of dredged material, erosion of the beach would continue and eventually threaten the upland park facilities and the jetty. This alternative would likely have higher transportation costs to move the dredged material farther away and it would fail to take advantage of the opportunity to use the material beneficially to nourish a starved beach. In addition, the Port Townsend PSDDA site is closed 1 September to 30 November to protect shrimp, which would restrict the dredging and disposal window. Alternative 4 was rejected and not carried through further environmental analysis because this would only meet half of the purpose and need for the proposed action. Open water disposal would not meet the need of protecting the jetty and infrastructure at Fort Casey State Park.

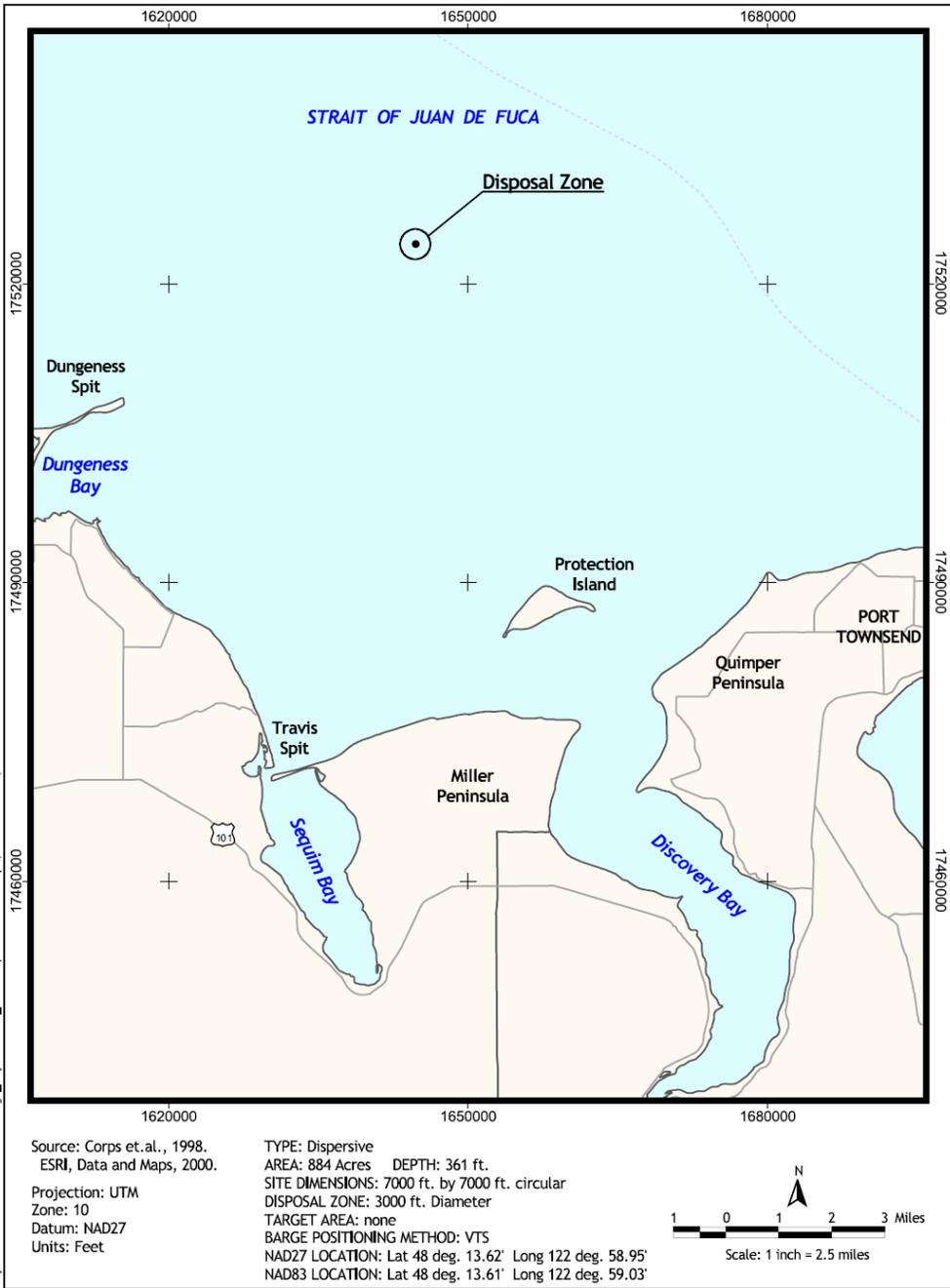


Figure 6. PSDDA-approved Port Townsend open water dispersive disposal site.

3. ISSUES FOR COMPARISON OF THE ALTERNATIVES

This section provides information on issues relevant to the decision process for selecting the preferred alternative. This analysis investigates the potential for activities associated with the considered alternatives to affect (either adversely or beneficially) the various issues of concern, and provides a comparative assessment of each alternative's effects to the environment. Factors for selecting the recommended plan include finding the plan that is the most cost effective and the least environmentally damaging.

3.1 Geomorphology

The barrier beach that separates Admiralty Bay from Lake Crockett was formed by material eroded from high bluffs of glacial outwash located to the west at Admiralty Head, and to the southeast of the

navigation project. Active erosion of these “feeder” bluffs supplies sediments to adjacent beaches. Currents along the shoreline move sediments that become sorted by size; finer material drifts offshore to less turbulent waters and larger sand, gravel, and cobbles are carried by littoral drift to adjacent beaches. The bluffs southeast of Keystone Harbor have been estimated to supply northern Admiralty Bay beaches with more than 15,000 cubic yards of sediment annually (WSDOT 2005 - Appendix 9). Two drift cells occur within the northern portion of Admiralty Bay (Figure 7). Littoral drift moves material east from Admiralty Head and west from bluffs 3.5 miles southeast of the Harbor (Corps 1972). A nodal point (area of zero net beach movement) exists on the beach about 11,000 feet east of Keystone Harbor.

Construction of the harbor and jetty created a littoral trap for the Admiralty Head feeder bluff. The effect of this trap is accretion inside Keystone Harbor and erosion of the beach east of the harbor entrance. During the 1950s, the beach east of the jetty eroded rapidly. Erosion undermined the jetty structure, which required repairs in 1950, 1954, and 1960. Since 1960, most material dredged from the navigation channel has been placed on the beach to the east of the jetty. The dredged material serves as a beach nourishment stockpile, eroding gradually through wave action and tidal currents. Although the channel and jetty interrupt the Admiralty Head drift cell, dredging and beach nourishment provide a bypass mechanism that supplies sediments to two miles of beaches downdrift of the jetty. Over 220,000 cubic yards of sediment have been placed east of the jetty since 1960, allowing for maintenance of a nearly equilibrium shoreline shape and position (see Figure 9 in section 6.1).

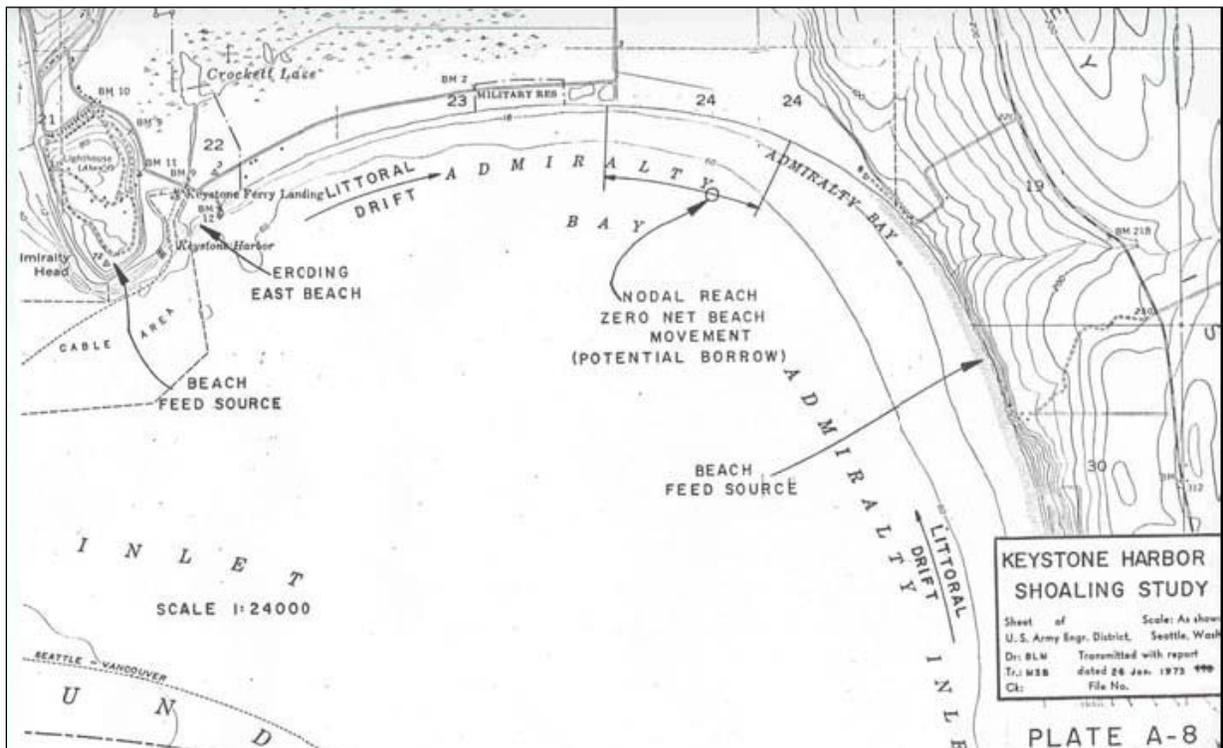


Figure 7. Littoral drift cells in the project area (USACE 1972).

3.1.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

This alternative would entail dredging 154,000 cy from the entire 1,800-foot long channel and areas to the east and west of the ferry terminal to return depths in the navigation channel and boat basin to -27 feet. Based on historic sediment characterization and the coarse gradation of the sediment, the Corps has determined the dredged material is suitable for depositing as beach nourishment. Dredging will have no effect on the character and grain size distribution provided by the adjacent feeder bluff. Beach nourishment will compensate for the interruption of the littoral drift cell by moving the shoaled material back into the drift cell and will prevent erosion and loss of infrastructure at the State Park. This alternative

would maintain the historic geomorphology of a sediment transport system at equilibrium such that the shape of the shoreline does not change (Figure 7, also see Figures 8 and 9 in Section 6.1).

3.1.2 Alternative 2 – No-Action Alternative

For the No-Action alternative, the Corps would not dredge the shoaling Keystone Harbor, further decreasing the depth of the harbor and limiting navigation. Without placement of material along the eroding shoreline, the effect to the geology and geomorphology of the project area is that the shoreline erosion would likely continue threatening access to the jetty, parking lot, and park facilities. The material that accumulates in Keystone Harbor, roughly 6,500 to 10,000 cy per year, would not be available to the natural system of sediment transport along this reach of Admiralty Bay. This alternative does not meet the need for the project.

3.1.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Under this alternative, the Corps will dredge 50,000 cy from a shorter lane of the navigation channel. Effects to the geomorphology of the project area will be similar to the effects of Alternative 1. The average rate of shoaling in the harbor has historically been approximately 6,500 cy per year. Dredging an average of 40,000 cy every four to six years with placement on the adjacent beach has been sufficient to maintain the balance that erodes from the beach. The proposed quantity of 50,000 cy is presumed to be sufficient to nourish the beach and prevent undermining of the jetty based on historic dredging quantities.

3.2 Aquatic Vegetation

Limited aquatic vegetation occurs in the project area. The Corps created this artificial basin in 1947-48 and has been dredging it routinely over the past 50 years; therefore, almost no bull kelp (*Nereocystis luetkeana*) or eelgrass (*Zostera marina*) can grow in all of Keystone Harbor. In addition, the daily ferry movements in and out of the harbor likely limit vegetation growth by regularly suspending sediments from the propeller wash. The non-dredged aquatic areas of Keystone Harbor are largely covered in macroalgae with the dominant species being sugar kelp (*Laminaria saccharina*); however, the navigation channel itself is sparsely covered with small red algae species. Immediately offshore of the beach nourishment area at Keystone Spit is a small stand of bull kelp.

3.2.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Effects of dredging on the sparse vegetation in the channel will be to limit the area that could host aquatic vegetation. Alternative 1 would not be expected to have a measurable effect on the bull kelp bed offshore of Keystone Spit for two reasons. First, the nourishment material will be placed upon the beach adjacent to the kelp bed during fall and winter months. This avoids the spring months when algae are most vulnerable to sediment effects when increasing light levels trigger reproduction. Second, the nourishment materials will be a coarse grain size and are not expected to remain suspended in the water column. This reduces the chance for sub-threshold light levels that could affect macroalgae growth rates or reproductive cycles. In addition, Corps SCUBA studies during and after previous dredging and disposal activities revealed little to no effect on aquatic vegetation near the disposal area (Smith 1976). Although the quantity proposed in Alternative 1 is significantly greater than the 31,000 cy placed in 1976, dispersal of the material will be complete before the spring growth period of bull kelp.

3.2.2 Alternative 2 – No-Action Alternative

The No-Action alternative may allow a more stable and dense community of aquatic vegetation or macroalgae communities within the harbor. The likely increase in sugar kelp may serve to host more species in the nearshore area.

3.2.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Effects of dredging a reduced quantity of material from a smaller area than what is proposed for Alternative 1 will mean that Keystone Harbor may be able to host slightly more sugar kelp. Less area of

substrate disturbed will leave some macroalgae on the bottom, but the harbor will still not be able to support any eelgrass. Disposal of 50,000 cy on the beach will have no effect on aquatic vegetation near the disposal area, as discussed for Alternative 1 above.

3.3 Fish and Wildlife

The project area hosts a great variety of marine life. The nearshore bottom between the breakwater and wharf is shallow with small rock outcrops. Sparse algae and a few horse clams (*Tresus* sp) occur here. The pilings of the wharf host numerous tubeworms and serve as substrate for barnacles (*Balanus* spp.) and sea anemones (*Metridium* sp.), which provide cover and habitat for several species of fish. The breakwater provides substrate for barnacles, anemones, chitons, mussels, and other organisms. Snails, hydroids, sea cucumbers, crabs, sea urchins, sea stars, wolf eels, greenlings, gunnels, and lingcod inhabit the area. The channel biota are limited to opportunistic species that colonize the area between maintenance dredging periods. Juvenile salmonids outmigrate along the shoreline between April and June. Waterfowl use Lake Crockett and Keystone Harbor throughout the year, though peak abundance occurs during fall migration. Raptors are common along the shores of Lake Crockett, while shorebirds are numerous during fall migration (August to October). Pandalid shrimp are present offshore in high numbers in the fall. Marine mammals are seen in the vicinity, though seldom in the navigation channel.

3.3.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Mobile fish and wildlife species will be able to avoid the areas of dredging within the harbor. A temporary reduction in benthic productivity in the dredged areas is expected during the four months of dredging; however, these areas will recolonize with similar fast-establishing organisms. A Washington State Ferry vessel docks here 11 times per day, so fish and wildlife are assumed to be accustomed to the presence of large, noisy boat traffic. The presence of the dredge will be a small increment of noise and activity beyond the usual activity in the harbor and would endure for roughly four months. The work may occur during bald eagle wintering season (31 October to 28 February); however, no bald eagle nests have been recorded near the project.

Disposal of 154,000 cy as beach nourishment would maintain a higher, more gently graded beach profile than under the No Action alternative, and would maintain the range of intertidal elevations necessary to support the epibenthic invertebrates that serve as prey for a wide variety of marine fishes. Alternative 1 would temporarily adversely affect epibenthic prey organisms, particularly gammarid amphipods, within and adjacent to the two-acre beach nourishment footprint. Amphipods are mobile epifauna that are adapted to heavy disturbance regimes, and are expected to recolonize the nourishment area to previous population levels within a few months. The small scale of mortality effects that may result from the proposed project is not likely to affect amphipod population dynamics in the project area.

Alternative 1 would not directly affect forage fish such as herring, surf smelt, and sand lance. Entrainment is a risk for small fishes near a hydraulic dredge; however, the number of aquatic organisms entrained in this small, confined harbor will not have population-level consequences. Placement of the nourishment materials will primarily occur above the waterline so as not to directly interfere with fish usage of beach habitat. Turbidity will not increase substantially above ambient conditions due to the large grain size of the material. According to the Washington Department of Fish and Wildlife, indirect effects are not anticipated since no documented spawning beaches occur in the project area (Thompson 2005). NOAA-sponsored studies have shown that the epibenthic fauna that will likely be affected by material placement do not appear to constitute a significant fraction of the forage fishes' diets, as they tend to rely more on pelagic organisms (Simenstad et al. 1977). Beach nourishment would occur after the end of the juvenile salmonid outmigration period, limiting direct effects individual fish. This schedule will allow for maximum recovery of the epibenthos prior to the following salmonid outmigration period, diminishing project effects to the prey base.

3.3.2 Alternative 2 – No-Action Alternative

The No-Action alternative would allow a more stable benthic community to establish in Keystone Harbor and would avoid entrainment of crabs and small fish.

3.3.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

The environmental effects of dredging and disposing 50,000 cy for Alternative 3 will be nearly identical to the effects of Alternative 1. One notable difference is that fewer crabs and small fish will be entrained during dredging because of the reduced quantity and duration. The entire two-acre disposal area will be covered, so effects to beach-dwelling fauna will be the same. The duration of noise disturbance for fish and wildlife will be shorter than Alternative 1 at approximately two months for Alternative 3. The quantity proposed for removal in this alternative is only slightly more than the average amount, but within the normal range, that the Corps dredges every four to six years and places on the adjacent beach as nourishment.

In 1976, the Corps, with assistance from the U.S. Fish and Wildlife Service (USFWS), Environmental Protection Agency (EPA), and Western Washington State College, conducted SCUBA surveys of the subtidal area fronting the beach disposal site before, during, and after dredging and disposal (Smith 1976). Diver observations revealed that the majority of the area did not appear significantly disturbed by the beach nourishment, as shown by the presence of macro algae, a periphyton growth of diatoms, occasional bivalves and crustaceans, sea urchins, and other benthic invertebrates. The divers determined that no noticeable changes were seen, and they considered any plant or animal losses to be minor. They observed no gross differences in feeding activity by sessile organisms. No noticeable effects to invertebrates were recorded and fish species avoided areas of high siltation. Some filter feeding organisms were covered to some extent by sediment. This did not appear to dramatically affect their feeding functions. At the old dock location, the vertical slope of the piles protected the marine life from sedimentation and no adverse effects to this community were noted (Smith 1976).

3.4 Threatened and Endangered Species

Eleven species protected by the Endangered Species Act (ESA) of 1973, as amended, may occur near Keystone Harbor. In accordance with Section 7(a)(2) of the Act, federally funded, constructed, permitted, or licensed projects must take into consideration effects to federally listed, proposed, and candidate species. Table 1 is a list of ESA-listed species that may occur near Keystone Harbor.

Table 1. Endangered and Threatened Species Potentially Occurring near Keystone Harbor

Species common name	Scientific Name	Listing Status	Critical Habitat
Coastal/Puget Sound Bull Trout	<i>Salvelinus confluentus</i>	Threatened	Designated
Golden Paintbrush	<i>Castilleja levisecta</i>	Threatened	—
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Designated
Puget Sound Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened	Designated
Hood Canal Summer Chum Salmon	<i>Oncorhynchus keta</i>	Threatened	Designated
Puget Sound Steelhead	<i>Oncorhynchus mykiss</i>	Threatened	Proposed
Steller Sea Lion	<i>Eumetopias jubatus</i>	Threatened	Designated
Southern Resident Killer Whale	<i>Orcinus orca</i>	Endangered	Designated
Eulachon	<i>Thaleichthys pacificus</i>	Threatened	Proposed
Bocaccio Rockfish	<i>Sebastes paucispinis</i>	Endangered	—
Canary Rockfish	<i>Sebastes pinniger</i>	Threatened	—
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	Threatened	—

3.4.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

To satisfy the requirements of the ESA, the Corps has initiated consultation with the USFWS and National Marine Fisheries Service (NMFS) regarding the effects of the proposed action on listed species. The Corps has prepared a biological evaluation (BE) to determine the effects of the project and to propose conservation measures for species affected by the proposed action; the document was submitted to the Services in April 2011. Although a preferred alternative had not been selected at the time of submitting the consultation document, the Corps described the effects of Alternative 1 as this is the alternative with the largest quantity and longest duration of dredging and disposal. Effects to listed species include noise disturbance, displacement due to their avoidance of the dredge, risk of entrainment, and irritation due to turbidity. Table 2 shows the Corps' effect determinations as described in the BE. The document describes the Corps' analysis and determination that the proposed project will have no effect on golden paintbrush; bocaccio, canary, and yelloweye rockfish; and is not likely to adversely affect marbled murrelet, Steller sea lion, southern resident killer whale, Puget Sound Chinook salmon, Hood Canal Summer-run chum salmon, Puget Sound steelhead, and Coastal/Puget Sound bull trout. Table 2 provides a list of the effect determinations as well as Critical Habitat determinations.

Table 2. Summary of Effects Determinations for Alternatives 1 and 3

Species	Effect Determination	Critical Habitat Determination
Coastal/Puget Sound Bull Trout	Not likely to adversely affect	No effect
Golden Paintbrush	No effect	-----
Marbled Murrelet	Not likely to adversely affect	No effect
Puget Sound Chinook Salmon	Not likely to adversely affect	Not likely to adversely affect
Hood Canal Summer Chum Salmon	Not likely to adversely affect	Not likely to adversely affect
Puget Sound Steelhead	Not likely to adversely affect	-----
Steller Sea Lion	Not likely to adversely affect	No effect
Southern Resident Killer Whale	Not likely to adversely affect	No effect
Eulachon	No effect	No effect
Bocaccio Rockfish	No effect	-----
Canary Rockfish	No effect	-----
Yelloweye Rockfish	No effect	-----

Construction will occur when Puget Sound Chinook, Hood Canal summer-run chum, and Coastal/Puget Sound bull trout are least likely to be present in the action area. The work timing is outside of the USFWS closure period for bull trout in Puget Sound marine waters (16 February to 15 July), the NMFS closure period for Chinook in Puget Sound marine waters (1 March to 1 July), and the NMFS closure period for Hood Canal chum in marine waters (1 March to 15 July). In addition to avoiding work closure windows, the Corps will set aside all beach logs from the beach nourishment site and redistribute the woody debris after the dredge materials have been placed on the beach site.

3.4.2 Alternative 2 – No-Action Alternative

The No-Action alternative would have no effect on any threatened or endangered species.

3.4.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

The environmental effects of Alternative 3 to ESA-listed species will be identical to effects of Alternative 1, although the duration of noise effects to Southern Resident killer whales and Steller sea lions will be greatly reduced due to the reduced time required to remove the smaller quantity of material.

3.5 Historic and Cultural Resources

A cultural resources assessment was performed by a professional archaeologist in order to determine if a potential exists to cause effects to Historic Properties if they should exist within the project area. A search of the archaeological and historic site records at the Washington State Department of Archaeology and Historic Preservation (DAHP) indicated that the proposed project lies within the southern boundary of the National Park Service (NPS) administered “Ebey’s Landing National Historical Reserve” (45IS04H; a.k.a “Central Whidbey Island Historic District”). The Historical Reserve is listed on both the Washington Heritage Register (WHR) and the National Register of Historic Places (NRHP). The project is within the boundaries of the Washington State Parks administered Fort Casey State Park (45IS103H), which contains structures that are components of the Historical Reserve. A comprehensive review of the prehistory and history of the historical reserve can be found on the NPS web site at: <http://www.nps.gov/ebla/index.htm>

In 2006, a Corps archaeologist conducted a pedestrian archaeological survey of the shoreline and adjacent areas during a minus tide, as well as a study of viewsheds to and from the nearest historic properties. The archaeological survey produced no evidence of prehistoric-period activity within or closely adjacent to the project APE. The Corps determined that the 2006 maintenance project had a finding of No Historic Properties Adversely Effected, as well as previous dredging actions dating back to 1948.

3.5.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

The proposed action is a routine maintenance task that was surveyed in 2006 with a finding of No Historic Properties Adversely Affected, and all ground disturbing activity will occur within previously disturbed and surveyed maintenance areas; therefore, the Corps has determined that the project has No Potential to Cause Adverse Effects to Historic Properties under the NHPA. Furthermore, there are no historic structures adjacent to the undertaking, and the work will not affect immediate viewsheds that are eligible for the National Register.

If, during construction activities, the Contractor observes items that might have historical or archeological value, such observations shall be reported immediately to the Contracting Officer so that the appropriate authorities may be notified and a determination can be made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in the destruction of these resources and shall prevent his employees from trespassing on, removing, or otherwise damaging such resources.

3.5.2 Alternative 2 – No-Action Alternative

The No-Action alternative would have no effect on any cultural resources.

3.5.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

The Maintenance Dredging with Reduced Quantity alternative will have no potential to adversely affect cultural resources. The same protocol for the contractor will apply as described in Alternative 1.

3.6 Water Quality

Admiralty Inlet is generally more saline than the rest of Puget Sound due to the proximity of the Strait of Juan de Fuca and its direct connection to the Pacific Ocean. The interchange of freshwater contributed from rivers around Puget Sound and the deeper more saline water create stratified mixing with cooler saline water on the bottom. Typical sources of water pollution in the Puget Sound region are industrial waste, combined storm-sewer overflow events, and stormwater runoff from developed areas. Ecology has rated the water quality of Admiralty Inlet as Class 1, meeting standards for all uses.

The material that shoals in Keystone Harbor is composed of sand and gravel (less than 3% fines) eroding naturally from unaltered bluffs to the west of the navigation channel. This material is not likely to alter

water quality in the area. Previous testing showed the material to be dredged is ranked low concern for characterization by the DMMP Agencies. A full PSDDA characterization of two composited samples occurred in 1988. One composite consisted of material from the east side of the entrance channel, and the other consisted of material from the west side of the entrance channel. The results of these analyses showed that all chemicals of concern from the composited sample west of the channel were measured below PSDDA screening levels (SL), level of specific chemicals below which there is no reason to believe that disposal of that material will result in unacceptable adverse effects. The composited samples from the area east of the channel (the receiving area for nourishment material) were below SL and Washington sediment quality standards, except for Phenol. Phenol in Puget Sound has natural and anthropogenic sources, mainly from decomposition of conifer needles and wood chips, respectively. The spatial and temporal variability of Phenol in Puget Sound indicates more natural sources (SAIC 2005). Phenol does not persist in the environment and dissipates in a few days after release. Sublethal toxicity to fish affects their metabolism and reproductive potential. The material sampled at Keystone in 1988 met exclusionary criteria under CWA: 40 CFR 230.60 (subparagraphs a, b, and c). The exclusionary criteria state that material meets the criteria and can be excluded from further testing if (1) it is predominantly sand from high current/wave energy area; and (2) dredging area is sufficiently removed from contaminant sources; and (3) the disposal site is adjacent to the dredging site.

Sediments were tested according to Puget Sound Dredged Disposal Analysis (PSDDA) protocol and results will be submitted for approval for unconfined open water disposal by the DMMP agencies. The dredging/disposal site is in a highly dynamic littoral drift current/tidal area, and is free from any known sources of contamination. For previous sampling results, the DMMP agencies have concurred that the material does not require further testing under Section 404 of the Clean Water Act. Sampling occurred 12 May 2011. The Corps received a determination from the DMMP agencies on 28 July 2011 that material dredged from Keystone Harbor is suitable for beach nourishment.

3.6.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

The only effect to water quality that is expected during dredging is turbidity due to pulling sediments off the harbor floor. If a mechanical dredge is used, turbidity may increase in the area immediately surrounding the dredging vessel as the clamshell bucket pulls the sediment up through the water column. If a hydraulic dredge is used, the turbidity stays at the bottom of the water column. For both types of dredging, turbidity is expected to be of short duration, such as only a few minutes because of the coarseness of the material. The large particles typically fall quickly and do not remain suspended. Dredging will cease intermittently to avoid affecting the WSDOT ferry, thus providing periods for suspended sediments to settle. The potential increase in turbidity is deemed discountable because the daily periodic movements of the WSDOT ferries and subsequent prop wash routinely suspend bottom sediments in the shallow harbor. The material to be dredged and placed on the beach will be tested with standard PSDDA protocols by the DMMP. The material is ranked as having a low concern and no negative effects from contaminants, including phenols, are anticipated.

During disposal activities, the majority of materials used beneficially at the disposal site will be placed above the mean-higher-high water line. If a hydraulic dredge is used, effects to water quality will be minimized by pushing berms of local material at the disposal site to preclude effluent from flowing directly into receiving water without first filtering through the berms. If a mechanical dredge is used, turbid water will drain from the material while it is staged on the shore of the harbor waiting for loading into trucks.

During all phases of construction, the Corps will employ best management practices for equipment operation and storage and use of hazardous materials (See Section 4). No leakage or spills of hazardous materials are expected to occur. The Corps will monitor water quality during construction using a protocol coordinated with the Washington Department of Ecology. Should turbidity levels reach an unacceptable level, work will temporarily cease until water quality is restored.

3.6.2 Alternative 2 – No-Action Alternative

Without dredging in the navigation channel, continued shoaling would likely decrease depths in the basin. Therefore, propeller wash from routine ferry traffic would likely increase the amount of material suspended in the water column each time the ferry enters and exits the harbor.

3.6.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Consequences to water quality for Alternative 3 will be the same as for Alternative 1, but with a period of only two months rather than four months of dredging and disposal.

3.7 Air Quality, Greenhouse Gas Emissions, and Noise

Air quality in the northern Puget Sound area meets the Environmental Protection Agency's (EPA) standards for all air quality parameters (EPA 2007). The EPA creates regulations as required by the Clean Air Act. Areas of the country where air pollution levels persistently exceed the national ambient air quality standards are designated as "non-attainment" areas. The EPA has set *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) for non-attainment areas; however, no standards are set for green house gas emissions in Washington State. In Washington, the Seattle-Tacoma area is the only designated non-attainment area; this is due to particulate matter (PM_{2.5}) levels. The project area is rural-agricultural with the town of Coupeville a few miles away. Air quality in Keystone harbor area is generally good. Motor vehicles, including the ferries, are the largest source of air pollutants. Particulates, sulfur dioxide, ozone, and carbon monoxide are the pollutants of concern.

Carbon monoxide, a product of incomplete combustion, is generated by automobiles and other fuel burning activities (e.g. residential heating with wood). The highest ambient concentrations of carbon monoxide tend to occur in localized areas such as major roadways and intersections during periods of low temperatures, light winds, and stable atmospheric conditions. Ozone is a highly reactive form of oxygen created by sunlight-activated chemical reactions of nitrogen oxides and volatile organic compounds. Unlike high carbon monoxide concentrations, which tend to occur close to emission sources, ozone problems tend to be regional since ozone precursors can be transported far from their sources. Motor vehicle engines primarily generate ozone precursors.

Sources of air pollution during the construction of this project will include the dredge, dump truck, excavator, tugboat, bulldozer, and personal vehicles. For each project alternative, the quantity of potential air emissions was estimated using a construction emissions spreadsheet model for non-road equipment from the Sacramento Metropolitan Air Quality Management District (SMAQMD; 2008). The model accounts for emissions associated with the operation of on-road vehicles which will transport workers to/from the site and off-road equipment which will be used during dredging activities; emissions associated with pre- and post-dredging mobilization were neglected. These estimates are not intended as an exact calculation of the emissions associated with this project but rather as a means for comparison among the alternatives. Carbon monoxide (CO); reactive organic gases (ROGs), which are ozone precursors; nitrogen oxides (NO_x); particulate matter with diameters larger than 2.5 micrometers and smaller than 10 micrometers (PM₁₀); and particulate matter with diameters that are 2.5 micrometers and smaller (PM_{2.5}) were estimated using the SMAQMD model and reported in the sections below.

Regarding airborne noise, this rural and recreational area is typically quiet. Typical existing noise consists of those generated by the Washington State ferry, trucks and automobiles on State Route 20, farm machinery, other internal combustion engines, and frequent aircraft from Whidbey Naval Air Station. Permanent ambient underwater noise in Admiralty Inlet is around 98 dB re 1 μ Pa, and the ferry vessel emits roughly 179 dB re 1 μ Pa (Bassett 2010).

3.7.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Air quality will meet the standards as set forth by the Washington Department of Ecology; construction of the project will not permanently affect regional air quality. During construction, reduction in air quality

may occur due to exhaust emissions from the internal combustion engines of the equipment performing dredging and disposal. This would endure for the roughly four months of dredging. These emissions will not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan; therefore, effects will be minimal. The Corps used a construction emissions spreadsheet model for non-road equipment from the Sacramento Metropolitan Air Quality Management District (SMAQMD; 2008) and used EPA data on emissions (USEPA 2011). The estimated emissions associated with this alternative are shown in the table below.

Table 3. Emissions Associated with Alternative 1 (Total for Construction Period)

Dredging Method	CO (tons)	ROG (tons)	CO ₂ (tons)	NO _x (tons)	PM10 (tons)	PM2.5 (tons)
Mechanical	6.1	1.1	1,029.7	11.4	0.3	0.3
Hydraulic	3.3	0.3	267.7	2.3	0.1	0.1

Noise will be intermittent at the site and will vary depending on the frequency of dredging and disposal activities. Airborne noise levels will increase slightly above ambient while construction equipment was operating. Noise effects would endure for the four months of dredging and disposal, and would remain localized to the immediate work area. Equipment work schedules will be coordinated with Fort Casey State Park to limit effects to visitors.

The Corps analyzed underwater noise disruption for potential effect on threatened and endangered species and marine mammals in the ESA Section 7(a) consultation document. The threshold for Level B harassment of marine mammals as established by NMFS is 120 dB for non-pulsed noise, which applies to the hydraulic dredge, and 160 dB for pulsed noise, which applies to the mechanical (clamshell) dredge. Both types of dredges emit noise below the threshold for harassment of marine mammals. The hydraulic dredge typically used at Keystone peaks at about 110 dB, and the mechanical dredge peaks at around 124 dB. The periodic noise of the ferry is louder than the dredge vessels, so it is possible that marine mammals are already avoiding the area due to this frequent noise disturbance, or else they may be accustomed to frequent, loud marine traffic across along the shipping channel that transects Admiralty Inlet. The dredging will cease whenever the ferry is in the harbor, so there will never be ferry and dredge vessels causing noise disturbance at the same time.

3.7.2 Alternative 2 – No-Action Alternative

No effects are anticipated as a result of the No-Action alternative.

3.7.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Effects of Alternative 3 to air quality, greenhouse gas emissions, and noise will be the same as for Alternative 1, but will have a shorter duration of approximately two months instead of four months. The estimated emissions associated with this alternative are shown in the table below.

Table 4. Emissions Associated with Alternative 3 (Total for Construction Period)

Dredging Method	CO (tons)	ROG (tons)	CO ₂ (tons)	NO _x (tons)	PM10 (tons)	PM2.5 (tons)
Mechanical	2.6	0.5	513.3	5.7	0.2	0.2
Hydraulic	1.2	0.1	133.4	1.1	0.0	0.0

3.8 Utilities and Public Services

The utilities and public services in and near Keystone Harbor include the WSDOT Port Townsend/Coupeville ferry route, State Highway 20, Fort Casey State Park and its associated recreation opportunities, and a boat launch.

3.8.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Maintenance of the navigation channel will allow continued, safe access for the WSDOT ferry. In addition, recreational features including the restrooms, picnic area, parking lot, and boat launch facilities of Fort Casey State Park will be preserved by the use of dredge material as beach nourishment.

3.8.2 Alternative 2 – No-Action Alternative

The No-Action alternative would limit navigation access to Keystone Harbor, primarily Washington Department of Transportation ferry access, and would likely lead to cancellations of the Port Townsend/Coupeville ferry run. Continued erosion of the beach adjacent to the harbor could result in damage to the State Park facilities and potentially damage State Route 20 if left unmitigated.

3.8.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Effects to utilities and public services under Alternative 3 will be the same as for Alternative 1 in that all features, facilities, and services will be preserved.

3.9 Land Use

The project area is located within the 25-square-mile Ebey's Landing NHR. The NHR encompasses a mixture of Federal, State, county, and private property, all managed in a way that preserves its historic essence. Two State parks are within Ebey's Landing NHR along with the historic waterfront town of Coupeville, one of the oldest towns in Washington State. The navigation channel and disposal area are located in Fort Casey State Park. The project area provides scenic views of Puget Sound and the surrounding mountains. The nearby marine park allows for an underwater viewing experience for SCUBA divers.

3.9.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Alternative 1 will not cause any unique effects to land use. The area will remain as a State Park open for public use, although the Corps may close access to the disposal area during dredging and disposal activities.

3.9.2 Alternative 2 – No-Action Alternative

The No-Action alternative might result in decreased use of the area for the WSDOT ferry transportation, as shoaling would continue in the harbor jeopardizing the safety of ferry access.

3.9.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Alternative 3 will have the same effects as Alternative 1, but with a shorter duration of only two months with less closure time and disruption at the State Park.

3.10 Recreation

The Keystone Spit dredged material disposal area is located in Fort Casey State Park. The park provides over 460 acres of recreational lands, including more than two miles of saltwater shoreline along Admiralty Inlet and Admiralty Bay (Washington Parks 2005). The park was incorporated into the Ebey's Landing National Historic Reserve in 1980, but is managed by Washington State Parks and Recreation Commission.

The park provides facilities for camping, picnicking, and hiking, as well as two boat ramps. Major park attractions include an underwater dive park, the Admiral Head Lighthouse and interpretive center, and historic bunker structures from the coast artillery post built at the site in the late 1800s. The Fort Casey underwater park is located immediately waterward of the dredged material disposal site. It is an easily accessible training site popular with divers from western Washington and southwestern British Columbia. The Keystone Jetty feature of the Federal navigation project is one of two dive sites within the park. The jetty stones are home to large anemones, starfish, urchins, barnacles, and tubeworms. Giant Pacific octopus and wolf eels occur at the jetty site.

3.10.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

This alternative will allow for continued ferry operations with continued use of the ferry by recreators transiting to and from Whidbey Island. Beach maintenance will cause short-term closures of a small section of beachfront in the disposal area during construction, but will allow for long-term public access to beach and boat launch. The beach nourishment will help protect access to the jetty, a popular feature for SCUBA divers and anglers. The dive park will remain open during dredging and beach nourishment.

3.10.2 Alternative 2 – No-Action Alternative

Continued erosion could limit access to the jetty, which is a popular feature with anglers and other park recreators. In addition, beach erosion could eventually damage the recreational boat launch as well as the State Park parking area and other infrastructure.

3.10.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Alternative 3 will have the same effects to recreation as Alternative 1, although temporary closures of the beachfront area will only occur for two months instead of four months.

3.11 Hazardous, Toxic, and Radioactive Waste

There are no known sites at the project locations that have any hazardous, toxic, or radioactive waste. The DMMP agencies determined the material at the site has a low concern for contaminants in the dredged material. Although phenols were detected in the 1988 sediment sampling, there are no known anthropogenic sources near Keystone Harbor. None of the alternatives will have a predictable effect on levels of phenols, so this parameter is not a factor that aids with the decision between alternatives.

3.11.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

The Corps does not anticipate any effect to the environment from hazardous, toxic, or radioactive waste.

3.11.2 Alternative 2 – No-Action Alternative

The No-Action alternative would not cause any effects to the environment regarding hazardous, toxic, or radioactive waste.

3.11.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

The Corps does not anticipate any effect to the environment from hazardous, toxic, or radioactive waste.

3.12 Aesthetics

Aesthetic resources in the area include views of Puget Sound from many angles along the shoreline, views of the iconic Washington State ferries as they transit Puget Sound, and a semi-natural environment as there are no major industrial ports within view of the project area.

3.12.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Maintenance activities will not significantly affect the aesthetics of the area as these activities have been routinely occurring in the area every five years since harbor construction began in 1947. Placement of the

dredged material at the disposal will not exceed the +19 feet above MLLW contour, in order to prevent blocking the existing Puget Sound view from Route 20. The Corps anticipates no permanent changes or long-term effects to the aesthetic qualities in the surrounding area and marine park.

3.12.2 Alternative 2 – No-Action Alternative

No effects to aesthetics of the area are anticipated as a result of the No-Action alternative.

3.12.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

The effects to aesthetics of the area will be the same for Alternative 3 as they are for Alternative 1, but with a period of only two months for the presence of the dredge as opposed to four months for Alternative 1. The Corps anticipates no permanent changes or long-term effects to the aesthetic qualities in the surrounding area and marine park.

3.13 Socioeconomic Resources

Typical socioeconomic analysis considerations include employment, population, income, economic growth, and public infrastructure. Alternatives are analyzed for their potential to affect these elements. Of the 81,000 residents in Island County, the median household income is \$56,370 and the top three employment sectors are retail, healthcare and social assistance, and the hospitality industry (U.S. Census Bureau 2011). Keystone Harbor is located in central Whidbey Island near the town of Coupeville, which is the location of most of the county government offices and a small general hospital. The Washington State Ferry terminal at Keystone Harbor is an important connection point for private auto traffic and the movement of a great deal of commercial goods across northern Puget Sound. The Port Townsend-Keystone ferry route has an annual ridership of over 750,000 people, which includes private, public, and commercial vehicles (WSDOT 2007).

3.12.1 Alternative 1 – Maintenance Dredging With Beach Nourishment

Alternative 1 will maintain the present capability of the Washington State Ferry system to provide service at the Keystone ferry terminal. This alternative will have no effect on the socioeconomics of the region, and will meet the need for maintaining the connection across northern Puget Sound.

3.12.2 Alternative 2 – No-Action Alternative

For the Corps to take no action toward maintaining the navigation channel would mean increasing cancellations of ferry sailings, which eventually could cause reduced tourism to Whidbey Island and Port Townsend, as well as an increased cost to companies that transport commercial goods across northern Puget Sound. Effects of reduced auto and commercial vehicle traffic could reduce employment, income, and hamper economic growth among the communities served by this transportation connection.

3.12.3 Alternative 3 – Maintenance Dredging with Reduced Quantity

Alternative 3 will maintain the present capability of the Washington State Ferry system to provide service at the Keystone ferry terminal. This alternative will have no effect on the socioeconomics of the region and is the least cost alternative that meets the purpose and need for the project.

4. MITIGATION

Mitigation for effects of a proposed action is evaluated as part of documentation under NEPA, such as this EA. Mitigation can take any of the following forms (Federal Register 1978):

1. Avoiding the effect altogether by not taking a certain action or parts of an action.
2. Minimizing effects by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the effect by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the effect over time by preservation and maintenance operations during the life of the action.

5. Compensating for the effect by replacing or providing substitute resources or environments.

The preferred alternative includes typical Best Management Practices that will be employed to avoid and minimize any adverse effects:

- all work will occur during the WDFW approved in-water work window,
- no work will occur during the spring months when macro-algae are most susceptible to harm from increases in turbidity,
- all easily accessible large woody material at the disposal site will be moved, temporarily stockpiled, and replaced on the beach at the conclusion of the project,
- all dredged material will be beneficially used as beach nourishment,
- all work will occur in areas previously disturbed by the navigation project,
- turbidity will be monitored and kept below State mandated levels during construction,
- all work will be coordinated with Fort Casey State Park to limit effects to recreators,
- and the recreational diving site will be protected from sedimentation.

5. COORDINATION

The following agencies and entities were contacted during the preparation of this EA:

- Washington Department of Transportation (Washington State Ferries)
- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- Environmental Protection Agency
- Skagit River System Cooperative
- Washington Department of Fish and Wildlife
- Washington Department of Ecology
- U.S. Coast Guard
- Washington Department of Natural Resources

6. CUMULATIVE EFFECTS

As defined by the White House Council on Environmental Quality implementing regulations for NEPA at 40 CFR 1508.7, “cumulative impact” means “the impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”

The Corps reviewed historic maps, documents, photographs, survey information, and navigation project records from 1870 to present in order to determine the types of activities that have contributed to, and continue to contribute to, cumulative effects on resources in the vicinity of the Keystone navigation project.

6.1 Historic Landscape Conditions

The U. S. Coast Survey began mapping the Puget Sound nearshore in the 1840s. The agency’s topographic sheets (or “T-sheets”) are the most comprehensive and detailed early map representations of nearshore conditions in the second half of the 19th century. The 1870 T-Sheet of Lake Crockett, overlain on a 1998 orthophoto, is provided in Figure 9 (courtesy the Washington Department of Natural Resources, Aquatic Resources Division). The size of the lake at this time was approximately 600 acres, though some modifications had already obscured pre-settlement conditions. The lake had been drained with a ditch and diked for hay and pasturage by the time of the survey, reducing it to a third of its original size (Nesbit 1885, as cited by Collins and Sheikh 2005). The T-sheet indicates that Lake Crockett was a closed lagoon fronted by a barrier beach.

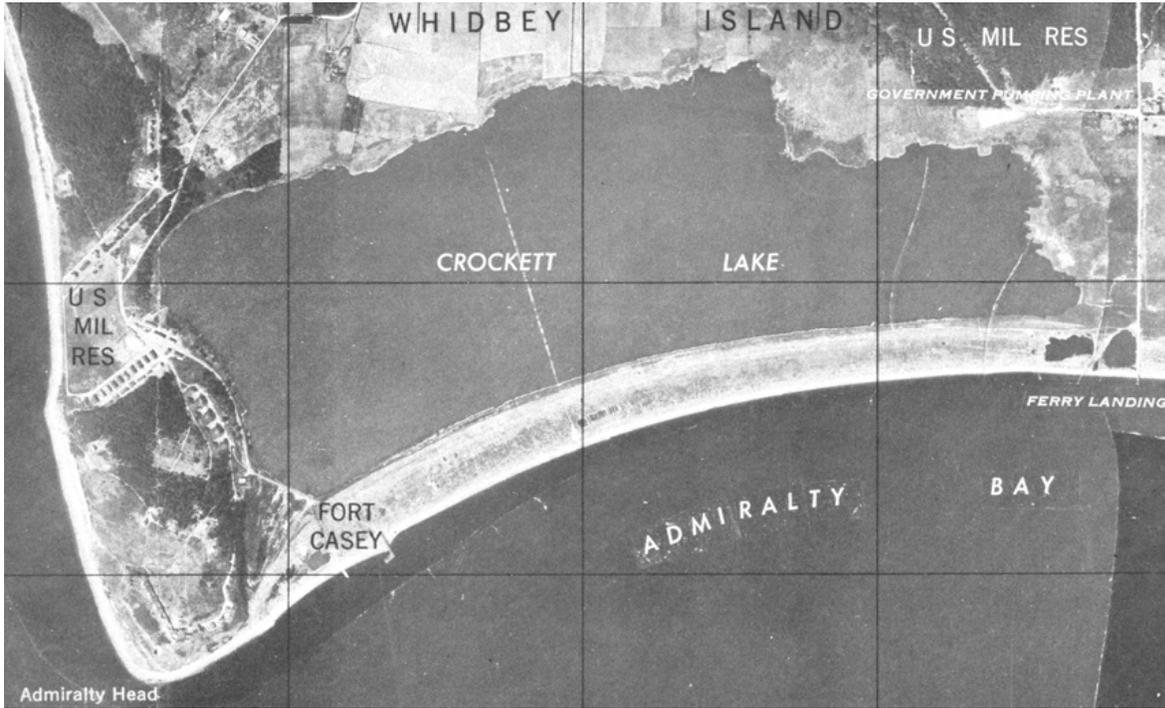


Figure 8. Shoreline of project area before the construction of Keystone Harbor in 1948 (WSDOT 2005).



Data Sources: T-sheet #1164 (USC&GS 1870)
Black and white orthophoto (Washington DNR 1998)

Figure 9. 1870 T-Sheet overlaid on a 1998 orthophoto showing little or no change to shoreline shape during this period.

The Corps mapped the Lake Crockett area in 1914. At that time, the high water mark on the Admiralty Bay side of the barrier beach was between 200 and 800 feet from Lake Crockett's mapped edge. The map

indicated the mean lake level was almost five feet above mean low water of Admiralty Bay. By this time, the United States Quartermaster Department wharf had been constructed, along with a wharf access road traversing the triangular marsh area in the southwestern corner of the lake. A drainage ditch through the barrier beach west of the Quartermaster wharf is visible. Other improvements shown on the map include a rail trestle over the lake and barrier beach, a pumping station, a pipeline, and a second wharf east of Admiralty Head. The 1914 map accompanied a report to the U.S. House of Representatives on a proposal to construct a channel connecting Admiralty Inlet with Lake Crockett. This report provides useful information about the physical condition of Lake Crockett in the early portion of the 20th century. Excerpts are provided below.

...Crockett Lake is...about 1½ miles long and has an average width of one-half mile. The lake is separated from Admiralty Bay, an arm of Admiralty Inlet, by a narrow strip of gravel beach through which the salt waters of Puget Sound readily percolate, making its waters brackish and maintaining the water surface at about the level of mean tide.

4. A hydrographic survey of the western half of Crockett Lake was made in 1904, showing an average depth of water of about 3 feet and a maximum depth of 7 feet. The eastern portion of the lake is shallower than the western and has an average depth of only about 2 feet.

5. In former years, by the use of drainage ditches with tide gates, the level of Crockett Lake was considerably lowered and much land reclaimed for agricultural purposes, but in recent years these drainage ditches have become clogged or closed, and there is no longer a free connection between the waters of the lake and Puget Sound...

The Corps prepared a more detailed map of the area providing elevation data for the barrier beach and Lake Crockett in 1941. This map accompanied a report to the U.S. House of Representatives on the proposal to construct Keystone Harbor. Mapped structures include the Quartermaster wharf and associated access road, as well as a Keystone ferry slip almost 1.5 miles to the east of the Quartermaster wharf. The report provides additional information about habitats in the project area:

...Tidal currents, which are strong in Admiralty Bay, follow the shore and generally flow from east to west during both the flood and ebb, so that landings at Fort Casey wharf and Keystone ferry slip are at all times difficult...The spit is constantly receiving accretions of gravel on the bay side, so that Quartermaster wharf at Fort Casey has had to be extended to maintain sufficient depth at its face to land vessels...

5. The drainage area of Crockett Lake is about 3 square miles. The lake is flanked on the west by comparatively steep hillsides. On the north and east are gentle slopes with marshland intervening. The marshland is said to comprise about 400 to 500 acres and to be useful for pastures. There is no creek of any considerable size flowing into the lake. Its level is maintained by surface drainage and springs and by percolation from Admiralty Bay. Depths in the lake vary from 3 feet to 7 feet below mean lake level which is 7.7 feet above mean lower low water in the bay. The gravel spit between the lake and the bay varies from about 450 feet to about 800 feet in width at low tide and its maximum surface elevation is about 16 feet above mean lower low water in the bay, or about 7 feet above mean higher high water.

29. ...During the construction of Fort Casey large quantities of sand and gravel for concrete were excavated from the spit in the vicinity of the proposed channel into the lake...

56. The spit through which the channel would have to be dredged is composed of heavy gravel. Accurate records are not available but it is believed that this spit is increasing in width to the south at the rate of about 1 foot annually owing to accretions of gravel brought from the bluffs to the east and south by the prevailing westerly set of the littoral current, which at times attains a

velocity estimated at 6 or 7 knots. The beach in front of the spit has a steep grade and is exposed to the southerly storms that prevail during the winter season.

The National Park Service (2005, 2007) documented more recent attempts to control water levels in Lake Crockett. In 1948, the Island County Drainage District installed tide gates to drain the lake and its marshes. This reduced the lake to about 10 acres by 1953. In 1974, the flapper valves rusted off the tide gate and allowed saltwater into the lake. The drainage district was no longer active, so the valves remained open and the lake grew to about 750 acres by 1982. Lands around the lake were no longer cultivated so flooding was not an issue for agriculture; however, a nearby housing development had flooded, so the drainage district was reactivated and new flapper valves were installed in 1982.

In 1983, Seattle Pacific University (SPU) filed a lawsuit against Drainage District 6 regarding the management of lake levels (Jefferson County Cause No. 83-2-0008-3). SPU, a major landowner in the area, desired that lake levels be restored to natural conditions and filed suit, and a series of legal battles followed. A study was commissioned in 1986 to determine optimal levels for the lake in order to reduce flooding of residences along the lake. This study recommended maintaining base lake levels of 2 to 3 feet, and found that the existing management regime was adequate for maintaining these levels. In 1989 or 1990, however, mosquitoes became a problem and lake water management was blamed. These residents manipulated the tide gates in order to lower the lake levels and, with state approval, used biological and chemical control methods to control the mosquitoes. A resulting study recommended maintaining the lake level at 5.5 feet to submerge mosquito habitat. It also recommended that allowing regular tidal flushing would also likely help solve this problem (Island County Health Department 1990). Modifications to Crockett Lake have resulted in degraded nearshore habitat important to migrating salmon. [see <http://www.nature.nps.gov/water/publications/EBLA.pdf> and the report at: http://www.nature.nps.gov/water/watershed_reports/EBLA_Finallowres.pdf]

Maintenance Dredging History

The Federal navigation channel is typically dredged every four to six years. The navigation channel was widened in 1971 and deepened in 1993 through the Corps' Continuing Authorities Program, Section 107, to the current project depth of -25 feet with authorized overdepth maintenance to -27 feet. Table 5 provides a list of dredging actions in Keystone Harbor.

Table 5. History of Dredging Activity in the Federal Navigation Channel

Year	Amount Dredged (cy)	Disposal Site(s)
1947-48	419,000	169,000 cy – side cast fill around basin 250,000 cy – open water
1955-56	24,000	open water below 60' depth
1960	27,000	Beach nourishment east of jetty
1966	39,000	Beach nourishment east of jetty
1971 widening	40,000	Beach nourishment east of jetty
1976	31,000	Beach nourishment east of jetty
1980	26,000	Beach nourishment east of jetty
1988	30,000	Beach nourishment east of jetty
1993 deepening	33,000	25,000 cy – beach nourishment east of jetty 8,000 cy – open water near Pt. Townsend
1999	30,000	Beach nourishment east of jetty
2006	45,000	Beach nourishment east of jetty

6.2 Existing Conditions

Water levels in Lake Crockett continue to be managed to levels lower than desired by the NPS. The tide gates are still in place but in disrepair; it is unclear to what extent the gates still inhibit natural water flow and fish passage (NPS 2005). Significant salt marsh areas remain, but the partially drained lake is less productive for wildlife because benthic organisms cannot survive in the mudflats without regular inundation. The natural resource and scenic value of Lake Crockett remains greatly reduced by manipulation of lake levels (NPS 2005).

6.3 Reasonably Foreseeable Future Actions

Snohomish County Public Utilities District (PUD) will install two 400-ton underwater turbines offshore of Admiralty Head on Whidbey Island near the Keystone Harbor ferry landing as part of a tidal power pilot project. Electricity generation is expected to begin in 2012 and will be an average of 100 kilowatts, enough to supply power to 700 homes. The Draft Environmental Report prepared by Snohomish County PUD for the Federal Energy Regulatory Commission concluded that their pilot project will have negligible effects to the environment of Admiralty Inlet.

6.4 Incremental Effects of the Proposed Action

In the context of all that has occurred in the past and the reasonably foreseeable future actions, dredging and placement of 154,000 cy for Alternative 1 or 50,000 cy for Alternative 3 will not harm biological function. Placement of the dredged material on the eroding beach is intended to replace the interrupted littoral drift, and, therefore, ameliorates the long-term effect of the navigation project. The proposed action will not change the function or extent of the existing navigation project, so it will not affect other shoreline processes. The project will not result in any changes to the human occupancy of the project area, but will allow for continued safe operation of the ferry run. The Corps concludes that there will not be a significant cumulative effect associated with this action.

7. ENVIRONMENTAL COMPLIANCE

This chapter describes how the recommended plan, Alternative 3, complies with all of the pertinent environmental laws.

7.1 National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.)

In accordance with the National Environmental Policy Act, Federal agencies are required to declare the potential environmental effects of their projects and to solicit public comment. The purpose of this document is to solicit public comment and fulfill the Corps of Engineers' documentation requirements under NEPA.

7.2 Endangered Species Act of 1973, as Amended (16 U.S.C. §§ 1531-1544)

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, (16 U.S.C. §§ 1531-1544) federally funded, constructed, permitted, or licensed projects must take into consideration effects to federally listed or proposed threatened or endangered species. The Corps prepared a Biological Evaluation (BE) and submitted it to NMFS and USFWS for their concurrence with the Corps' analysis. The Corps received a letter of concurrence from USFWS on 27 June 2011 and from NMFS on 18 August 2011.

7.3 Clean Water Act, as Amended (33 U.S.C. § 1251 et seq.)

The Clean Water Act (33 U.S.C. § 1252 et seq.) requires Federal agencies to protect waters of the United States. The regulations implementing the Act disallows the placement of dredged or fill material into waters (and excavation) unless it can be demonstrated there are no less environmentally damaging practicable alternatives. The Corps has prepared a 404(b)(1) Consistency Evaluation that can be found in Appendix A and contacted the Washington Department of Ecology requesting a 401 Water Quality Certification. The Corps received the Water Quality Certification on 16 September 2011.

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

The Coastal Zone Management Act of 1972 as amended (16 U.S.C. §§ 1451-1465) requires Federal agencies to carry out their activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state Coastal Zone Management Program. The Corps prepared a Coastal Zone Management Act Consistency Determination and submitted this document to the Washington Department of Ecology for their review and concurrence. The Corps received Ecology's concurrence with the Consistency Determination on 16 August 2011.

7.6 National Historic Preservation Act) (16 U.S.C. § 470 et seq.,)

The National Historic Preservation Act (16 U.S.C. § 470) requires that the effects of proposed Federal undertakings on sites, buildings structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. The Keystone Harbor Maintenance Dredging project is a Federal undertaking of the type that has No Potential to cause adverse effects to Historic Properties, as the proposed action is a routine maintenance task that was surveyed in 2006 with a finding of No Historic Properties Adversely Effected. The Corps has determined that the project has No Potential to Cause Adverse Effects to Historic Properties under the NHPA, as all ground disturbing activity will occur within previously disturbed and surveyed maintenance areas. This determination completes the NHPA process.

7.7 Clean Air Act As Amended (42 U.S.C. § 7401, et seq.)

Section 176 of the Clean Air Act, 42 U S C §7506(c), prohibits Federal agencies from approving any action that does not conform to an approved state or Federal implementation plan. Maintenance dredging and disposal activities are specifically excluded from Clean Air Act conformity determination requirements [40 CFR 51.583(c)(1)(ix)].

7.8 Marine Mammal Protection Act (16 U.S.C. §§ 1361-1407)

The Marine Mammal Protection Act of 1972 (16 U.S.C. §§1361-1407) restricts harassment of marine mammals. Marine mammal species that are observed in Puget Sound include harbor seal (*Phoca vitulina*), killer whale, (*Orcinus orca*), Steller sea lion (*Eumetopias jubatus*) Northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), Minke whale (*Balaenoptera acutorostrata*), and gray whale (*Eschrichtius robustus*) (Orca Network 2011).

This project is concerned with the potential for harassment due to noise pollution. The threshold for Level B harassment of marine mammals as established by NMFS is 120 dB for non-pulsed noise, which applies to the hydraulic dredge, and 160 dB for pulsed noise, which applies to the mechanical dredge. Hydraulic dredges emit steady noise, and the size that will be used at Keystone will have sound pressure levels at 100 to 110 dB in the frequency range of 70 to 1,000 Hz (Clarke et al. 2002). This frequency is at the low end of the hearing range of marine mammals. Clarke et al. (2002) found that sound attenuation to ambient levels occurs as close as 500 m. The sound pressure level is below the threshold for Level B harassment. The mechanical dredge peaks at 124 dB, which is well below the 160dB threshold for Level B harassment. The loudest sound from the mechanical dredge is at a frequency of 162.9 Hz, which is below the hearing frequency range of all marine mammals except for baleen whales, per NMFS memorandum dated 30 November 2009. None of the baleen whales found in Puget Sound would enter the shallow and narrow inlet of Keystone Harbor, but they may be passing through Admiralty Inlet.

The Washington State Ferry vessel that docks at Keystone Harbor 11 times per day emits an underwater sound pressure level of 179 dB re 1 μ PA measured at a distance of 1 meter (Bassett 2010). This periodic noise is louder than the dredge vessels, so it is possible that marine mammals are already avoiding the area due to this frequent noise disturbance, or else they may be accustomed to frequent, loud marine traffic across and along the shipping channel that transects Admiralty Inlet. Bassett (2010) found that permanent ambient noise in Admiralty Inlet is approximately 98 dB re 1 μ PA. The dredging will cease

whenever the ferry needs to dock at the terminal, so there will never be both ferry and dredge vessels causing noise disturbance at the same time.

Based on the dredge noise being below the threshold for Level B harassment, defined as having potential to cause a variety of disturbances to marine mammals, the Corps is not applying for an Incidental Harassment Authorization.

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

The proposed project will be conducted in such a manner that migratory birds will not be harmed or harassed. The proposed work will be outside the nesting season for most birds. This project will not affect flow regimes or hydrology in Lake Crockett.

7.10 Executive Order 12898, Environmental Justice

Executive Order 12898 directs every Federal agency to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. Maintenance dredging will not exclude, deny benefits to, or discriminate against minority or low-income populations, nor does the project involve locating a facility that will discharge pollutants or contaminants. Therefore, the project complies with this order.

7.11 Executive Order 11990, Protection of Wetlands

This order directs Federal agencies to avoid to the extent possible the long and short-term adverse effects associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Maintenance dredging and disposal activities will not alter the wetlands found in and adjacent to Lake Crockett. A small amount of intertidal habitat will be filled with dredged material; however, the placed material will help maintain the typical beach profile found in the area prior to the creation of the navigation project.

7.12 Treaty Rights

In the mid-1850s, the United States entered into treaties with nearly all of the Native American tribes in the territory that would become Washington State. These treaties guaranteed the signatory tribes the right to "take fish at usual and accustomed grounds and stations . . . in common with all citizens of the territory" [*U.S. v. Washington*, 384 F. Supp. 312 at 332 (WDWA 1974)]. In *U.S. v. Washington*, 384 F. Supp. 312 at 343 - 344, the court resolved that the Treaty tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right comprehends certain subsidiary rights, such as access to their "usual and accustomed" fishing grounds. More than *de minimis* effects to access to usual and accustomed fishing area may violate this treaty right [*Northwest Sea Farms v. Wynn*, F. Supp. 931 F. Supp. 1515 at 1522 (WDWA1996)]. In *U.S. v. Washington*, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The Ninth Circuit has held that this right encompasses the right to take shellfish [*U.S. v. Washington*, 135 F.3d 618 (9th Cir 1998)].

The proposed project has been analyzed with respect to its effects on the treaty rights described above. The Corps believes the following:

- (1) The work will not interfere with access to usual and accustomed fishing and gathering areas;
- (2) The work will not cause the degradation of fish runs in usual and accustomed fishing grounds or with fishing activities or shellfish harvesting and habitat; and
- (3) The work will not impair the Treaty tribes' ability to meet moderate living needs.

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**Appendix A – Clean Water Act Section 404(b)(1)
Evaluation**

APPENDIX A

CLEAN WATER ACT SECTION 404(b)(1) EVALUATION FISCAL YEAR 2011 MAINTENANCE DREDGING AND DISPOSAL KEYSTONE HARBOR, WASHINGTON

1. Introduction. The purpose of this document is to record the Corps' evaluation and findings regarding this project pursuant to Section 404 of the Clean Water Act (CWA). The following action is covered by this document:

Disposal of up to 154,000 cubic yards of dredged material as nourishment on the beach at Fort Casey State Park.

The information contained in this document reflects the findings of the project record. Specific sources of information included the following:

- a. Keystone Harbor Routine Maintenance Dredging for Biological Evaluation, dated April 2011
- b. Keystone Harbor Routine Maintenance Dredging for Fiscal Year 2011 Draft Environmental Analysis (see above)
- c. 404(b)(1) Evaluation (see below)
- d. Public Interest Review (see below)

This document addresses the substantive compliance issues of the Clean Water Act 404(b)(1) Guidelines [40 CFR §230.12(a)] and Public Interest Factors [33 CFR §320.4 as reference].

2. Description of Proposed Discharge.

Disposal of the dredged material will occur next to Keystone Harbor on the adjacent previously used beach disposal site, which is approximately 2.5 acres. All the dredged sand and gravel will be used beneficially to re-nourish a section of the beach to the east of the breakwater. The majority of the material will be placed above mean higher high water with some of the material lower to be available to the aquatic ecosystem at most high tides. The method used to deposit material on the beach depends on the dredge equipment. With hydraulic dredging, the material will be pumped to the beach area. To minimize effects on the diving park below the nourishment site, should a hydraulic dredge be used, berms will be pushed up with local material to preclude effluent from flowing directly into receiving water without ponding/settling or filtering through the berm. With mechanical dredging, the sediment will be loaded onto barges and rehandled onto trucks for placement on the beach. The total quantity may be as much as 154,000 cubic yards; however, the Corps is electing to achieve the need for dredging by removing only 50,000 cubic yards, which will be placed in the beach disposal area.

3. Project Purpose and Need.

The purpose of this project is to provide necessary safe navigation conditions for the Washington State Ferry System vessels to dock at Keystone Harbor for uninterrupted service on the Port Townsend/Coupeville ferry route, and to ensure continuity of the sediment transport processes along the shoreline in the project area. The purpose of the beach disposal component of the project is to prevent erosion to the point of undermining the jetty and losing park infrastructure. The navigation project interrupts the natural littoral drift process. This results in gradual erosion of the harbor features and related recreation facilities. Continued erosion risks undermining the east jetty, an essential feature of the Federal navigation project. Over several years, severe erosion can occur on the adjacent beach to the east and can undermine the Washington State Park's restroom facilities, picnic areas, parking lot, and recreational boat launch

4. Availability of Less Environmentally Damaging Practicable Alternatives to Meet the Project

Purpose. The alternatives evaluated for this project were as follows:

- a. Alternative 1 – Maintenance Dredging with Beach Nourishment.** Alternative 1 consists of maintenance dredging of up to 154,000 cubic yards of material from the Keystone navigation channel. Disposal of the dredged material will occur on the adjacent previously used beach disposal site, which is

approximately 2.5 acres. All the dredged sand and gravel will be used beneficially to re-nourish a section of the beach to the east of the breakwater.

b. Alternative 2 – No-Action. Under the no-action alternative, the Corps would not take any actions to maintain the Keystone Harbor navigation channel. The Corps would not dredge the harbor or address the continuing erosion of the neighboring beach.

c. Alternative 3 – Maintenance Dredging with Reduced Quantity. The Corps is considering reducing the quantity to be dredged in 2011 because a portion of the authorized channel does not require dredging for safe navigation. The Corps has estimated that dredging approximately 50,000 cubic yards of material will achieve safe navigation conditions for the ferry vessel and will accomplish erosion prevention at the State Park.

Findings. The Corps rejected Alternative 2 because it would not meet the authorized project purpose and need. The Corps selected Alternative 3 because it is the least cost and least environmentally damaging between the two alternatives that would meet the project purpose and need.

5. Significant Degradation, Either Individually or Cumulatively, To the Aquatic Environment

a. Impacts on Ecosystem Function. The Corps has assessed potential effects from the maintenance operations and determined that they will be very low intensity effects in a very small space for short duration. Effects of the work on salmonids will be reduced and/or avoided through implementation of timing restrictions. Due to these measures, effects to these important resources will not be significant either individually or cumulatively.

b. Impacts on Recreational, Aesthetic, and Economic Values. Construction vehicles may temporarily disrupt local and tourist traffic at Keystone Harbor; however, no significant adverse effects on recreation, aesthetics, or the economy are anticipated, nor have these types of effect occurred during previous maintenance dredging operations. The placement of nourishment materials onto the beach will delay the conversion of the current high intertidal beach to a subtidal beach, thereby allowing for continued use of the shore for recreational purposes.

Findings. The Corps has determined that there will be no significant adverse effects to aquatic ecosystem functions and values.

6. Appropriate and Practicable Measures to Minimize Potential Harm to the Aquatic Ecosystem.

a. Impact Avoidance Measures. Potential effects of the proposed work on the aquatic ecosystem will be avoided through the implementation of timing restrictions, and by avoiding unnecessary disturbance. Work will not occur during the juvenile salmon outmigration period, 1 March through 14 June. For the protection of bull trout, chum salmon, and Chinook salmon, species listed as threatened under the Endangered Species Act, no work will occur between 15 February and 15 July.

b. Impact Minimization Measures. Beach nourishment material will be placed as high as possible in the intertidal zone, thereby mimicking natural sediment erosion and transport processes to the maximum extent practicable. The area of beach nourishment is limited to only 2.5 acres.

c. Compensatory Mitigation Measures. The beach nourishment program is considered a benefit to the nearshore structure and function and does not require compensatory mitigation.

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 has coordinated with State and Federal agencies to assure careful consideration of fish and wildlife resources. The Corps provided a Biological Evaluation to the USFWS and NMFS pursuant to Section 7 of the Endangered Species Act (ESA). Each of the Services provided a letter of concurrence with the Corps' findings that the action is not likely to adversely affect any ESA-listed species.

b. Water Quality. Public Notice CENWS-OD-TS-NS-40, which was issued in May 2011, which is a request for Certification under Section 401 of the Clean Water Act from the Washington Department of Ecology (Ecology) for disposal. The Corps will abide by the conditions of the Water Quality Certification to ensure compliance with State water quality standards. Ecology provided the Certification on 16 September 2011.

c. Historic and Cultural Resources. Archaeological and historic site records at the Washington State Office of Archaeology and Historic Preservation (OAHP) were examined, and a pedestrian survey of the project area was conducted. The records search indicated that no properties listed on the National Register of Historic Places (NRHP) are located within the proposed project area.

d. Activities Affecting Coastal Zones. The Corps received concurrence from Ecology with the determination that this work is consistent to the maximum extent practicable with the Coastal Zone Management Act.

e. Environmental Benefits. No substantial benefits to the environment have been identified as part of this proposed work.

f. Navigation. A minor, temporary disruption of navigation traffic may result from dredging and disposal operations. The dredge will not block the navigation channel but may impinge on the total width available to vessel traffic. A Notice to Mariners will be issued before dredging and disposal operations are initiated.

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

9. Conclusions. Based on the analyses presented in project NEPA and ESA documents, as well as the following 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 and the Rivers and Harbors Act.

Potential Impacts on Physical and Chemical Characteristics (Subpart C)

- 1. Substrate [230.20]** The material that shoals in Keystone Harbor is composed of sand and gravel (less than 3% fines) eroding naturally from unaltered bluffs to the west of the navigation channel. This material would have naturally deposited on the adjacent beach if not for the interruption of the littoral drift cell by the navigation channel. Placing the dredged material on the beach is a substitute for what would have naturally occurred.
- 2. Suspended Particulate/Turbidity [230.21]** Any increases in turbidity resulting from the proposed action will be minor considering the large grain size of the nourishment material. The nourishment materials will be less than 3% fines. Any sediment plumes attributable to the project will be temporary, localized, and equivalent to those created by natural sediment transport processes and by the regular ferry traffic in the harbor.
- 3. Water Quality [230.22]** No significant water quality effects are anticipated (see number 2 above).
- 4. Current Patterns and Water Circulation [230.23]** The discharge of nourishment materials will not obstruct flow, change the direction or velocity of water flow/circulation, or otherwise change the dimensions of the receiving water body. The beach nourishment material will slowly enter the longshore drift system as it erodes off the beach over several years.
- 5. Normal Water Fluctuations [230.24]** The discharge of nourishment materials will not impede normal tidal fluctuations. Beach nourishment material will be placed as high as possible in the intertidal zone, thereby mimicking natural sediment erosion and transport processes to the maximum extent practicable. The proposed nourishment project will delay the conversion of the beach from a high intertidal beach to a subtidal beach.
- 6. Salinity Gradients [230.25]** The discharge of nourishment materials will not divert or restrict tidal flows or affect salinity gradients (see number 5. above).

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

- 1. Threatened and Endangered Species [230.30]** Pursuant to Section 7 of the Endangered Species Act, the Corps prepared a Biological Evaluation to assess potential effects of the proposed work on species protected under the Act. This document concluded that the proposed maintenance work is not likely to adversely affect marbled murrelet (*Brachyramphus marmoratus*), bull trout (*Salvelinus confluentus*), Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*), or Hood Canal summer chum salmon (*O. keta*), Puget Sound steelhead (*O. mykiss*), Steller sea lion (*Eumetopias jubatus*), and Southern Resident killer whale (*Orcinus orca*); and will have no effect on golden paintbrush (*Castilleja levisecta*), eulachon (*Thaleichthys pacificus*), bocaccio rockfish (*Sebastes paucispinis*), canary rockfish (*S. pinniger*), and yelloweye rockfish (*S. ruberrimus*). The Biological Evaluation was sent to the National Marine Fisheries Service and U.S. Fish and Wildlife Service on 12 April 2011.
- 2. Aquatic Food Web [230.31]** The proposed action is not expected to have a significant effect on the kelp bed offshore. The nourishment material will be placed upon the beach away from the kelp bed during mid-summer and early fall months. Algae are most vulnerable to sediment effects during spring months, when sporophyte growth is triggered by increasing light levels. The nourishment materials will have a coarse grain size and therefore are not expected to remain suspended in the water column for very long. This reduces the chance for subthreshold light levels that could affect macroalgae growth rates or reproductive cycles.

The proposed action will affect epibenthic prey organisms, particularly gammarid amphipods, within and adjacent to the 2.5-acre beach nourishment footprint; however, amphipods are mobile epifauna that are adapted to heavy disturbance regimes, and are thus expected to recolonize the nourishment area within a couple months. The scale of mortality effects that will result from the proposed project is not likely to affect amphipod population dynamics in the project area. The nourishment material will be placed after

the end of the juvenile salmonid outmigration period. This schedule will allow for maximum recovery of the epibenthos prior to the next salmonid outmigration.

Forage fish, such as herring, surf smelt, and sand lance, will not be directly affected by the proposed action because (a) placement of the nourishment materials will occur above the waterline at low tides so as not to directly interfere with fish usage of beach habitat, and (b) turbidity is not expected to increase substantially above ambient conditions due to the large grain size of the material. Indirect effects are not anticipated since no documented spawning beaches occur in the project area, and NOAA-sponsored studies have shown that the epibenthic fauna that will be affected by material placement do not appear to constitute a significant fraction of these species' diet.

3. Wildlife [230.32] Noise associated with disposal operations may have an effect on bird and marine mammals in the project vicinity. The effects of any sound disturbance would likely result in displacement of animals rather than injury. Disposal operations are not expected to result in a long-term reduction in the abundance and distribution of any prey items. No breeding or nesting areas will be affected.

Potential Impacts to Special Aquatic Sites (Subpart E)

1. Sanctuaries and Refuges [230.40] The proposed project will not affect any designated sanctuary or refuge area.

2. Wetlands [230.41] Nourishment material will not be discharged in wetland areas. The project will not alter the inundation patterns of wetlands in the project vicinity.

3. Mudflats [230.42] No mudflats occur in the project area.

4. Vegetated Shallows [230.43] A kelp bed stands offshore from the project area, so nourishment material will be discharged near but not adjacent to or in vegetated shallows. Turbidity associated with the placement of nourishment material is not expected to significantly affect this kelp bed (see Aquatic Food Web discussion above). The project will not change circulation patterns, increase nutrients, result in any chemical contamination, or change the capacity of the kelp to stabilize bottom materials. As described in the Aquatic Food Web section, the placement of nourishment materials is not expected to reduce the value of the area as nesting, spawning, nursery, cover, or forage habitat.

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] The project is not expected to affect recreational or commercial fisheries.

3. Water-Related Recreation [230.52] Construction vehicles may briefly disrupt local and tourist traffic on Highway 20; however, the frontloader and dump truck that may be used will only be operating at the edge of the parking lot in Fort Casey State Park. Use of the beach areas in and directly adjacent to the stockpile footprint will be disallowed during construction for safety reasons. These effects will occur for 60 to 120 days in a relative small portion of the parking lot, so no significant adverse effects on recreation are anticipated.

4. Aesthetics [230.53] The stockpiles will not block views of Puget Sound or the Strait of Juan de Fuca from the vehicles traveling along the road. The stockpile area is expected to be indistinguishable from adjacent areas shortly after project completion. The effect of the project on aesthetics will be discountable.

5. Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves [230.54] The beach nourishment site is located within the boundaries of the Ebey's Landing National Historical Reserve (NHR), which was created by Congress in 1978 as a unit of the National Park System. The beach nourishment site is within Fort Casey State Park, which is a

marine camping park that includes an underwater park for SCUBA diving. Beach nourishment helps to maintain the jetty that hosts the abundance of marine life that makes the site popular among divers.

Evaluation and Testing (Subpart G)

- 1. General Evaluation of Dredged or Fill Material [230.60]** The fill material will be composed of sand, gravel, and other naturally occurring inert material obtained from the Keystone Harbor Federal Navigation Channel. The dredging site is sufficiently removed from sources of pollution to provide reasonable assurance that the proposed discharge material is not a carrier of contaminants.
- 2. Chemical, Biological, and Physical Evaluation and Testing [230.61]** Sediments will be tested according to Puget Sound Dredged Disposal Analysis (PSDDA) protocol and results will be submitted for approval for unconfined open water disposal by the Dredged Material Management Program.

Action to Minimize Adverse Effects (Subpart H)

- 1. Actions Concerning the Location of the Discharge [230.70]** The stockpile site has been used previously for similar discharge. The beach nourishment will not disrupt tidal flows, nor create standing bodies of water. The substrate of the discharge is similar to the receiving beach and would have been deposited there naturally but for the interruption of the shoreline by the navigation channel. The location and timing of the discharge has been planned to minimize effects to marine organisms.
- 2. Actions Concerning the Material to be Discharged [230.71]** No treatment substances nor chemical flocculants will be added to the nourishment materials before disposal. The DMMP agencies have determined the sediment to be dredged from Keystone Harbor is suitable for open-water disposal and beach nourishment, and there were no screening level exceedances for chemicals of concern.
- 3. Actions Controlling the Material after Discharge [230.72]** Methods for reducing the potential for erosion, slumping, or leaching will not be employed, as the intent of the action is to introduce material into littoral transport along the project area. The material will be piled high enough out of the water to allow for decanting of turbid water on the beach before it reaches the aquatic environment.
- 4. Actions Affecting the Method of Dispersion [230.73]** Beach nourishment material will be placed as high as possible in the intertidal zone, thereby mimicking natural sediment erosion and transport processes to the maximum extent practicable. The stockpile locations will make use of currents and circulation patterns to disperse the discharge.
- 5. Actions Related to Technology [230.74]** Appropriate machinery and methods of transport of the material for discharge will be employed. All machinery will be properly maintained and operated.
- 6. Actions Affecting Plant and Animal Populations [230.75]** The timing of the proposed discharge operations will minimize the potential for adverse effects to animal populations, particularly juvenile salmonids. As the nourishment stockpiles erode and reduce the slope of the beach, the prime elevation range for intertidal epibenthic invertebrates upon which salmonids prey, approximately 1 to 7 feet above MLLW, should increase in area. So while there will be a short-term reduction in densities of organisms like gammarid amphipods, production will recover to the previous population level within a few months. Any resulting increases in epibenthic productivity could benefit salmonids, particularly Hood Canal summer-run chum salmon, which is protected under the Endangered Species Act.
- 7. Actions Affecting Human Use [230.76]** The discharge will not result in damage to aesthetically pleasing features of the aquatic landscape. The discharge will not increase incompatible human activity in remote fish and wildlife areas.
- 8. Other Actions [230.77]** Not applicable.

General Policies for the Evaluation of Public Interest [33 CFR §320.4 for reference]

- 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)]** No wetlands will be altered by the proposed maintenance work.
- 3. Fish and Wildlife [320.4(c)]** The Corps consulted the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to ensure that direct and indirect loss and damage to fish and wildlife resources attributable to the proposed maintenance work will be minimized.
- 4. Water Quality [320.4(d)]** The Corps will abide by the conditions of the Section 401 Water Quality Certification for disposal issued by the Department of Ecology to ensure compliance with Washington 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 will be adversely affected by the proposed maintenance work. The maintenance of a gently graded beach profile will maintain recreation values.
- 6. Effects on Limits of the Territorial Sea [320.4(f)]** The proposed maintenance work will not alter the coastline or 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)]** Not applicable.
- 8. Activities Affecting Coastal Zones [320.4(h)]** The proposed work complies with the shoreline use regulations specified in the Island Shoreline Master Program, as adopted in June 2001.
- 9. Activities in Marine Sanctuaries [320.4(i)]** Not applicable.
- 10. Other Federal, State, or Local Requirements [320.4(j)]**
The Corps has analyzed the proposed action under all applicable Federal, State, and local requirements and documented this compliance in the Environmental Assessment.
- 11. Safety of Impoundment Structures [320.4(k)]** Not applicable.
- 12. Floodplain Management [320.4(l)]** The proposed maintenance work will not alter any floodplain areas.
- 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)]** One of the purposes for the beach nourishment is to prevent erosion from undermining the rock jetty structure that protects the harbor from direct wave action and aids in preventing excessive shoaling in the navigation channel. No adverse effects to navigation will result from the proposed maintenance work.
- 16. Environmental Benefits [320.4(p)]** The proposed nourishment project will delay the conversion of the beach from a high intertidal beach to a subtidal beach. The maintenance of a higher, more gently graded beach profile will maintain the range of intertidal elevations necessary to support the epibenthic invertebrates that serve as prey for a wide variety of marine fishes.
- 17. Economics [320.4(q)]** Placement of dredged material as beach nourishment is the least cost location for disposal. Completion of the project will enable the recreation area including the restroom facility at Fort Casey State Park to remain open and functional, to continue serving the local and regional public. The Corps finds this project is economically justified.
- 18. Mitigation [320.49(r)]** Potential effects of the maintenance work on salmonids will be avoided through implementation of timing restrictions. For the protection of these species, work will occur between 16 July and 15 February. The use of rounded cobbles and gravels of similar size to the substrate presently on the beach will minimize habitat effects of the proposed action.

Appendix B – Biological Evaluation

BIOLOGICAL EVALUATION

Keystone Harbor Maintenance Dredging Admiralty Inlet, Island County, Washington



US ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT

April 2011



**US Army Corps
of Engineers®**
Seattle District

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1. INTRODUCTION

This Biological Evaluation (BE) evaluates the environmental effects of proposed maintenance of the Keystone Harbor Navigation Project. Keystone Harbor is located on the west side of Whidbey Island in Island County, Washington. This artificial harbor is a dredged basin constructed by the U.S. Army Corps of Engineers (Corps) in 1947-48. The Corps constructed the harbor by dredging a triangular shaped bay from an existing barrier beach, and connected the harbor to Admiralty Bay with a navigation channel. The Corps built a stone breakwater on the eastern side of the harbor. The basin provides a harbor of refuge, a boat launch ramp, and a terminal for the Washington State ferry run between the city of Port Townsend and Whidbey Island. Construction of the basin, entrance channel, and adjacent rock jetty interrupted the natural eastward transport of beach material. Consequently, shoaling of the entrance channel requires maintenance dredging every four to six years to ensure safe navigation. Maintenance dredging last occurred in 2006. When the channel and ferry slip have become too shallow, the ferry has run aground during landings at low tide. This limits service on the Port Townsend/Coupeville run.

The proposed project consists of removing enough material from the navigation channel and ferry slip to ensure safe navigation. The navigation channel has disrupted the littoral drift on the east side of the channel, and beach nourishment is necessary to replenish the sand normally deposited by littoral drift. To return the navigation channel to design depth and dimensions with authorized overdepth to -27 MLLW would require dredging approximately 154,000 cubic yards. Dredging will occur either by clamshell dredge from a barge, or a hydraulic dredge may be used. The type of dredge employed is the choice of the dredging contractor.

If the Corps uses a mechanical dredge, then the dredger will place all material from the navigation channel onto the adjacent beach on the east side of the channel. Then a frontloader will place the material in dump trucks, which will haul it to the beach nourishment site at Fort Casey State Park to the east of the breakwater. If a hydraulic dredge is used, the pipeline will deposit the material dredged from the channel directly onto the beach nourishment site. Disposal of the coarse-grained dredged material provides the necessary protection of the harbor features and related recreation facilities. In addition, beach replenishment prevents erosion from outflanking and causing deterioration of the jetty. The Corps will complete the work within the approved Washington Department of Fish and Wildlife in-water construction window of July 16 to February 15.

1.1. Location

The Keystone Harbor Navigation project (initially called the Lake Crockett project) is located on the west side of Whidbey Island on the shores of Admiralty Inlet, Island County, Washington (T31N, R1E, Sections 22, 23, and 24). The navigation channel provides access to the Washington State Ferry system between the shipping lanes of Admiralty Inlet and the Keystone ferry dock (Figure 1). The Federal navigation channel and dredged material disposal site are located within the boundaries of Ebey's Landing National Historical Reserve (NHR), which Congress created in 1978 as a unit of the National Park System (Pub. L. 95-625, title V, Sec. 508, Nov. 10, 1978, 92 Stat. 3507, as amended Pub. L. 96-87, title IV, Sec. 401(k), Oct. 12, 1979, 93 Stat. 666). The purpose of Ebey's Landing NHR is to preserve and protect a rural community that provides an unbroken historical record from nineteenth century exploration and settlement in Puget Sound to present time.

1.2. Authority

The Lake Crockett navigation project and maintenance dredging by the Department of the Army was authorized by the Rivers and Harbors Act of March 2, 1945 (House Document 303, 77th Congress, 1st Session). In 1993, the project was modified under authority of Section 107 of the 1960 Water Resources

Development Act, as amended by Section 915 of the Water Resources Development Act of November 17, 1986 (Public Law 99-662). The finished project is named Keystone Harbor.

2. ACTION AREA AND PROJECT AREA

2.1. Action Area

The action area is defined as all areas that are affected directly or indirectly by a Federal action and not merely the immediate area involved in the action (50 CFR § 402.02). The landward portion of the action area is located within the 25 square mile Ebey's Landing NHR. The reserve encompasses a mixture of Federal, state, county, and private property, which are all managed in a way that preserves the reserve's historic essence. The directly affected aquatic environment is the navigation channel within Keystone Harbor, the beach disposal area, and the shoreline eastward to the extent of the littoral drift cell that ends at a nodal point on the beach about 11,000 feet east of the breakwater. Keystone Harbor includes a mooring basin, a navigation channel, a breakwater, and a boat launch ramp (Figure 2). Overnight camping occurs adjacent to the channel to the west, and a day-use beach is immediately to the east of the channel. Washington Department of Transportation operates a ferry from a dock at the head of the mooring basin. The aquatic action area is the area within a roughly five-kilometer radius around Keystone Harbor, which includes Admiralty Inlet and extends to Port Townsend, Indian Island, and the southern reach of Whidbey Island (Figure 1).

2.2. Project Area

The project area of the proposed work is comprised of Keystone Harbor (Figure 1) and the adjacent day-use beach within the state park immediately to the east. The dredging area is up to four acres in the center of Keystone Harbor; material placement will cover up to 2.5 acres along the adjacent beach to the east (Figures 1, 2, and 3).

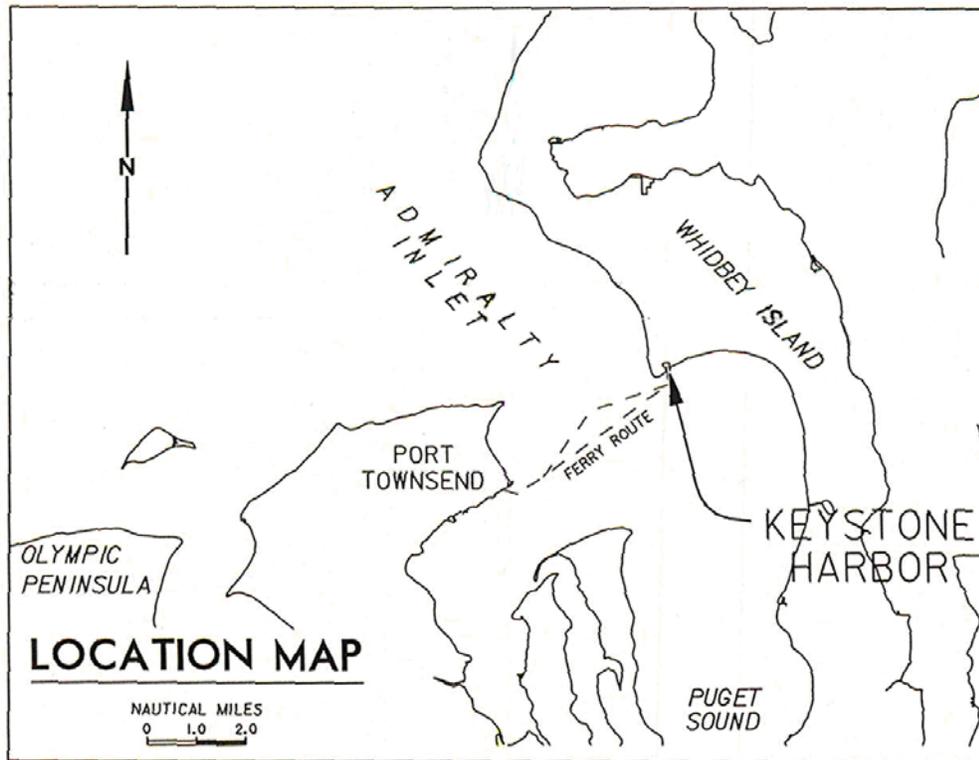


Figure 1. Map of vicinity and action area for the Keystone Navigation Channel project.

The project area includes the navigation channel, mooring basin, and beach disposal site. The navigation channel and disposal area are located in Fort Casey State Park. The Corps will deposit dredged materials on the beach of the state park for beneficial use in protecting park resources from erosion. The beach deposition area is approximately 600 feet long, centered in front of the restroom building on the east side of Fort Casey State Park. The Fort Casey underwater park is located immediately waterward of the dredged material disposal site. It is an easily accessible training site popular with divers from western Washington and southwestern British Columbia. The Keystone Jetty feature of the Federal navigation project is one of two dive sites within the park. The jetty stones are home to large anemones, starfish, urchins, barnacles, and tubeworms. Giant Pacific octopus and wolf eels have been seen at the jetty site.



Figure 2. Project Area – Aerial photo of Keystone Harbor taken May 5, 1993 (photo courtesy of Washington Department of Ecology).

3. PROJECT DESCRIPTION

The Keystone Harbor Dredge project consists of maintenance dredging of up to 154,000 cubic yards of material from the Keystone navigation channel to the authorized depth of -25 feet MLLW, plus 2 feet overdepth to achieve -27 MLLW. Dredging will occur either with mechanical (clamshell bucket) dredge or with a hydraulic (pipeline) dredge; dredge type is at the discretion of the Corps' dredging contractor. This document discusses environmental effects of both types of dredges. Dredging and disposal may take as long as 120 days if all shoaled material is removed from the authorized area; however, for Fiscal Year 2011, the Corps expects to spend roughly 60 days to dredge 50,000 cubic yards only from the channel leading into the ferry terminal and not the adjacent areas.

Disposal of all the dredged sand and gravel will occur on the adjacent, previously used, beach disposal site to nourish a section of the beach to the east of the breakwater (Figure 3). The method used to deposit material on the beach depends on the dredge equipment. With pipeline dredging, the material is pumped to the beach area. If the Corps uses a pipeline dredge, effects on the diving park will be minimized by

pushing up berms of local material to preclude effluent from flowing directly into receiving water without first filtering through the berms. With mechanical dredging, a derrick barge digs up sediment with a 20 cubic yard clamshell bucket and places the material on the beach on the east side of the channel. Bucket loaders on shore scoop up the sediment, travel along the edge of the parking area to the disposal area and dump the sand on the beach to the east of the jetty.

Dredging and disposal will occur within the approved Washington Department of Fish and Wildlife (WDFW) in-water construction window of July 16 - February 15. This fish window is based on salmon and bull trout as no forage fish spawning grounds are documented along this reach of Whidbey Island shoreline (Bargmann 1998).



Figure 3. Disposal/beach nourishment area showing park infrastructure at risk of damage from shoreline erosion.

4. CONSERVATION MEASURES

Construction will occur when Puget Sound Chinook, Hood Canal summer-run chum, and Coastal/Puget Sound bull trout are least likely to be present in the action area. The work timing, which is scheduled for late summer, is outside of the USFWS closure period for bull trout in Puget Sound marine waters (February 16 to July 15), the NMFS closure periods for Chinook in Puget Sound marine waters (March 1 to July 1), and for Hood Canal chum in marine waters (March 1 to July 15). The work will occur outside bald eagle wintering season (October 31 to February 28). There are no bald eagle nests in the vicinity of the project; see Section 11.0 for a discussion on effects to bald eagles. The Corps will be putting dredged materials to beneficial use by placing the sand and gravel material on the adjacent beach, to the east of the jetty. Because the harbor and jetty interrupt the natural drift cell of Admiralty Bay, beach placement helps to put material that eroded from the bluffs back into the natural longshore drift cell. In addition to avoiding work closure windows, the Corps will set aside all beach logs from the beach nourishment site and redistribute the woody debris after the dredge materials have been placed on the beach site.

5. ENVIRONMENTAL BASELINE AND EFFECTS OF THE PROPOSED ACTION

5.1. Habitat Conditions

The project area receives moderate wave action from the Strait of Juan de Fuca and the beach system is nourished by unconsolidated glacial deposits from uplands (Webber 1979). The barrier beach separating Admiralty Bay from Lake Crockett was formed by material eroded from high bluffs of glacial outwash located to the northwest at Admiralty Head and southeast of the navigation project. Active erosion of these “feeder” bluffs supplies sediments to adjacent beaches. The current moves sediment along the shoreline and sorts it by size; finer material drifts offshore to less turbulent water and larger sand/gravel/cobble deposits on adjacent beaches. Two drift cells occur within the northern portion of Admiralty Bay (Figure 4). Littoral drift moves material east from Admiralty Head and west from the bluffs 3.5 miles southeast of the Harbor (USACE 1972). An area of zero net beach movement, or “nodal point,” occurs on the beach about 11,000 feet east of Keystone Harbor.

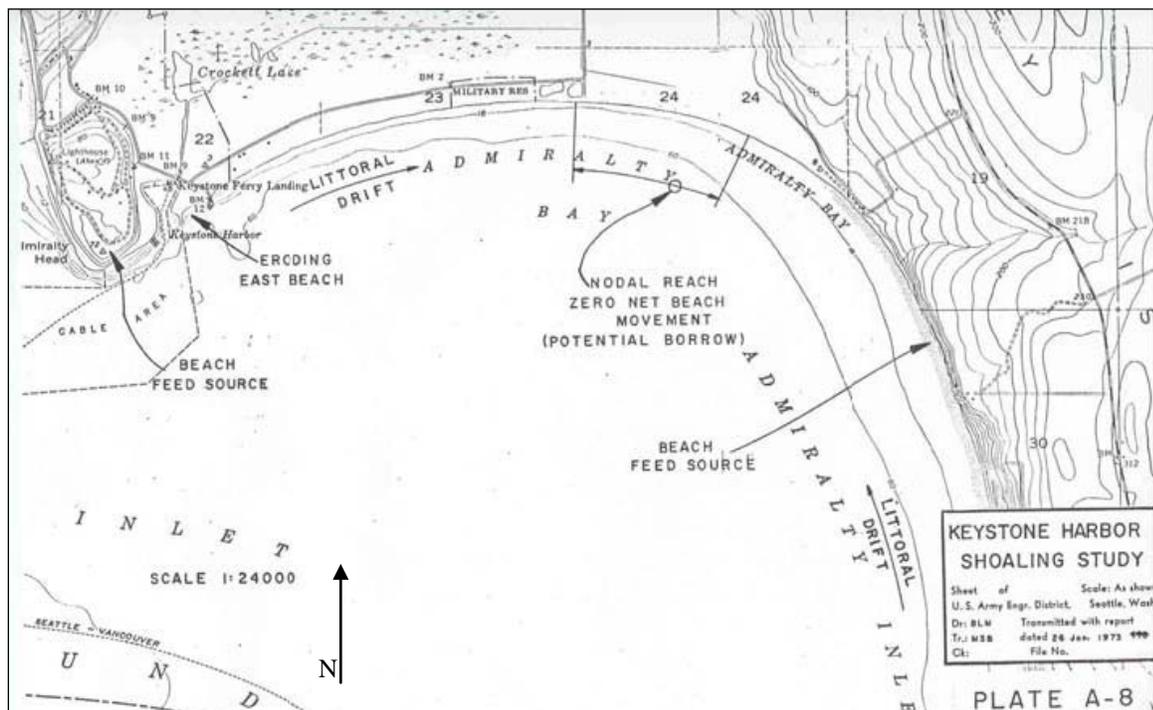


Figure 4. Littoral drift cells of Admiralty Bay shoreline.

Construction of the harbor and jetty created a littoral trap for the Admiralty Head feeder bluff. The effect of this trap is accretion inside Keystone Harbor and erosion of the beach east of the harbor entrance. During the 1950s, the beach east of the jetty eroded rapidly. The mean higher high water (MHHW) depth contour immediately east of the jetty retreated landward by approximately 150 feet between 1948 and 1960 (USACE 1975). Erosion undermined the jetty structure, requiring repairs in 1950, 1954, and 1960. Since 1960, most material dredged from the navigation channel has been placed on the beach to the east of the jetty. Although the channel and jetty interrupt the Admiralty Head drift cell, dredging and beach nourishment serve as an artificial replacement of the natural process, which supplies sediments to two miles of beaches downdrift of the jetty. The dredged material serves as a beach nourishment stockpile, eroding gradually through wave action and tidal currents. Over 220,000 cubic yards of sediment have been placed east of the jetty since 1960, achieving a nearly equilibrium shoreline shape and position.

5.2. Water and Sediment Quality

The water quality of Admiralty Inlet meets Class 1 standards as defined by Washington State Department of Ecology. Water quality of this class exceeds the requirements for all uses such as wildlife habitat, aesthetic enjoyment, commerce and recreation, and fish and shellfish reproduction, rearing, and harvest. Water quality information from samples collected in the general area of Admiralty Inlet in past years generally confirms the Class 1 rating.

The material to be dredged is composed of sand and gravel (less than 3% fines) eroding naturally from unaltered bluffs to the west of the navigation channel. Thus, disposal of material on the beach supplies the actual native material that would have deposited there naturally if not for the navigation channel. Dredging the material, composed of clean sands and gravel, and placement in the surf zone of the east beach may cause minor increases in local turbidity; however, this should be of short duration due to the coarse grain size of the material. No release of contaminants is expected due to the clean nature of the material. No other impact to water quality is anticipated from this action.

The Corps will test sediments according to Puget Sound Dredged Disposal Analysis (PSDDA) protocol. For previous dredging events, the sediments were approved for unconfined open water disposal by the Dredged Material Management Program (DMMP) administered by the Corps, Environmental Protection Agency, Washington Department of Ecology, and Washington Department of Natural Resources. The material to be dredged is ranked “low concern for characterization” by the DMMP agencies. A full PSDDA characterization of two composited samples occurred in 1988, one from each side of the entrance channel. The results of these analyses showed that all chemicals of concern from the composited sample west of the channel were quantified below PSDDA screening levels (SL) – levels of specific chemicals below which it is believed that disposal of that material would not result in unacceptable adverse impacts to the aquatic environment. The composited sample from the area east of the channel (the receiving area for nourishment material) was below SL and Washington sediment quality standards, except for Phenol. The material meets exclusionary criteria under CWA: 40 CFR 230.60 (subparagraphs a, b, and c). The exclusionary criteria state that material meets the criteria and can be excluded from further testing if it is (1) predominantly sand from high current/wave energy area; (2) the dredging area is sufficiently removed from contaminant sources, and (3) where the disposal site is adjacent to the dredging site. The dredging/disposal site is in a highly dynamic littoral drift current/tidal area, and is free from any known sources of contamination. For the previous dredging event in 2006, the DMMP agencies signed a determination that material dredged from Keystone Harbor was suitable for beach nourishment. The DMMP agencies will review the 2011 sampling results and are expected to concur that the material does not require further testing under Section 404 of the Clean Water Act.

5.3. Biota

Admiralty Inlet provides habitat to an abundance and diversity of life, ranging from algae to anadromous salmonids to marine mammals and seabird colonies. A great variety of marine life occurs in the immediate vicinity of the project. The nearshore bottom between the breakwater and wharf is shallow with small rock outcrops. Sparse algae and a few horse clams (*Tresus* spp.) have been observed here. The pilings of the wharf serve as substrate for numerous tubeworms, barnacles (*Balanus* spp.), and sea anemones (*Metridium* spp.), which provide cover and habitat for several species of fish. Algal growth in the intertidal and shallow subtidal areas provides habitat for crabs and other invertebrates. The breakwater provides substrate for barnacles, anemones, chitons, mussels, and other organisms. Snails, hydroids, sea cucumbers, crabs, sea urchins, starfish, wolf eels, greenlings, pen point gunnels, and lingcod inhabit this area.

Biota within the channel is limited to opportunistic species that may colonize the area between maintenance dredging periods. Juvenile salmonids migrate along the shoreline from March to July.

According to WDFW (Bargmann 1998, Penttila 1999), no forage fish spawning is known or expected to occur in the project area, although Wait and Trim's (2006) sampling showed forage fish presence in Keystone Harbor. The bottom of Keystone Harbor is largely covered in macroalgae with the dominant species being sugar kelp (*Laminaria saccharina*); however, the navigation channel is sparsely covered with small red algae species. The harbor has no eelgrass.

Waterfowl use both Lake Crockett and Keystone Harbor throughout the year, though peak abundance occurs during fall migration. Raptors are common along the shores of Lake Crockett, and shorebirds are numerous during fall migration (August to October). Pandalid shrimp occur in deep water offshore in high numbers in the fall. Marine mammals occur in the vicinity, though seldom in the navigation channel.

6. EVALUATION OF PROJECT EFFECTS ON PROTECTED SPECIES

Eleven species protected under the Endangered Species Act of 1973 (16 USC 1531-1544) potentially occur in the project vicinity. A list of species potentially affected by the proposed project was obtained through the websites of the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) Northwest Region to determine which species may occur in the project area. Table 1 summarizes the information received from USFWS and NMFS. The following sections briefly summarize relevant life history information on the protected species, synthesize current knowledge on the presence and utilization of the project and action areas by these species, and then evaluate how the proposed project may affect the species concluding with a determination of effect.

Table 1. Endangered and threatened species potentially occurring in the project vicinity according to the USFWS and NMFS species lists for Island County.

Species	Listing Status	Critical Habitat
Coastal/Puget Sound Bull Trout <i>Salvelinus confluentus</i>	Threatened	Designated
Golden Paintbrush <i>Castilleja levisecta</i>	Threatened	—
Marbled Murrelet <i>Brachyramphus marmoratus</i>	Threatened	Designated
Puget Sound Chinook Salmon <i>Oncorhynchus tshawytscha</i>	Threatened	Designated
Hood Canal Summer Chum Salmon <i>Oncorhynchus keta</i>	Threatened	Designated
Puget Sound Steelhead <i>Oncorhynchus mykiss</i>	Threatened	Proposed
Steller Sea Lion <i>Eumetopias jubatus</i>	Threatened	Designated
Southern Resident Killer Whale <i>Orcinus orca</i>	Endangered	Designated
Eulachon <i>Thaleichthys pacificus</i>	Threatened	Proposed
Bocaccio Rockfish <i>Sebastes paucispinis</i>	Endangered	—
Canary Rockfish <i>Sebastes pinniger</i>	Threatened	—
Yelloweye Rockfish <i>Sebastes ruberrimus</i>	Threatened	—

6.1. Coastal/Puget Sound Bull Trout

The Coastal/Puget Sound bull trout population segment was listed as a threatened species in October 1999 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). Bull trout populations have declined throughout much of the species' range; some local populations are extinct, and many other stocks are isolated and may be at risk (Rieman and McIntyre 1993). Combinations of factors including physical habitat and water quality degradation, expansion of exotic species, and exploitation have contributed to the decline and fragmentation of indigenous bull trout populations.

Bull trout exhibit four types of life history strategies. The three freshwater forms include adfluvial, which migrate between lakes and streams; fluvial, which migrate within river systems; and resident, which are non-migratory. The fourth and least common strategy is the amphidromous life history; bull trout move seasonally between marine and fresh water as subadults, and then the fish spawn in fresh water after rearing in marine and freshwater environments. Amphidromous sub-adults and non-spawning adults are thought to migrate from marine waters to freshwater areas to spend the winter. Based on research in the Skagit Basin (Kraemer 1994), amphidromous bull trout juveniles migrate to the estuary in April-May, then re-enter the river from August through November. Most adult fish entered the estuary in February-March, and returned to the river in May-June. Subadults, fish that are not sexually mature but have entered marine waters, move between the estuary and lower river throughout the year.

Use of the Action Area

Bull trout have been documented in nearshore areas around Whidbey Island; however, USFWS did not include the west side of Whidbey Island in Admiralty Inlet, Admiralty Bay, or Keystone Harbor in designated critical habitat for the Coastal/Puget Sound population segment of bull trout (USFWS 2010b). Bull trout use of estuary and marine habitat predominantly occurs March to July. Some fish re-enter marine areas briefly in the fall to return to foraging areas. Bull trout typically stay closer to their natal rivers than other salmonids, but are found from 1- to 20-meter depths, over all substrates, many nearby to eelgrass areas. Distributions in saltwater are closely tied to forage fish, including surf smelt and herring, and when bull trout are in marine areas, they are often found along forage fish spawning beaches (Kraemer 1994). WDFW has not located any forage fish spawning beaches on the west side of Whidbey Island (Bargmann 1998), and there are no bull trout spawning streams in the project area, so concentrations of bull trout are less likely to occur here than on the east side of the island.

Effects of the Proposed Action

The February 16 to July 15 USFWS closure period corresponds to the portion of the year when bull trout are most likely to be present in nearshore marine waters. Construction will likely occur in late July and August, outside of the bull trout closure period for marine waters. The proposed action will not degrade baseline water quality and habitat conditions for bull trout. The dredging and material placement will produce only short-term, localized disturbances. During and immediately after the placement of the nourishment materials, turbidity is not expected to increase substantially above ambient conditions due to the large grain size of the material. Since the placement of the nourishment materials will occur above the waterline at low tides, construction should not directly impact fish usage of the beach habitat.

Indirect effects to bull trout prey species are not anticipated since no documented forage fish spawning beaches occur in the action area, and the epibenthic fauna that will be impacted by material placement do not appear to constitute a significant fraction of bull trout or forage fish diets.

Designated Critical Habitat

Puget Sound marine areas are designated as critical habitat (USFWS 2010b). The project and action areas are at the north end of Puget Sound; however, the western shore of Whidbey Island is not designated critical habitat.

Effect Determination

The proposed project **may affect, but is not likely to adversely affect** bull trout. This determination is based upon the low likelihood that bull trout would be present in the action area during construction activities, and the lack of impacts to bull trout prey items. The project would have **no effect** on designated critical habitat for bull trout.

6.2. Golden Paintbrush

Golden paintbrush (*Castilleja levisecta*) was listed as a threatened species in June 1997 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq*). Threats to the species include competition with encroaching native and non-native plant species, loss of habitat through grassland species succession in the absence of fire, and grazing by herbivores. Direct human-caused threats include conversion of habitat for residential and commercial development, conversion to agriculture, and possible damage associated with road maintenance (USFWS 1997).

Golden paintbrush is a rare, regional, endemic associated with *Festuca* grasslands. This perennial herb was formerly widespread on glacial prairies and steep coastal headlands from the Willamette Valley of Oregon to southeastern Vancouver Island (USFWS 2000). Many golden paintbrush populations went extinct because the habitat was converted to agriculture, residential, or commercial development. It is now found on only 9 sites in Washington, and 2 sites in British Columbia (Douglas and Ryan 1999); it is extinct in Oregon (USFWS 2000). Golden paintbrush grows to a height of 30cm (12 in.) and its spreading, unbranched stems are covered with soft, sticky hairs. It is distinguished by its brilliant golden to yellow floral bracts, flowering from April to June (Hitchcock and Cronquist 1973). The plants tend to grow in clumps, occurring in open grasslands at low elevations, 10 to 300 feet, around the Puget Trough. Most populations occur on glacially derived soils, either gravelly glacial outwash or clayey glacio-lacustrine sediments (Sheehan and Sprague 1984). The past 150 years of fire suppression in the Pacific Northwest has led to invasion of grasslands by both native and alien species that either overshadow or out-compete golden paintbrush (Agee 1993).

Use of the Action Area

Five populations are located on the north half of Whidbey Island, Island County, in Puget Sound. These locations are Forbes Point at Crescent Harbor, Fort Casey State Park, Ebey's Landing, West Beach, and Bocker property (USFWS 1997). The Fort Casey population of golden paintbrush is on the western bluff of the park and completely outside of the action area of the Keystone Harbor Maintenance Dredge project (Arnett 2006 pers. comm.).

Effects of the Proposed Action

The proposed action of dredging the Keystone Navigation Channel and subsequent disposal of dredged materials on the adjacent beach will not have any impact to the golden paintbrush plants or their habitat. The local plant population is on a high bluff located outside of the immediate vicinity of the proposed activities.

Effect Determination

Because golden paintbrush is a grassland species located on the eastern bluff of Fort Casey State Park, the dredging and beach disposal to the east of Keystone Harbor will have **no effect** on this plant population.

6.3. Marbled Murrelet

The marbled murrelet was listed as a threatened species in October 1992 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq*). Primary causes of population decline include the loss

of nesting habitat, foraging disruption due to underwater noise, and direct mortality from oil spills, gillnet fisheries, and derelict fishing gear.

Marbled murrelets forage in the nearshore marine environment and nest in inland old-growth coniferous forests of at least seven acres. Marbled murrelets nest in low-elevation forests with multi-layered canopies; they select large trees with horizontal branches of at least seven inches diameter and heavy moss growth. Of 95 murrelet nests in North America identified during 1995, nine were located in Washington. April 1 through September 15 is considered nesting season; however, in Washington, marbled murrelets generally nest between May 26 and August 27 (USFWS 1999). Adults with young to feed fly between terrestrial nest sites and ocean feeding areas primarily during the dawn and dusk hours.

Marbled murrelets spend most of their lives in the marine environment, where they forage in areas within two miles from shore. Murrelets often aggregate near localized food sources and distribute through a feeding area to forage solitarily or in pairs, termed “best possible spacing” by Carter (1984). This strategy in which birds are loosely associated with others serves to decrease the need for searching for food, and wider spacing reduces competition for food. Prey species include herring, sand lance, anchovy, osmerids, seaperch, sardines, rockfish, capelin, smelt, as well as euphasiids, mysids, and gammarid amphipods. Marbled murrelets aggregate, loaf, preen, and exhibit wing-stretching behaviors on the water.

Although marine habitat is critical to marbled murrelet survival, USFWS’ primary concern with respect to declining marbled murrelet populations is loss of terrestrial nesting habitat. In the marine environment, USFWS is primarily concerned with direct mortality from gillnets and spills of oil and other pollutants (USFWS 1996).

Use of the Action Area

Carter (1984) found that the preferred habitat of murrelets in marine waters is close to shore in relatively shallow water, usually less than 100 m deep, and in protected areas where the surrounding shoreline is at least three times as long as the width of the opening; murrelets are seldom observed in embayments. This preference tends to rule out the use of a shoreline feature such as the narrow channel of Keystone Harbor. Regional patterns of marbled murrelet activity in marine waters tend to be seasonal and coincide with exposure to winter storm activity. There is a general shift of birds from the Strait of Juan de Fuca and British Columbia during spring and summer to areas in the San Juan areas and eastern bays during the fall and winter (Speich and Wahl 1995). Murrelets are often found in specific areas (e.g., Hood Canal, Rosario Strait/San Juan Islands), as foraging distribution is closely linked to tidal patterns; however, occurrences are highly variable as they move from one area to another often in short periods. Speich and Wahl (1995) found that summer and fall murrelet densities in Admiralty Inlet ranged from 0.03 to 0.12 birds per km². In that census area, murrelets were present in only 33% of their summer censuses, and 6% in fall censuses, represented by two bird sightings in 21 census days.

Effects of the Proposed Action

USFWS lists noise disturbance in the marine environment as a threat to feeding behavior; the primary problematic noise source is pile driving (USFWS 2010a). The Corps may use either mechanical or hydraulic dredging at Keystone Harbor, so this document addresses the noise effects of each. A more complete description of noise produced by dredges is provided in Section 6.10 in the analysis of effects to Southern Resident killer whales.

A study conducted by the U.S. Army Engineer Research and Development Center (ERDC; Clarke et al. 2002) on dredge noises found that sound pressure levels peaked at 110 dB from a hydraulic dredge, and attenuated to nearly inaudible at only 500 meters away. For the full cycle of bucket dredging, no sounds with a frequency over 400 Hz were detected beyond the 2km distance and the range of sound pressure levels was typically 85 to 120 dB re 1 µPA for discrete events (Dickerson et al. 2001). Marbled murrelet

“harassment” level is around 150 dB according to USFWS (as cited in WSDOT 2011). Marbled murrelets are relatively opportunistic foragers, and they have flexibility in prey choice, which likely enables them to respond to changes in prey abundance and location (USFWS 1996). This indicates that if murrelets are present in the immediate vicinity of construction activities and if they are disturbed while foraging, they would likely move without significant injury. The Washington State Ferry vessel that docks at Keystone Harbor 11 times per day emits an underwater sound pressure level of 179 dB re 1 μ PA at a distance of 1 meter (Bassett 2010), which is louder than the dredge vessel. The dredging will cease whenever the ferry needs to dock at the terminal, so there would never be both vessels causing noise disturbance at the same time. Therefore, the effect of noise disturbance associated with the proposed project is expected to be discountable.

Maintenance of the Keystone Federal Navigation Project is not expected to result in a long-term reduction in the abundance and distribution of murrelet prey items. Reduction in prey availability is expected to rebound rapidly upon completion of the construction work.

Designated Critical Habitat

Critical habitat was designated for the marbled murrelet on May 24, 1996 (USFWS 1996); this designation only included terrestrial nesting habitat. The critical habitat units nearest to the project site are more than 40 miles away from Whidbey Island.

Effect Determination

Since construction activities would have no effect on nesting habitat or the murrelet food base, and the effects of any noise disturbance during construction are expected to be insignificant, the proposed project may affect, but is not likely to adversely affect the marbled murrelet. The project would have no effect on designated critical habitat for murrelets since no critical habitat is located near the project.

6.4. Puget Sound Rockfish: Bocaccio, Canary, and Yelloweye

Three species of Puget Sound rockfish were listed on April 28, 2010 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). Yelloweye and canary rockfish were listed as threatened; bocaccio were listed as endangered.

Bocaccio (*Sebastes paucispinis*) is an elongated rockfish, a member of the scorpion fish family (Scorpaenidae) that ranges from northern British Columbia to central Baja California. Larval bocaccio are pelagic, drifting at the mercy of the currents, usually occupying surface waters. By age 3.5 months, the young will settle and recruit to nearshore habitat. Juveniles inhabit much shallower water over rocky substrate with various understory kelps and/or sandy bottoms with eelgrass. Adults generally occupy water 50 to 250 meters deep over rocky outcroppings, boulder fields, and sloping walls and will school with conspecifics and other species of rockfish. Occasionally, adults will migrate onto mudflats adjacent to rocky substrates. Adult bocaccio will cling to steep rocky walls in deeper waters of Puget Sound or may swim off the substrata up in the water column. Adults and large juveniles feed on small fish and squid; larvae and small juveniles feed on copepods, krill, diatoms, dinoflagellates, and various larvae (Love et al. 2002).

Canary rockfish (*Sebastes pinniger*), a member of the scorpion fish family (Scorpaenidae), range from northern British Columbia to northern Baja California, potentially living to be over 80 years old. Larval canary rockfish are pelagic, drifting with the currents, and tend to be present in the upper 100 meters of the water column. After 3 to 4 months, the pelagic juveniles settle onto shallow benthic substrates such as tide pools and kelp beds. As juveniles grow, they start to school and move into depths of 15 to 20 meters at the interface between rock and sand during the day, and then disperse onto the sand flats at night. The juveniles gradually move from shallower to deeper areas toward the end of summer. Adults occupy

depths of 80 to 200 meters in areas with considerable current around pinnacles and high relief rock, often schooling with conspecifics and other species of rockfish. Adults and sub-adults feed on small fish and invertebrates while juveniles feed on copepods, krill eggs, and various larvae (Love et al. 2002).

Yelloweye rockfish (*Sebastes ruberrimus*), a member of the scorpion fish family (Scorpaenidae), range from the eastern portions of the Aleutian Islands to Northern California and can live longer than 110 years. Adults and sub-adults occupy rocky nearshore areas with refuge such as crevices, caves, and boulder piles. Occasionally, they will wander onto mudflats adjacent to rocky areas, sometimes in shallower waters. Very little is known about the larval stage of yelloweye rockfish (year 1), but young juveniles can be found on vertical walls with cloud sponges and anemones at depths greater than 15 meters. Yelloweye rockfish spend the majority of their time on the substrata where they feed on small fish, shrimp, crab, and lingcod eggs (Love et al. 2002).

The primary causes of population decline for all three of these species are overharvest in commercial and recreational fisheries, bycatch in other fisheries, habitat degradation, water quality issues such as low dissolved oxygen and elevated contaminant levels, and lack of regulations on exploitation (NMFS 2010).

Use of the Action Area

It is very unlikely that any adults of these three species of rockfish would occur in the project area or the beach nourishment site. Bocaccio tend to inhabit deep water (50 to 250 meters) over high-relief boulder fields and rocks, canary inhabit deep (80 to 200 meters) water with rocky and/or sandy substrate, and yelloweye inhabit deep water (90 to 180 meters) with rocky substrate that provides refuge space and/or invertebrate cover (Love et al. 2002). The project area is only 10 meters deep, and none of the key habitat features are present within the project area.

Although bocaccio juveniles are present in shallower water, they are also associated with rocky areas with kelp cover and sandy areas with eelgrass beds. Canary juveniles tend to be present in shallower water as well, and are associated with rocky areas with kelp cover and/or areas with a rocky-sand interface. Yelloweye juveniles typically inhabit areas of high relief with steep walls and depths greater than 15 meters (Love et al. 2002). None of these habitats are present within the project area.

There is chance, although a very slight one, that the larval stage of these species would be present at the project site because at this life stage they are pelagic drifters at the mercy of the currents (Love et al. 2002). Reported for the British Columbia and southeast Alaska region, Bocaccio and canary rockfish larvae are released in February (O'Connell 1987, Wyllie-Echeverria 1987) and would reach free swimming stage and settle out to their typical benthic habitats in about 3.5 months (Love et al. 2002), well before dredging begins in July in Keystone Harbor. Yelloweye larvae are reported to be released in May (Wyllie-Echeverria 1987), and remain pelagic for up to two months (Moser 1996). They would have grown to size of directional swimming capability by the time dredging will occur at Keystone Harbor. Then at juvenile stage, yelloweye would be moving into steeper rocky habitat than exists in Keystone Harbor.

Effects of the Proposed Action

None of the life stages are expected to be present within Keystone Harbor, and none of the typical habitat types for the three listed rockfish species exist in Keystone Harbor; therefore, the channel dredging activity is not anticipated to have an effect on these species. The disposal activity is not expected to affect rockfish because none of the lifestages of the three listed species are expected to be present in the intertidal and supratidal zone during the time of beach nourishment in July and August.

Effect Determination

Due to the presumed absence of bocaccio, canary, and yelloweye rockfish in the project area based on the analysis provided above, the proposed action is expected to have “**no effect**” on this species.

6.5. Puget Sound Chinook Salmon

The Puget Sound Evolutionarily Significant Unit of Chinook salmon was listed as a threatened species in March 1999 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). Puget Sound/Strait of Juan de Fuca Chinook are predominantly of the ocean-type race (NMFS 1998). Ocean-type Chinook migrate to sea during their first year of life, normally within three months after emergence from spawning gravel. Growth and development to adulthood occurs primarily in estuarine and coastal waters (NMFS 1998). The amount of time juveniles spend in estuarine areas is dependent upon their size at downstream migration and rate of growth. Juveniles disperse to deeper marine areas when they reach approximately 65 to 75 mm in fork length (Simenstad et al. 1982). While residing in upper estuaries as fry, juvenile Chinook have an affinity for benthic and epibenthic prey items such as amphipods, mysids, and cumaceans. As the juveniles grow and move to deeper waters with higher salinities, this preference changes to pelagic items such as decapod larvae, larval and juvenile fish, drift insects, and euphausiids (Simenstad et al. 1982).

Use of the Action Area

Chinook life history stages that could occur near the project site include larger juveniles utilizing the nearshore habitat and migrating adults in deeper water. Juvenile Chinook salmon from all major Puget Sound populations use Admiralty Inlet nearshore areas for feeding and growth, refuge, physiological transition and as a migratory corridor (Redman et al. 2005). Sampling from February through August revealed that Chinook juveniles were present in the nearshore area of Keystone Harbor and Keystone Spit from May 2 to July 20 during the 2005 sampling season with peak abundance through the month of June (Wait and Trim 2006). Coded wire tag data collected during this study revealed that most Chinook using the West Whidbey nearshore are from the Whidbey basin, but also included stocks from Hood Canal, north Puget Sound, and east Kitsap Peninsula.

Effects of the Proposed Action

The project area is a short, artificial channel created by the Corps of Engineers in 1948, and constantly experiences a high degree of human disturbance due to activities of the ferry traffic, boat launch, and state park. The dredging project will be a short-term, localized disruption, and does not constitute a new modification of the shoreline. The beneficial use of dredged materials will assist in maintaining the historical shoreline shape and longshore sediment transport process.

The Corps will complete all work within the in-water construction window of July 16 to February 15, as approved by Washington Department of Fish and Wildlife. This will avoid the outmigration of juveniles as no Chinook were present past July 20 (Wait and Trim 2006). Adult Chinook on the homeward migration would likely use deeper water and not occur along the shoreline near the project area.

Designated Critical Habitat

Puget Sound marine areas designated as critical habitat include South Sound, Hood Canal, and North Sound to the international boundary at the outer extent of the Strait of Georgia, Haro Strait, and the Strait of Juan de Fuca to a straight line extending north from the west end of Freshwater Bay (NMFS 2000). Critical habitat consists of the water, substrate, and the adjacent riparian zone of accessible marine, estuarine, and riverine reaches. Both the project and action areas are designated critical habitat.

Within the designated critical habitat for Chinook in nearshore marine areas, the primary constituent elements (PCEs) are water quality, foraging opportunities supporting growth and maturation, and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels (NMFS 2005a). Dredging would temporarily disturb up to approximately four acres of nearshore marine habitat in the center of Keystone Harbor to a maximum depth of 25 feet (plus 2 feet overdredge). Material placement will cover up to approximately 2.5 acres along the adjacent beach to the east. As a result, these areas will suffer temporary habitat degradation due to reduced benthic prey availability during and after dredging. Habitat value will be temporarily decreased until the substrate can be recolonized by benthic and epibenthic organisms. The benthic community should recolonize fairly rapidly, as in several months, following the disturbances of dredging and beneficial use placement of dredged material (McCauley et al. 1977, Dernie et al. 2003, Braun 2005). Because Keystone Harbor undergoes maintenance dredging every five to six years, the benthic community has likely shifted toward those species that can rapidly repopulate and adapt to the frequent disturbance (McCauley et al. 1977). The Corps will monitor water quality and will strictly adhere to State of Washington water quality standards. The other PCEs such as large wood, aquatic vegetation, and side channels are not present in Keystone Harbor. Large wood will be retained on the beach disposal site.

Effect Determination

The proposed project **may affect, but is not likely to adversely affect** Puget Sound Chinook. This determination is based on the limited scope and duration of the project, the low likelihood that Chinook will be present in the action area during construction, and the temporary and minor nature of project impacts. Beach nourishment activities are not expected to impact prey of any juvenile Chinook occurring in Admiralty Inlet. The Corps has determined that this project **may affect, but is not likely to adversely affect** critical habitat of Puget Sound Chinook.

6.6. Hood Canal Summer-Run Chum

The Hood Canal Summer-Run chum salmon Evolutionarily Significant Unit was listed as a threatened species in March 1999 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). Chum (*Oncorhynchus keta*) have evolved to migrate immediately to marine waters upon hatching, limiting their freshwater life history. This life history strategy, which chum salmon share with pink salmon (*O. gorbuscha*), reduces the mortality associated with the variable freshwater environment but makes chum more dependent on estuarine and marine habitats. When the fry first enter saltwater they assemble in small schools and reside close to shore to avoid predators. As the young fish grow, they gradually move to deeper waters and generally migrate towards open ocean waters. Some chum salmon juveniles will remain in nearshore marine waters until late in their second year before migrating to the open ocean. Mortalities during this early marine life period are primarily the result of predation by birds and other fish species.

Use of the Action Area

Chum life history stages that could occur near the project site include larger juveniles using the nearshore habitat, and migrating adults that use deeper water. Wait and Trim's (2006) sampling showed that juvenile chum were present in Keystone Harbor and along Keystone Spit from April 11 to July 20 in the 2005 sampling effort with peak abundance in May and June. It is suspected that some portion of the chum sampled in the West Whidbey nearshore are Hood Canal summer-run because of two factors: (1) longer fork lengths may indicate longer growth period than the other stocks present, and (2) 12% of CWT Chinook were from Hood Canal streams (Wait and Trim 2006). Hood Canal/Eastern Strait of Juan de Fuca summer chum salmon use the western shore of Admiralty Inlet as outmigrant fry (Simenstad 2000). The eastern side of Admiralty Inlet/West Whidbey Island is more likely to support the larger life history stages of these summer-run chum populations (Redman et al. 2005).

Effects of the Proposed Action

The project area is an artificial channel created by the Corps of Engineers in 1948, and constantly experiences a high degree of human disturbance due to activities of the ferry traffic, boat launch, and state park. The dredging project will be a short-term, localized disruption, and does not constitute a new modification of the shoreline. The beneficial use of dredged materials will assist in maintaining the historical shoreline shape and longshore sediment transport process.

The Corps will complete all work within the in-water construction window of July 16 to February 15, as approved by Washington Department of Fish and Wildlife. This will avoid the outmigration of juveniles as no chum were present in the nearshore area of Keystone Harbor and Keystone Spit past July 26 (Wait and Trim 2006). Adult chum on the homeward migration would likely use deeper water and not occur along the shoreline in the immediate vicinity of the action area.

As described in the preceding section on Puget Sound Chinook, dredging and beach nourishment activities are expected to cause only a temporary degradation to the nearshore marine habitat and will likely become at least partially recolonized by the benthic community within a few months.

Designated Critical Habitat

Designated critical habitat for the Hood Canal Summer-Run chum ESU includes the estuarine/marine areas of Hood Canal, Admiralty Inlet, and the Strait of Juan de Fuca to the international boundary and as far west as Dungeness Bay.

Within the designated critical habitat for chum in nearshore marine areas, the primary constituent elements (PCEs) are water quality, foraging opportunities supporting growth and maturation, and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels (NMFS 2005a). Dredging would temporarily disturb up to approximately 4 acres of nearshore marine habitat in the center of Keystone Harbor to a maximum depth of 25 feet (plus 2 feet overdredge). Material placement would cover up to approximately 2.5 acres along the adjacent beach to the east. As a result, these areas will suffer temporary habitat degradation due to reduced benthic prey availability during and after dredging. Habitat value will be temporarily decreased until the substrate can be recolonized by benthic and epibenthic organisms. The benthic community should recolonize fairly rapidly, as in several months, following the disturbances of dredging and beneficial use placement of dredged material (McCauley et al. 1977, Dernie et al. 2003, Braun 2005). Because Keystone Harbor undergoes maintenance dredging every five to six years, the benthic community has likely shifted toward those species that can rapidly repopulate and adapt to the frequent disturbance (McCauley et al. 1977). The Corps will monitor water quality and will strictly adhere to State of Washington water quality standards. The other PCEs such as large wood, aquatic vegetation, and side channels are not present in Keystone Harbor. Large wood will be retained on the beach disposal site.

Effect Determination

The proposed project **may affect, but is not likely to adversely affect** Hood Canal Summer-run chum. This determination is based on the limited scope and duration of the project, the low likelihood that chum will be present in the action area during construction, and the temporary and minor nature of project impacts. Beach nourishment activities are not expected to impact prey of any juvenile chum occurring Admiralty Inlet. The Corps has determined that this project **may affect, but is not likely to adversely affect** critical habitat of Hood Canal Summer-run chum.

6.7. Puget Sound Steelhead

The Puget Sound Steelhead Distinct Population Segment was listed as a threatened species in May 2007 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*).

The Puget Sound Steelhead Distinct Population Segment (DPS) includes runs from the Strait of Juan de Fuca, Puget Sound, and Hood Canal, Washington. Puget Sound Steelhead are predominantly winter-run type and reach maturity in the Pacific Ocean. Steelhead from this area are genetically distinct from those in other areas of Washington, and the fjord-like structure of Puget Sound itself may promote distinctive steelhead migration patterns. The majority are two years old at time of smolting, and spend another two to three years in the ocean before returning to natal streams at time of their first spawning (NMFS 1996). Unlike chum and Chinook, steelhead exhibit iteroparity, the ability to spawn more than once; although, this trait is relatively uncommon in populations north of Oregon (NMFS 1996).

Use of the Action Area

Because steelhead spend their first two years rearing in freshwater before smoltification and seaward migration, the life history stages that could occur near the project site include larger age 2+ juveniles using the nearshore habitat and migrating adults in deeper water. Juvenile salmon use Admiralty Inlet nearshore areas for feeding and growth, refuge, physiological transition and as a migratory corridor (Redman et al. 2005). Sampling with beach seines revealed that juvenile salmon were present in the nearshore area of Keystone Harbor and Keystone Spit from late February until mid-July during the 2005 sampling season with peak abundance through the month of June (Wait and Trim 2006).

Effects of the Proposed Action

The project area is an artificial channel created by the Corps of Engineers in 1948, and constantly experiences a high degree of human disturbance due to activities of the ferry traffic, boat launch, and state park. The dredging project will be a short-term, localized disruption, and does not constitute a new modification of the shoreline. The beneficial use of dredged materials will assist in maintaining the historical shoreline shape and longshore sediment transport process. The Corps will complete all work within the in-water construction window of July 16 to February 15, as approved by Washington Department of Fish and Wildlife. This will avoid the outmigration of juveniles.

NMFS has listed the Critical Habitat status as “under development.”

Effect Determination

The proposed project **may affect, but is not likely to adversely affect** Puget Sound steelhead. This determination is based on the limited scope and duration of the project, the low likelihood that steelhead will be present in the action area during construction, and the temporary and minor nature of project impacts. Beach nourishment activities are not expected to impact prey of any juvenile steelhead occurring in Admiralty Inlet.

6.8. Steller Sea Lion

The Steller sea lion was listed as a threatened species in November 1990 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). In 1997, the North Pacific’s population of Steller sea lions was separated into two distinct stocks, one of which was reclassified as endangered. The status of the eastern stock, which includes the population inhabiting the waters of the Washington coast, remains unchanged.

Steller sea lions use two types of terrestrial habitats: rookeries are areas where adults congregate for breeding and pupping, and haul-outs are areas used for resting and socializing. Sites used as rookeries during the breeding season may be used as haul-outs during the remainder of the year. Steller sea lions haul-out on offshore islands, reefs, and rocks, while rookeries generally occur on beaches. Preferred rookeries and haul-out areas are located in relatively remote areas where access by humans and

mammalian predators is difficult; locations are specific and change little from year to year (Steller Sea Lion Recovery Team 1992).

When not on land Steller sea lions are inshore, typically less than five miles from the coast. Steller sea lion foraging patterns vary depending upon age, season, and reproductive status, as well as the distribution and availability of prey. Foraging patterns of females during the winter months vary considerably; individuals travel an average of 133 km and dive an average of 5.3 hours per day. The vast majority of feeding dives occur to a depth of 100 m. The diet of Washington's Steller sea lions is not well known; primary prey items may include cod, pollock, rockfishes, herring, and smelt (Gearin and Jeffries 1996). They appear to be largely opportunistic feeders.

In 1993, NMFS designated critical habitat for the Steller sea lion. No critical habitat occurs in Washington.

Use of the Action Area

A species list obtained from NMFS indicates that Steller sea lions may occur in the action area of the proposed project. Stellers occur in Puget Sound in fall, winter, and spring, but return to their breeding grounds mainly in Alaska in the winter. The WDFW Seal and Sea Lion Atlas states that there are no Steller sea lion haulout sites near Keystone Harbor (Jeffries et al. 2000); however, since 2000, three to 15 Steller sea lions have been observed using a site on the northeast side of Marrowstone Island (Snohomish County PUD 2009) This is roughly 11 kilometers from the project area.

Effects of the Proposed Action

Given the lack of rookery and major haul-out areas in Admiralty Bay, Steller sea lions in the action area are likely on foraging expeditions. The Corps does not anticipate adverse effects since the work will occur within the narrow navigation channel with regular ferry traffic, the disturbance would be temporary, and the project area is small. Construction activities will have no effect on breeding habitat or behavior, and are unlikely to affect the Steller sea lion prey base. Construction activities will occur in an area with substantial human activity on the landward side of the shoreline. The potential for long-term or indirect impacts of the proposed project to Steller sea lions is insignificant. The proposed work will only maintain and not increase vessel traffic in the area, and construction activities are anticipated to have only minor and temporary impacts to water quality.

Effect Determination

This project **may affect, but is not likely to adversely affect** the Steller sea lion since the potential for significant sound disturbance or impacts to water quality and prey abundance are unlikely. The project will have **no effect** on designated critical habitat for this species.

6.9. Eulachon

Eulachon (*Thaleichthys pacificus*) was listed as a threatened species under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*) on March 18, 2010.

Eulachon are a small anadromous fish that spend most of their lives in the nearshore water of the eastern Pacific Ocean and may range from California to Vancouver Island. As a schooling fish, eulachon travel together in the ocean. At about three to four years of age, they migrate into some of the major river systems along the west coast of North America to spawn in the early spring, late February to May (Wydoski and Whitney 2003). All fish are believed to die soon after spawning. It is believed that eulachon return to the estuary of their birth, but it is not known if they return to the same river from where they hatched (Hay and McCarter 2000). Eulachon spawn in major rivers such as the Columbia, and larger

tributaries to the Columbia, such as the Cowlitz. The nearest known spawning river to the project area is the Fraser River (WDFW 2008).

After hatching, larvae drift downstream and out into the estuary where they feed on zooplankton. They have been found to live near the ocean bottom at depths of 20 to 150 m in nearshore and coastal inlets (Hay and McCarter 2000). Details of their habits and habitat while in saltwater are unknown; distribution of eulachon in the ocean has been identified through studies of eulachon as by-catch for shrimp trawlers, but this information is limited to locations where shrimp trawling occurs (Wydoski and Whitney 2003). High catch levels have been noted in the areas along the southwest coast of Vancouver Island (Hay and McCarter 2000).

Use of the Action Area

Eulachon movements in Puget Sound are unknown, other than some historic data; no rivers in Puget Sound are known to support eulachon populations (ODFW 2001). Since the spawning rivers are Fraser, Elwha, and Columbia, and the fish move from the estuaries to deep ocean waters, the likelihood that eulachon would be present along the shore of Whidbey Island is extremely low.

Effects of the Proposed Action

Risks to eulachon from the maintenance dredging include possible entrainment if a hydraulic pipeline is used, and impacts from temporary water quality degradation due to localized turbidity. The Corps plans to use a clamshell dredge, and eulachon are assumed to be able to avoid the machinery.

Critical Habitat

NMFS has proposed critical habitat for the Southern DPS of eulachon. The nearest area is the Elwha River. No critical habitat occurs near the project.

Effect Determination

Based on low likelihood that eulachon would be present within Keystone Harbor or along the beach at the disposal site, it is anticipated that the project will have **no effect** on eulachon. The project will have **no effect** on proposed critical habitat.

6.10. Southern Resident Killer Whale

The Southern Resident Killer Whale Distinct Population Segment was listed as an endangered species in November 2005 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). Primary causes of population decline include habitat loss, decline in availability of prey items, pollution (PCBs, dioxins, furans), and noise disturbance from vessel traffic and whale watching.

Killer Whales are the most widely distributed marine mammal and are classified as top predators in the food chain. Three distinct forms of killer whales, termed as residents, transients, and offshores, are recognized in the northeastern Pacific Ocean. Although there is considerable overlap in their ranges, these populations have little or no membership interchange (Barrett-Lennard 2000). They have important differences in ecology, behavior, and morphology as well (Ford et al. 2000).

The Southern Resident killer whale assemblage contains three pods – J pod, K pod, and L pod – and is considered a stock under the Marine Mammal Protection Act. Their range during the spring, summer, and fall includes the inland waterways of Puget Sound, Strait of Juan de Fuca, and Southern Georgia Strait. Their occurrence in the coastal waters off Oregon, Washington, Vancouver Island, and more recently off the coast of central California in the south and off the Queen Charlotte Islands to the north has been documented. Little is known about the winter movements and range of the Southern Resident stock.

Behavioral and population research has been conducted since the 1970's; however, very little is known about the precise species of fish eaten by whales in this population during the winter. Salmon comprise the vast majority of the Southern residents' diet from May through October (Baird et al. 2003). Chinook salmon comprised 65% of salmonids and were selected despite their lower abundance compared to other species available in the area May through August, then chum become the primary salmonid in the diet in September and October (Ford and Ellis 2006).

Killer whales produce three categories of sounds: echolocation clicks, tonal whistles, and pulsed calls (Ford 1989). Certain sound vocalizations are used for navigation and discriminating between prey and other objects in the local environment, while other calls have communicative functions within pods (Barrett-Lennard et al. 1996). Some calls are used for maintaining acoustic contact when beyond visual range and other calls are used when the whales are in close proximity and physical contact (Ford 1989).

Use of the Action Area

Through the summer months J, K, and L pods are present in the Georgia Strait, San Juan Islands, and Strait of Juan de Fuca, with occasional visitation into Admiralty Inlet (Heimlich-Boran 1988). Residents generally spend more time in deeper water and only occasionally enter water less than 5 m deep when foraging; other behaviors, such as resting and socializing, are performed in open water with varied bathymetry (Heimlich-Boran 1988). According to the Whale Museum's sighting data collected since 1976, during March through July, there are typically no sightings of killer whales reported for the east side of Admiralty Inlet; for August through February, there are typically one to five sightings reported per month – a relatively low number compared to other regions within the range of the southern resident killer whale population (Donnelly 2006 pers. comm.). Autumn movements of southern resident pods into Puget Sound roughly correspond with chum and Chinook salmon runs (Osborne 1999).

Effects of the Proposed Action

Noise pollution from marine vessel traffic and how it may affect orca vocalizations and hearing is one of the main concerns with decline in the southern resident killer whale population. Killer whales rely on their highly developed acoustic sensory system for navigating, locating prey, and communicating with other individuals. Excessive noise levels may mask echolocation and other signals used by the species, as well as temporarily or permanently damage hearing sensitivity (NMFS 2005b). The main issue stems from increases in whale-watching traffic in which vessels are deliberately following animals; however, dredging operations are another source of underwater noise with an anthropogenic origin. Individual orcas have been observed making a variety of short-term reactions to the presence of whale-watching vessels including swimming faster, making shorter or longer dives, and moving into open water, while in some cases, no disturbance seems to occur (Kruse 1991). Morton and Symonds (2002) showed that killer whales actively avoided an area in which acoustic harassment devices (AHDs) were installed to keep pinnipeds away from fish farms, and then returned to the area when the AHDs were no longer in use. Aside from avoidance, another behavior modification that whales use to communicate in a noisy environment is to lengthen the duration of calls in order to minimize masking of their communication and echolocation (Wood and Evans 1980). Several studies have failed to find significant behavioral effects, but these null results have not been published or reported, so it is important to emphasize that while many studies have shown short-term effects, this is not universally the case (Trites and Bain 2000).

The most important variables for analysis are the sound threshold at which orcas modify behavior and the level at which they suffer ill effects due to anthropogenic noise. Unfortunately, very little data is available. The physiological costs of changing behavior to ameliorate effects of masking are unknown. Three studies that measured the killer whale audiogram show the range is approximately 500Hz up to 105kHz with varying sensitivities; the range of highest sensitivity is 18-42kHz, which includes their most common clicking noise at 20kHz (Hall and Johnson 1971, Bain et al. 1993, Szymanski et al. 1999). Very

little data is available for the important parameter of received noise levels for killer whale tolerances and reactions. Erbe (2002) measured boat noise source levels at 145 to 169 dB re 1 μ PA at 1m, and found this noise level elicited a behavioral response at 200m, and masked killer whale vocalizations at 14km distance. Additionally, this study found orca vocalizations to fall in the range of 105 to 124 dB re 1 μ PA.

Two studies that attempted to characterize noises of a clamshell dredge found that the digging cycle is approximately 60 to 90 seconds, and there are six discrete events in the cycle: clamshell hits water, winch out, clamshell hits bottom, scrape, winch in, dump load; the bucket hitting the bottom is the most intense sound event of the cycle (Dickerson et al. 2001, Clarke et al. 2002). Measurements 150 m away from this event were at approximately 124 dB re 1 μ PA with peak frequency 162.9 Hz, attenuated to 95 dB re 1 μ PA at the 5000m listening station with peak frequency 72.7 Hz, and were only barely detectable at the 7000 m listening station. These frequencies are below the range of killer whale hearing as determined by Hall and Johnson (1971) and Szymanski et al. (1999). For the full cycle of bucket dredging, the frequency range was typically 30 to 900 Hz, and no sounds with a frequency over 400 Hz were detected beyond the 2km distance (Dickerson et al. 2001); in addition, the range of sound pressure levels was typically 85 to 120 dB re 1 μ PA for discrete events. Beyond the distance of approximately 2 km from the clamshell dredge operation, sounds from the dredge are not likely to be audible to the southern resident killer whales, or would not be loud enough to mask their echolocation and communication calls.

The Corps may employ a pipeline dredge at the Keystone Navigation Channel. This type of dredging produces a constant sound profile rather than the discretely distinguishable events of the clamshell. According to Clarke et al. (2002), the frequency range of a pipeline is 70 to 1,000 Hz, and peaked in the 100 to 110 dB re 1 μ PA range as measured at a distance of 40 m. Sound attenuation to ambient levels occurred as close as 500 m. The decibel level at this frequency is within orca hearing range; however, the low-frequency noise does not reach the critical threshold of signal-to-noise ratio and would therefore not mask orca calling and echolocation, which occur at much higher frequencies (Talus 2000). Based on published studies of similar types of underwater noise, the likely responses of killer whales to noise from the pipeline dredge could be either avoidance of the area and return when the noise is gone (Morton and Symonds 2002), or no reaction at all (Kruse 1991, Trites and Bain 2000). Dredging activity will cease each time the Washington State Ferry vessel will use the Keystone Harbor channel and ferry terminal providing breaks in the noise approximately 15 to 20 times per day. Relatively few killer whales are in Admiralty Inlet compared to other locations around the Strait of Juan de Fuca and Georgia Strait. Killer whales follow Chinook and chum runs farther south into Puget Sound, so those present during the late-July/early-August dredge project would likely be passing through, rather than lingering near West Whidbey Island. The noise from the pipeline dredge will not significantly add to the ambient noise that is already present in Admiralty Inlet during the summer.

The potential for toxic effects of contaminants released from discharged sediments is minimal. Sediments are determined to be suitable for discharge through a series of physical, chemical, and biological testing procedures, which have been subject to thorough review by the regulating agencies and the public.

Due to the wide distribution of killer whales near the vicinity of the action area; the fact that no pelagic habitat will be affected by disposal of dredged material; the low probability of the species coming in contact with the action area; the infrequent and short-lived nature of the beach disposal events; and the ability of these mobile species to quickly leave the affected area, the overall effects of the Keystone navigation channel dredge and beach disposal activities on killer whales would be insignificant.

Designated Critical Habitat

NMFS designated critical habitat for the Southern Resident killer whale in November 2006 (NOAA 2006). The Primary Constituent Elements essential for conservation of the Southern Resident killer whale are the following:

1. Water quality to support growth and development;
2. Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development as well as overall population growth; and
3. Passage conditions to allow for migration, resting, and foraging.

The southern half of Whidbey Island, which includes Keystone Harbor, is within the Puget Sound area of designated critical habitat. The project will not change any of these primary constituent elements.

Effect Determination

This project **may affect, but is not likely to adversely affect** the southern resident killer whale since the project activities will not significantly disrupt normal behavior patterns nor limit prey availability. The project will have **no effect** on designated critical habitat.

7. INTERRELATED AND INTERDEPENDENT EFFECTS

There are no interrelated or interdependent actions associated with the proposed action.

8. CUMULATIVE EFFECTS

The Washington Department of Transportation (WSDOT) Long-Range Plan (WSDOT 2009) does not include any modifications to the Keystone Ferry terminal. The Corps knows of no other actions that are reasonably certain to occur within the action area.

The project will not change function or extent of the existing navigation project, so it will not affect other shoreline processes. The benthic community has likely adapted to the maintenance dredging regime and the high frequency of propeller-wash disturbance of ferry boat traffic. The project will also not result in any changes to the human occupancy of the project area. Dredging will maintain the current level of usage by ferryboat traffic; placement of dredged materials will maintain the condition of the beach at the state park and prevent erosion that would affect park infrastructure. The Corps concludes that there will not be a significant cumulative effect associated with this action.

9. CONCLUSION

Table 2. Summary of determinations

Species	Effect Determination	Critical Habitat Determination
Coastal/Puget Sound Bull Trout	Not likely to adversely affect	No effect
Golden Paintbrush	No effect	----
Marbled Murrelet	Not likely to adversely affect	No effect
Puget Sound Chinook Salmon	Not likely to adversely affect	Not likely to adversely affect
Hood Canal Summer Chum Salmon	Not likely to adversely affect	Not likely to adversely affect
Puget Sound Steelhead	Not likely to adversely affect	----
Steller Sea Lion	Not likely to adversely affect	No effect
Southern Resident Killer Whale	Not likely to adversely affect	No effect
Eulachon	No effect	No effect
Bocaccio Rockfish	No effect	----
Canary Rockfish	No effect	----
Yelloweye Rockfish	No effect	----

10. MARINE MAMMAL PROTECTION ACT

The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407) restricts harassment of marine mammals. This project is concerned with the potential for harassment due to noise pollution. Aside from Steller sea lions and killer whales addressed above, other marine mammal species that are observed in Puget include harbor seal (*Phoca vitulina*), Northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), Minke whale (*Balaenoptera acutorostrata*), and gray whale (*Eschrichtius robustus*) (Orca Network 2011).

The threshold for Level B harassment of marine mammals as established by NMFS is 120 dB for non-pulsed noise, which would apply to the hydraulic cutterhead dredge, and 160 dB for pulsed noise, which would apply to the mechanical (clamshell) dredge.

Hydraulic dredges emit steady noise, and the size that will be used at Keystone will have sound pressure levels at 100 to 110 dB in the frequency range of 70 to 1,000 Hz (Clarke et al. 2002). This frequency is at the low end of the hearing range of marine mammals. Clarke et al. (2002) found that sound attenuation to ambient levels occurs as close as 500 m. The sound pressure level is below the threshold for Level B harassment.

The mechanical dredge peaks at 124 dB, which is well below the 160dB threshold for Level B harassment. The loudest sound from the mechanical dredge is at a frequency of 162.9 Hz, which is below the hearing frequency range of all marine mammals except for baleen whales, per NMFS memorandum dated November 30, 2009. None of the baleen whales found in Puget Sound would enter the shallow and narrow inlet of Keystone Harbor, but they may be passing through Admiralty Inlet.

The Washington State Ferry vessel that docks at Keystone Harbor 11 times per day emits an underwater sound pressure level of 179 dB re 1 μ PA measured at a distance of 1 meter (Bassett 2010). This periodic noise is louder than the dredge vessels, so it is possible that marine mammals are already avoiding the area due to this frequent noise disturbance, or else they may be accustomed to frequent, loud marine traffic across and along the shipping channel that transects Admiralty Inlet. Bassett (2010) found that permanent ambient noise in Admiralty Inlet is approximately 98 dB re 1 μ PA. The dredging will cease whenever the ferry needs to dock at the terminal, so there would never be both ferry and dredge vessels causing noise disturbance at the same time.

Based on the dredge noise being below the threshold for Level B harassment, defined as having potential to cause a variety of disturbances to marine mammals, the Corps is not applying for an Incidental Harassment Authorization.

11. BALD AND GOLDEN EAGLE PROTECTION ACT

The Bald and Golden Eagle Protection Act of 1940 (16 USC 668a-d) prohibits taking or transporting bald and golden eagles. "Take" includes: pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.

The Washington State bald eagle population was listed as threatened in February 1978 under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*). Since DDT was banned in 1972, bald eagle populations have rebounded. The bald eagle was de-listed in August 2007.

While golden eagles are reported as occasionally sighted around Whidbey Island, the WDFW Priority Habitats and Species List shows that their distribution is does not occur there (WDFW 2008).

The bald eagle wintering season extends from October 31 through March 31. Food is the essential habitat requirement affecting winter numbers and distribution of bald eagles. Other wintering habitat considerations are communal night roosts and perches. Generally large, tall, and decadent stands of trees on slopes with northerly exposures are used for roosting; eagles tend to roost in older trees with broken crowns and open branching (Watson and Pierce 1998). Bald eagles select perches on the basis of exposure, and proximity to food sources. Eagles prefer trees over other types of perches, which may include pilings, fence posts, power line poles, the ground, rock outcrops, and logs (Steenhof 1978).

Bald eagles nest between early January and mid-August. The characteristic features of bald eagle breeding habitat are nest sites, perch trees, and available prey. Bald eagles primarily nest in uneven-aged, multi-storied stands with old-growth components. Factors such as tree height, diameter, tree species, position on the surrounding topography, distance from water, and distance from disturbance influence nest selection. Snags, trees with exposed lateral branches, or trees with dead tops are often present in nesting territories and are critical to eagle perching, movement to and from the nest, and as points of defense of their territory.

Birds and fish are the primary food source for eagles in Western Washington, but bald eagles will take a variety of mammals and reptiles (both live and as carrion) when fish are not readily available (Knight et al. 1990). Eagles in tidally influenced habitats scavenge and pirate more prey than do eagles at rivers or lakes, possibly resulting from expanded feeding opportunities provided by dead and stranded prey on tide flats (Watson and Pierce 1998).

Use of the Action Area

A species list obtained from the USFWS indicates that bald eagles may occur in the vicinity of the proposed project. According to the WDFW priority habitat and species database, the nearest bald eagle nest is 20 miles away from the project area.

Effects of the Proposed Action

Construction activities would not occur during the nesting season; in fact, the dredging would occur during the eagles' least sensitive time of year given that no nesting territories are near the project area. Because the nearest bald eagle nest is located at least 20 miles from the project location, the likelihood that construction activities would directly disrupt eagle nesting and rearing of young is very low. No communal night roosts or perch trees would be affected, as none are present near the site. Construction operations will be complete before the start of the wintering season.

Foraging bald eagles may be displaced by the noise of heavy equipment, but the availability of prey will not be significantly disrupted by the proposed maintenance work. Eagles should be somewhat accustomed to high levels of human activity in and near the project site. Eagles tend to tolerate more disturbances at feeding sites than in roosting areas (Steenhof 1978).

Effect Determination

The Corps believes that this project **may affect, but is not likely to adversely affect** the bald eagle and golden eagle. This determination is based on the lack of nests and communal night roosts in the immediate vicinity of the navigation channel. This project would have no effects on bald eagle or golden eagle foraging, nesting, or roosting habitat.

12. ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fisheries Conservation and Management Act requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) regarding actions that may affect Essential Fish Habitat (EFH) for Pacific coast groundfish, coastal pelagic species, and Pacific salmon. The Act defined

EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” EFH is the habitat (waters and substrate) required to support a sustainable fishery and a managed species’ contribution to a healthy ecosystem. Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities.

The project area as previously described in Section 2 of this document is part of the Washington State Estuarine EFH composite, and has been designated as EFH for various life stages of species that are found in Puget Sound which include: 17 species of groundfish, 4 coastal pelagic species, and 3 species of Pacific salmon according to the NMFS Fisheries Management Plans (PFMC 1998, 2003, 2004). The proposed project involves dredging approximately 154,000 cy of material in the Keystone Navigation Channel, and disposal of dredged material as a beneficial use for beach nourishment on the east side of the jetty.

Potential Effects to EFH

The Keystone Navigation Channel was created and first dredged in 1948. The proposed project is a maintenance activity that occurs every four to six years and will not involve dredging of any new areas. The Corps will dredge the channel to the authorized depth of -25 feet MLLW plus two feet of allowed overdepth for a total depth of -27 MLLW. The Corps may use either a clamshell dredge with a 6 to 9 cy bucket, or a pipeline dredge. Entrainment of fish and their prey species is not a concern with the clamshell dredge type as all mobile species are able to vacate the area; however, pipeline dredges cause entrainment of small fish and benthic species.

Clamshell dredges generate a plume of suspended sediment; however, this temporary, localized condition is not likely to lead to appreciable reductions in dissolved oxygen. Furthermore, dredge-induced turbidity plumes typically dissipate quickly in areas of strong tidal influence (LaSalle 1990). The Corps will monitor water quality and will halt dredge activity if the state standards are exceeded. Because the coarse sand material to be dredged is largely or all from the adjacent eroding bluffs, there are not likely to be toxic substances suspended when the material is dredged.

Feeding and refuge are the primary ecological functions provided for juvenile salmonids along the shoreline of Admiralty Bay and Keystone Harbor. By burying the beach surface with new dredged material, the proposed work will temporarily decrease populations of epibenthic organisms within the project footprint. Potential adverse effects would be minimal because the project footprint represents only a small proportion of the available foraging habitat in the vicinity, and any dip in epibenthic abundance would be of a short duration. Placement of the beach nourishment material along the shoreline will not change the character of the beach slope and substrate. The new material would be suitable for a wide range of invertebrates. Additionally, juvenile salmonids are expected to have migrated out of the area after the start of the work window on July 15. The dredging and beach nourishment activities will occur in late July and August.

The substrate classification of Keystone Harbor is coarse-grained sand and gravel. The Pacific Coast groundfish species of Puget Sound that may be associated with the substrate of the navigation channel are the following: California skate, ratfish, Pacific cod, brown rockfish, copper rockfish, quillback rockfish, English sole, rex sole, and starry flounder. The depth of the channel will change by only five feet and will remain coarse-grained sand and gravel substrate. The Corps does not consider the periodic minor deepening of this habitat to be significant alterations.

For concerns with essential fish habitat of the coastal pelagic species, it is more important to focus on effects to the water column, than with substrate. While clamshell dredges are known to generate a plume

of suspended sediment, this temporary, localized condition is not likely to lead to appreciable reductions in dissolved oxygen. The dredge-induced turbidity plume is expected to dissipate quickly due to a fast current along the shore of West Whidbey Island. Because the fine and coarse sand material to be dredged is largely or all from the nearby eroding bluffs of the state park, there are not likely to be land-derived toxic substances suspended when the material is dredged. Additionally, the activity will not result in physical alterations that could affect water temperature.

The proposed action will not result in excessive levels of organic materials or inorganic contaminants. Water quality may be temporarily impacted by turbidity shortly after placement of the nourishment materials, but no long-term degradation will occur. Beach contours will be modified, but in a way that mimics natural conditions. The action will not remove large woody debris or other natural beach complexity features, nor is it likely to affect any vegetated shallows. Benthic productivity will be temporarily impacted, but significant effects to prey species are not anticipated.

Proposed EFH Conservation Measures

The following list comprises measures the Corps will take during the proposed dredging and beach placement activities:

- Compliance with the project's Water Quality 401 certification requirements for turbidity and dissolved oxygen will limit any adverse impact to water quality to a defined mixing zone.
- Woody debris already found on the beach nourishment site will be collected prior to dredged material placement, and then redistributed on the beach to maintain as natural conditions as possible.
- Use of a clamshell dredge whenever practicable will avoid entrainment of the smaller fish species.
- The Corps will minimize the frequency of dredging the channel.

Conclusion

The Corps of Engineers has determined that the proposed action is **not likely to adversely affect** EFH for Federally-managed fisheries in Puget Sound, Washington. This determination is based on the limited scope and duration of the construction and the temporary and minor nature of project impacts.

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**Appendix C – Concurrence Letters from USFWS and
NMFS**



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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

In Reply Refer To:
13410-2011-I-0125

JUN 24 2011

Evan Lewis, Chief Environmental and Cultural Resources Branch
Seattle District, Corps of Engineers
ATTN: Environmental and Cultural Resources Branch (Gleason)
P.O. Box 3755
Seattle, Washington 98124-3755

Dear Ms. Walker:

Project: Keystone Harbor, Maintenance Dredging

This is in response to your April 12, 2011, letter requesting our concurrence with your determination that the proposed action in Keystone Harbor, on the west side of Whidbey Island, Island County, Washington, would "not likely adversely affect" federally listed species. A photocopy from your transmittal document(s) describing the proposed action is enclosed.

Specifically, you requested informal consultation pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) for the federally listed species identified below (only those species that have been checked are addressed in this consultation request (See Enclosure)).

- Bull trout (*Salvelinus confluentus*)
- Marbled murrelet (*Brachyramphus marmoratus*)

If you requested consultation for the bald eagle, please note that the bald eagle was removed from the Federal List of Threatened and Endangered Wildlife, effective August 8, 2007. Given that your project will be implemented after that date, consultation under section 7(a)2 of the Endangered Species Act is not required. We have therefore not provided concurrence on your effect determination for the bald eagle.

Based on the information provided in and/or with your cover letter and any additional information, we have concluded that effects of the proposed action to the above-identified federally listed resources would be insignificant and/or discountable. Therefore, for the reasons identified in the enclosures to this letter, we concur with your determination that the proposed action is "not likely to adversely affect" the above-identified federally listed resources. This letter and its enclosures constitute a complete response of the U.S. Fish and Wildlife Service to your request for informal consultation.

This concludes consultation pursuant to the regulations implementing the Endangered Species Act (50 CFR 402.13). This project should be re-analyzed if new information reveals effects of the action that may affect listed species or critical habitat in a manner, or to an extent, not considered in this consultation. The project should also be re-analyzed if the action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this consultation, and/or a new species is listed or critical habitat is designated that may be affected by this project.

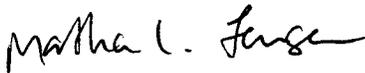
Our review and concurrence with your effect determination is based on the implementation of the project as described. It is the responsibility of the Federal action agency to ensure that projects that they authorize or carry out are in compliance with the regulatory permit and/or the Endangered Species Act, respectively. If a permittee or the Federal action agency deviates from the measures outlined in a permit or project description, the Federal action agency has the obligation to reinstate consultation and comply with section 7(d).

If you have any questions about this letter or our joint responsibilities under the Endangered Species Act, please contact the consultation biologist identified below, of this office.

U.S. Fish and Wildlife Service Consultation Biologist(s):

Lindsay Wright (360 / 753-6037)

Sincerely,


h/ Ken S. Berg, Manager
Washington Fish and Wildlife Office

Enclosures
Appendix 1 Checklist(s)

**U.S. FISH AND WILDLIFE SERVICE
WASHINGTON FISH AND WILDLIFE OFFICE**

**BULL TROUT
ENDANGERED SPECIES ACT
SECTION 7 INFORMAL CONSULTATION CONCURRENCE RATIONALE**

Project Name: Keystone Harbor, Maintenance Dredging

DIRECT EFFECTS

1. Bull trout may be in the action area despite the application of an in-water work window. The proposed action would occur during the following in-water work window (July 16 to February 15) when bull trout are expected to occur in low numbers. The timing restriction reduces but does not eliminate the potential for exposure of bull trout to project effects. However, direct effects of the proposed project to bull trout are expected to be insignificant because of the following:

- The proposed project would result in the suspension of a relatively minor amount of sediment. Although bull trout may be exposed to the sediment and increased turbidity, the concentration and duration of this exposure are not at levels that would result in a measurable effect to bull trout.

INDIRECT EFFECTS

1. Bull trout may or may not occur in the action area; however, effects to bull trout via their prey resources would be insignificant because of the following:

- The proposed action is located in a documented or potential forage fish spawning area; however, the effects of the proposed action to this spawning area would be small. Consequently, effects to forage fish are expected to be insignificant. Therefore, effects to bull trout via reduced forage fish abundance are not expected to be measurable.
- Eelgrass would not be appreciably affected (e.g., by shading or physical disturbance from in- and over-water construction and structures or the use of watercraft (including but not limited to jet skis, boats, and float planes)). Eelgrass in intertidal and sub-tidal areas is important to the forage fish that bull trout feed on. Therefore, indirect effects to bull trout via effects of the proposed project to forage fish from increased over-water shading or habitat impacts are not expected to be measurable.

Consulting Biologist: Lindsay Wright
FWS Project Biologist

Date: June 23, 2011

Concurrence approved by: M Jensen
Federal Activities Branch
Supervisor

Date: 6/24/11

Note: The rationale expressed in this informal section 7 concurrence rationale checklist represents our current understanding of the effects of some commonly permitted federal actions to bull trout. This document does not express all possible rationale for insignificant or discountable effects to bull trout. This document is subject to change at any time due to the collection of new information or the need to clarify our rationale. However, any future changes to this concurrence rationale document would not be expected to necessitate reinitiation on previously completed consultations. Please see the "reinitiation" paragraph of the cover letter for a discussion of reinitiation triggers.

**U.S. FISH AND WILDLIFE SERVICE
WASHINGTON FISH AND WILDLIFE OFFICE**

**MARBLED MURRELET AND MARBLED MURRELET CRITICAL HABITAT
ENDANGERED SPECIES ACT
SECTION 7 INFORMAL CONSULTATION CONCURRENCE RATIONALE**

Project Name: Keystone Harbor, Maintenance Dredging

MARBLED MURRELET CRITICAL HABITAT

- The proposed project, including indirect effects, will not occur within marbled murrelet critical habitat.

DIRECT EFFECTS

Nesting Marbled Murrelets

The project will not result in the destruction or modification of suitable marbled murrelet nesting habitat and

- The project is more than 0.25 mile from suitable marbled murrelet nesting habitat and does not include blasting, low-elevation (< 500 ft) aircraft operations, impact pile driving, or other activities that could produce sound above 92 dB. Thus, nesting marbled murrelets and their young are extremely unlikely to be exposed to project stressors (sound and visual disturbance) while on the nest or in the nest stand. Therefore, the effects of the proposed action to nesting marbled murrelets would be insignificant and discountable.

Foraging

- The proposed project is not expected to result in sound pressure levels that would measurably affect marbled murrelets. Therefore, effects to marbled murrelets would be insignificant.

Turbidity and Other Environmental Contaminants

- The proposed project is not expected to release or introduce environmental contaminants into or adjacent to the aquatic environment. Therefore, effects to marbled murrelets via direct exposure or uptake of contaminants will not occur.
- Project activities will cause prolonged/temporary periods (during sediment release when tides inundate the nourished beach area, for a total of three dredge events to occur over a 15 yr period) of elevated turbidity. Marbled murrelets are diving seabirds that rely on eyesight when hunting fish underwater. Because foraging efficiencies are appreciably reduced by high levels of turbidity, it is likely that marbled murrelets will avoid the area during dredging/construction. However, the area of impact is relatively small/or isolated (along the shoreline) and/or there are ample foraging opportunities adjacent to the project site and effects to foraging

marbled murrelets are not expected to be measurable. Therefore, effects to marbled murrelets are considered insignificant.

INDIRECT EFFECTS

Disturbance (Foraging)

- The indirect effects associated with operation of the completed action and use of the facility are not expected to result in sound pressure levels above background; therefore, disturbance of marbled murrelets is not anticipated to be measurable. Thus, effects to marbled murrelets would be insignificant.

Prey Resources¹

- The proposed project is located in a documented or potentially suitable forage fish spawning area and/or eelgrass bed. However, because construction and operation of the proposed action and use of the project will not result in appreciable or long-term effects to forage fish habitat, effects to marbled murrelets via their prey resources would be insignificant.

Contaminants

- Operation of the proposed project and use of the facility is expected to re-suspend minor amounts of suspended sediments for a short time period; however, due to the low levels of turbidity and/or duration of exposure, the effects to marbled murrelets via their prey will not be measurable. Therefore, effects to marbled murrelets via exposure to suspended sediments are expected to be insignificant.

Consulting Biologist: Lindsay Wright
FWS Project Biologist

Date: June 23, 2011

Concurrence approved by: M Jensen
Federal Activities Branch
Supervisor

Date: 6/24/11

Note: The rationale expressed in this informal section 7 checklist represents our current understanding of the effects of some commonly permitted federal actions to marbled murrelet. This document does not express all possible rationale for insignificant or discountable effects to marbled murrelet. This document is subject to change at any time due to the collection of new information or the need to clarify our rationale. However, any future changes to this concurrence rationale document would not be expected to necessitate reinitiation on previously completed consultations. Please see the "reinitiation" paragraph of the cover letter for a discussion of reinitiation triggers.

¹ Many areas of Puget Sound contain high-value spawning habitat for marbled murrelet prey resources such as surf smelt (*Hypomesus pretiosus*), sand lance (*Ammodytes hexapterus*), and Pacific herring (*Clupea harengus*). This determination may not be appropriate for projects that would have significant, long-term negative effects to marbled murrelet prey resources.

1. INTRODUCTION

This Biological Evaluation (BE) evaluates the environmental effects of proposed maintenance of the Keystone Harbor Navigation Project. Keystone Harbor is located on the west side of Whidbey Island in Island County, Washington. This artificial harbor is a dredged basin constructed by the U.S. Army Corps of Engineers (Corps) in 1947-48. The Corps constructed the harbor by dredging a triangular shaped bay from an existing barrier beach, and connected the harbor to Admiralty Bay with a navigation channel. The Corps built a stone breakwater on the eastern side of the harbor. The basin provides a harbor of refuge, a boat launch ramp, and a terminal for the Washington State ferry run between the city of Port Townsend and Whidbey Island. Construction of the basin, entrance channel, and adjacent rock jetty interrupted the natural eastward transport of beach material. Consequently, shoaling of the entrance channel requires maintenance dredging every four to six years to ensure safe navigation. Maintenance dredging last occurred in 2006. When the channel and ferry slip have become too shallow, the ferry has run aground during landings at low tide. This limits service on the Port Townsend/Coupeville run.

The proposed project consists of removing enough material from the navigation channel and ferry slip to ensure safe navigation. The navigation channel has disrupted the littoral drift on the east side of the channel, and beach nourishment is necessary to replenish the sand normally deposited by littoral drift. To return the navigation channel to design depth and dimensions with authorized overdepth to -27 MLLW would require dredging approximately 154,000 cubic yards. Dredging will occur either by clamshell dredge from a barge, or a hydraulic dredge may be used. The type of dredge employed is the choice of the dredging contractor.

If the Corps uses a mechanical dredge, then the dredger will place all material from the navigation channel onto the adjacent beach on the east side of the channel. Then a frontloader will place the material in dump trucks, which will haul it to the beach nourishment site at Fort Casey State Park to the east of the breakwater. If a hydraulic dredge is used, the pipeline will deposit the material dredged from the channel directly onto the beach nourishment site. Disposal of the coarse-grained dredged material provides the necessary protection of the harbor features and related recreation facilities. In addition, beach replenishment prevents erosion from outflanking and causing deterioration of the jetty. The Corps will complete the work within the approved Washington Department of Fish and Wildlife in-water construction window of July 16 to February 15.

1.1. Location

The Keystone Harbor Navigation project (initially called the Lake Crockett project) is located on the west side of Whidbey Island on the shores of Admiralty Inlet, Island County, Washington (T31N, R1E, Sections 22, 23, and 24). The navigation channel provides access to the Washington State Ferry system between the shipping lanes of Admiralty Inlet and the Keystone ferry dock (Figure 1). The Federal navigation channel and dredged material disposal site are located within the boundaries of Ebey's Landing National Historical Reserve (NHR), which Congress created in 1978 as a unit of the National Park System (Pub. L. 95-625, title V, Sec. 508, Nov. 10, 1978, 92 Stat. 3507, as amended Pub. L. 96-87, title IV, Sec. 401(k), Oct. 12, 1979, 93 Stat. 666). The purpose of Ebey's Landing NHR is to preserve and protect a rural community that provides an unbroken historical record from nineteenth century exploration and settlement in Puget Sound to present time.

1.2. Authority

The Lake Crockett navigation project and maintenance dredging by the Department of the Army was authorized by the Rivers and Harbors Act of March 2, 1945 (House Document 303, 77th Congress, 1st Session). In 1993, the project was modified under authority of Section 107 of the 1960 Water Resources



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, Washington 98115

NMFS Tracking No.:
2011/01689

August 18, 2011

Evan R. Lewis, Chief
Environmental and Cultural Resources Section
Corps of Engineers, Seattle District
Post Office Box 3755
Seattle, Washington 98124-3755

Re: Endangered Species Act Section 7 Informal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Keystone Harbor Maintenance Dredge Project (6th Field HUC 171100190105, Whidbey Island)

Dear Mr. Lewis:

This correspondence is in response to your request for consultation and conferencing under the Endangered Species Act (ESA). Additionally, this letter serves to meet the requirements for consultation under the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

Endangered Species Act

The Army Corps of Engineers (COE) submitted a Biological Evaluation (BE) to the National Marine Fisheries Service (NMFS) for the above referenced project on April 14, 2011. The COE requested NMFS' concurrence with the following determinations of may affect, not likely to adversely affect: Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) salmon (PS Chinook); PS Chinook critical habitat; Hood Canal summer-rum chum salmon (*O. keta*) salmon (HCSC); critical habitat for HCSC; Steller sea lion (*Eumetopias jubatus*); Southern resident killer whale (*Orcinus orca*) (SRKW); and Puget Sound steelhead (*O. mykiss*) (PS steelhead). The NMFS has determined the project "may affect, not likely to adversely affect" for the Puget Sound/Georgia Basin Distinct Population Segments (PSGB) of yelloweye rockfish (*Sebastes ruberrimus*), canary rockfish (*S. pinniger*), and bocaccio rockfish (*S. paucispinis*). PS Chinook and HCSC were listed as threatened under the ESA on March 24, 1999 (50 CFR 223 and 224). Critical Habitat for PS Chinook and HCSC was designated on September 2, 2005 (70 FR 52630) and became effective on January 2, 2006.



The project area is outside critical habitat for HCSC so the correct determination is no effect. Puget Sound/Georgia Basin Distinct Population Segments of yelloweye rockfish and canary rockfish were listed as threatened and bocaccio as endangered under the ESA on April 27, 2010 (75 FR 22276). Steller sea lion were listed as threatened under the ESA on December 4, 1990 (50 CFR 223 and 224). The NMFS published the final rule listing SR killer whales as endangered under the ESA on November 18, 2005 (70 FR 69903), Puget Sound steelhead were listed under the ESA (72 FR 26722) and reaffirmed on August 15, 2011 (76 FR 50448). This ESA consultation with the COE is conducted under section 7(a)(2), and its implementing regulations, 50 CFR 402.

The COE proposes to dredge the entrance channel to Keystone Harbor on Whidbey Island, Washington. Keystone Harbor is an artificially created small embayment used by the Washington State Ferry System for the Whidbey Island terminus of the Whidbey Island - Port Townsend Ferry route. Keystone Harbor provides necessary shelter for the Ferry Boats to dock, offload, load, and leave the terminal. The entrance to Keystone Harbor opens into Admiralty Inlet through a longshore drift cell where sediment is moved, by currents and waves action along the beach. Construction of the basin, entrance channel, and adjacent rock jetty interrupted the natural eastward transport of beach material. Consequently, shoaling of the entrance channel requires maintenance dredging every four to six years to ensure safe navigation. Maintenance dredging last occurred in 2006. When the channel and ferry slip have become too shallow, ferry service is delayed or interrupted. The project proposes to remove accumulated sediment from the entrance channel, now about 20 to 30 feet deep, and place it on the beach downdrift of the harbor entrance, which will allow the natural processes of sediment routing to continue with minimal disruption. The work will be done when juvenile salmon and steelhead, Steller sea lion, SRKW are unlikely to be present.

To return the navigation channel to design depth and dimensions with authorized over-depth to -27 below mean lower low water elevation (MLLW) would require dredging approximately 154,000 cubic yards. For 2011, the COE expects to spend roughly 60 days to dredge 50,000 cubic yards only from the channel leading into the ferry terminal and not the adjacent areas. Total project time may be up to 120 days if the project receives funding to remove all accumulated shoaled material, and may occur over multiple years.

Dredging will occur either by clamshell dredge from a barge, or a hydraulic dredge may be used. If the Corps uses a mechanical dredge, then the dredger will place all material from the navigation channel onto the adjacent beach on the east side of the channel. Then a front-loader will place the material in dump trucks, which will haul it to the beach nourishment site at Fort Casey State Park to the east of the breakwater. If a hydraulic dredge is used, the pipeline will deposit the material dredged from the channel directly onto the beach nourishment site. In addition, beach replenishment prevents erosion from outflanking and causing deterioration of the jetty. The COE will complete the work within the in-water construction window of July 16 to February 15. No forage fish spawning areas are documented along this reach of Whidbey Island.

There will be minimal impact on the species and critical habitats in the action area. Removal of sediment from the entrance channel and replacement of the sediment back into the drift cell on

the adjacent beach will result in a slightly deepened entrance channel and promote functional sediment conditions along the entire two mile long drift cell. Sediments to be dredged are clean sand and gravels, with less than three percent fines. There are no kelp beds or eelgrass in the area to be dredged.

The action area is the area within a roughly 2-mile radius around Keystone Harbor and the two mile long drift cell to the southeast. The project is located on Whidbey Island, Island County, Washington (6th Field HUC 171100190105, Lat. 48.156599, Long. -122.672108)

Species Determination

Puget Sound Chinook Salmon
Puget Sound Steelhead
Hood Canal Summer Chum Salmon

The NMFS has analyzed the potential impacts of the proposed project and has determined that the effects on PS Chinook salmon, PS steelhead, and HCSC will be discountable and insignificant for the following reasons.

Puget Sound Chinook, PS steelhead, and HCSC are not expected to be present during the time when the dredging will take place. Keystone Harbor is located many miles from the nearest natal river, and small shoreline-dependent PS Chinook juveniles are unlikely to be in the area after mid-July, based on sampling summarized in the BA.

If a few Puget Sound Chinook and juvenile HCSC occur in the project area, NMFS expects effects to be insignificant. Both juveniles and adults can detect disturbance, principally noise from both the ferries and the dredger, and avoid the project site. Because juveniles can forage in offshore areas, leaving the project area is not expected to affect their survival or growth. Adults are unlikely to enter the construction area because there are not any spawning streams associated with Keystone Harbor. Adults may pass by on their homing migration, but are not likely to enter the harbor. In addition HCSC adults and juveniles generally migrate on the western side of Puget Sound away from Whidbey Island.

Most PS steelhead smoltification and emigration occurs from April through May, but can occur as early as March and as late as June or July. Juveniles rear 1 to 3 years in freshwater prior to emigrating. Steelhead are less dependent on nearshore areas for feeding and rearing, and are generally found in offshore waters when they are in the marine environment. Beach seining results reported from Sinclair Inlet and eastern central Puget Sound found few steelhead in the nearshore. Therefore, NMFS considers the likelihood of juvenile steelhead rearing and being exposed to the short-term construction effects in the action area discountable.

Project activity will have only minor habitat effects to a small area (the Keystone Harbor entrance channel). Although the habitat may be slightly altered as a result of the project, these changes are expected to produce only minor changes in prey abundance or availability. Because prey abundance will be re-established before juvenile PS Chinook, PS steelhead, or HCSC return

to the action area the following spring, effects to PS Chinook, PS steelhead, and HCSC are expected to be insignificant.

Because all potential adverse effects to PS Chinook, PS steelhead and HCSC are discountable or insignificant, NMFS concurs with the COE effect determination of "may affect, not likely to adversely affect" for Puget Sound Chinook salmon, Puget Sound steelhead, and Hood Canal summer chum salmon.

Species Determination

Bocaccio
Yelloweye Rockfish
Canary Rockfish

Rockfish larvae of all types are pelagic and found throughout Puget Sound throughout the year in low densities (Weis 2004). However, the very low larval densities and current-driven dispersion mechanisms make it unlikely that rockfish larvae will be present in the action area. Juvenile bocaccio and canary rockfish often recruit to and associate with submerged aquatic vegetation and rocky reefs as they transition for larvae to juveniles (Love et al. 2002). The action area does not contain these types of habitats, making it unlikely that larval or juvenile bocaccio and canary rockfish will be present in the action area. Juvenile yelloweye rockfish recruit to waters deeper than are present in the action area (Love et al. 2002). Adults for each species associate with high relief, complex rocky habitats at depths greater than are found in the action area and therefore are unlikely to be present in the action area (Love et al. 2002). Because rockfish are very unlikely to be present in the action area, it is very unlikely that sound effects from pile driving will have any impact on rockfish. Thus the potential for effects on rockfish are discountable.

Project activity will have only minor habitat effects to a small area (the Keystone Harbor entrance channel), none of which is preferred habitat for PSGB rockfishes. Although the habitat may be slightly altered as a result of the project, these changes are expected to produce only negligible changes in prey abundance or availability for PSGB rockfishes. Because of this, project effects for rockfish are expected to be insignificant.

Because the potential for effects on PS bocaccio, yelloweye, and canary rockfish are discountable and insignificant, the NMFS makes the effect determination of "may affect, not likely to adversely affect" for PS bocaccio, yelloweye, and canary rockfish.

Species Determination

Steller Sea Lion

The likelihood of Steller sea lion being present in the marine waters offshore of Whidbey Island in the project vicinity is very low during the proposed work window. In addition, Steller sea lions are not known to occur at all in Keystone Harbor and therefore would not be present at the project site. The nearest haulout site, Race Rocks in British Columbia, is many miles distant.

The project as described would likely have no effect on Steller sea lions should they transit by the western shore of the Whidbey Island while the project is ongoing.

Because effects of the action are expected to be discountable or insignificant, NMFS concurs with the COE effect determination of "may affect, not likely to adversely affect" for Steller sea lion.

Species Determination

Southern Resident Killer Whale

The likelihood of SRKW being present in the marine waters offshore of Whidbey Island in the project vicinity is very low during the proposed work window. In addition, SRKW are not known to occur at all in Keystone Harbor and therefore would not be present at the project site. The project as described would likely have no effect on SRKW should they transit by the southwestern shore of the island while the project is ongoing.

Because effects of the action are expected to be discountable or insignificant, NMFS concurs with the COE effect determination of "may affect, not likely to adversely affect" for southern resident killer whale.

Critical Habitat Determination

Puget Sound Chinook Salmon

Critical habitat consists of six Primary Constituent Elements (PCEs) for the PS Chinook salmon Evolutionary Significant Unit. The primary constituent element (PCE) for the PS Chinook salmon ESU critical habitat in this action area is:

PCE (5) - Nearshore marine areas free of obstruction and excessive predation with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation, and natural cover such as submerged and overhanging large wood, aquatic vegetation, etc.

Construction will be conducted in a small artificial embayment on the western shore of Whidbey Island, Washington. The project will not result in a barrier to migration through any marine habitat because the project does not have any elements that would cause a barrier to migration. The project will mobilize only a small amount of sediment during construction. The project is unlikely to adversely affect the food base in the project area because construction is unlikely to reduce the abundance of prey items.

The impacts will be insignificant because the construction area is small, about four acres in the harbor entrance channel. Because construction will occur during a period when PS Chinook are unlikely to be present, the conservation values of the PCE will be maintained. After construction, the conservation values of the PCE will most likely return to current conditions before the following spring when juveniles may again be present.

The project is not expected affect water quality beyond local, brief, and insignificant periods of suspended sand. The likelihood of petroleum products entering the water is negligible because of dredge methods, either pipeline or clam shell dredge. Overall water quality and salinity will remain substantially the same before and after construction.

Therefore, NMFS concurs with the COE effect determination of "may affect, not likely to adversely affect" for Puget Sound Chinook salmon critical habitat.

Conclusion

This concludes informal consultation and conferencing pursuant to the regulations implementing the ESA at 50 CFR 402. The COE must re-analyze this ESA consultation if new information reveals effects of the action that may affect listed species in a way not previously considered, the action is modified in a manner that causes an effect to the listed species or critical habitat that was not previously considered, or a new species is listed, or critical habitat designated, that may be affected by the identified action.

Magnuson-Stevens Fishery Conservation and Management Act

Federal agencies are required, under section 305(b)(2) of the MSA and its implementing regulations (50 CFR 600 Subpart K), to consult with NMFS regarding actions that are authorized, funded, or undertaken by that agency that may adversely affect essential fish habitat (EFH). The MSA section 3 defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." If an action would adversely affect EFH, NMFS is required to provide the Federal action agency with EFH conservation recommendations (section 305(b)(4)(A)). This consultation is based, in part, on information provided by the Federal agency and descriptions of EFH for Pacific coast groundfish, coastal pelagic species, and Pacific salmon contained in the Fishery Management Plans developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce.

The proposed action is described on pages four through six of the BE. The project area includes habitat, which has been designated as EFH for various life stages managed groundfish, coastal pelagics, and Pacific salmon. The project will create short term localized impacts to EFH that will reduce the quality of habitat by resuspending sediment and reducing prey base for some managed species. Suspended sediment will rapidly settle or be dispersed by tidal currents, and rapid recolonization of benthic fauna is expected post dredging activities.

The EFH Conservation Recommendations: Because the conservation measures that the COE included as part of the proposed action (pages 6 and 27 of the BE) to address ESA/EFH concerns are adequate to avoid, minimize, or otherwise offset potential adverse effects to the EFH of the species, conservation recommendations pursuant to MSA (section 305(b) (4) (A)) are not necessary. Since NMFS is not providing conservation recommendations at this time, no 30 day response from the COE is required (MSA section 305(b) (4) (B)).

This concludes consultation under the MSA. If the proposed action is modified in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for

NMFS' EFH conservation recommendations, the COE will need to reinitiate consultation in accordance with the implementing regulations for EFH at 50 CFR 600.920(1).

If you have questions regarding either the ESA or EFH consultation, please contact Zach Hughes of the Washington State Habitat Office at 360-753-7761, or by electronic mail at Zach.Hughes@noaa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "William W. Stelle, Jr.", written in a cursive style.Handwritten initials "WWS" in black ink, positioned to the left of the typed name.

William W. Stelle, Jr.
Regional Administrator

cc: Martha Jensen, USFWS
Nancy Gleason, COE

References

Love, M.S., M.M. Yoklavich, and L. Thorsteinson. 2002. The rockfishes of the Northeast Pacific. University of California Press, Berkeley, California.

Weis, L.J. 2004. The Effects of San Juan County, Washington, marine protected areas on larval rockfish production (Masters Thesis). University of Washington, Seattle.

Appendix D – Public Notice



US Army Corps
of Engineers®

Seattle District

Public Notice

Navigation Section
PO Box 3755
Seattle, Washington 98124-3755
Attn: John Pell (OD-TS-NS)

Notice Date: May 26, 2011
Expiration Date: June 27, 2011
Reference: CENWS-OD-TS-NS-40

U.S. ARMY CORPS OF ENGINEERS, FISCAL YEAR 2011 KEYSTONE HARBOR – LAKE CROCKETT NAVIGATION PROJECT MAINTENANCE DREDGING, ISLAND COUNTY, WASHINGTON

Interested parties are hereby notified that the U.S. Army Corps of Engineers, Seattle District (Corps) plans to conduct routine dredging and disposal activities associated with maintenance of the Keystone Harbor – Lake Crockett navigation channel. The maintenance program for fiscal year 2011 is described below, and the location of the proposed dredging and disposal sites are shown on the attached plans. The dredging would be performed in late July through mid-October. The purpose of this Public Notice is to solicit comments from interested persons, groups, and agencies on proposed Corps of Engineers, Seattle District maintenance dredging related to the navigation project.

LOCATION

The Keystone Harbor – Lake Crockett navigation project is located on the west side of Whidbey Island on the shores of Admiralty Inlet, Island County, Washington (T31N, R1E, Sections 22, 23, and 24). Keystone Harbor is the eastern terminal of the Port Townsend/Coupeville ferry route. The navigation channel connects Admiralty Inlet to the Washington State Ferry terminal. The Harbor is surrounded by Ebey's Landing National Historic Reserve and by Fort Casey State Park. Lake Crockett lies to the northeast across State Route 20, and is hydraulically connected to the harbor through a culvert with a tide gate.

AUTHORITY

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 Materials 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."

PROJECT PURPOSE

The purpose of this project is to provide necessary safe navigation conditions for the Washington State Ferry System vessels to dock at Keystone Harbor for uninterrupted service on the Port Townsend/Coupeville ferry route, and to ensure continuity of the sediment transport processes along the shoreline in the project area. The purpose of the beach disposal component of the project is to prevent erosion to the point of undermining the jetty and losing park infrastructure.

PROPOSED PROJECT

The recommended plan consists of maintenance dredging of 50,000 cubic yards of material from the Keystone navigation channel to the authorized depth of -25 feet mean lower low water (MLLW), plus 2 feet overdepth. The area that may be dredged is approximately four acres in Keystone Harbor; the navigation channel is 1,800 feet long and 200 feet wide. Dredging would occur with either a hydraulic cutter-head dredge or mechanical (clamshell) dredge. Dredging this quantity would take approximately 60 days.

Disposal of the dredged material would occur on the adjacent previously used beach disposal site, which is approximately 2.5 acres. All dredged sand and gravel would be used beneficially to re-nourish a section of the beach to the east of the breakwater. The method used to deposit material on the beach depends on which type of dredge equipment is used. With hydraulic dredging, the material would be pumped to the beach area. To minimize effects on the diving park below the nourishment site, the Corps would use local material to create berms to prevent effluent from flowing directly into receiving water without first settling or filtering through the berm. With mechanical dredging, the sediment would be loaded onto barges and rehandled onto trucks for placement on the beach. Dredging and disposal would occur within the approved Washington Department of Fish and Wildlife (WDFW) in-water construction window of July 16 to February 15.

Construction is proposed to begin July 16 and is expected to be completed by October 31. The construction period may be affected by seasonal storm activity. Drawing sheets showing the location of the proposed work are enclosed.

ENVIRONMENTAL COMPLIANCE

The proposed maintenance activities will be reviewed in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347); the Endangered Species Act of 1973 (16 U.S.C. 668a-668cc-6, 87 Stat. 884); Section 313 of the Clean Water Act of 1977 (33 U.S.C. 1323, 86 Stat. 816); Section 404 of the same Act (33 U.S.C. 1344); Section 307(c)(1) and (2) of the Coastal Zone Management Act of 1972 as amended (16 U.S.C. 1456(c)(1) and (2), 86 Stat. 1280), and the National Historic Preservation Act of 1966 (16 U.S.C. 470, 80 Stat. 915).

The decision to proceed with this work will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and use of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and in general, the needs and welfare of the people.

A Draft Environmental Assessment (EA) was prepared for maintenance of the Keystone Harbor – Lake Crockett Federal Navigation Channel. This document has a public comment period

pursuant to requirements of the National Environmental Policy Act. The public comment period is concurrent with this Clean Water Act public notice. Comments may be sent to the Project Manager as listed below. The document is available online:

<http://www.nws.usace.army.mil/ers/index.cfm>

The Corps has prepared a biological evaluation for review by U.S. Fish and Wildlife Service and National Marine Fisheries Service under Section 7 (a)(2) of the Endangered Species Act. A preliminary determination has been made that the proposed maintenance work may affect, but is “not likely to adversely affect” species protected under this Act.

A Clean Water Act - Section 401 water quality certification has been requested from the Washington Department of Ecology. The proposed work is consistent to the maximum extent practicable with the enforceable policies of the State of Washington Coastal Zone Management Program. All dredging and disposal work would be conducted entirely within the approved fish work window.

COMMENT PROCEDURE

Replies to this Public Notice should be mailed to reach the District Engineer, ATTN: CENWS-OD-TS-NS, PO Box 3755, Seattle, Washington 98124-3755, not later than June 27, 2011 to assure consideration. Requests for additional information should be directed to Mr. John Pell, Project Manager, (206) 764-3413 or via email at John.L.Pell@usace.army.mil.

Any person may request, in writing and within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reason for holding a public hearing.

John Pell, P.G.
Project Manager
Navigation Section

Enclosures (2)



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Notice of Application for
Water Quality Certification
and for
Certification of Consistency with the
Washington Coastal Zone Management Program

Date: May 26, 2011

Notice is hereby given that a request has been filed with the Department of Ecology, pursuant to the requirements of Section 401 of the Federal Clean Water Act of 1977 (PL 95-217), to certify that the project described in the U.S. Army Corps of Engineers Public Notice No. CENWS-OD-TS-NS-40 will comply with the Sections 301, 302, 303, 306, and 307 of the Act, and with applicable provisions of State and Federal water pollution control laws.

Notice is hereby given that a request has been filed with the Department of Ecology, pursuant to the requirements of Section 307(c) of the Federal Coastal Zone Management Act of 1972 (16 U.S.C. 1451), to certify that the above referenced project will comply with the Washington State Coastal Zone Management Program and that the project will be conducted in a manner consistent with that program.

Any person desiring to present views on the project pertaining to the project on either or both (1) compliance with water pollution control laws or (2) the project's compliance or consistency with the Washington State Coastal Zone Management Program may do so by providing written comments within 30 days of the above publication date to:

Federal Permit Coordinator
Department of Ecology
SEA Program
Post Office Box 47600
Olympia, Washington 98504-7600



US Army Corps
of Engineers
Seattle District

REVISIONS				
SYMBOL	ZONE	DESCRIPTION	DATE	BY

KEYSTONE HARBOR MAINTENANCE DREDGING FY 11



WHIDBEY ISLAND, WASHINGTON

DRAWING INDEX				
FILE NO.	SHEET NO.	PLATE NO.	TITLE	
D-1-3-95	1	C-1	TITLE, VICINITY MAP, AND DRAWING INDEX	
D-1-3-95	2	C-2	GENERAL PLAN	
D-1-3-95	3	C-3	TYPICAL CROSS-SECTIONS	
REFERENCE				
D-1-3-94	1	C-1	MOORING BASIN AND BREAKWATER, CONDITION 10 FEB 2011, STA. 0+00 TO STA. 15+64	

Tidal datums at PORT TOWNSEND,
ADMIRALTY INLET based on:

TIDAL EPOCH: 1983-2001

Elevations of tidal datums referred to
Mean Lower Low Water (MLLW), in FEET

MEAN HIGHER HIGH WATER (MHHW)	= 11.88
MEAN HIGH WATER (MHW)	= 11.2
MEAN TIDE LEVEL (MTL)	= 8.53
MEAN LOW WATER (MLW)	= 8.35
MEAN LOWER LOW WATER (MLLW)	= 3.36

D-1-3-95

FY 2011

U.S. ARMY ENGINEER DISTRICT, SEATTLE CORPS OF ENGINEERS SEATTLE, WASHINGTON				
KEYSTONE HARBOR MAINTENANCE DREDGING FY 11				
TITLE, VICINITY MAP, AND DRAWING INDEX				
WHIDBEY ISLAND,		WASHINGTON		
DATE	QUANTITY NO.	FILE NO.	DATE	PLATE
D	WHIDBEY ISLAND	D-1-3-95	24 MAR 2011	G-1
BY: PELL	CHK: NICKS	HEET 1 OF 3		

DREDGING, THIS CONTRACT

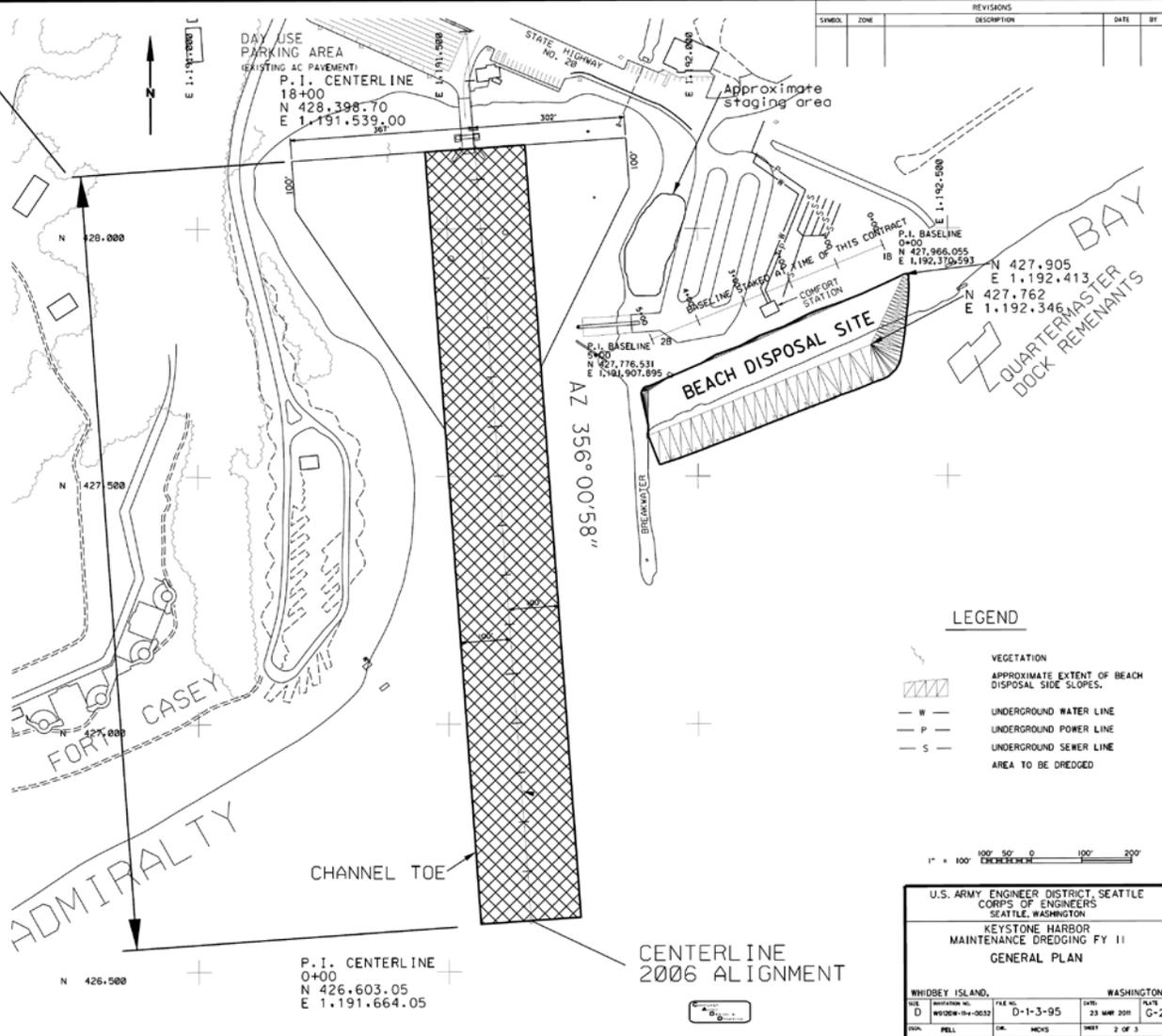
ITEMS OF WORK			
LOCATION	REQUIRED DREDGING PRISM (C.Y.) TO -25' MLLW (ESTIMATED QUANTITIES)	DREDGING PRISM (C.Y.) TO -26' MLLW (ESTIMATED QUANTITIES)	DREDGING PRISM (C.Y.) TO -27' MLLW (ESTIMATED QUANTITIES)
STA. 0+00 TO 15+62	23,803.7	5,505.7	13,391.2
TOTALS	23,803.7	29,309.4	37,194.9

Channel Area Approximate Coordinates State Plane NAD 83 North Zone		Channel Area Approximate Coordinates State Plane NAD 83 North Zone	
Left Toes	Right Toes	Left Toes	Right Toes
N 427,722.76 E 1,190,006.03	N 426,610.00 E 1,191,763.81	N 427,762.00 E 1,192,346.00	N 427,905.00 E 1,192,413.00
N 428,155.25 E 1,191,455.71	N 428,169.15 E 1,191,655.23	N 427,579.04 E 1,191,900.62	N 427,669.61 E 1,191,901.11
Beach Disposal Site Approximate Coordinates State Plane NAD 83 North Zone		Baseline Approximate Coordinates State Plane NAD 83 North Zone	
Left Toes	Right Toes	Sta. 0+00	Sta. 5+00
N 427,864.45 E 1,191,875.35	N 427,865.18 E 1,191,918.56	N 427,866.06 E 1,192,370.59	N 427,776.53 E 1,191,907.90
N 428,070.44 E 1,191,930.92	N 428,052.24 E 1,191,976.04		

AREA	ALIGNMENT 2006 STATION	REQUIRED DREDGING DEPTH	ALLOWABLE OVERDEPTH	CHANNEL SIDE SLOPE	DESIGNATED DISPOSAL SITE
BASE BID ITEMS					
CHANNEL	0+00 TO 15+62	-25'	1'	1H:2H	BEACH DISPOSAL SITE
OPTIONAL BID ITEMS					
CHANNEL	0+00 TO 15+62	-26'	1'	1H:2H	BEACH DISPOSAL SITE

NOTES:

- HORIZONTAL CONTROL BASED ON LAMBERT GRID PROJECTION FOR WASHINGTON NORTH ZONE, NAD 83.91.
- BASEMAP PREPARED FROM AERIAL PHOTOGRAPHY, FLOWN 25 SEPTEMBER 1996, BY SURVEY BRANCH, SEATTLE DISTRICT, CORPS OF ENGINEERS.
- CHANNEL ALIGNMENT SHOWN IS ALIGNMENT 2006.



REVISIONS		DATE	BY
SYMBOL	ZONE		

LEGEND

- VEGETATION
- APPROXIMATE EXTENT OF BEACH DISPOSAL SIDE SLOPES.
- W — UNDERGROUND WATER LINE
- P — UNDERGROUND POWER LINE
- S — UNDERGROUND SEWER LINE
- AREA TO BE DREDGED

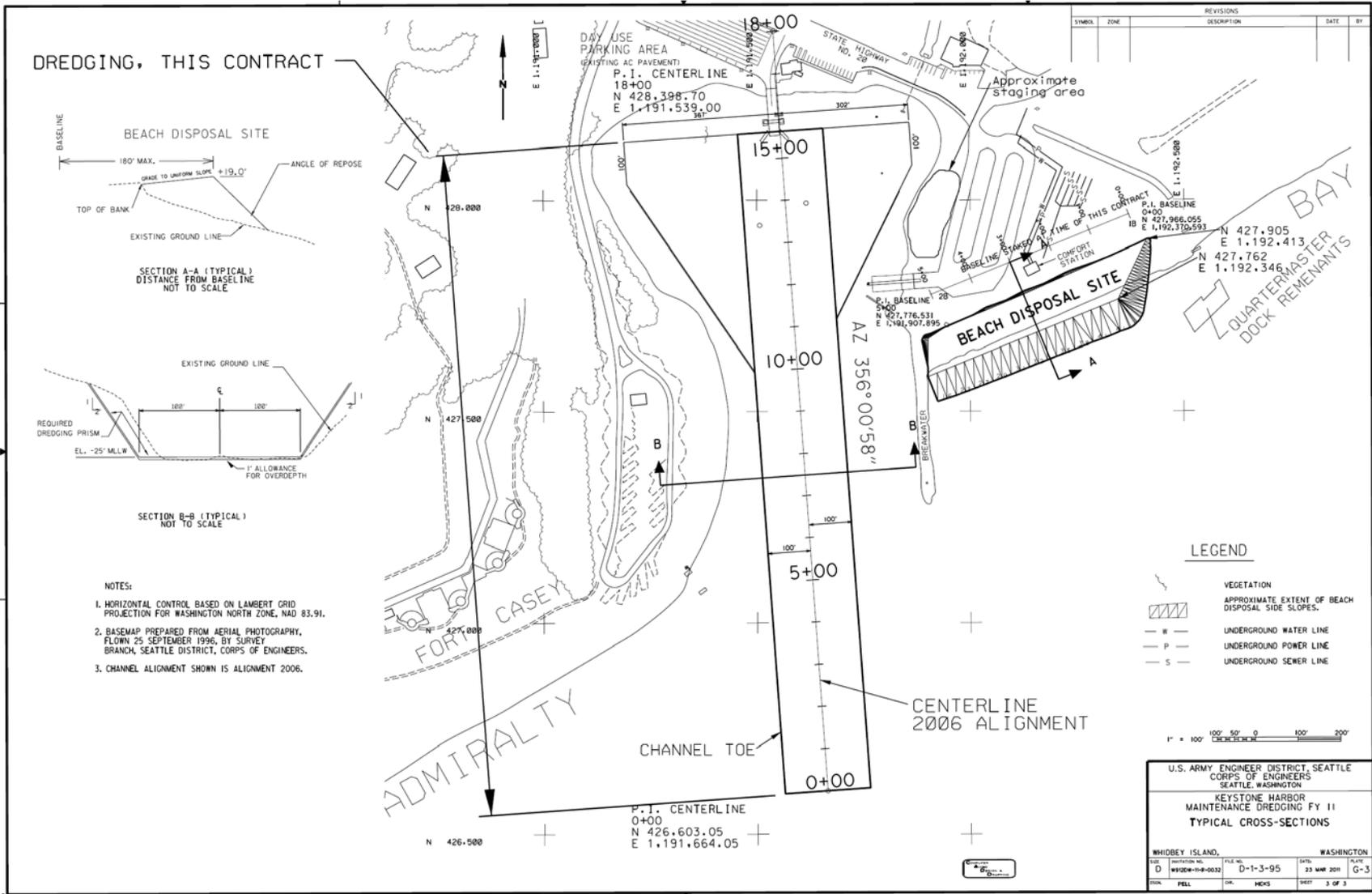


U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON

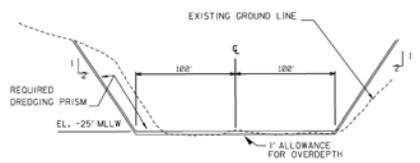
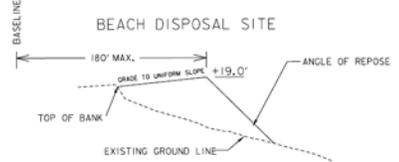
KEYSTONE HARBOR
MAINTENANCE DREDGING FY 11
GENERAL PLAN

WHIDBEY ISLAND, WASHINGTON

DATE: 23 MAR 2011
FILE NO.: 0-1-3-95
SCALE: MCHS
SHEET: 2 OF 3



DREDGING, THIS CONTRACT



- NOTES:**
1. HORIZONTAL CONTROL BASED ON LAMBERT GRID PROJECTION FOR WASHINGTON NORTH ZONE, NAD 83.91.
 2. BASEMAP PREPARED FROM AERIAL PHOTOGRAPHY, FLOWN 25 SEPTEMBER 1996, BY SURVEY BRANCH, SEATTLE DISTRICT, CORPS OF ENGINEERS.
 3. CHANNEL ALIGNMENT SHOWN IS ALIGNMENT 2006.

REVISIONS				
SYMBOL	ZONE	DESCRIPTION	DATE	BY

LEGEND

- VEGETATION
- APPROXIMATE EXTENT OF BEACH DISPOSAL SIDE SLOPES.
- UNDERGROUND WATER LINE
- UNDERGROUND POWER LINE
- UNDERGROUND SEWER LINE



U.S. ARMY ENGINEER DISTRICT, SEATTLE		WASHINGTON	
CORPS OF ENGINEERS			
SEATTLE, WASHINGTON			
KEYSTONE HARBOR			
MAINTENANCE DREDGING FY 11			
TYPICAL CROSS-SECTIONS			
PROJECT	WHIDBEY ISLAND,	DATE	23 MAR 2011
CONTRACT NO.	W5100W-11-R-0032	FILE NO.	D-1-3-95
DRAWN	FELL	CHECKED	HEXS
SHEET		3 OF 3	

**Appendix E – Coastal Zone Management Act
Consistency Determination**

COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION

Coastal Zone Management Act Consistency Determination Keystone Maintenance Dredging Project 2011

The dredging action discussed herein is an activity undertaken by a Federal agency; the following constitutes a Federal consistency determination with the enforceable provisions of the Washington Coastal Zone Management Program.

1. INTRODUCTION

The proposed Federal action applicable to this consistency determination is the maintenance dredging of the Keystone Harbor Navigation Project in Island County, Washington. The U.S. Army Corps of Engineers (Corps) intends to dredge 154,000 cubic yards of sand and gravel to maintain channel depths of 25 feet below mean lower low water (MLLW). The Corps will dredge the Federal Navigation Channel and Washington State Ferry terminal at Keystone Harbor to remove accumulated sand and gravel. The Corps will place the material on the adjacent shoreline as beach nourishment to prevent erosion from threatening infrastructure at Fort Casey State Park. This determination of consistency with the Washington Coastal Zone Management Act is based on review of applicable sections of the State of Washington Shoreline Management Program and shoreline use regulations of the Island County Shoreline Master Plan.

2. STATE OF WASHINGTON SHORELINE MANAGEMENT PROGRAM

The Coastal Zone Management Act of 1972, as amended, requires Federal agencies to carry out their activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state Coastal Zone Management (CZM) Programs. The Shoreline Management Act (SMA) 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. Island County, in which the proposed channel maintenance project is located, fulfilled this requirement with the Shoreline Management Program for Island County adopted in June 2001.

3. ISLAND COUNTY SHORELINE MANAGEMENT PROGRAM

Island County has implemented the Washington Shoreline Management Act through the adoption of the Island County Shoreline Master Program in June 2001. Therefore, the Island County Shoreline Master Program was used to determine project consistency.

The proposed dredging location for channel maintenance is located on the west side of Whidbey Island on the shore of Admiralty Inlet, within Keystone Harbor and on the beach at Fort Casey State Park. This reach of shoreline is designated in Island County's Shoreline Management Program as Conservancy, which means that *the area permits varying densities of human activity, while retaining the aesthetic, cultural, ecological, historic, and recreational resources.*

Applicable portions of the Island County SMP are presented below with the Corps consistency indicated in ***bold italics***. Non-applicable portions have been omitted.

17.05.120 ARCHAEOLOGICAL AREAS AND HISTORIC SITES

A. Definition: Island County has established one of the largest Historical Preservation Districts (Ebey's Landing) in the Puget Sound Basin and Pacific Northwest. The current archaeological site inventory for the County includes a number of different sites, of which the five major types are shell middens, lithic sites, earthworks, rock cairns, and burial grounds. While shell middens and burial grounds are strongly

associated with shorelines, the other types may also be found within the shorelines of the County. Areas and sites of archaeological and historic value are in danger of being lost through present day changes in land use and urbanization.

The Keystone Harbor Federal Navigation Channel is adjacent to Ebey's Landing National Historical Reserve.

B. Use Requirements

1. All shoreline permits shall contain a special provision requiring permittees to notify Island County if any potential archaeological artifacts are uncovered during excavation or development and to cease work immediately if, during the course of development human remains or archaeological resources are encountered.

The Corps includes a "Cease Work Order" in every contract specification package. The contractor selected to perform the Fiscal Year 2011 routing maintenance dredging at Keystone Harbor will be contractually obligated to comply. The Corps will notify Island County immediately if any human remains or archaeological resources are encountered.

2. All permits issued for development in areas known to be archaeologically significant shall provide for site inspection and report by a qualified archaeologist prior to the issuance of a permit.

In 2006, a professional cultural resources reconnaissance survey was conducted along the shoreline during a minus tide with negative results. A report containing the results of the survey was sent to the State Historic Preservation Officer, the National Park Service, the Advisory Council on Historic Preservation, and the Swinomish Tribe. The Corps coordinated with the Swinomish Tribe to determine if they have any knowledge or concerns within the project's Area of Potential Effects (APE).

3. No permit for an application requiring an archaeologist's report will be issued prior to the receipt by the County of the required archaeological report. Once received, the report will be conveyed to the affected Indian Tribe(s), the Trust Board of Ebey's Landing and/or the Island County Historical Society. Based on the information contained in the written report of the qualified professional archaeologist, including the recommendations of any affected Indian Tribe on avoidance or mitigation of the proposed project's impacts obtained during the consultation process, the County will condition project approval in a manner to avoid or minimize impacts to the site consistent with federal and state law.

The Corps complied with this requirement prior to the Fiscal Year 2006 routine maintenance dredging at Keystone Harbor. Fiscal Year 2011 will have no additional risk beyond the same conditions as in the 2006 dredging event.

4. All developments proposed for location adjacent to historical sites which are registered on the State or National Historic Register shall be located and designed so as to be complimentary to the historic site. Development which degrades or destroys the historic character of such sites shall not be permitted.

No new developments are proposed. The Corps will only perform routine maintenance dredging at the Keystone Harbor ferry terminal and navigation channel.

17.05.150 DREDGING AND LANDFILL

A. Definition: Dredging is the removal of earth, sand, gravel, silt or debris from the bottom of a stream, river, lake, bay or other water body. Dredging includes any harvesting of natural resources by any mechanical or hydraulic means which involves substrate displacement or disturbance. Landfills are the creation of a dry upland area by the deposition of materials into water, or onto shoreline or wetland or upland areas in order to raise the elevation.

The Corps will dredge the Federal Navigation Channel and Washington State Ferry terminal at Keystone Harbor to remove accumulated sand and gravel. The Corps will place the material on the adjacent shoreline as beach nourishment to prevent erosion from threatening infrastructure at Fort

Casey State Park. The beach nourishment aspect of the project does not qualify as landfill per the definition provided above.

B. Use Requirements

8. Dredging shall cause no more than minimal disruption of natural geohydraulic processes along shorelines. ***Construction of the harbor and jetty in 1948 created a littoral trap for the Admiralty Head feeder bluff. The effect of this trap is accretion inside Keystone Harbor and erosion of the beach east of the harbor entrance. The purpose of dredging and beach nourishment is to replace the process that would have occurred naturally. This effort maintains the natural geohydraulic processes along the eastern shoreline of Admiralty Inlet.***

9. Dredging operations shall be scheduled so as not to interfere with the migratory movements of anadromous fish. ***The proposed project is scheduled to be completed within the approved Washington Department of Fish and Wildlife in-water construction window July 16 to February 15.***

10. Dredging shall not cause unnecessary interference with navigation or infringement upon adjacent shoreline uses, properties, or values. ***The purpose of this project is to provide necessary navigation conditions for the Keystone/Coupeville ferry run at Keystone Harbor, and to ensure integrity of the adjacent beach at Fort Casey State Park with its associated uses.***

11. Dredged material shall be deposited on upland sites wherever possible, and in any case only on those sites authorized by a Shoreline Management Substantial Development Permit. ***The dredged material will be placed upland of ordinary high water with a minimal amount placed below to maintain a natural beach contour.***

12. Dredged materials deposited on upland sites shall constitute landfill, and shall comply with all applicable landfill requirements of this Ordinance. ***Dredged material will be deposited in the supratidal and intertidal zone, which are not considered upland locations and therefore do not constitute landfill.***

4. STATEMENT OF CONSISTENCY

Based on the above evaluation, the Corps has determined that the proposed dredging and beach nourishment activity complies with the policies, general conditions, and activities as specified in Island County Shoreline Master Program adopted in 2001. The proposed action is thus considered to be consistent to the maximum extent practicable with the State of Washington Shoreline Management Program and policies and standards of the Island County Shoreline Master Program.

Appendix F – Water Quality Certification

IN THE MATTER OF GRANTING A) ORDER #8728
WATER QUALITY)
CERTIFICATION TO) Corps Reference No. CENWS-OD-TS-NS-40
US Army Corps of Engineers) Maintenance dredging of approximately 50,000
in accordance with 33 U.S.C. 1341) cubic yards of the Keystone navigation channel
(FWPCA § 401), RCW 90.48.120, RCW) in Keystone Harbor, Island County, Washington
90.48.260 and Chapter 173-201A WAC)

TO: Ms. Nancy Gleason
US Army Corps of Engineers
PO Box 3755
Seattle WA 98424-3755

On May 24, 2011 the US Army Corps of Engineers submitted a Joint Aquatic Resources Permit Application (JARPA) to the Department of Ecology (Ecology) requesting a Section 401 Water Quality Certification. A joint public notice regarding the request was distributed by the Army Corps of Engineers (Corps) for the above-referenced project pursuant to the provisions of Chapter 173-225 WAC on May 26, 2011.

The purposed project consists of maintenance dredging of 50,000 cubic yards of material from the Keystone navigation channel to the authorized depth of -25 feet mean lower low water (MLLW), plus 2 feet overdepth. The area that may be dredged is approximately four acres in Keystone Harbor; the navigation channel is 1,800 feet long and 200 feet wide. Dredging would occur with either a hydraulic cutter-head dredge or mechanical (clamshell) dredge. Dredging this quantity would take approximately 60 days.

Disposal of the dredged material would occur on the adjacent previously used beach disposal site, which is approximately 2.5 acres in size. All dredged sand and gravel would be used beneficially to re-nourish a section of the beach to the east of the breakwater. The method used to deposit material on the beach depends on which type of dredge equipment is used. With hydraulic dredging, the material would be pumped to the beach area.

To minimize effects on the diving park below the nourishment site, the Corps would use local material to create berms to prevent effluent from flowing directly into receiving water without first settling or filtering through the berm. With mechanical dredging, the sediment would be loaded onto barges and rehandled onto trucks for placement on the beach.

AUTHORITIES:

In exercising authority under 33 U.S.C. § 1341, RCW 90.48.120, and RCW 90.48.260, Ecology has examined this application 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 (FWPCA § 301, 302, 303, 306 and 307);
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.

WATER QUALITY CERTIFICATION CONDITIONS:

Through issuance of this Order, Ecology certifies that it has reasonable assurance that the activity as proposed and conditioned will be conducted in a manner that will meet the applicable water quality standards and other appropriate requirements of state law. In view of the foregoing and in accordance with 33 U.S.C. § 1341, RCW 90.48.120, RCW 90.48.260, Chapter 173-200 WAC and Chapter 173-201A WAC, water quality certification is granted to the Applicant subject to the conditions within this Order.

Certification of this proposal does not authorize the Applicant to exceed applicable state water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC) or sediment quality standards (Chapter 173-204 WAC). Furthermore, nothing in this certification shall absolve the Applicant from liability for contamination and any subsequent cleanup of surface waters, ground waters or sediments occurring as a result of project construction or operations.

A. General Conditions:

1. For purposes of this Order, the term "Applicant" shall mean the US Army Corps of Engineers and its agents, assignees and contractors.
2. For purposes of this Order, all submittals required by its conditions shall be sent to Ecology's Headquarters Office, Attn: 401/CZM Federal permit coordinator, P.O. Box 47600 Olympia, WA 98504-7600 and/or hpre461@ecy.wa.gov. Any submittals shall reference Order #8728 and Corps Reference # CENWS-OD-TS-NS-40.
3. Work authorized by this Order is limited to the work described in the Joint Aquatic Resource Permit Application (JARPA) received by Ecology on May 24, 2011. The Applicant will be out of compliance with this Order and must submit an updated JARPA if the information contained in the JARPA is voided by subsequent changes to the project not authorized by this Order.

4. Within 30 days of receipt of an updated JARPA, Ecology will determine if the revised project requires a new water quality certification and public notice or if a modification to this Order is required.
5. Copies of this Order shall be kept 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.
6. The Applicant shall provide access to the project site upon request by Ecology personnel for site inspections, monitoring, necessary data collection, and/or to ensure that conditions of this Order are being met.
7. Nothing in this Order waives Ecology's authority to issue additional orders if Ecology determines that further actions are necessary to implement the water quality laws of the state. Furthermore, Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if additional impacts due to project construction or operation are identified or if additional conditions are necessary to further protect water quality.
8. The Applicant shall ensure that all appropriate project engineers and contractors at the project site have read and understand relevant conditions of this Order and all permits, approvals, and documents referenced in this Order. The Applicant shall provide Ecology a signed statement (see Attachment A for an example) from each project engineer and contractor that they have read and understand the conditions of this Order and the above-referenced permits, plans, documents and approvals. These statements shall be provided to Ecology before construction begins at the project.
9. This 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 Order.
10. Failure of any person or entity to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.

B. Water Quality Conditions:

1. This Order does not authorize temporary exceedances of water quality standards beyond the limits established in WAC 173-201A, except as otherwise authorized by this Order.
 - The area of mixing established for marine waters is a 150 foot radius surrounding the in-water activity. Turbidity occurring outside that zone that is more than 5 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less, or a 10% increase in turbidity when the background turbidity is more than 50 NTU is a violation of the turbidity water quality standard.

C. Dredging and Disposal:

1. All dredging is to be done using a clamshell or a hydraulic pipeline dredge. **Use of a different kind of dredge must be prior approved by Ecology.**
2. All dredged material will be used beneficially to re-nourish a section of beach that is found east of the breakwater. It will be transported there via pipeline or barge and clamshell depending on the type of dredging chosen. **Use of any other type of disposal shall have prior approval from Ecology**
3. Dredging operations shall be conducted in a manner that minimizes the disturbance or siltation of adjacent waters and prevents the accidental discharge of petroleum products, chemicals or other toxic or deleterious substances into waters of the State.
4. Dredged material shall not be stockpiled on a temporary or permanent basis below the ordinary high water line.
5. During dredging, the Applicant shall have a boat available on site at all times to retrieve debris from the water.
6. Care shall be taken to prevent the grounding of vessels and equipment in shallow water. In addition, where there are offshore areas of eelgrass, both the berm and the sand shall be graded such they do not impact the eelgrass.
6. A pre-dredge meeting is required to be convened prior to the start of dredging. A **Dredging Plan** is required and shall be submitted to Ecology to the 401/CZM Federal permit coordinator at the address shown in Condition A2 for review and approval 2 weeks prior to the pre-construction meeting.
7. Prior to each dredging cycle, the Applicant shall contact the DMMP agencies to determine whether additional sediment testing is required. If additional testing is required, no dredging or disposal shall be conducted until the material has been tested and a suitability determination has been issued. This area ranks low in potential for contamination and the recency determination extends until May 2018. Contact the DMMP for a possible extension of up to 2 years.

D. Timing Requirements:

1. Work below the ordinary high water line shall only occur from July 16th through February 15th of any year, unless otherwise authorized by Ecology.

2. This Order shall remain in effect for a period of 7 years from date of issuance. Continuing this project beyond the 7 year term of this Order will require separate certifications every 7 years.

E. Notification Requirements:

1. The Applicant shall provide notice to Ecology's 401/CZM Federal permit coordinator at least 7 days prior to the start of dredging each dredging season and within 14 days after completion of dredging each season. Notification should be made using all the information required in Condition A2.

F. Emergency/Contingency Measures:

1. The Applicant shall develop a spill prevention and containment plan for this project, and shall have spill cleanup materials and an emergency call list available on site.
2. Any work that is out of compliance with the provisions of this Order, or conditions causing distressed or dying fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the Applicant or operator shall immediately take the following actions:
 - a. Cease operations that are causing the compliance problem.
 - b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
 - c. In the event of finding distressed or dying fish, the applicant shall collect fish specimens and water samples in the affected area within the first hour of the event. These samples shall be held in refrigeration or on ice until the applicant is instructed by Ecology on what to do with them. Ecology may require analyses of these samples before allowing the work to resume.
 - d. 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.
 - e. Immediately notify Ecology's 24-Hour Spill Response Team at 1-800-258-5990, **and** within 24 hours of spills or other events Ecology's 401/CZM Federal permit coordinator at (360) 407-6076.
 - f. 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.

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, including wetlands.
4. If at any time during work the proponent finds buried chemical containers, such as drums, or any unusual conditions indicating disposal of chemicals, the proponent shall immediately notify Ecology using the above phone numbers.

G. Appeal Process:

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on 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 Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p>
<p>Pollution Control Hearings Board 1111 Israel Rd SW STE 301 Tumwater, WA 98501</p>	<p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p>

CONTACT INFORMATION

Please direct all questions about this Order to:

Helen Pressley
Department of Ecology SEA Program
PO Box 47600
Olympia WA 98504-7600
360-407-6076
hpre461@ecy.wa.gov

MORE INFORMATION

Pollution Control Hearings Board Website

www.ecy.wa.gov/Boards_PCHB.aspx

Chapter 43.21B RCW - Environmental Hearings Office – Pollution Control Hearings Board

<http://apps.leg.wa.gov/RCW/default.aspx?cite=43.21B>

Chapter 371-08 WAC – Practice And Procedure

<http://apps.leg.wa.gov/WAC/default.aspx?cite=371-08>

Chapter 34.05 RCW – Administrative Procedure Act

<http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05>

Chapter 90.48 RCW – Water Pollution Control

<http://apps.leg.wa.gov/RCW/default.aspx?cite=90.48>

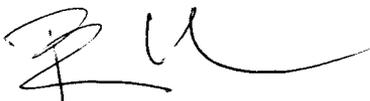
Chapter 173.204 WAC – Sediment Management Standards

www.ecy.wa.gov/biblio/wac173204.html

Chapter 173-201A WAC – Water Quality Standards for Surface Waters of the State of Washington

www.ecy.wa.gov/biblio/wac173201A.html

DATED September 16, 2011 at Olympia, Washington.



Brenden McFarland, Section Manager
Shorelands & Environmental Assistance Program
Headquarters Office – Ecology
State of Washington

