Draft Environmental Assessment

Keystone Harbor Maintenance Dredging
Admiralty Inlet, Island County, Washington

May 2006

US Army Corps
of Engineers®
Seattle District

Keystone Harbor Maintenance Dredging
Draft Environmental Assessment
May 2006

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 4 - 6 years to ensure safe navigation. Maintenance dredging last occurred in 1999.

The proposed project consists of maintenance dredging approximately up to 45,000 cubic yards within the approved Washington Department of Fish and Wildlife in-water construction window July 16 - February 15 by pipeline dredge or clamshell 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.

This document is also available online at: http://www.nws.usace.army.mil/ers/envirdocs.html

Please send questions and requests for additional information to:

Mr. Rustin Director
Environmental Resources Section
U.S. Army Corps of Engineers
P.O. Box 3755
Seattle, Washington 98124-3755
Rustin.a.director@usace.army.mil
206-764-3636

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1 LOCATION 1
1.2 BACKGROUND 3
Ebey's Landing National Historical Reserve 3
Fort Casey State Park 4
Maintenance Dredging History 4
1.3 PROJECT PURPOSE AND NEED 5
Navigation Conditions 5
Beach Erosion 5
1.4 AUTHORITY 5

2. ALTERNATIVES 5

2.1 ALTERNATIVE 1 -- NO ACTION 5
2.2 ALTERNATIVE 2 -- MAINTENANCE DREDGING WITH BEACH NOURISHMENT (PREFERRED ALTERNATIVE) 6
2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION 8

3. AFFECTED ENVIRONMENT 10

3.1 GEOLOGY 10
3.3 AQUATIC VEGETATION 11
3.4 FISH AND WILDLIFE 11
Crockett Lake and Avian Species 11
3.5 THREATENED AND ENDANGERED SPECIES 12
3.6 HISTORIC AND CULTURAL RESOURCES 13
3.7 WATER QUALITY 13
3.8 AIR QUALITY AND NOISE 14
3.10 LAND USE AND AESTHETICS 14
3.11 RECREATION 15

4. EFFECTS OF THE ALTERNATIVES 15

4.2 GEOLOGY 15
4.2.1 Maintenance Dredging With Beach Nourishment 15
4.2.2 No-Action Alternative 15
4.3 AQUATIC VEGETATION 15
4.3.1 Maintenance Dredging With Beach Nourishment 15
4.3.2 No-Action Alternative 16
4.4 FISH AND WILDLIFE 16
4.4.1 Maintenance Dredging With Beach Nourishment 16
4.4.2 No-Action Alternative 17
4.5 THREATENED AND ENDANGERED SPECIES 17
4.5.1 Maintenance Dredging With Beach Nourishment 17
4.5.2 No-Action 18
4.6 CULTURAL RESOURCES 18
4.6.1 Maintenance Dredging With Beach Nourishment 18
4.6.2 No-Action Alternative 20
4.7 WATER QUALITY 20
4.7.1 Maintenance Dredging With Beach Nourishment 20
4.7.2 No-Action Alternative 21
4.8 AIR QUALITY AND NOISE 21
4.8.1 Maintenance Dredging With Beach Nourishment 21
4.8.2 No-Action Alternative 21
4.9 UTILITIES AND PUBLIC SERVICES 21
4.9.1 Maintenance Dredging With Beach Nourishment 21
4.9.2 No-Action Alternative 21

4.10 LAND USE 22
4.10.1 Maintenance Dredging With Beach Nourishment *22*
4.10.2 No-Action Alternative *22*
4.11 RECREATION 22
4.11.1 Maintenance Dredging With Beach Nourishment *22*
4.11.2 No-Action Alternative *22*
4.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE 22
4.12.1 Maintenance Dredging With Beach Nourishment *22*
4.12.2 No-Action Alternative *22*
4.13 AESTHETICS 22
4.13.1 Maintenance Dredging With Beach Nourishment *22*
4.13.2 No-Action Proposed Alternative *23*

5. UNAVOIDABLE ADVERSE EFFECTS 23

6. MITIGATION 23

7. COORDINATION 24

8. CUMULATIVE EFFECTS 24

8.1 HISTORIC LANDSCAPE CONDITIONS 24
8.2 EXISTING CONDITIONS 27
8.3 REASONABLY FORESEEABLE FUTURE ACTIONS 27
8.4 INCREMENTAL EFFECTS OF THE PROPOSED ACTION 27

9. ENVIRONMENTAL COMPLIANCE 28

9.1 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) (42 USC 4321 ET SEQ.) 28
9.2 ENDANGERED SPECIES ACT OF 1973, AS AMENDED (16 USC 1531-1544) 28
9.3 CLEAN WATER ACT, AS AMENDED (33 USC 1251 ET SEQ.) 28
9.5 COASTAL ZONE MANAGEMENT ACT (16 U.S.C. 1451-1465) 28
9.6 NATIONAL HISTORIC PRESERVATION ACT) (16 USC 470 ET SEQ., 110) 28
9.7 CLEAN AIR ACT AS AMENDED (42 USC 7401, ET SEQ.) 28
9.9 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT (16 USC 701-715) 29
9.16 EXECUTIVE ORDER 12898, ENVIRONMENTAL JUSTICE 29
9.17 EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS 29
9.18 TREATY RIGHTS 30

10. CONCLUSION 30

11. REFERENCES 30

Table of Figures

Figure 1. Project location. 2
Figure 2. Aerial photo of Keystone Harbor taken May 5, 1993 (photo courtesy of the Washington Department of Ecology) 2
Figure 3. Shoreline of project area before the construction of the Keystone Harbor (WSDOT 2005). 3
Figure 4. Plan view of Preferred Alternative. 7
Figure 5. Disposal/ beach nourishment area showing park infrastructure at risk of damage from shoreline erosion. 8
Figure 6. Port Townsend PSDDA site. 9
Figure 7. Littoral drift cells in the project area. 10

1. INTRODUCTION

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 constructed by the U.S. Army Corps of Engineers in 1947-48 and is connected to Admiralty Bay by a Federal navigation channel. The harbor was formed by dredging a triangular shaped bay from an existing barrier beach. A stone breakwater was constructed 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 4 - 6 years to ensure safe navigation. Maintenance dredging last occurred in 1999.

The proposed project consists of maintenance dredging approximately 45,000 cubic yards within the approved Washington Department of Fish and Wildlife in-water construction window July 16 - February 15 by pipeline dredge or clamshell dredge. The area to be dredged is up to approximately 4 acres in Keystone Harbor; material placement would cover up to approximately 2.5 acres along the adjacent beach to the east. 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. All the dredged sand and gravel shall be used beneficially to nourish a section of the beach to the east of the breakwater.

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. Beach replenishment also prevents erosion causing deterioration of the jetty.

1.1 Location

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). The navigation channel connects Admiralty Inlet to the Washington State Ferry Keystone dock. The location of the proposed dredging and beach replenishment sites is shown in Figure 1. An aerial photograph of the project area can be found in Figure 2.

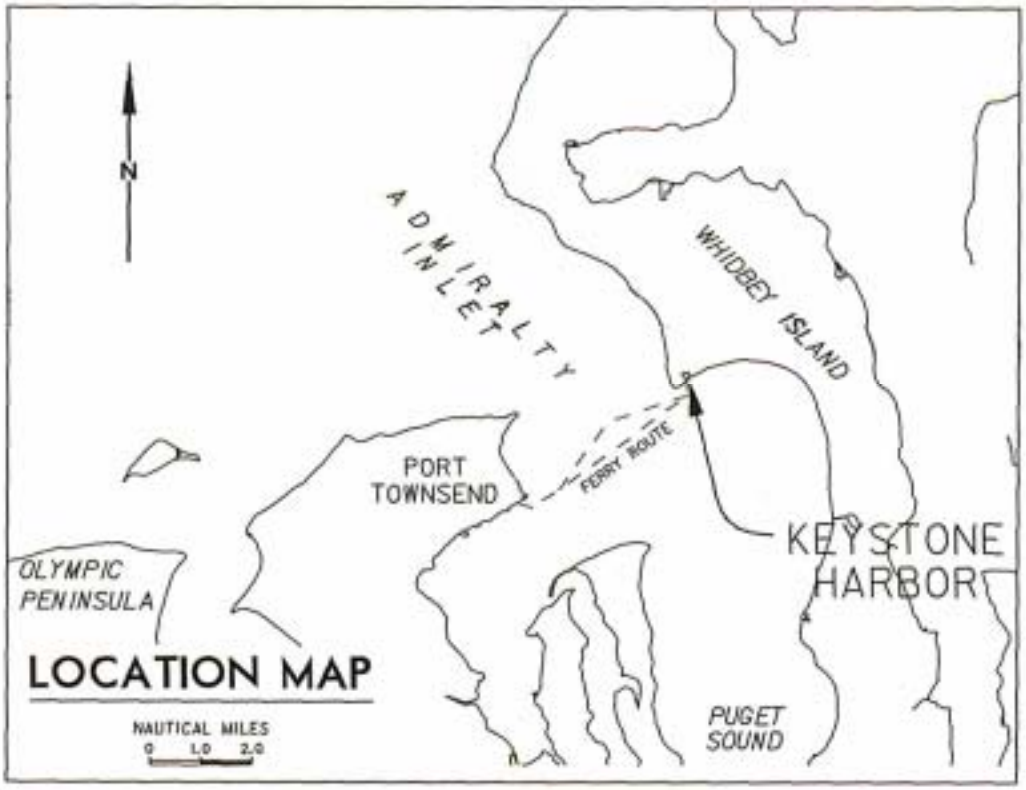

Figure 1. Project location.

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

1.2 Background

Keystone Harbor is a dredged basin constructed by the U.S. Army Corps of Engineers in 1947-48. The harbor was formed by dredging a triangular shaped bay from an existing barrier beach. A stone breakwater was constructed on the eastern side of the harbor. A picture of the shorelines in the project before the creation of the artificial harbor can be found in Figure 3.

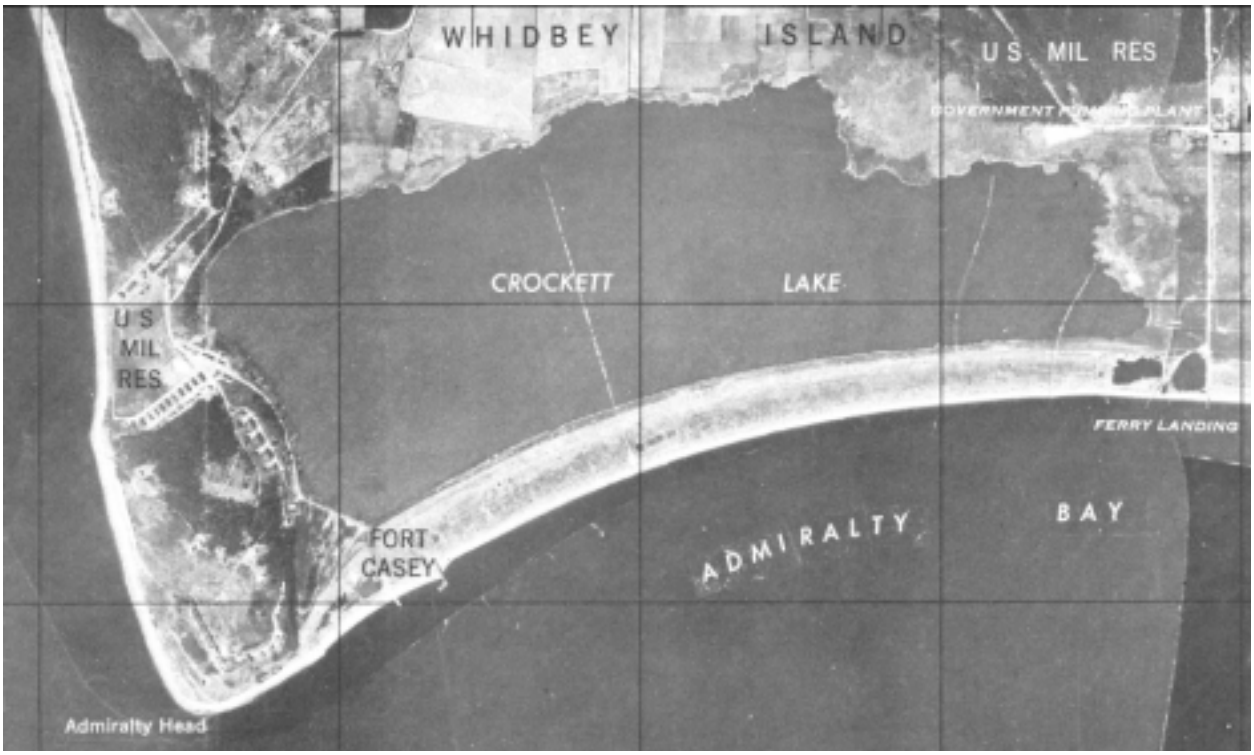

Figure 3. Shoreline of project area before the construction of the Keystone Harbor (WSDOT 2005).

The harbor is located on the west side of Whidbey Island 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 4 - 6 years to ensure safe navigation. Maintenance dredging last occurred in 1999.

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. Beach replenishment also prevents erosion from causing deterioration of the jetty.

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 which 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 Crocket Lake. An underwater park for SCUBA diving is also located within the state park, immediately east of the jetty.

Maintenance Dredging History

The federal navigation channel is typically dredged every 4-6 years. The navigation channel was widened in 1971 and deepened in 1993 through the Continuing Authorities Program, Section 107 to the current project depth of 25 ft. A list of dredging actions in Keystone Harbor can be found in Table 1.

Table 1. History of dredging activity in the Federal navigation channel.

Year	Amount Dredged (cubic yards)	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

1.3 Project Purpose and Need

1.3.1 Need

Navigation Conditions

Strong cross currents, narrow channel width, and wind generated waves combine to make Keystone Harbor the most difficult of all 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, full reverse is applied and the docking maneuver begins. At low tides there is not sufficient 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 be grounded. A propeller clearance of at least 7 feet is required 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 the Keystone Harbor to serve as a harbor of refuge.

Beach Erosion

The current navigation project interrupts the natural littoral drift process (see section 3.1). This results in gradual erosion of the harbor features and related recreation facilities. Over time, severe erosion can occur on the adjacent beach to the east and undermine the Washington State Park's restroom facilities, picnic areas, parking lot, and recreational boat launch.

1.3.2 Purpose

The purpose of this project is to provide necessary navigation conditions for the Keystone-Port Townsend ferry at Keystone Harbor, and to ensure integrity of the littoral drift processes in the project area.

1.4 Authority

The Lake Crockett navigation project and maintenance dredging by the Department of the Army was authorized by the River and Harbor Act of March 2, 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 November 17, 1986 (Public Law 99 662).

2. ALTERNATIVES

2.1 Alternative 1 -- No Action

The no action alternative would not provide any actions to maintain the Keystone navigation channel. No dredging would occur, and no efforts would be taken to address the current erosion of the neighboring beach.

2.2 Alternative 2 -- Maintenance Dredging with Beach Nourishment (Preferred Alternative)

Alternative 2 consists of the maintenance dredging of up to 45,000 cubic yards of material from the Keystone navigation channel. The area that may be dredged is up to approximately 4 acres in Keystone Harbor; material placement would cover up to approximately 2.5 acres along the adjacent beach to the east. Dredging would occur with either a hydraulic cutter-head dredge or clamshell dredge. A small amount of material on the east side of the channel redistributed by ferry propeller wash is proposed to be leveled by dragging to channel grade (Elevation -25 feet mean lower low water). See Figure 4.

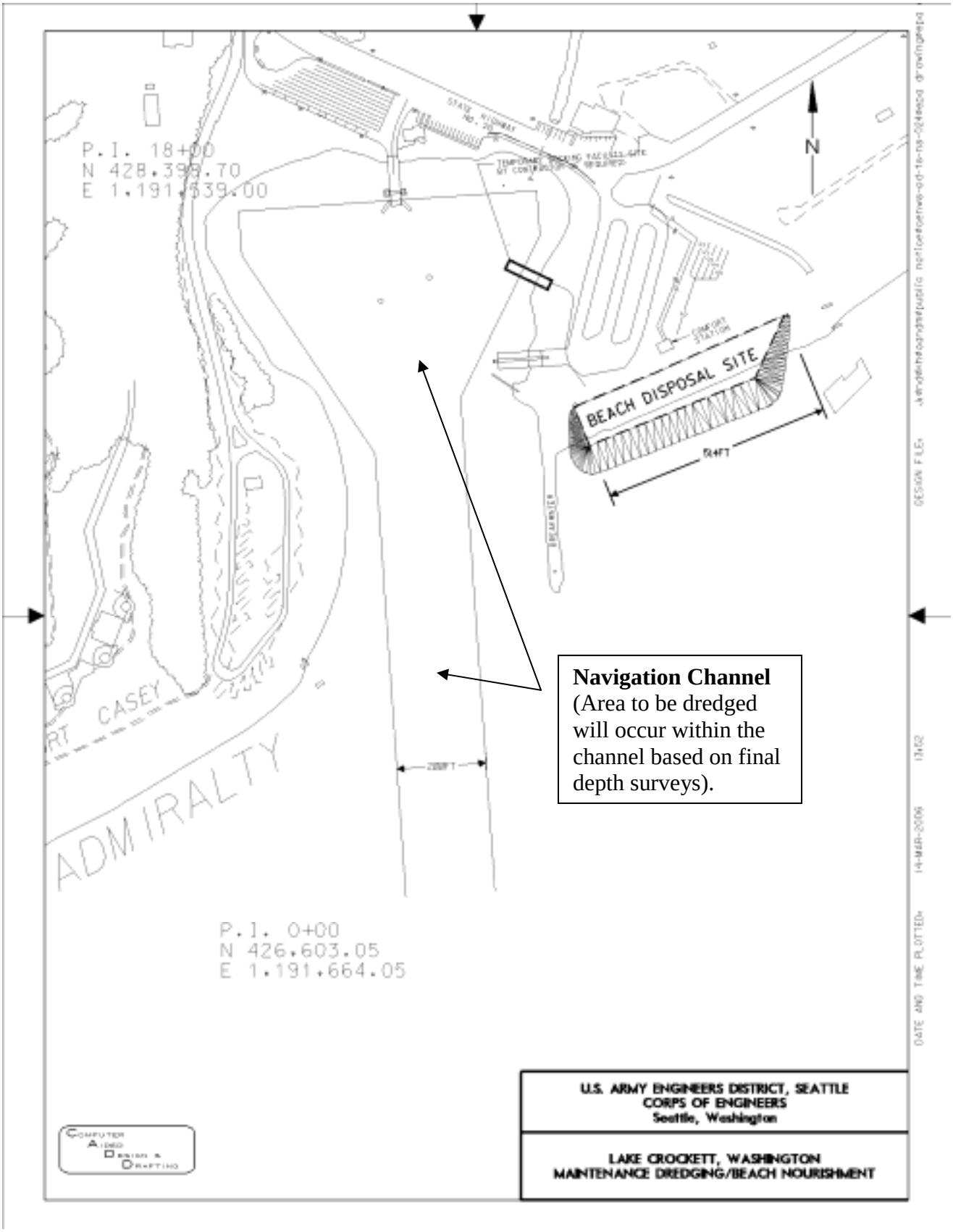

Figure 4. Plan view of Preferred Alternative.

Disposal of the dredged material would occur on the adjacent previously used beach disposal site. All the dredged sand and gravel would be used beneficially to re-nourish a section of the beach to the east of the breakwater as shown on the attached figures. See Figure 5. The method used to deposit material on the beach depends on the dredge equipment. With hydraulic dredging, the material would be pumped to the beach area. In order to minimize effects on the diving park below the renourishment site, should a hydraulic dredge be used, berms would 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 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 - February 15.

Figure 5. Disposal/ beach nourishment area showing park infrastructure at risk of damage from shoreline erosion.

2.3 Alternatives Eliminated From Further Consideration

Maintenance Dredging with Open-water Disposal

Under Alternative 3, dredging would occur as in Alternative 2 with up to 45,000 cubic yards of material removed from the Keystone navigation channel. However, the dredged material would be placed on a barge and transported to an existing open-water dredged material disposal site shown on 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]

[1] The PSDDA program is a coordinated multi-agency effort to manage dredged material disposal in Puget Sound. The PSDDA program manages eight multi-user disposal sites, evaluates the suitability of dredged material for disposal at those sites, and monitors the effects of disposal at each of the sites. 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.

If Alternative 3 were selected, no additional environmental compliance requirements would apply to the disposal component of the proposed project. 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). That document is incorporated by reference herein.

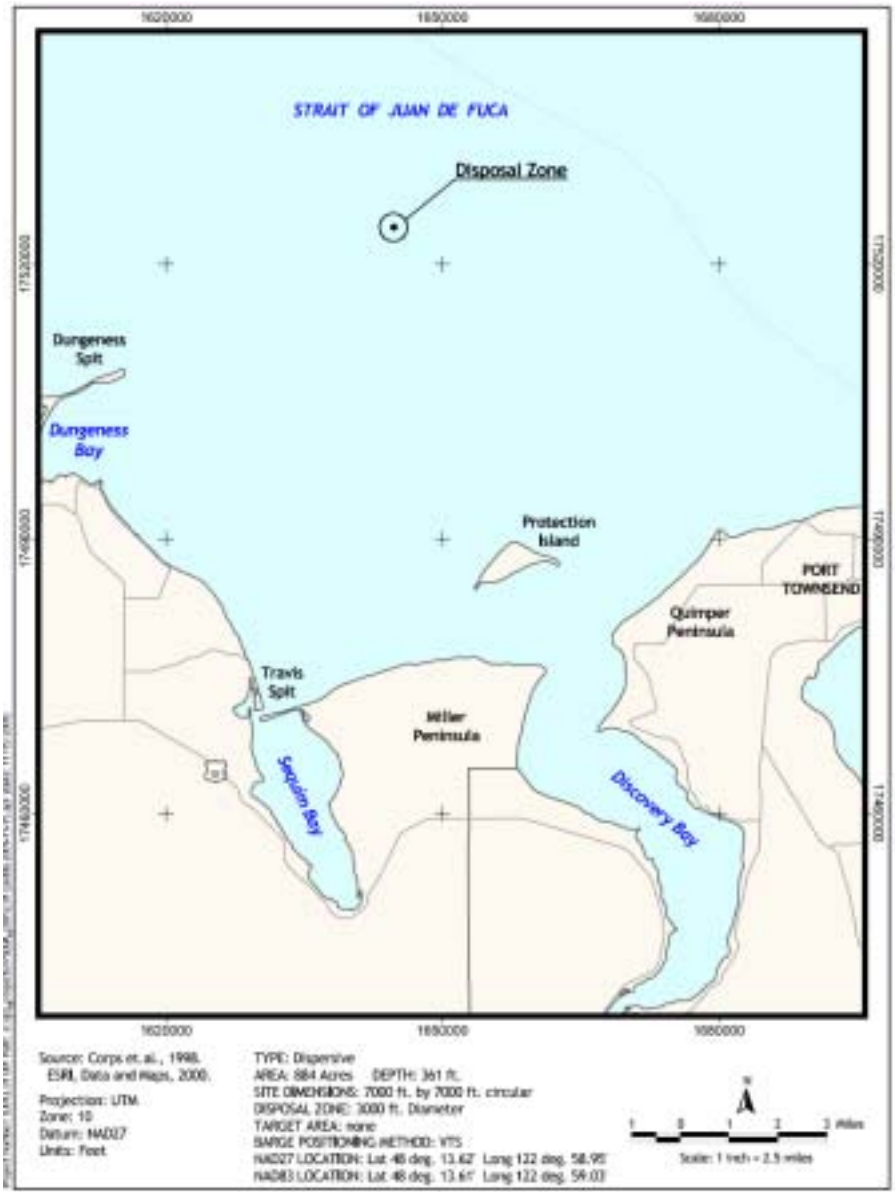

Figure 6. Port Townsend PSDDA site.

While the Open-water Disposal Alternative would result in the necessary channel maintenance and disposal of dredged shoal material, erosion of the beach would continue and eventually threaten the upland park facilities and the jetty. In addition, this alternative would likely have higher transportation costs to move the dredged material and it would fail to take advantage of

the opportunity to beneficially use the material to nourish a starved beach. Because this alternative does not meet the project purpose and need, it was therefore eliminated from further consideration.

3. AFFECTED ENVIRONMENT

3.1 Geology

The barrier beach separating Admiralty Bay from Lake Crockett was formed by material eroded from high bluffs of glacial outwash located to the northwest (Admiralty Head) and southeast of the navigation project. Active erosion of these "feeder" bluffs supplies sediments to adjacent beaches. Sediments are moved along the shoreline and sorted by size, with the finer material carried offshore to less turbulent waters and larger sand/gravels/cobbles 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 (see Figure 7 below). 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.

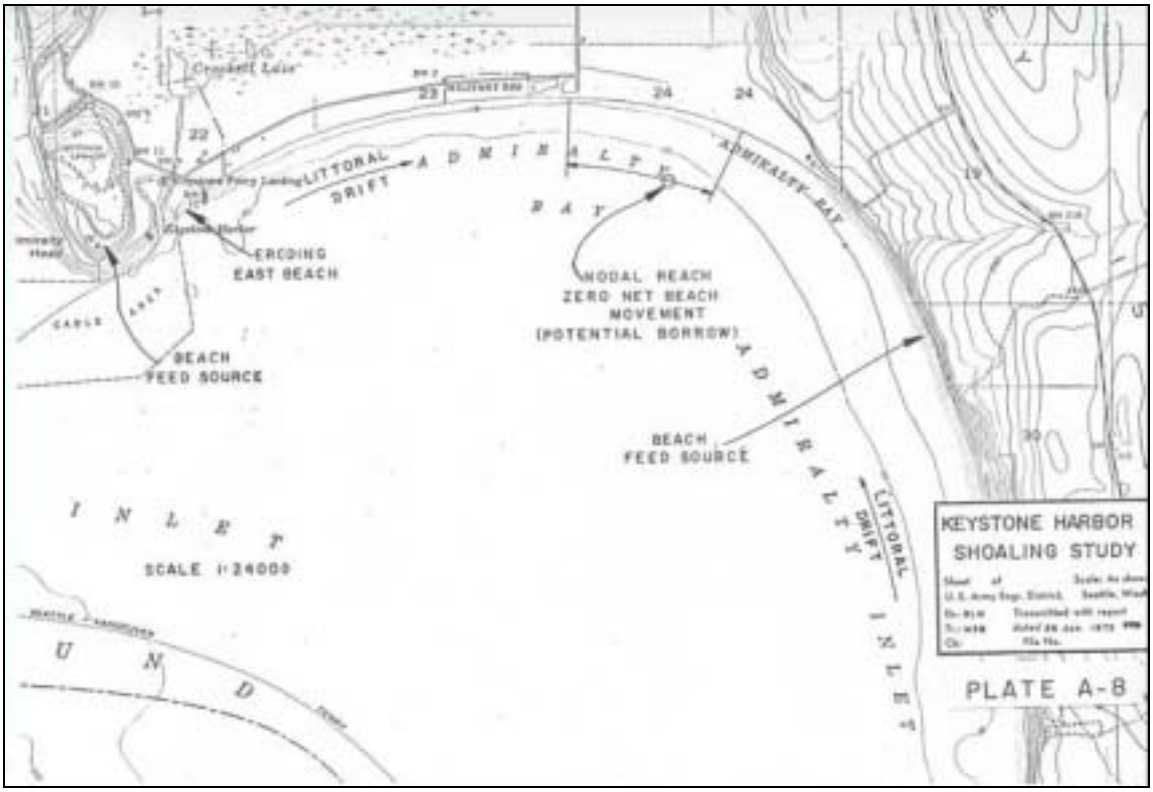

Figure 7. Littoral drift cells in the project area.

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 jetty structure was undermined by this erosion, 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. 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 which supplies sediments to 2 miles of beaches downdrift of the jetty. Over 220,000 cubic yards of sediment has been placed east of the jetty since 1960, allowing for maintenance of a nearly equilibrium shoreline shape and position.

3.3 Aquatic Vegetation

Limited aquatic vegetation is expected to be found in the project area. The basin was artificially created and routinely dredged over the past approximate 50 years. Therefore, little macroalgae or eelgrass, *Zostera marina*, is found in the basin. In addition, the daily ferry movements in and out of the harbor likely limit vegetation growth by regularly suspending sediments from the prop wash. In the area immediately offshore of the disposal area, areas of bull kelp, *Nereocystis luetkeana*, can be found.

3.4 Fish and Wildlife

A great variety of marine life occurs in the immediate vicinity. The near shore bottom between the breakwater and wharf is fairly shallow with small rock outcrops. Sparse algae and a few horse clams (*Tresus* sp) have been observed here. The pilings of the wharf serve as substrate for barnacles (*Balanus* spp.) and sea anemones (*Metridium* sp.), which provide cover and habitat for several species of fish. These pilings also support numerous tube worms. 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 ling cod also inhabit the area.

Biota within the channel is limited to opportunistic species which colonize the area between maintenance dredging periods. Juvenile salmonids migrate along the shoreline between April and June. Waterfowl utilize Lake Crockett and Keystone Harbor throughout the year, though peak abundance occurs during fall migration. Raptors are also common along the shores of Lake Crockett, while shorebirds are numerous during fall migration (August-October). Pandalid shrimp are present offshore in high numbers in the fall. Marine mammals are found in the vicinity, though seldom in the navigation channel.

Crockett Lake and Avian Species

Crockett Lake is an Audubon Washington-designated Important Bird Area. The lake is a shallow, brackish lake and complex of salt and fresh water marshes, separated from Admiralty Inlet by a narrow gravel spit. Water levels are influenced by surface runoff and by a tidegate managed by the local drainage district. During periods of low water, extensive mudflats are exposed. Crockett Lake supports extraordinarily large numbers of shorebirds during autumn migration. It is a critically important staging area for 17 species of shorebirds, and for raptors such as peregrine falcon and merlin that follow migration south. Whidbey Audubon Society has

observed 213 species at the site.

The natural hydrology of the lake has been altered by dikes, ditches, and the tidegate. The wetland may succeed to shrub communities if water levels are not carefully managed. The fresh water supply comes entirely from runoff in the surrounding 23-sq. kilometer watershed, so pollution from agriculture and residential development is a threat. Disturbances from adjacent roads and increasing numbers of waterfowl hunters have been associated with a significant decrease in wintering waterfowl in recent years. The invasive, non-native Canada thistle has become established and is spreading (Olympic Peninsula Audubon Society, 2006).

3.5 Threatened and Endangered Species

Eight species protected by the Endangered Species Act of 1973, as amended, are potentially found in the vicinity of Keystone Harbor (see Table 2 below). In accordance with Section 7(a)(2) of the Act, Federally funded, constructed, permitted, or licensed projects must take into consideration impacts to Federally listed and proposed threatened or endangered species. In order to satisfy the requirements of the Act, the Corps will consult with the U.S. Fish and Wildlife Service (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 propose conservation measures for species affected by the proposed action. The effect determinations described in the Corps BE can be found in Table 3. No construction would occur by the Corps until the Services concur with the determinations made in the BE.

Table 2. Endangered and Threatened Species Potentially Occurring in the Project Vicinity

Species	Listing Status	Critical Habitat
Bald Eagle *Haliaeetus leucocephalus*	Threatened	—
Coastal/Puget Sound Bull Trout *Salvelinus confluentus*	Threatened	Designated
Marbled Murrelet *Brachyramphus marmoratus*	Threatened	Designated
Golden Paintbrush *Castilleja levisecta*	Threatened	—
Puget Sound Chinook Salmon *Oncorhynchus tshawytscha*	Threatened	Designated
Hood Canal Summer-run Chum Salmon *Oncorhynchus keta*	Threatened	Designated
Steller Sea Lion *Eumetopias jubatus*	Threatened	Designated
Southern Resident Killer Whale *Orcinus orca*	Endangered	—

Table 3. Summary of Effect Determinations

Species	Effect Determination	Critical Habitat Determination
Bald Eagle	Not likely to adversely affect	-----
Coastal/Puget Sound Bull Trout	Not likely to adversely affect	No effect

Marbled Murrelet	Not likely to adversely affect	No effect
Golden Paintbrush	No effect	-----
Puget Sound Chinook Salmon	Not likely to adversely affect	No effect
Hood Canal Summer Chum Salmon	Not likely to adversely affect	No effect
Steller Sea Lion	Not likely to adversely affect	No effect
Southern Resident Killer Whale	Not likely to adversely affect	-----

3.6 Historic and Cultural Resources

Suttles and Lane (1990:485-486) placed the central portion of Whidbey Island in which the project is located as within the territory of the Skagit Tribe, who spoke a language classified as Northern Lushootseed dialect, a subdivision of the Southern Coast Salish language. Before the treaties of 1854-1855 and instigation of the reservation system there were 50 named groups or tribes within the Northern Lushootseed speaking area, including the Skagit on Penn Cove north of the project area (Suttles and Lane 1990:485). The Bureau of Indian Affairs map of 1978, depicting "Indian Land Areas Judicially Established," shows the project area as lying within Lower Skagit Tribe ceded lands (Docket Number 155). The Lower Skagits were sometimes called the Whidbey Island Skagits and occupied tracts on central Whidbey Island, the mouth of the Skagit River and an area around the North Fork of the Skagit (Ruby and Brown 1992:107). As a result of the Point Elliot Treaty of January 22, 1855, the Lower Skagits were placed under the Tulalip Agency and moved to the Swinomish Reservation. Today, the descendants of the Lower Skagit people are members of the Swinomish Tribal Community (Ruby and Brown 1992:108).

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 also 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

3.7 Water Quality

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.

Sediments have been tested according to Puget Sound Dredged Disposal Analysis (PSDDA) protocol and 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 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 would result in unacceptable adverse impacts. The composited sample from the area east of the channel (the receiving area for nourishment material) were below SL and Washington sediment quality standards, except for Phenol.

The material also 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: (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. The dredging/disposal site is in a highly dynamic littoral drift current/tidal area, and is free from any known sources of contamination.

The DMMP agencies have concurred that the material does not require further testing under Section 404 of the Clean Water Act. A determination that material dredged from Keystone Harbor was suitable for beach nourishment was signed by the DMMP agencies on May 11, 2005.

3.8 Air Quality and Noise

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.

This rural and recreational area is typically quiet. Typical existing noise consists of those generated by the Washington State ferry, trucks, automobiles, farm machinery and other internal combustion engines.

3.10 Land Use and Aesthetics

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. This means that changes in the cultural landscape will continue but in a way that respects the past. There are two state parks within Ebey's Landing NHR as well as the historic waterfront town of Coupeville, one of the oldest towns in Washington State. The navigation channel and disposal area is located in Fort Casey State Park. The project area also

provides scenic views of Puget Sound and the surrounding mountains. The nearby marine park allows for an underwater viewing experience by SCUBA divers.

3.11 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 tube worms. Giant Pacific octopus and wolf eels are sometimes seen at the jetty site.

4. EFFECTS OF THE ALTERNATIVES

4.2 Geology

4.2.1 Maintenance Dredging With Beach Nourishment

The preferred alternative would return depths in the navigation channel and boat basin back to an approximate depth of 25ft. Based on historic sediment characterization and the coarse gradation of the sediment, the Corps has determined the dredged material is considered suitable for depositing as beach renourishment.

4.2.2 No-Action Alternative

The No-Action alternative would not dredge the shoaling Keystone Harbor, further decreasing the depth of the harbor and limiting navigation. Without a placement of material along the eroding shoreline, shoreline erosion would likely continue threatening access to the jetty, parking lot, and park facilities.

4.3 Aquatic Vegetation

4.3.1 Maintenance Dredging With Beach Nourishment

Very little aquatic vegetation exists in Keystone Harbor. The harbor has been dredged on a regular basis since its creation limiting the ability of aquatic vegetation to establish. Therefore, the preferred action would have minor impacts to the limited vegetation in the channel.

In addition, the preferred action is not expected to have a measurable affect on the 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 mid-summer months. This avoids the time frame (spring months) when algae are most vulnerable to sediment impacts when increasing light levels trigger reproduction. Second, 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 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.

4.3.2 No-Action Alternative

The No-Action alternative would not alter any of the existing aquatic vegetation or macroalgae communities.

4.4 Fish and Wildlife

4.4.1 Maintenance Dredging With Beach Nourishment

Impacts to fish and wildlife from the preferred action would be expected to be minor and discountable. Due to the intermittent dredging cycle, mobile fish and wildlife species should be able to avoid the areas of dredging within the harbor. A temporary reduction in benthic productivity in the dredged areas would be expected; however, these areas should recolonize with similar fast-establishing organisms as the preferred dredging action has occurred regularly, in similar areas, over the past approximate 50 years.

In 1976, the Corps, with assistance from the U.S. Fish and Wildlife Service, Environmental Protection Agency, and Western Washington State College, conducted SCUBA surveys of the subtidal area fronting the beach disposal site prior, during, and after dredging and disposal (Smith 1976). Maintenance dredging and disposal operations at this time were similar in scope to the proposed project. Diver observations revealed that the majority of the area did not appear significantly disturbed by the beach nourishment, as evidenced 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 any plant or animal losses were considered minor. No gross differences in feeding activity by sessile organisms were noted. No noticeable effects on invertebrates were recorded and fish species did appear to avoid areas of high siltation. Some filter feeding organisms were covered to some extent by sediment. This did not appear to drastically 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.

The proposed disposal as beach nourishment would 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 would maintain the range of intertidal elevations necessary to support the epibenthic invertebrates which serve as prey for a wide variety of marine fishes. However, the preferred action will temporarily adversely affect epibenthic prey organisms, particularly gammarid amphipods, within and adjacent to the approximate 2.5 acre beach nourishment footprint. Amphipods are mobile epifauna that are adapted to heavy disturbance regimes, and are thus expected to recolonize the nourishment area quickly. The scale of mortality impacts which will result from the proposed project is not likely to affect amphipod population dynamics in the project area.

Forage fish such as herring, surf smelt, and sand lance are not expected to be directly impacted by the proposed action. First, placement of the nourishment materials will primarily occur above the waterline so as not to directly interfere with fish usage of beach habitat. Second, turbidity is not expected to 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 also not anticipated since no documented spawning beaches occur in the project area (Thompson, 2005). NOAA-sponsored studies have shown that the epibenthic fauna which will likely be impacted by material placement do not appear to constitute a significant fraction of these species' diet, as they tend to rely more on pelagic organisms (Simenstad et al. 1977).

The nourishment material will be placed soon after the end of the juvenile salmonid outmigration period. This schedule will allow for maximum recovery of the epibenthos prior to the 2007 salmonid outmigration period.

4.4.2 No-Action Alternative

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

4.5 Threatened and Endangered Species

4.5.1 Maintenance Dredging With Beach Nourishment

Effects of the preferred alternative are described in a Biological Evaluation submitted to NMFS and USFWS in May, 2006. The document determines that the proposed project would have no effect on golden paintbrush, and may affect, but is not likely to adversely affect: bald eagle, marbled murrelet, Steller sea lion, southern resident killer whale, Puget Sound Chinook salmon, Hood Canal Summer-run chum salmon, and Puget Sound/ Coastal bull trout. In addition, the project is not likely to jeopardize Puget Sound Steelhead. A list of the effect determinations as well as Critical Habitat determinations are found in Table 2.

Table 2. Determinations Summary for the Preferred Alternative

Species	Effect Determination	Critical Habitat Determination
Bald Eagle	Not likely to adversely affect	-----
Coastal/Puget Sound Bull Trout	Not likely to adversely affect	No effect
Marbled Murrelet	Not likely to adversely affect	No effect
Golden Paintbrush	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 jeopardize	-----
Steller Sea Lion	Not likely to adversely affect	No effect
Southern Resident Killer Whale	Not likely to adversely affect	-----

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 - July 15), the NMFS closure period for Chinook in Puget Sound marine waters (March 1 – July 1), and the NMFS closure period for Hood Canal chum in marine waters (March 1 – July 15). The work will also occur outside bald eagle wintering season (October 31 – February 28). There are no bald eagle nests in the vicinity of the project.

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.

4.5.2 No-Action

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

4.6 Cultural Resources

4.6.1 Maintenance Dredging With Beach Nourishment

The Corps has determined that the preferred alternative is a Federal undertaking of the type that could affect historic properties and must comply with the requirements of Section 106, as amended through 2004, of the National Historic Preservation Act of 1966, as amended through 2000 (NHPA; 16 USC 470). Section 106 requires that Federal agencies identify and assess the effects of Federal undertakings on historic properties and to consult with others to find acceptable ways to resolve adverse effects. Properties protected under Section 106 are those that are listed on or are eligible for listing on the National Register of Historic Places (NRHP). Eligible properties must generally be at least 50 years old, possess integrity of physical characteristics, and meet at least one of four criteria for significance. Regulations implementing Section 106 (36 CFR Part 800) encourage maximum coordination with the environmental review process required by the National Environmental Policy Act (NEPA) and with other statutes. The Washington State Archaeological Sites and Resources Act (RCW 27.53) may also apply.

The Corps posted a Public Notice on May 20, 2005, soliciting comments on the proposed project. The Public Notice included a section on "National Historic Preservation Act Compliance," which stated that:

> "Section 106 of the National Historic Preservation Act of 1966, as amended, compliance studies completed to date include an examination of the Washington State Office of Archaeology and Historic Preservation's electronic archaeological and historic site records database, other background research, and a cultural resources survey. The records search indicated that the project area lies within the southern boundary of the Ebey's Landing National Historical Reserve, which is administered by the National Park Service (NPS), but is not likely to effect or be within the viewshed of any of the reserve's contributing historic properties. 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 is in-progress and when completed will be sent to the State Historic Preservation Officer, the National Park Service, the Advisory Council on Historic Preservation, and the appropriate tribe(s). Prior to completing the report the Corps will conduct coordination with the appropriate tribe(s) to determine if they have any knowledge or concerns within the project's Area of Potential Effects (APE).

> The District Engineer invites responses to this Public Notice from Federal, State and local agencies, historical and archeological societies, Indian tribes and other parties likely to have knowledge of or concerns with historic properties located within the APE of the proposed project."

To further identify historic properties, Section 106 of the NHPA (36 CFR 800.4[a][3]) requires Federal agencies to seek information from tribes likely to have knowledge of, or concerns with, historic properties within the project's APE. The Corps sent a letter to the Swinomish Tribe (the project is located on the tribe's ceded lands) on 4 November 2005 soliciting knowledge or concerns for the project location and information on Traditional Cultural Properties (TCPs) for the project. As of the date of this report the Corps has not received any written response from interested parties, the Swinomish, or other tribes indicating any specific cultural resources related concerns or knowledge for the proposed project. The Swinomish Tribe did express verbal, general cultural resource concerns regarding the Admiralty Bay area to the Washington Department of Transportation. The Corps will continue to seek assistance form the Swinomish Tribe in identifying properties that may be of religious or cultural significance, including TCPs, and that may be eligible for the NRHP. Specific guidance concerning the Corps' obligation to contact the Swinomish Tribe regarding this issue is found at 36 CFR 800.4(a)(4), which states that the agency official shall:

(4) Gather information from any Indian tribe or Native Hawaiian organization identified pursuant to Sec. 800.3(f) to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the National Register, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to Sec. 800.11(c).

In a letter sent to the Washington Department of Archaeology and Historic Preservation (DAHP), the Corps proposed that the Area of Potential Effects (APE) for the project be defined as the project boundaries and the DAHP concurred. The Corps' letter requesting concurrence with the then proposed APE was copied to: the Swinomish Tribe's cultural resources contact; the Advisory Council on Historic Preservation; the Ebey's Landing National Historical Reserve; the Trust Board of Ebey's Landing National Historical Reserve; and the Washington State Parks Archaeologist. Other Corps studies included background and archival research, a historic site records search at the DAHP office in Olympia, and the DAHP electronic Historic Property Inventory Database was periodically checked for updated information during these studies.

The Corps has determined that the preferred alternative is a Federal undertaking that has limited potential to cause effects to the known components of the Historical Reserve or indeterminate submerged prehistoric deposits. To comply with Section 106 of the NHPA, a cultural resources investigation has been completed and a report is in progress. As part of the investigation Corps archaeologists have conducted a search of the DAHP electronic Historic Sites Inventory Database, other background and archival research, viewshed surveys, and pedestrian archaeological surveys. Dredging for the project will occur underwater and there is no potential for it to cause any permanent effects to the view shed of any contributing structure within the Historical Reserve. The beach nourishment portion of the project is located along the southern boundary of the Historical Reserve and the dredged material will be placed along the waterward

or south side of existing fill material (Figures 3 and 4). In that context the new material does not appear to have any potential to cause an effect to the viewshed of any component of the Historical Reserve. The potential for the proposed project to cause effects within the proposed APE appears to be limited to the possible presence of unrecorded prehistoric or historic-period archaeological deposits. However, even that potential is low considering that the upland portion of the APE consists of dredged material from the original construction of the ferry landing. A professional archaeological survey of the APE during minus tides produced no evidence of prehistoric-period activity. A non-diagnostic, small ceramic shard was observed on the surface of the shoreline along the western edge of the basin and represented the only possible evidence of historic-period activity found within the APE.

A cultural resources report is in progress and when completed, the report and a determination of effects will be submitted to the State Historic Preservation Officer (SHPO) for her review. At the same time a copy of the report will be sent to the Swinomish Tribe's cultural resources contact. Coordination with the cultural resource contact for the tribe will continue at regular intervals throughout the project.

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.

4.6.2 No-Action Alternative

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

4.7 Water Quality

4.7.1 Maintenance Dredging With Beach Nourishment

Water quality impacts from dredging and disposal would be temporary and discountable. Minor short term increases in turbidity are expected during dredging. However, dredging will occur intermittently to avoid impacts to the WSDOT ferry, thus providing periods for suspended sediments to settle. In addition, because of the shallow harbor and the daily periodic movements of the WSDOT ferries and subsequent prop wash, bottom sediments are routinely suspended in the area.

The material to be dredged and placed on the beach was tested with standard PSDDA protocols by the DMMP and was ranked as having a low concern and no negative impacts from contaminants are anticipated.

Minor and temporary increases in turbidity are also expected during disposal activities; however, the majority of materials used beneficially at the disposal site will be placed above the mean-higher-high water line.

During construction, best management practices for equipment operation and storage and use of hazardous materials would be employed. No leakage or spills of hazardous materials would be expected to occur.

Water quality would be monitored during construction utilizing a protocol coordinated with the Washington Department of Ecology. Should turbidity levels reach an unacceptable level, work would temporarily cease until water quality can be restored.

4.7.2 No-Action Alternative

Without dredging in the navigation channel, continued shoaling would likely decrease depths in the basin. Therefore, prop wash from routine ferry traffic would likely increase the amount of material suspended in the water column.

4.8 Air Quality and Noise

4.8.1 Maintenance Dredging With Beach Nourishment

Air quality would meet the standards as set forth by the Washington Department of Ecology and would not be permanently affected by the construction of the project. Noise would be intermittent at the site and would vary depending on the frequency of dredging and disposal activities. Noise disruption factors were considered for their effect on threatened and endangered species in the ESA document.

During construction, there would be temporary and localized reduction in air quality due to emissions from heavy machinery operating during the dredging and disposal activities. These emissions would 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, impacts would not be major.

Noise levels would increase slightly above ambient while construction equipment was operating. However, these effects would be temporary and localized and equipment work schedules would be coordinated with Ft. Casey State Park to limit impacts to visitors.

4.8.2 No-Action Alternative

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

4.9 Utilities and Public Services

4.9.1 Maintenance Dredging With Beach Nourishment

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

4.9.2 No-Action Alternative

The No-Action alternative would limit navigation access to Keystone Harbor, primarily Washington Department of Transportation ferry access and likely lead to closures of the Keystone- Pt. Townsend ferry run. Continued erosion to the beach adjacent to the harbor could result in damage to the State park facilities and potentially damage Route 20.

4.10 Land Use

4.10.1 Maintenance Dredging With Beach Nourishment

The preferred alternative would not cause any unique effects or impacts to land use. The area would remain a state park open for public use, although the disposal area may be temporarily closed to access during dredging and disposal activities.

4.10.2 No-Action Alternative

The no action alternative might result in limited use of the area for the WSDOT ferry transportation as shoaling would be expected to continue in the harbor jeopardizing the safety of ferry access. In additional, recreational access may become limited on the eroding shoreline of Ft. Casey State Park.

4.11 Recreation

4.11.1 Maintenance Dredging With Beach Nourishment

The preferred alternative would allow for continued ferry operations to allow continued use of the WA State ferry by recreators transiting to and from Whidbey Island. Beach maintenance would cause short term closures of the beachfront in the disposal area during construction, but would allow for long term public access to beach and boat launch. The beach nourishment would also help protect access to the jetty which is popular feature of SCUBA divers and fishers.

4.11.2 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.

4.12 Hazardous, Toxic, and Radioactive Waste

4.12.1 Maintenance Dredging With Beach Nourishment

There are no known sites at the project locations that have any hazardous, toxic, or radioactive waste and the material at the site was determined by DMMP that there is a low concern for contaminants in the dredged material; therefore, the Corps does not anticipate any effect.

4.12.2 No-Action Alternative

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

4.13 Aesthetics

4.13.1 Maintenance Dredging With Beach Nourishment

Maintenance activities will not significantly affect the aesthetics of the area as these activities have routinely occurred in the area every 5-6 years. Placement of the dredged material at the disposal will not exceed the +19 MLLW contour, in order to prevent blocking the existing Puget

Sound view from Route 20. No long-term affects are anticipated to wildlife in the surrounding area and marine park.

4.13.2 No-Action Proposed Alternative

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

5. UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse effects associated with this project include:

(1) a temporary and localized increase in noise and turbidity, which may disrupt fish and wildlife in the area,
(2) a temporary and localized disruption of benthic productivity
(3) a temporary and localized disruption of traffic by construction vehicles
(4) a temporary disruptions to recreational uses at the project site

6. MITIGATION

Mitigation for impacts of a proposed action is something that is evaluated as part of documentation under NEPA, such as this EA. Mitigation takes the following forms (Federal Register 1978):

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments

The preferred alternatice includes several measures that would be employed to avoid and minimize any adverse effects, including:

(1) all work would occur during the WDFW approved in-water work window
(2) no work would occur during the spring months when macro-algae are most susceptible to harm from increases in turbidity
(3) all easily accessible large woody material at the disposal site would be moved, temporarily stockpiled, and replaced on the beach at the conclusion of the project
(4) all dredged material would be beneficially used as beach nourishment
(5) all work would occur in areas previously disturbed by the navigation project
(6) turbidity would be monitored during construction
(7) all work would be coordinated with Ft. Casey State Park to limit impacts to recreators

7. COORDINATION

The following agencies and entities have been contacted during the preparation of this environmental assessment:

- National Park Service
- The Trust Board of Ebey's Landing
- Washington Department of Transportation (Washington State Ferries)
- Washington State Office of Archaeology and Historic Preservation
- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- Washington Department of Fish and Wildlife
- The Skagit River System Cooperative
- Washington Trout
- Washington Department of Ecology
- Fort Casey State Park

8. 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 impacts on resources in the vicinity of the Keystone navigation project.

8.1 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 7 (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 7. 1870 T- sheet overlaid on a 1998 orthophoto showing little change in the shoreline during this time period

The Corps of Engineers mapped the Lake Crockett area in 1914. At this 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 also indicated the mean lake level was almost 5 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 also 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, and 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…

A more detailed map of the area providing elevation data for the barrier beach and Lake Crockett was prepared by the Corps of Engineers 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 (NPS) (2005) provides information on more recent attempts to control water levels in Lake Crockett. In 1948, the Island County Drainage District installed tide gates in an effort to drain the lake and its surrounding marshes. This effort reduced the lake to about 10 acres in size by 1953. In 1974, the flapper valves rusted off the tide gate and allowed water to flow into the lake. The drainage district was no longer active, so the valves remained open and the lake grew to about 750 acres in size by the spring of 1982. Lands around the lake were no longer cultivated so flooding was not an issue for agricultural lands. However, residences in a nearby housing development had flooded, so the drainage district was reactivated and new flapper valves were installed on the gates in 1982.

The National Park Service determined that reducing the lake's water levels would impair the scenic, historical, and natural values of Lake Crockett. In 1985, a lawsuit was filed by Seattle Pacific University regarding the management of lake levels. The Skagit County Superior Court's decision in the case required the drainage district to maintain the lake at higher levels protective of wildlife and aquatic resources. However, in 1989 or 1990, mosquitoes became a problem and lake water management operations were blamed. The infestation became so severe in 1992 that the tide gates were operated to lower lake levels.

8.2 Existing Conditions

Water levels in Lake Crockett continue to be managed to levels lower then 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).

8.3 Reasonably Foreseeable Future Actions

WSDOT is investigating improvements at the Keystone Ferry terminal. Information regarding the potential WSDOT project can be found on the World-Wide-Web at:
http://www/wsdot/wa/gov/Ferries/projects/keystoneharbor/
Corps maintenance dredging in 2006 is necessary to provide a safe navigation channel regardless of the WSDOT's long-term construction plans. The Corps knows of no other actions that are reasonably certain to occur within the action area.

8.4 Incremental Effects of the Proposed Action

In the context of all that has occurred in the past, the dredging and placement of up to 45,000 cubic yards will cause only a small, temporary increment more harm to biological function. The project will not change function or extent of the existing navigation project, so it will not affect other shoreline processes. The project will also 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.

9. ENVIRONMENTAL COMPLIANCE

9.1 National Environmental Policy Act (NEPA) (42 USC 4321 et seq.)

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

9.2 Endangered Species Act of 1973, as Amended (16 USC 1531-1544)

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. A Biological Evaluation is currently being prepared and will be submitted to NMFS and USFWS for concurrence prior to initiation of construction.

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

The Clean Water Act requires federal agencies to protect waters of the United States. The Act disallows the placement of dredged or fill material into waters (and excavation) unless it can be demonstrated there are no reasonable alternatives. The Corps has prepared a 404(b)(1) Consistency Evaluation that can be found in Appendix A and has contacted the Washington Department of Ecology requesting a 401 water quality certification to be obtained prior to proceeding with the project.

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

The Coastal Zone Management Act of 1972 as amended (15 CFR 923) requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program. The Corps will prepare a Coastal Zone Consistency Determination and coordinate with the Washington Department of Ecology.

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

Section 106 of the National Historic Preservation Act (36 CFR PART 800) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. As required under Section 106 of the NHPA, the Corps is coordinating with the Washington State Office of Archeology and Historic Preservation (OAHP) and the Swinomish Tribe.

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

The Clean Air Act requires states to develop plans, called State Implementation Plans (SIP), for eliminating or reducing the severity and number of violations of National Ambient Air Quality Standards (NAAQS) while achieving expeditious attainment of the NAAQS. The act also requires Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is defined as an action that will not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The U.S. Army Corps of Engineers has determined that emissions associated with this project will not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone).

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

The proposed project would be conducted in such a manner that migratory birds would not be harmed or harassed. The proposed work would be outside the nesting season for most birds. Existing flow regimes and hydrology in Lake Crockett will not be affected by this project.

9.16 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 siting a facility that will discharge pollutants or contaminants. Therefore the project is in compliance with this order.

9.17 Executive Order 11990, Protection of Wetlands

In order to avoid to the extent possible the long and short term adverse impacts 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

SECTION 1

> (a) Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for…conducting Federal activities and programs affecting land use…

SECTION 5

In carrying out the activities described in Section 1 of this Order, each agency shall consider factors relevant to a proposal's effect on the survival and quality of the wetlands. Among these factors are:

> (a) public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion;
>
> (b) maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and
>
> (c) other uses of wetlands in the public interest, including recreational, scientific, and cultural uses.

Maintenance dredging and disposal activities will not alter the current 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.

9.18 Treaty Rights

In the mid-1850's, the United States entered into treaties with a number of Native American tribes in Washington. 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 also found 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* impacts to access to usual and accustomed fishing area violates 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 also 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. We believe that:

(1) The work would not interfere with access to usual areas

(2) The work would not cause the degradation of fish runs accustomed fishing grounds or with fishing activities or shellfish harvesting; and habitat; and

(3) The work would not impair the Treaty tribes' ability to meet moderate living needs

10. CONCLUSION

Based on the preceding analysis, the proposed maintenance dredging and beneficial use of dredged material disposal 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.

11. REFERENCES

Collins, B.D., and A.J. Sheikh. 2005. *Historical reconstruction, classification, and change analysis of Puget Sound tidal marshes.* Report to Washington Department of Natural Resources Aquatic Resources Division, Olympia, WA. <http://riverhistory.ess.washington.edu/research/tidal_marshes.php>.

National Park Service. 2005. *Ebey's Landing National Historical Reserve Draft General Management Plan and Environmental Impact Statement.* National Park Service, Pacific West Region, Park Planning and Environmental Compliance, Seattle, WA. <http://parkplanning.nps.gov/document.cfm?projectId=11188&documentID=12304>.

Olympic Peninsula Audubon Society, 2006. web site. http://www.olympicpeninsulaaudubon.org/shell.php?page=conserve_crocket_lake

Puget Sound Dredged Disposal Analysis Program (PSDDA). 1989. *Final Environmental Impact Statement: Unconfined Open-Water Disposal Sites for Dredged Material Disposal, Phase II (North and South Puget Sound)*. Prepared by the Corps of Engineers in cooperation with the Environmental Protection Agency and the Washington Departments of Ecology and Natural Resources. Seattle, WA

Shaffer, J.A. 1998. "Kelp Bed Habitats of the Inland Waters of Western Washington." *In* Proceedings Puget Sound Research 1998. Puget Sound Action Team, Olympia, WA. < http://www.psat.wa.gov/Publications/98_proceedings/sessions/aquatic_plants.html>.

Shaffer, J.A, and D.S. Parks. 1994. "Seasonal Variation in and Observations of Landslide Impacts on the Algal Composition of a Puget Sound Nearshore Kelp Forest." *Botanica Marina* 37:315-323.

Shipman, H. 2001. "Beach Nourishment on Puget Sound: A Review of Existing Projects and Potential Applications" *In* Proceedings Puget Sound Research 2001. Puget Sound Action Team, Olympia, WA. <http://www.psat.wa.gov/Publications/01_proceedings/sessions/oral/4b_shipm.pdf>.

Simenstad, C.A., B.S. Miller, J.N. Cross, K.L. Fresh. S.N. Steinfort, J.C. Fegley. 1977. *Nearshore Fish and Macroinvertebrate Assemblages along the Strait of Juan de Fuca including Food Habits of Nearshore Fish*. NOAA Technical Memorandum ERL MESA-20.

Smith, Gary Frederick. "Observations on the Effects of Dredging to Subtidal Communtites at Keystone Harbor, Whidbey Island." Western Washington State College. June 1976.

U.S. Fish and Wildlife Service. June 11, 1997. *Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for Castilleja levisecta (Golden Paintbrush).* Federal Register 62 (112): 31740.

Washington State Department of Transportation. 2005. *Keystone Harbor Study Final Report*. Washington State Ferries, Seattle, WA.

Washington State Parks and Recreation Commission. "Fort Casey." 20 Sept 2005. < http://www.parks.wa.gov/parkpage.asp?selectedpark=Fort%20Casey>.

U.S. Army Corps of Engineers, Seattle District. 1972. Keystone Harbor Shoaling Study. Engineering Division Techincal Memorandum, Seattle, WA.

U.S. Army Corps of Engineers, Seattle District. 1975. Keystone Harbor Disposal Site Erosion Study. Engineering Division Techincal Memorandum, Seattle, WA.

U.S. House of Representatives, 63d Congress, Second Session. May 16, 1914. *Admiralty Inlet with Crockett Lake, Wash.* Document No. 983.

U.S. House of Representatives, 77th Congress, 1st Session. June 25, 1941. *Channel from Puget Sound into Lake Crockett (Keystone Harbor), Wash.* Document No. 303.

DRAFT FINDING OF NO SIGNIFICANT IMPACT

FISCAL YEAR 2006 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 4 to 6 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 1999.

The proposed work consists of dredging up to 45,000 cubic yards of shoaled material with disposal for beach nourishment east of the jetty. The work is proposed to occur during the Washington Department of Fish and Wildlife approved in-water work window, July 16 – February 15.

Environmental impacts associated with the proposed action include minor short-term impacts to water quality due to turbidity increases, minor short-term impacts to air quality and noise levels from operation of machinery involved in dredging and disposal activities, minor short-term stress to aquatic organisms due to turbidity increases, burial of small areas of benthos along with attendant plants and animals, and minor short-term impacts to the esthetics of the area during disposal activities.

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. In order 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.

For the reasons described above, I have determined that maintenance dredging and the beneficial use of dredge material of this 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 action and therefore does not require an environmental impact statement.

_____ _____

Date

Debra M. Lewis
Colonel, Corps of Engineers
District Commander

APPENDIX A

CENWS-PM-PL-ER February 13, 2006

SECTION 404(b)(1) EVALUATION
FISCAL YEAR 2006 MAINTENANCE DREDGING
KEYSTONE HARBOR, WASHINGTON

1. Introduction. The preceding environmental assessment (EA) describes the proposed Fiscal Year (FY) 2006 dredging and beach nourishment disposal of sediments from the Keystone Harbor project at Keystone, Whidbey Island, Washington. The following evaluation was prepared pursuant to Section 404(b)(1) of the Clean Water Act in accordance with guidelines promulgated by the Environmental Protection Agency (40 CFR 230) for evaluation of the discharge of dredged or fill materials into waters of the United States. References to the EA for this section will be made throughout the 404 evaluation.

2. Description of Proposed Discharge.

2.1 Need for Discharge. Please see section 1.3 of the EA.

2.2 Location. See section 1.1 of the EA.

2.3 Description of Discharge Site. Dredged material will be discharged for beach nourishment east of the jetty (please see EA, figure 2).

2.4 Method of Discharge. Please see section 2.2 of the EA.

2.5 Disposal Schedule. Dredging will occur during the approved Washington Department of Fish and Wildlife in-water work window, July 16- February 15.

2.6 General Characteristics of Material. Material to be dredged consists of littoral drift deposits composed of sandy gravel with less than one percent of silt. Material is acceptable for open-water disposal.

2.7 Quantity of Material. The proposed project would discharge approximately 25,000 - 45,000 cubic yards of material.

2.8 Source of Material. Material is to be dredged from within the navigation channel and basin boundaries.

3. Potential Impacts and Chemical Characteristics of the Aquatic Ecosystem.

3.1 Substrate. Beach nourishment has been performed in the past with materials from the channel. The proposed discharge will help maintain the existing substrate.

3.2 Suspended Particulate/Turbidity. Sediments to be discharged are composed primarily of sands and gravel and will settle quickly.

3.3 Water Quality. Turbidity will occur during disposal operations.

3.4 Current Patterns and Water Circulation. No impact.

3.5 Normal Water Fluctuations. No impact.

3.6 Salinity Gradients. No impact.

4. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem.

4.1 Threatened and Endangered Species. A Biological Evaluation will be prepared and submitted to the U.S. Fish and Wildlife Service and National Marine Fisheries Service that address the project effects to listed species found in the area. No major impacts are anticipated.

4.2 Aquatic Food Web. Fish and other mobile organisms tend to avoid the activity and turbidity of dredging and disposal operations and will, therefore, be minimally impacted. Benthic organisms will be covered by settling of dredged material, but are expected to recolonize quickly. No long term adverse impacts to aquatic organisms are anticipated.

4.3 Wildlife. Not wildlife species are expected to be affected by the proposed action.

5. Potential Impacts on Special Aquatic Sites. Proposed action will have no impact on any special aquatic sites as described in subpart E of the Section 404 (b)(1) guidelines.

6. Potential Effects on Human Use Characteristics.

6.1 Recreational and Commercial Fisheries. No impact.

6.2 Water Related Recreation. There will be no permanent impacts to water related recreation-just minor, temporary restrictions to recreational facilities in the project area during construction. All dredging and disposal activities will be coordinated with Fort Casey State Park to help limit impacts to recreation.

6.3 Esthetics. No long-term impact.

6.4 Parks, National and Historic Monuments. National Seashores, Wilderness Areas. Research Sites, and Similar Preserves. An underwater park (State of Washington) is located in the disposal area. Beach nourishment is considered necessary to maintain existing conditions. The project will not change the character of the Ebey's Landing National Historical Reserve.

7. Evaluation and Testing of Discharge Material.

7.1 General Evaluation of Dredged or Fill Material. The material consists of sandy gravel, there is no reason to believe the material would be unacceptable for disposal.

7.2 Evaluation of Chemical-Biological Interactive Effects.

7.2.1 Exclusion of Material from Testing. Material meets criteria for exclusion from testing.

7.2.2 Water Column Effects. Rapid settling of discharged material is expected, resulting in no significant water column effects.

7.2.3 Effects on Benthos. Some covering of benthos is anticipated. Size of disposal area and small quantity of material would minimize this effect.

7.3 Comparison of Excavation and Discharge Sites.

7.3.1 Total Sediment Chemical Analysis. Chemical analyses were not considered necessary as the material meets the exclusion criteria.

7.3.2 Biological Community Structure Analysis. A community structure analysis was not considered necessary and was not performed.

7.4 Physical Tests and Evaluation. Material to be discharged will settle quickly.

8 Factual Determinations.

8.1 Physical Substrate Determinations. The dredged material will have minimal impact on the disposal area substrate. Beach nourishment will maintain the substrate.

8.2 Water Circulation, Fluctuation, and Salinity Determinations. No impact.

8.3 Suspended Particulate/Turbidity Determinations. Turbidity increases due to the proposed discharge will be minimal and short lived and monitored to comply with state standards.

8.4 Contaminants Determinations. No contaminants are anticipated.

8.5 Aquatic Ecosystem and Organism Determinations. Please see section of the 4.4 of the EA.

8.6 Proposed Disposal Site Mixing Zone Determinations. The quantity to be discharged is relatively small; the mixing zone will be small in size and will have low potential for adverse environmental effects.

8.7 Determination of Cumulative Effects on the Aquatic Ecosystem. Proposed action will have no adverse cumulative effects. No planned related projects are anticipated to occur in the project area.

8.8 Determination of Secondary Effects on the Aquatic Ecosystem. No adverse secondary effects are anticipated from the proposed discharge. Beneficial effects resulting from beach nourishment will occur.

9. Proposed and Alternative Actions to Minimize Adverse Effects. Location of proposed

discharge, actions affecting human use, and actions affecting plant and animal populations are described in the EA. Please see Section 5 of the EA.

10. Analysis of Practicable Alternatives.

10.1 Identification and Evaluation of Practicable Alternatives. Please see EA section 2.

10.2 Evaluation of Alternatives to Discharge in Special Aquatic Sites. Proposed action will have no impact on any special aquatic sites as described in subpart E of the Section 404(b)(1) guidelines.

11. Review of Conditions for Compliance.

11.1 Availability of Practicable Alternatives. Please see EA, section 4. There are no practicable alternatives to the proposed discharge that would have substantially less adverse impact on the aquatic ecosystem and still provide safe navigation in the channel and basin.

11.2 Compliance with Pertinent Legislation.

11.2.1 State Water Quality Standards and Federal Toxic Effluent Standards (Section 307 of the Clean Water Act). The proposed discharge will comply with all applicable state water quality and Federal toxic effluent standards. Water quality certification will be received prior to initiation of dredging and disposal activities.

11.2.2 Threatened and Endangered Species (Endangered Species Act of 1973). No threatened or endangered species are anticipated to be adversely affected by proposed action.

11.2.3 Marine Sanctuaries (Marine Protection, Research, and Sanctuaries Act of 1977). A marine sanctuary is located in the vicinity of the proposed beach nourishment area. The project will result in a minor, temporary increase in turbidity. However, the project will also help re-establish a more diverse beach profile adjacent to the sanctuary.

11.3 Potential for Significant Degradation of Water as a Result of the Discharge of Polluted Material. None.

11.4 Steps to Minimize Potential Adverse Impacts on the Aquatic Ecosystem. Dredging and disposal will have minimum impact on water quality. Operations have been scheduled to have minimal impact on spawning fish and recreation.

12. Findings. The discharge of dredged material for the FY 2006 maintenance dredging of the Keystone Harbor Channel complies with the Section 404(b)(1) guidelines.