Alaska District
U.S. Army Corps of Engineers

Environmental Resources Section

Public Notice

JAN 22 2014

Date _____ Identification No. ER 14-04
Please refer to the identification number when replying.

The U.S. Army Corps of Engineers (Corps) has prepared an environmental assessment (EA) and finding of no significant impact (FONSI) for the following action:

Small Boat Harbor Dredging
Old Harbor, Alaska

The U.S. Army Corps of Engineers (Corps) is proposing to dredge the existing small boat harbor basin and entrance channel at the Kodiak Island community of Old Harbor, Alaska, to remove accumulated sediment and achieve the original project design depth. A 2009 project condition survey and tidal datum update found that the entrance channel depth is -3 feet mean lower low water (MLLW), well above the -8 feet MLLW project depth. The entire harbor basin is also above project depth. Vessels frequently hit bottom trying to access the harbor and must maneuver carefully to find deeper portions of the channel for entry and exit. The estimated quantity to be removed is 50,000 cubic yards, and the Corps anticipates that dredging would be done with an excavator or clam-shell dredge. The dredged material would be stockpiled on shore near the harbor site prior to on-land disposal or construction use. The Corps has identified two areas of chemical contamination within the harbor basin; dredged material from those areas would be managed separately and re-analyzed to determine the disposal options for that material.

The proposed action and potential environmental impacts are described in the enclosed EA. The EA is available for public review and comment for 30 days from the date of this notice. The EA and unsigned FONSI may be viewed on the Alaska District's website at: http://www.poa.usace.army.mil. Click on the Reports and Studies button and look under Documents Available for Review, Civil Works.

No public meeting is scheduled for this action. If you believe a meeting should be held, please send a written request to the address below during the 30-day review period explaining why you believe a meeting is necessary.

The comment period will close 30 days from the date of this notice. Written comments received on or before this date will become part of the official record. The FONSI will be signed upon review of comments received and resolution of significant concerns. Please submit comments regarding the proposed action to the following address:

U.S. Army Corps of Engineers, Alaska District
ATTN: CEPOA-PM-C-ER (Floyd)
P.O. Box 6898
Joint Base Elmendorf-Richardson, AK 99506-0898

Notice is hereby given that the Corps will be applying for State Water Quality certification from the Alaska Department of Environmental Conservation (ADEC). ADEC may certify there is a reasonable assurance this proposed action and any discharge that might result will comply with the Clean Water Act, Alaska Water Quality Standards, and other applicable State laws. ADEC's certification may authorize a mixing zone and/or a short-term variance under 18 AAC 70. ADEC may also deny or waive certification.

Any person desiring to comment on this proposed action with respect to water quality certification may submit written comments to ADEC at the address below within 30 days from the date on this public notice.

Alaska Department of Environmental Conservation
WQM/401 Certification
555 Cordova Street
Anchorage, AK 99501-2617
Telephone: (907) 269-7564
FAX (907) 269-7508

Please contact Mr. Christopher Floyd of the Environmental Resources Section at (907) 753-2700 if you have any questions about the proposed action. Comments or requests for additional information may also be submitted electronically to the email address: Christopher.B.Floyd@usace.army.mil.

Michael R. Salyer
Chief, Environmental Resources Section

US Army Corps of Engineers
Alaska District

Environmental Assessment and Finding of No Significant Impact

Small Boat Harbor Dredging
Old Harbor, Alaska

January 2014

FINDING OF NO SIGNIFICANT IMPACT

Small Boat Harbor Dredging
Old Harbor, Alaska

The U.S. Army Corps of Engineers (Corps) will dredge the existing small boat harbor basin and entrance channel at the Kodiak Island community of Old Harbor, Alaska, to remove accumulated sediment and achieve the original project design depth. A 2009 project condition survey and tidal datum update found that the entrance channel depth is -3 feet mean lower low water (MLLW), well above the -8 feet MLLW project depth. The entire harbor basin is also above project depth. Vessels frequently hit bottom trying to access the harbor and must maneuver carefully to find deeper portions of the channel for entry and exit. The estimated quantity to be removed is 50,000 cubic yards, and the Corps anticipates that dredging will be done with an excavator or clam-shell dredge. Most of the material is sand and gravel suitable for construction, though chemical contamination exists in some areas of the harbor, so the material will be stockpiled upland near the harbor. Material from identified chemically-contaminated areas of the harbor will be stockpiled separately and tested to determine whether it is suitable for local use or must be disposed of at an approved facility.

This Federal action complies with the National Historic Preservation Act, the Endangered Species Act, the Clean Water Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the National Environmental Policy Act. The completed environmental assessment supports the conclusion that the action does not constitute a major Federal action significantly affecting the quality of the human and natural environment. An environmental impact statement (EIS) is therefore not necessary for this dredging project.

_____ _____

Christopher D. Lestochi DATE
Colonel, Corps of Engineers
District Commander

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ABBREVIATIONS AND ACRONYMS

ADEC – Alaska Department of Environmental Conservation
ADFG – Alaska Department of Fish and Game
AHRS – Alaska Heritage Resources Survey
APE – Area of Potential Effect
BMP's – Best Management Practices
Corps – U.S. Army Corps of Engineers
CWA – Clean Water Act
cy – Cubic Yards
EA – Environmental Assessment
EFH – Essential Fish Habitat
EPA – U.S. Environmental Protection Agency
ESA – Endangered Species Act
FONSI – Finding of No Significant Impact
HAPC – Habitat Area of Particular Concern
MHHW – Mean Higher High Water
MLLW – Mean Lower Low Water
NMFS – National Marine Fisheries Service
NOAA – National Oceanic Atmospheric Administration
SHPO – State Historic Preservation Officer
USFWS – U. S. Fish and Wildlife Service
USACE – U.S. Army Corps of Engineers

Environmental Assessment
Small Boat Harbor Dredging
Old Harbor, Alaska

1.0 Purpose and Need for the Proposed Action

1.1. Introduction

The Alaska District U.S. Army Corps of Engineers (Corps) Environmental Resources Section prepared this environmental assessment (EA) to describe proposed dredging at the small boat harbor in Old Harbor, Alaska, and to discuss potential environmental effects of this project. The community of Old Harbor is on the southeast coast of Kodiak Island, about 50 miles south-southwest of the City of Kodiak (figure 1). The project site is at latitude 57.21°N, longitude 153.30°W, in Sections 29 and 30, Township 34S, Range 25W, of the Seward Meridian.

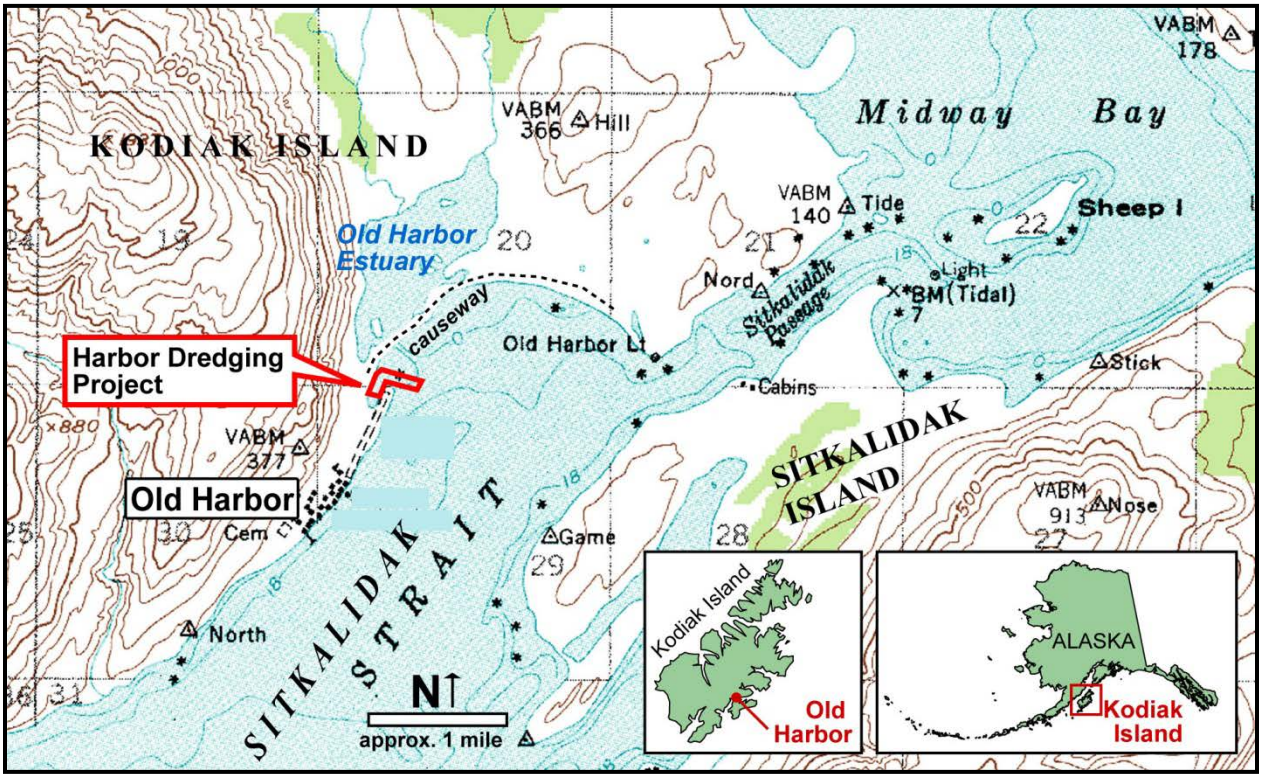

Figure 1. Location and vicinity of the Old Harbor dredging project.

1.2 Project Authority

Section 107 of the Rivers and Harbors Act, 14 July 1960 (Public Law 86-645), as amended and authorized by the Chief of Engineers, 15 June 1966, provides for a small boat basin 200 feet wide by 700 feet long at 8 feet below MLLW, an entrance channel 60 feet wide by 600 feet long at a depth of 8 feet below MLLW (figure 2)

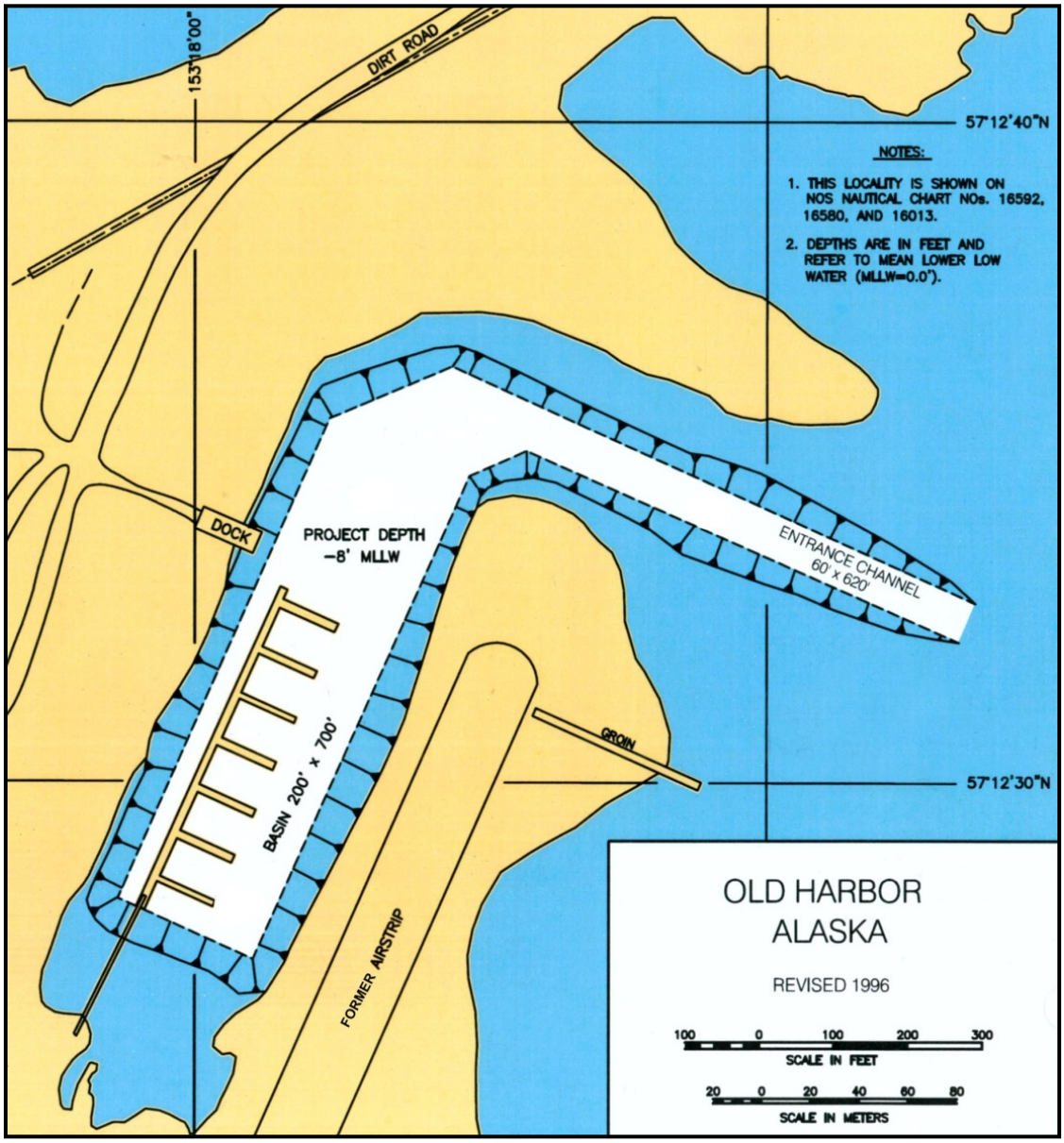

Figure 2. Layout of Federal dredging project (USACE 2011).

Figure 3. Aerial photograph showing harbor float configuration as of 2010.

1.3 Purpose and Need

Built in 1967, the small boat harbor at Old Harbor is vital to the economic and cultural interests of the remote island community and provides the only harbor of refuge within 40 miles. The Corps of Engineers 2009 project condition survey and a 2010 National Oceanic and Atmospheric Administration (NOAA) tidal datum update revealed that the entrance channel depth is 3 feet below mean lower low water (MLLW), far shallower than the -8 feet MLLW project depth. The entire harbor basin is also above project depth despite maintenance dredging in 1971 and 1993. The project may not have been originally constructed to the intended depth due to inadequate tidal data at the time. Vessels frequently hit bottom trying to access the harbor and must take care to seek out the deeper portions of the channel for entry and exit (USACE 2011).

An estimated 50,000 cubic yards of sediment must be removed from the harbor basin and entrance channel to return the harbor depths to -8 feet MLLW. Most of the material is sands and gravels suitable for construction, so dredged material is expected to be stockpiled upland in the vicinity of the harbor basin. If the stockpiled material meets State of Alaska contaminant limits, it would be available for local use as fill.

2.0 Alternatives and Proposed Action

2.1 No Action Alternative

The No Action alternative would result in no dredging of the Old Harbor entrance channel. This alternative would avoid the potential environmental impacts and temporary restricted access to the harbor described in later sections. However, it would also leave the current basin and entrance channel at depths well above the project limit of -8 feet MLLW, and the difficulties with safe access and potential vessel damage would remain.

2.2 Action Alternatives

Any dredging action requires a dredging method, a place to put the dredged material, and the means of transporting the dredged material to the disposal/placement site. The basic choices of dredge type are mechanical (clamshell or excavator) versus hydraulic (suction), and transport via a barge or hopper versus a pipeline. The usual alternatives for the placement of dredged material include: offshore disposal, near-shore placement as fill for construction or environmental-enhancement purposes, onshore dewatering and stockpiling for onshore beneficial use, and onshore disposal.

The choices of dredging and transport methods are constrained at Old Harbor by:

- The small size of the harbor, limiting the size of dredging equipment and vessels that can be used.

- The presence of cobbles and the need to dredge native (i.e., not previously dredged) consolidated material, which renders a suction dredge impractical.

The choice of the placement alternative at Old Harbor is constrained by the facts that:

- The waters just offshore of Old Harbor are in the U.S. Territorial Sea, and no offshore disposal site approved by the U.S. Environmental Protection Agency (USEPA) under the Marine Protection, Research, and Sanctuaries Act (MPRSA) exists in the area.

- The local proponent does not have a near-shore project in development that would be ready to receive the dredged material as fill.

The material to be dredged is expected to be relatively rich in sands and gravels, and therefore, suitable for upland construction and road repair. The City of Old Harbor has agreed to receive the dredged material and is providing locations for stockpiling the dredged material.

2.3 Preferred Alternatives

The dredging method would be identified by the contractor. Based on the nature of the dredging project, the constrained working space, and the material to be dredged, a barge-mounted excavator or clam-shell dredge may be used for dredging. The dredged material would be deposited first onto a barge then transferred to a dump truck, or where location permits, deposited directly into the truck. Upland placement for local beneficial use is the most practical and available alternative for the placement of non-contaminated sediment. Stockpiled, segregated sediment from identified contaminated areas of the harbor (section 2.4) that does not meet State of Alaska cleanup standards after testing may need to be transported away from Old Harbor for disposal at a permitted landfill.

2.4 Sediment Quality Considerations

Sediment in the small boat harbor was sampled and tested for chemical contamination in November 2012 (USACE 2013a), with follow-up sampling in March (USACE 2013b) and June 2013 (USACE 2013c). The sediment was found to be relatively clean, with generally low concentrations of common contaminants such as fuels and metals. However, a single sample on the west side of the harbor basin contained the chemical pentachlorophenol (PCP) at a concentration higher than State of Alaska regulations (ADEC 2012) would allow for unrestricted on-land disposal (0.047 mg/kg). PCP was a common wood preservative before its use was restricted in the 1980s, and its presence in the harbor sediment at Old Harbor is presumably due to old wooden float and pier structures that have since been removed.

The sampling and analysis performed in March 2013 used a more refined test method for PCP, and confirmed the presence of PCP (at concentrations of 0.026 to 0.120 mg/kg) in the area in which PCP was detected in 2012, but did not delineate the extent of PCP contamination. The June 2013 sampling event revealed wide-spread but generally very low concentrations (less than 0.010 mg/kg) of PCP through the harbor basin, with a swath along the west side of the basin containing PCP concentrations above or approaching the ADEC soil cleanup level of 0.047 mg/kg. The June 2013 sampling also detected a small area of fuel-contaminated sediment (340 mg/kg diesel-range organics) at the southeast corner of the Federal limit and is thought to be associated with a sunken watercraft (figure 4).

The PCP and fuel contamination are assumed to be concentrated in the upper 2 feet of harbor sediment, as the harbor shoals slowly, and these contaminants would be expected to have settled from above and been entrained in fine sediment and organic material. The volumes of sediment within the harbor exceeding ADEC soil cleanup levels are estimated to be:

- Pentachlorophenol (PCP) above 0.043 mg/kg: 800 cubic yards
- Diesel-Range Organics (DRO) above 230 mg/kg: 400 cubic yards

The March 2013 sampling and analysis established that concentrations of the metals arsenic and chromium in the harbor sediment, while higher than State of Alaska cleanup levels, are no higher

than concentrations of those metals found in background sediments or soils and at the proposed stockpile locations (USACE 2013b).

The process of dredging and dewatering may substantially change contaminant concentrations in the dredged material, and the stockpiled material may need to be tested further prior to its use for construction or fill.

2.5 Construction Considerations and Minimization of Environmental Impacts

The Corps expects that either a barge-mounted excavator or clam-shell dredge would be used for dredging. The dredged material would be accumulated on a barge, then transferred to a dump truck, or where location permits, deposited directly into the truck. Along the gradually-sloping shoreline on the west side of the basin, some dredging may also be conducted using an excavator on the shore.

Because of the coarse nature of the dredged material, the small extent of contaminated sediment, and the close confines of the harbor basin, the Corps considers the risk of spreading chemical contamination beyond the harbor basin during dredging to be small and determines that the use of a silt curtain in this setting would not provide significant additional environmental benefit. The Corps therefore does not propose to require the use of a silt curtain for this project.

The coarse-grained dredged material is expected to rapidly dewater in the process of being dredged and transported, and to contain minimal free water by the time it is stockpiled on shore. For that reason, no dewatering basins would be constructed; the dredged material would be immediately stockpiled in the upland locations shown in figure 4. Dredged material from the areas of PCP and fuel contamination would each be segregated and stockpiled on liners separately from the non-contaminated dredged material. The non-contaminated dredged material would not be placed on liners, but all stockpiles would be covered to reduce dust generation and infiltration of precipitation. The stockpiles of suspected contaminated material would be sampled and analyzed for contamination levels. The results of those analyses and consultation with the Alaska Department of Environmental Conservation would determine whether that segregated dredged material could be used for local purposes or must be disposed of at an appropriate off-site facility.

The in-water dredging work is expected to take about 50 days, although the entire project, including mobilization and management of the stockpile areas, may take 5 to 6 months.

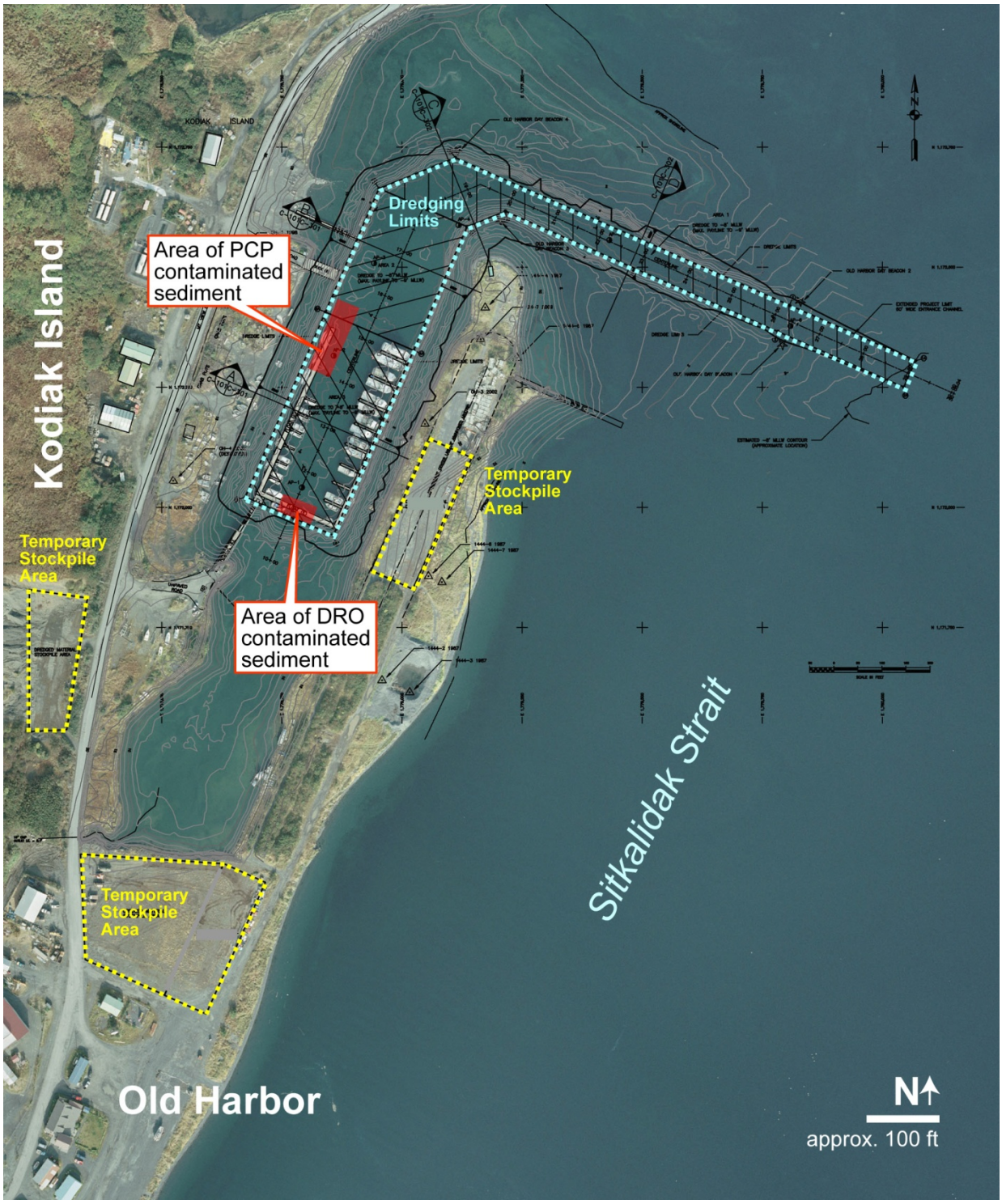

Figure 4. Layout of harbor dredging limits, and proposed dredged material handling areas.

Other steps to avoid or minimize environmental impacts would include but not be limited to the following:

- To minimize the danger to marine mammals from project-related vessels, speed limits (e.g. less than 8 knots) would be imposed on vessels moving in and around the project area.

- An oil spill/pollution prevention plan would be prepared by the contractor.

- The Corps would conduct post-dredging bathymetry surveys to ensure that only the material identified to be dredged was removed to the authorized depth and that the design depth was achieved by the dredging action.
- The Corps would maintain a wildlife monitor on site during dredging of the entrance channel. The monitor would alert the contractors to cease in-water dredging work if a protected species (Northern sea otter, Steller sea lion or other marine mammal, or Steller's eider; section 4.10) approached within 50 meters of the dredge.

- According to information provided by the ADFG (Frost 2012), Pacific herring are in the area April through May to spawn, and pink salmon and coho salmon smolt migrate through and occupy near-shore habitat April through early June. The proposed dredging, particularly in the entrance channel outside the harbor, has the potential to affect the transit of fish along the shore. Where feasible, the Corps would conduct the dredging in such a way as to minimize its impact on fish movements, perhaps by scheduling the entrance channel dredging for later in the summer.

3.0 Affected Environment

3.1 Community and People

Old Harbor is a small community (population 206 in 2012) on the remote southeast coast of Kodiak Island. The original town-site is on a narrow strip of land between Sitkalidak Strait and a mountainside. A causeway constructed across Old Harbor Estuary has allowed the community to expand eastward to a peninsula where its current airport and some residential areas are located. The Kodiak Island road system does not extend to Old Harbor, and access is only by air and sea. Building materials, vehicles, heavy equipment, fuel, and other heavy or bulky materials are delivered by barge. Passengers, mail, and perishable food are transported primarily by aircraft. Air service at Old Harbor has been limited to light aircraft due to a short runway hemmed in by terrain features, but the airfield is currently being lengthened.

Old Harbor is highly dependent on fishing, both commercially and for subsistence. The initial Corps project dredged a harbor basin and entrance channel from a natural inlet adjacent to the original town-site in 1967, removing 106,000 cubic yards of sediment. The project included a 240-foot-long gabion groin to the south of the harbor entrance and a diversion dike to the north to prevent the entrance channel from shoaling. The entrance channel required maintenance dredging in 1971 and in 1993. The community has reported continuing problems with vessels grounding in the entrance channel at low tide. A new tidal datum that the NOAA established for the community in 2010 revealed that the Corps' dredging project may not have been dredged to its originally authorized depth (ADCRA 2013).

3.2 Current Land Use

The dredging work would take place in the harbor basin and entrance channel. The areas selected for temporary stockpiles east and south of the harbor basin (figure 4) are unoccupied stretches of flat, graded gravel currently used as temporary storage for boats, vehicles, and harbor equipment (figure 5). The area south of the harbor includes a former softball diamond. The proposed temporary stockpile area on the west side of the harbor and main road (figure 4) currently holds stockpiles of gravel eroded from the adjacent hillside.

3.3 Climate

Old Harbor's proximity to the Gulf of Alaska ensures moderate temperatures (24 to 60 °F over the course of the year), frequent fog and cloud cover, and strong storms from December through February. The average annual precipitation is 60 inches (ADCRA 2013).

Figure 5. View of the proposed dewatering area on the spit west of harbor basin.

3.4 Topography, Soils, and Hydrology

The small boat harbor, along with the Old Harbor original town-site, occupies a narrow bench of relatively flat land between steep mountainsides and the ocean (figure 4). Soils in this area are made up predominantly of gravel eroded from the mountainside and sand accreted along the shore. The land around the harbor has been heavily modified and filled. The inlet containing the harbor and the spit on its east side presumably formed naturally as a result of the stream entering the south end of the harbor (the stream probably being much more active in the geological past), but the spit has been built up and reinforced considerably and the north end of the inlet dredged to form the present-day harbor basin.

3.5 Tides, Currents, and Sediment Transport.

Tides at the data station closest to Old Harbor (Alitak, about 40 miles to the southwest) range about 9.29 feet between mean high tide and mean low tide (NOAA 2013). The predominant near-shore current in Sitkalidak Strait at Old Harbor appears to be from south to north. The harbor is affected both by littoral transport of sediment from the south and by sediment discharged from Old Harbor Estuary to the north. The flow of water out of the estuary reverses at high tide, but the Corps has not evaluated the behavior of currents in Sitkalidak Strait in response to tides. The marine sediment that has accumulated in the harbor entrance channel is predominantly sands and gravel, while surficial deposits of fine sediment have built up in parts of the harbor basin.

3.6 Air Quality and Noise

Old Harbor presumably enjoys good air quality because of the community's isolation, the small number of pollutant emission sources, and persistent winds from the nearby ocean. The primary source of air pollutants are the community's electric generator, along with individual fuel oil or wood stoves, and vehicles such as trucks, cars, boats, and snowmachines. There is no established ambient air quality monitoring program at Old Harbor, however, and little existing data to compare with the National Ambient Air Quality Standards (NAAQS) established under the Clean Air Act (CAA). These air quality standards include concentration limits on the "criteria pollutants" carbon monoxide, ozone, sulfur dioxide, nitrogen oxides, lead, and particulate matter. The community is not in a CAA "non-attainment" area, and the "conformity determination" requirements of the CAA would not apply to the proposed project at this time.

No specific noise data exist for Old Harbor, but it is probably comparable with other small coastal Alaskan communities. Air traffic, boat traffic, vehicles, construction equipment, and generators are the most likely sources of human generated noise.

3.7 Biological Resources

3.7.1 Vegetation

The marine vegetation in the harbor basin and entrance channel appears to be sparse. A small amount of red algae was retrieved from the bottom during sampling in March 2013. Brown algae (*Fucus*) is visible attached to cobbles around the periphery of the harbor basin. Above the high tide line, beach rye and alder appeared to be the dominant vegetation surrounding the harbor.

3.7.2 Invertebrates

The marine invertebrate communities at the small boat harbor have not been evaluated. The surficial sediments at the bottom of the harbor basin and entrance channel are presumed to be mostly loose, in-migrated silt, sand, and gravel, with isolated rocks and debris providing some firm surfaces. A small crab, probably a helmet crab (*Telmessus cheiragonus*), was discovered in a clump of red marine algae that snagged on the hand auger during harbor sediment sampling in March 2013. Blue mussels and *Fucus* grow on shingle in the harbor's intertidal zone.

3.7.3 Fish

Fish present in the confines of the harbor would likely be smaller marine fish such as sculpin or juvenile flatfish. Species within Sitkalidak Strait would be similar to those found in Kodiak and coastal Gulf of Alaska waters, including groundfish such as cod and flounder. The marine waters around Old Harbor and the project site are designated as essential fish habitat (EFH) for a number of species, (including Pacific cod and all five Pacific salmon species) by the National Marine Fisheries Service (NMFS). An evaluation of EFH is provided in Appendix A. Some marine fish aggregate seasonally in the area's near-shore waters. According to the Alaska Department of Fish & Game (Frost 2012), Pacific herring are in the area April through May to

spawn, and pink salmon and coho salmon smolt migrate through and occupy near-shore habitat April through early June.

A small stream enters the harbor at its extreme southwest end and goes through a culvert that was observed to be partially blocked in March 2013. This stream has a very short run before its channel ascends a steep hillside overlooking the town and is not believed to support fish.

3.7.4 Birds

The adjacent Kodiak National Wildlife Refuge and surrounding marine waters host around 247 species of birds (USFWS 2012, MacIntosh 1998). Common species include waterfowl such as northern pintail and mallard duck, shorebirds such as black oystercatcher and greater yellowlegs, and migratory songbirds such as warblers and thrushes. Bald eagles are common year round along the coast. In winter coastal Kodiak is important to sea ducks such as long-tail duck and Steller's eider. A wide variety of upland and marine habitats and moderate climate give Kodiak Island the greatest diversity of wintering birds in Alaska; many breeding species are year-round residents (MacIntosh 1998). Kodiak Island is not on a major migratory pathway, and some migratory species common on the mainland, such as Canada geese and swans, are seldom seen on the island.

Sitkalidak Strait, with its sea-cliffs and scattered islets, provides important habitat for seabirds. Sheep Island in Midway Bay, roughly 1 mile east of the current airfield, is in the USFWS seabird colony database as hosting around 1,500 terns, as well as tufted puffins and glaucous winged gulls. Farther east, but within 5 miles of the current airfield, are several more colonies within Sitkalidak Strait: Cub Island, Amee Island, Granite Islands, Nut Island, and Cathedral Island (USFWS 2012b, figure 1). Sheep, Cub, Amee, Nut, and Cathedral Islands and Three Sisters Rocks in eastern Sitkalidak Strait, and John Island (10 miles southwest of the project site at the east entrance to Sitkalidak Strait) are all part of the Alaska Maritime National Wildlife Refuge. Other seabirds likely common in Sitkalidak Strait include common murre, marbled murrelet, pigeon guillemot, and horned puffin.

3.7.5 Mammals

No indigenous terrestrial mammals are expected in the developed area surrounding the harbor, although red fox, ermine, and rodents such as voles may forage within the town.

According to the National Marine Fisheries Service (NMFS 2013c), marine mammals with ranges that may include Sitkalidak Strait (other than those discussed as endangered or threatened species in the following section) include harbor seal, northern fur seal, Cuvier's beaked whale, Dall's porpoise, gray whale, harbor porpoise, killer whale, Minke whale, and Pacific white-sided dolphin. All these species are protected under the Marine Mammals Protection Act (MMPA).

3.8 Threatened and Endangered Species

Species listed and that potentially might occur or whose historic range includes the Kodiak area are:

• Steller's Eider (*Polysticta stelleri*; Threatened):
Wintering Steller's eiders could be present in marine waters near the project area between November and early April each year. No critical habitat areas for this species are in the Kodiak area (USFWS 2012c).

• Kittlitz's Murrelet (*Brachyramphus brevirostris*; Candidate):
The Kittlitz's murrelet is a small diving seabird. In Southeast and Southcentral Alaska, it selects a nest site on the ground, on barren, steep-sided mountains or ledges of steep, rocky cliffs adjacent to the coastal waters where it feeds on small fish and crustaceans. In the Aleutian Islands, nests are found on mountain slopes with approximately 40 percent cover from low growing forbs and grasses. No critical habitat has been designated for this species (USFWS 2012c).

• Yellow-billed Loon (*Gavia adamsii*; Candidate):
This species nests on freshwater lakes in the arctic tundra, but like Steller's eider, it could be found wintering in marine waters near the project site. No critical habitat has been designated for this species (USFWS 2012c).

• Northern Sea Otter (*Enhydra lutris kenyoni*; Threatened)
The Alaska southwest "distinct population segment" (DPS), which includes the Kodiak Island area, was listed under the ESA in 2005; its critical habitat designation was finalized in 2009 (USFWS 2009a). Critical habitat for northern sea otters within its range is defined in terms of ecological features or "primary constitutive elements" (PCEs):

1. Shallow, rocky areas where marine predators are less likely to forage, which are waters less than 2 meters (6.6 feet) in depth.

2. Near-shore waters that may provide protection or escape from marine predators, which are those within 100 meters (328.1 feet) from the mean high tide line.

3. Kelp forests, which occur in waters less than 20 meters (65.6 feet) in depth, that provide protection from marine predators.

4. Prey resources within the areas identified by PCEs 1, 2, and 3 that are present in sufficient quantity and quality to support the energetic requirements of the species.

Much of central Sitkalidak Strait around Old Harbor is marked as containing critical habitat for sea otters on maps created by the USFWS (USFWS 2009b). However, communications with USFWS personnel and Old Harbor residents suggest that subsistence hunting pressure has kept populations of sea otters in the Old Harbor vicinity low and that sea otters would be seldom found near the harbor.

• Steller Sea Lion (*Eumetopias jubatus*; Endangered):
Steller sea lions may be found foraging in Sitkalidak Strait, especially when salmon are running in local streams, but are not commonly seen near the project site. Steller sea lions in the Kodiak area fall into the western "distinct population segment" designated as endangered under the ESA. Major rookeries and haulouts were designated as critical habitat for this species in 1993. According to the National Marine Fisheries Service (NMFS), who administers this species, the Old Harbor project site is within the 20-nautical-mile aquatic zone of the Cape Barnabus haulout (NMFS 2013). Cape Barnabus is about 14 miles straight-line distance east of Old Harbor at the eastern entrance of Sitkalidak Strait.

• Finback Whale (*Balaenoptera physalus*) and Humpback Whale (*Megaptera novaeangliae*; both Endangered)
Sitkalidak Strait is within the general range of these great whales, and individual whales could conceivably enter the strait during migration or foraging.

3.9 Essential Fish Habitat and Anadromous Streams

The marine waters around Old Harbor and the project site are designated essential fish habitat (EFH) for a number of species (including Pacific cod and all five Pacific salmon species) by the National Marine Fisheries Service (NMFS). An evaluation of EFH is provided in Appendix A. The nearest anadromous stream listed in the Alaska Department of Fish &Game (ADFG) anadromous waters catalog (AWC) is Dog Creek (AWC # 258-52-10015), which empties into Old Harbor Estuary and ultimately into marine waters immediately north of the harbor. This stream is reported to have Dolly Varden present and to contain spawning habitat for chum, coho, and pink salmon (ADFG 2013). A small unnamed stream enters the southwest end of the harbor inlet through a culvert. This stream drains a small area of hillside immediately west of town and is not believed to contain any fish.

3.10 Cultural and Historic Resources

No documented cultural or historic resources exist in the marine setting of the dredging project or in the heavily graded and developed lands immediately surrounding the harbor. Several upland historical or archaeological features cataloged by the Alaska Heritage Resources Survey (AHRS) present in or adjacent to the Old Harbor town-site include the Russian Orthodox Church (AHRS No. KOD-194), a small wood-frame house (KOD-1089), and a small prehistoric site near the cemetery south of town. This prehistoric site is believed to have been destroyed or buried

(OHA 2013). During sampling of the harbor sediment in June 2013, Corps personnel saw a small sunken boat partially buried in the harbor sediments near the southeast corner of the harbor float system (USACE 2013). However, an Old Harbor official confirmed that the boat in question was a contemporary fiberglass boat that burned and sank in 1982 or 1983 (Berns 2013).

4.0 Environmental Consequences

4.1 No-Action Alternative

The no-action alternative would avoid the direct and indirect environmental impacts described below, but would not accomplish the objective of returning the Old Harbor small boat harbor to its authorized design depth.

4.2 Dredging Alternative

Due to the constraints described in Section 2.2, excavator or clam-shell dredging and upland placement are regarded as the only viable process alternatives for this dredging project, and the discussion of environmental impacts below will be limited to that scenario.

4.3 Effects on Community and People

The intent of the proposed dredging is to benefit economic activity by ensuring local vessels have safe, effective access to the harbor. The presence of the dredge within the channel and basin may cause some short-term access delays, which could be minimized by close coordination with the Old Harbor harbormaster. Also, most boats moored in the harbor at the time of dredging would need to be periodically shuffled around to allow the dredging vessel access to all parts of the harbor basin. Any fishing within the harbor or entrance channel may be affected by temporary increases in turbidity or disruption of the bottom environment by the dredging. The Corps believes there should be no significant impacts to economic or subsistence activities in the limited area affected by the dredging activities.

4.4 Effects on Land Use

The temporary stockpiles would prevent the community from using some land around the harbor in the short term. Pending results of final testing for contaminant concentrations, the stockpiled dredged material could be relocated fairly quickly for use in road or construction projects, or transported away from Old Harbor for disposal at an appropriate facility

4.5 Effects on Topography and Hydrology

The stockpiles may cause short-term and highly localized changes in the topography and drainage patterns where they are positioned around the harbor. These effects would be easily reversed as the material is moved and the stockpile locations are graded back to their original contours.

4.6 Effects on Tides, Currents, and Sediment Transport

The proposed deepening of the entrance channel and harbor basin may have some marginal effect on circulation within the harbor but should have no wider effect on currents and sediment transport beyond the entrance channel.

4.7 Effects on Water Quality

The dredged material would be discharged upland, but the act of dredging would loft some sediment into the water column and cause a temporary increase in suspended solids. The material is expected to be primarily sand and gravel, which would settle out of the water column quickly. Most of the fine sediment that would be disturbed is in a relatively thin surface layer within the harbor basin, which would tend to limit its spread. The expected presence of cobbles and the need to dredge into native material precludes the use of an "environmental bucket" (i.e., one that seals and limits the drainage of water and fines from the dredge bucket during dredging). Sediments contaminated with significant concentrations of PCP and DRO occur in localized areas of the harbor basin. Within the physical constraints of the project, the Corps and its contractors would endeavor to limit the potential spread of suspended solids while dredging the two identified contaminated areas. Because of the coarse nature of the dredged material, the small extent of contaminated sediment, and the close confines of the harbor basin, the Corps considers the risk of spreading chemical contamination beyond the harbor basin during dredging to be small, and determines that the use of a silt curtain in this setting would not provide significant additional environmental benefit. The Corps therefore does not propose to require the use of a silt curtain for this project.

4.8 Effects on Air Quality and Noise

The proposed dredging action would not increase airborne particulate matter in the project area above acceptable threshold levels. Operation of dredging machinery and other equipment would cause a minor, temporary increase in air emissions because of exhaust, which would cease promptly once dredging was completed. To be considered "regionally significant" emissions associated with the project must exceed 10 percent or more of the region's annual emissions for a particular pollutant. Although no analysis was done, it is very unlikely that this short-term and relatively minor dredging project would cause a 10 percent increase of pollutants such as carbon monoxide (CO), volatile organic carbon (VOC), particulate matter (10 micrometers or less, PM_{10}), and NOx (nitric oxide and nitrogen dioxide). National ambient air quality standards are not expected to be exceeded.

On land, the proposed project would cause a temporary increase in noise similar to any construction project. The project would generate noise from increased truck traffic, generators, pumps, and the machinery powering the suction dredge or the clamshell dredge. Heavy vehicle traffic patterns and operation times for noisy equipment would be coordinated with local authorities to minimize disruptions to the residents of Old Harbor.

4.9 Effects on Biological Resources

The proposed project would have no significant impacts on animals, plants, or their habitat. The project's direct effects would be limited to the previously dredged harbor basin and entrance channel, and to previously developed areas around the harbor.

4.10 Effects on Threatened and Endangered Species

The Corps determines that the proposed project may affect, but have no adverse effect, on Northern sea otters. As discussed in section 3.8, much of central Sitkalidak Strait around Old Harbor is marked as containing critical habitat for sea otters on maps created by the USFWS. However, communications with USFWS personnel and Old Harbor residents suggest that subsistence hunting pressure has kept populations of sea otters in the Old Harbor vicinity low, and that sea otters would seldom be found near the harbor; no "resident" sea otters are observed at this harbor. In addition, the bare sand and gravel seafloor of the harbor basin and entrance channel does not contain the ecological features used to define critical habitat for sea otters. A sea otter that happened to be transiting the harbor area during dredging would most likely react by successfully avoiding the noise and disturbance of the dredging activity and finding more productive habitat nearby. Nevertheless, if recommended by the USFWS, the Corps will maintain a wildlife observer at the project site during dredging of the entrance channel and stop dredging operations if an otter (or other protected species) approaches within 50 meters of the dredge.

The Corps determines that the proposed activity would have no effect on Steller's eiders. Steller's eiders would be expected in Sitkalidak Strait only in winter, roughly from November to early April. Winter aerial surveys by USFWS scientists (Corcoran *et al*, 2010) suggest that the Sitkalidak area may not be heavily used by Steller's eiders for their wintering territory as compared with other Kodiak areas such as Chiniak Bay and the Geese Islands. Corps personnel conducting business in Old Harbor during winter have not noted Steller's eiders in the Old Harbor vicinity. The proposed dredging would most likely be scheduled for summer months, but if dredging occurred during the Steller's eider wintering season, that species would be included in any wildlife monitoring program established during dredging of the entrance channel.

Steller sea lions would be uncommon, highly mobile visitors to western Sitkalidak Strait and unlikely to linger in the project area if they did appear. The Corps determines that the proposed project would have no effect on Steller sea lions or their critical habitat but would include them and other marine mammals in any wildlife monitoring program established during dredging of the entrance channel.

The Corps determines that the proposed project would have no effect on any of the endangered great whale species described in section 3.8 due to the very low likelihood that a whale would be present in the project area during the relatively brief project period but would include them and any other marine mammals in any wildlife monitoring program established during dredging of the entrance channel.

4.11 Effects on Essential Fish Habitat

Appendix A lists fish species whose designated essential fish habitats coincide with marine waters near the project site, along with descriptions of the habitat necessary for various life

stages of that species. Walleye pollock, Pacific cod, arrowtooth flounder, and flathead sole all require soft substrates of sand, gravel, and mud for some or all life stages. The sand and gravel of the Old Harbor entrance channel and harbor basin may be adequate substrate for these species, although the previously-dredged, high-traffic basin and channel are unlikely to be high-quality habitat. The proposed dredging would cause a relatively brief disturbance in a very limited area. The Corps determines that the proposed project would have no adverse effect on EFH. According to information provided by the ADFG (Frost 2012), Pacific herring are in the area April through May to spawn, and pink salmon and coho salmon smolt migrate through and occupy near-shore habitat April through early June. The proposed dredging, particularly in the entrance channel outside the harbor, has the potential to affect the transit of fish along the shore. Where feasible, the Corps would conduct the dredging in such a way as to minimize its impact on fish movements, perhaps by scheduling the entrance channel dredging for later in the summer.

4.12 Effects on Cultural and Historic Resources

There are no known cultural resources in the dredging or upland material handling areas, so the Corps has determined that the proposed project would have no adverse effects on historic properties. The State Historic Preservation Officer (SHPO) concurred with that determination in a letter dated April 1, 2013.

4.13 Effects on Environmental Justice and Protection of Children

On February 11, 1994, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations was issued. The purpose of the order is to avoid the disproportionate placement of Federal actions and policies having adverse environmental, economic, social, or health effects on minority and low-income populations. Construction of the proposed corrective action would have beneficial effects on the Old Harbor community. No racial, ethnic, age, or other population group would be adversely affected disproportionately.

On April 21, 1997, Executive Order 13045, Protection of Children from Environmental Health and Safety Risks, was issued to identify and assess environmental health and safety risks that may disproportionately affect children. The proposed action would affect the community as a whole, and there would be no environmental health or safety risks associated with the action that would disproportionately affect children. All the alternatives considered in detail are located offshore, in proximity to commercially developed areas, and away from homes, schools, and playgrounds. Children would not be put at risk by the proposed corrective action.

4.14 Cumulative Effects

Federal law (40 CFR 651.16) requires that NEPA documents assess cumulative effects, which are the impact on the environment resulting from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions.

No other similar water resource projects are known to be planned at Old Harbor. The proposed dredging project is intended to return the Federal project to its intended configuration rather than expand upon it. No direct or indirect cumulative effects are anticipated.

5.0 Public Involvement, Regulatory Compliance, and Agency Coordination

5.1 Compliance with Laws and Regulations

This EA and unsigned Finding of No Significant Impact (FONSI) have been prepared relying on previous NEPA-related scoping efforts, public input associated with the Old Harbor entrance channel and harbor, and the most recent correspondence with state and Federal resource agencies. Per the NEPA process and Corps regulations and guidance, the EA and unsigned FONSI are subject to a 30-day public review. If requested, a public meeting may be held to discuss project alternatives and solicit public views and opinions.

An evaluation to determine consistency with Section 404(b)(1) of the Clean Water Act, which governs discharge of dredged or fill material, has been completed (Appendix 1). The ADEC regulates compliance with State of Alaska water quality standards under the Section 401 of the Clean Water Act. The Corps determines that the proposed corrective action would not violate state water quality standards. The Corps is coordinating their determination with the ADEC, and if they concur, they would issue a water quality certificate if there is reasonable assurance that the proposed corrective action would meet and maintain the standards.

Section 10 of the River and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from the U.S. Army Corps of Engineers. The Corps does not issue permits to itself, so no specific permit is required for this project under this act.

A checklist of project compliance with relevant Federal, state, and local statutes and regulations is shown in Table 1.

Table 1. Environmental Compliance Checklist

FEDERAL	Compliance
Archeological & Historical Preservation Act of 1974	FC
Clean Air Act	FC
Clean Water Act	PC
Coastal Zone Management Act of 1972 *	FC
Endangered Species Act of 1973	PC
Estuary Protection Act	FC
Federal Water Project Recreation Act	FC
Fish and Wildlife Coordination Act	FC
National Environmental Policy Act *	PC
Land and Water Conservation Fund Act	FC
Marine Protection, Research & Sanctuaries Act of 1972	FC
National Historic Preservation Act of 1972	FC
River and Harbors Act of 1899	FC
Magnuson-Stevens Fishery Conservation & Management Act *	PC
Marine Mammal Protection Act	FC
Bald Eagle Protection Act	FC
Watershed Protection and Flood Preservation Act	FC
Wild & Scenic Rivers Act	N/A
Executive Order 11593, Protection of Cultural Environment	FC
Executive Order 11988, Flood Plain Management	FC
Executive Order 11990, Protection of Wetlands	FC
Executive Order 12898, Environmental Justice	FC
Executive Order 13045, Protection of Children	FC
STATE AND LOCAL	
State Water Quality Certification *	PC
Alaska Coastal Management Program *	N/A

PC = Partial compliance, FC = Full compliance
*Full compliance will be attained upon completion of the Public Review process and/or coordination with the responsible agency.

6.0 Conclusion

The completed environmental assessment supports the conclusion that the proposed dredging project does not constitute a major Federal action significantly affecting the quality of the human and natural environment. An environmental impact statement (EIS) is therefore not necessary for the dredging action, and the prepared Finding of No Significant Impact (FONSI) may be signed.

7.0 Document Preparation

This environmental assessment was prepared by Chris Floyd and Diane Walters of the Environmental Resources Section, Alaska District, U.S Army Corps of Engineers. The Corps of Engineers Project Manager is Julie Anderson.

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APPENDIX 1

404 (b)(1) Evaluation of the Clean Water Act

EVALUATION UNDER SECTION 404(b)(1)
of the CLEAN WATER ACT

SMALL BOAT HARBOR DREDGING
OLD HARBOR, ALASKA

This is the factual documentation of evaluations conducted under the auspices of Section 404 of the Clean Water Act of 1977. This report covers the dredging of the entrance channel and harbor basin at Old Harbor, Alaska, and the placement of materials dredged from those areas. This evaluation is divided into three sections: Project Description, Factual Determinations, and Findings of Compliance.

I. PROJECT DESCRIPTION

A. Location: The project is in the city of Old Harbor, Alaska, located on Sitkalidak Strait on the southeast coast of Kodiak Island.

B. General Description: Built in 1967, the small boat harbor at Old Harbor, Alaska, is vital to the economic and cultural interests of the remote Kodiak Island community and provides the only harbor of refuge within 40 miles. The Corps of Engineers 2009 project condition survey and a 2010 National Oceanic and Atmospheric Administration (NOAA) tidal datum update revealed that the entrance channel depth is 3 feet below mean lower low water (MLLW), far shallower than the -8 feet MLLW project depth. The entire harbor basin is also above project depth despite maintenance dredging in 1971 and 1993, and the project may not have been originally constructed to the intended depth due to inadequate tidal data at the time. Vessels frequently hit bottom trying to access the harbor and must take care to seek out the deeper portions of the channel for entry and exit.

An estimated 50,000 cubic yards of sediment must be removed from the harbor basin and entrance channel to return the harbor to the -8-foot MLLW project depth. The Corps anticipates that the contractor would most likely choose a clamshell dredge or excavator to remove the sediment. Most of the material is sands and gravels suitable for construction, so dredged material is expected to be stockpiled upland in the vicinity of the harbor basin.

C. Authority: Section 107 of the Rivers and Harbors Act, 14 July 1960 (Public Law 86-645), as amended and authorized by the Chief of Engineers, 15 June 1966, provides for a small boat basin 200 feet wide by 700 feet long at 8 feet below MLLW, an entrance channel 60 feet wide by 600 feet long at a depth of 8 feet below MLLW.

D. General Description of Dredged or Fill Material: The sediment to be dredged from the Federal project is believed to be a combination of riverine material discharged from Old Harbor Lagoon just north of the harbor site and marine sediment carried in from the south by littoral transport. The material is predominantly sands and gravels, with some silt in the harbor basin.

The Corps sampled and tested the harbor sediments for chemical contamination in November 2012, with follow-up sampling events in March and June 2013. The sediment was found to be relatively clean, with generally low concentrations of common contaminants such as fuels and metals. However, a single sample on the west side of the harbor basin contained the chemical pentachlorophenol (PCP) at a concentration higher than State of Alaska Department of Environmental Conservation (ADEC) regulations would allow for unrestricted on-land placement (0.047 mg/kg). PCP was a common wood preservative before its use was restricted in the 1980s, and its presence in the harbor sediment at Old Harbor is believed to be due to old wooden float and pier structures that have since been removed. The sampling and analysis performed in March 2013 used a more refined test method for PCP and confirmed the presence of PCP (at concentrations of 0.026 to 0.120 mg/kg) in the area in which PCP was detected in 2012, but did not delineate the extent of PCP contamination. The June 2013 sampling revealed wide-spread but generally very low concentrations (less than 0.010 mg/kg) of PCP through the harbor basin, with a swath along the west side of the basin containing PCP concentrations above or approaching the ADEC soil cleanup level of 0.047 mg/kg. The June 2013 sampling also detected a small area of fuel-contaminated sediment (340 mg/kg diesel-range organics) at the southeast corner of the Federal limit. The fuel-contaminated sediment is thought to be associated with a sunken watercraft.

The PCP and fuel contamination are assumed to be confined to the upper 2 feet of harbor sediment. The volumes of sediment within the harbor exceeding ADEC soil cleanup levels are estimated as:

Pentachlorophenol (PCP) above 0.043 mg/kg: 800 cubic yards
Diesel-Range Organics (DRO) above 230 mg/kg: 400 cubic yards

The March 2013 sampling and analysis established that concentrations of the metals arsenic and chromium in the harbor sediment, while higher than State of Alaska cleanup levels, are no higher than concentrations of those metals found in background sediments or in soils at the proposed stockpile locations.

E. Description of the Proposed Discharge Sites: The dredged material would be placed upland. Two areas immediately east and south of the harbor basin have been selected for dewatering and stockpiling; a third area west of the harbor across the main road may be used for stockpiling. These areas have been heavily used for parking, storage, or gravel extraction and were sampled for metals concentrations in 2013. Concentrations of arsenic and chromium were found to be comparable to the concentrations of those metals detected in the harbor sediment.

F. Description of Disposal Method: The coarse-grained dredged material is expected to rapidly dewater in the process of being dredged and transported, and to contain minimal free water by the time it is stockpiled on shore. For that reason, no dewatering basins would be constructed; the dredged material would be immediately stockpiled in the upland locations described in the environmental assessment. Dredged material from the areas of PCP and fuel contamination would each be segregated and stockpiled on liners separately

from the non-contaminated dredged material. The non-contaminated dredged material would not be placed on liners, but all stockpiles would be covered to reduce dust generation and infiltration of precipitation. The stockpiles of suspected contaminated material would be sampled and analyzed for contamination levels; the results of those analyses and consultation with the Alaska Department of Environmental Conservation would determine whether that segregated dredged material could be used for local purposes or must be disposed of at an appropriate off-site facility.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations: The material would be placed upland for dewatering and temporary stockpiling. The material would be retested for contaminant concentrations prior to determining its final disposition. The temporary stockpile locations are flat, graded gravel areas immediately adjacent to the harbor that have been used extensively for parking and storage.

B. Water Circulation, Fluctuation, and Salinity Determinations: The proposed dredging would remove up to roughly 5 feet of sediment from the entrance channel and harbor basin. This action is not expected to have any discernible effect on water circulation patterns or salinity within this small harbor.

C. Suspended Particulate/Turbidity Determinations: The dredged material would be discharged upland, but the act of dredging would loft some sediment into the water column and cause a temporary increase in suspended solids. The material is expected to be primarily sand and gravel, which would settle out of the water column quickly. Most of the fine sediment that would be disturbed is in a relatively thin surface layer within the harbor basin, which would tend to limit its spread. The expected presence of cobbles and need to dredge into native material precludes the use of an “environmental bucket” (i.e., one that seals and limits the drainage of water and fines from the dredge bucket during dredging).

D. Contaminant Determinations: Sediments contaminated with significant concentrations of PCP and DRO occur in localized areas of the harbor basin. Within the physical constraints of the project, the Corps and its contractors would endeavor to limit the potential spread of suspended solids while dredging the two identified contaminated areas. Because of the coarse nature of the dredged material, the small extent of contaminated sediment, and the close confines of the harbor basin, the Corps considers the risk of spreading chemical contamination beyond the harbor basin during dredging to be small and determines that the use of a silt curtain in this setting would not provide significant additional environmental benefit. The Corps therefore does not propose to require the use of a silt curtain for this project.

Dredged material from the areas of PCP and fuel contamination would each be segregated and stockpiled on liners separately from the non-contaminated dredged material. The stockpiles of suspected contaminated material would be sampled and analyzed for contamination levels; the results of those analyses and consultation with the Alaska Department of Environmental Conservation would determine whether that segregated

dredged material could be used for local purposes or must be disposed of at an appropriate off-site facility.

E. Aquatic Ecosystem and Organism Determinations: The aquatic ecosystem has not been fully evaluated. However, project effects would tend to be limited to previously-impacted areas of the working boat harbor and entrance channel. The limited extent of the proposed dredging project, on-land placement of the dredged material, and careful management of contaminated sediment would minimize impacts to the aquatic environment.

F. Proposed Disposal Site Determinations: The final disposition of the stockpiled dredged material would be determined after testing of the temporary stockpiles. The stockpile areas should not be adversely affected by their use. These areas have been tested for metals concentrations and would be sampled again for PCP and DRO concentrations prior to their use. Contaminated material would be handled on a suitable liner.

The disposal action would comply with the applicable water quality standards and would have no detrimental effects on any of the following:

1. Municipal and private water supplies
2. Recreational and commercial fisheries
3. Water-related recreation
4. Esthetics
5. Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.

G. Determination of Cumulative/Secondary Effects: The proposed dredging and disposal operation should have no cumulative or secondary effects. Once the harbor basin and channel are dredged to the correct project depth, future maintenance dredging events should be infrequent.

III. FINDINGS OF COMPLIANCE

A. Adaptation of the Section (404)(b)(1) Guidelines to this Evaluation: This evaluation has been adapted to evaluate water quality impacts not from a discharge of material to waters of the U.S., but from other activities (dredging and transport of sediment) that have the potential to introduce suspended solids into the water column.

B. Evaluation of Availability of Practical Alternatives: The proposed hydraulic dredging and upland management of dredged material would avoid discharges to waters of the U.S., and represents the most economical and least environmentally damaging alternative.

C. Compliance with Applicable State Water Quality Standards: Disposal of the dredged material would not violate applicable State water quality standards. The fill operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

D. Compliance with Endangered Species Act of 1973: The proposed action would not harm any endangered species or their critical habitat.

E. Compliance with Specified Protection Measures for Marine Sanctuaries Designed by the Marine Protection Research and Sanctuaries Act of 1972: No action is associated with the proposed project that would violate the above Act.

F. Evaluation of Extent of Degradation of the Waters of the United States: There would be no significant adverse impacts to municipal and private water supplies, recreation and commercial fisheries, plankton, fish, shellfish, wildlife and/or aquatic sites caused by the proposed action. There would be no significant adverse effects on regional aquatic ecosystem diversity, productivity, and/or stability caused by the placement of the fill material or any significant adverse effects on recreation, aesthetic, and/or economic values caused by these project aspects. The dredging and placement activities would be coordinated with the City of Old Harbor to avoid conflicts with subsistence and recreational activities.

G. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on Aquatic Ecosystems: All appropriate and practicable steps would be taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Sediment from the identified contaminated areas would be segregated and managed separately from the sediment from uncontaminated areas. Because of the coarse nature of the dredged material, the small extent of contaminated sediment, and the close confines of the harbor basin, the Corps considers the risk of spreading chemical contamination beyond the harbor basin during dredging to be small, and determines that the use of a silt curtain in this setting would not provide significant additional environmental benefit. The Corps therefore does not propose to require the use of a silt curtain for this project.

On the basis of the Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR part 230), the proposed project has been specified as complying with the requirements of the guidelines for Section 404 of the Clean Water Act.

APPENDIX 2

ESSENTIAL FISH HABITAT ASSESSMENT

SMALL BOAT HARBOR DREDGING
OLD HARBOR, ALASKA

Prepared by:

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January 2014

ESSENTIAL FISH HABITAT ASSESSMENT

Small Boat Harbor Dredging
Old Harbor, Alaska

Preface

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act set forth the essential fish habitat (EFH) provision to identify and protect important habitats of federally managed marine and anadromous fish species. Federal agencies that fund, permit, or undertake activities that may adversely affect EFH are required to consult with National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH and respond in writing to NMFS recommendations.

EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities.

Upon completing the Corps's EFH-coordination with the NMFS, the Corps' will incorporate its EFH evaluation and findings and NMFS conservation recommendations (if any) into the project's environmental assessment.

Project Purpose

The purpose of the proposed action is the restoration of design depth to provide safe navigational access to Old Harbor's small boat harbor.

Project Authority

Section 107 of the Rivers and Harbors Act, 14 July 1960 (Public Law 86-645), as amended and authorized by the Chief of Engineers, 15 June 1966, provides for a small boat basin 200 feet wide by 700 feet long at 8 feet below MLLW, an entrance channel 60 feet wide by 600 feet long at a depth of 8 feet below MLLW.

Project Area Description

Built in 1967, the small boat harbor at Old Harbor, Alaska, is vital to the economic and cultural interests of the remote Kodiak Island community and provides the only harbor of refuge within 40 miles. The Corps of Engineers 2009 project condition survey and a 2010 National Oceanic and Atmospheric Administration (NOAA) tidal datum update revealed that the entrance channel depth is 3 feet below mean lower low water (MLLW), far shallower than the -8 feet MLLW project depth. The entire harbor basin is also above project depth despite maintenance dredging in 1971 and 1993, and the project may not have been originally constructed to the intended depth

due to inadequate tidal data at the time. Vessels frequently hit bottom trying to access the harbor and must take care to seek out the deeper portions of the channel for entry and exit.

An estimated 50,000 cubic yards of sediment must be removed from the harbor basin and entrance channel to return the harbor to the -8-foot MLLW project depth. The Corps anticipates the contractor would most likely choose a clamshell dredge or excavator to remove the sediment. Most of the material is sands and gravels suitable for construction, so dredged material is expected to be stockpiled upland in the vicinity of the harbor basin.

Figure 2-1. A 2010 aerial view of the Old Harbor small boat harbor.

Essential Fish Habitat

NMFS authority to manage EFH is directly related to those species covered under Fishery Management Plans (FMPs) in the United States. The Corps' dredging action is within an area designated as EFH for two FMPs— Gulf of Alaska (GOA) Groundfish and Alaska Stocks of Pacific Salmon. These two FMPs include species or species complexes of groundfish and invertebrate resources and all Pacific salmon species Table 1. See Appendix B for a description of GOA Groundfish and Pacific Salmon resources. No EFH "habitat areas of particular concern" are in the Corps' project area.

Table 1. Fish with designated essential fish habitat in the Gulf of Alaska Groundfish and Alaska Stocks of Pacific Salmon Fishery Management Plan areas.

Gulf of Alaska Groundfish	Alaska Stocks of Pacific Salmon
Walleye Pollock Pacific Cod Arrowtooth Flounder Rock Sole Flathead Sole Sculpins Skates Sharks Forage Fish Complex Squid Octopus	Chinook salmon Coho salmon Pink salmon Chum salmon Sockeye Salmon

Assessment of Project Effects on Essential Fish Habitat

Short-term impacts include water quality impacts in the form of increased levels of turbidity, noise from dredging operations, pollution in the form of fuel or oils spilled from the dredging equipment, noise from the dredging equipment, and disturbance from the movement of equipment through the area.

Short-term Impacts

Water Quality. The dredged material will be discharged upland, but the act of dredging would loft some sediment into the water column and cause a temporary increase in suspended solids. The material is expected to be primarily sand and gravel, which would settle out of the water column quickly. Most of the fine sediment that would be disturbed is in a relatively thin surface layer within the harbor basin, which would tend to limit its spread. The expected presence of cobbles and need to dredge into native material precludes the use of an "environmental bucket" (i.e., one that seals and limits the drainage of water and fines from the dredge bucket during dredging).

Pollution. Fuel and lubricants on the dredging vessel are potential sources of spills into the marine environment. The contractor would be required to prepare a spill prevention and response plan and have appropriate spill response materials at the work site.

Waterborne Noise. Most dredging would be performed within the confines of the harbor basin, which should limit the area of the local environment affected by dredge-generated sound. Other noise generated by the dredging vessel would be comparable to that created by other vessels in this busy harbor. Adult resident fish should be able to swim out of the vicinity of the slowly moving cutter-head if they are disturbed by the noise.

Construction-Related Vessel Traffic. The dredging and most project-related vessel traffic would take place within an established harbor, and its activities would be an incremental increase in the disturbances already created by other boat traffic.

Long-Term Impacts

Loss and Conversion of Marine Habitat. The project intent is to return the small, previously dredged harbor basin and entrance channel to their original design depths. The on-shore placement of dredged material would greatly reduce the project's impact to marine habitat. No significant loss or conversion of marine habitat is expected.

Water Quality. The proposed dredging project would have no long-term impact on coastal water quality. The purpose of the project is to return the harbor and entrance channel to their original design profile. Changes to water quality during dredging (e.g., turbidity) should dissipate immediately after dredging ceases.

Mitigation Measures. Planned measures to limit the project's impact on fish habitat include:

- According to information provided by the ADFG (Frost 2012), Pacific herring are in the area April through May to spawn, and pink salmon and coho salmon smolt migrate through and occupy near-shore habitat from April through early June. The proposed dredging, particularly in the entrance channel outside the harbor, has the potential to affect the transit of fish along the shore. Where feasible, the Corps would conduct the dredging in such a way as to minimize its impact on fish movements, perhaps by scheduling the entrance channel dredging for later in the summer.

- The dredged material would be placed upland rather than discharged to the marine environment.

- To minimize the danger to marine mammals from project-related vessels, speed limits (e.g. less than 8 knots) would be imposed on vessels moving in and around the project area.

- An oil spill/pollution prevention plan would be prepared by the contractor.

- The Corps would conduct post-dredging bathymetry surveys to ensure that only the material identified to be dredged was removed to the authorized depth and that the design depth was achieved by the dredging action.

Conclusions and Determination of Effect.

Appendix B lists fish species whose designated essential fish habitats coincide with marine waters near the project site, along with descriptions of the habitat necessary for various life stages of that species. Walleye pollock, Pacific cod, arrowtooth flounder, and flathead sole all

require soft substrates of sand, gravel, and mud for some or all life stages. The sand and gravel of the Old Harbor entrance channel and harbor basin may be adequate substrate for these species, although the previously-dredged, high-traffic basin and channel are unlikely to be high-quality habitat. The proposed dredging would cause a relatively brief disturbance in a very limited area. The Corps determines that the proposed project would have no adverse effect on EFH.

References.

Frost, William (ADFG). 2012. Email dated 13 December 2012, subject: RE: Old Harbor (Kodiak Island) harbor maintenance dredging - initial coordination.

National Marine Fisheries Service (NMFS). 2013a. Alaska Region Essential Fish Habitat (EFH) website, http://www.fakr.noaa.gov/habitat/efh.htm

APPENDIX A
PROPOSED SMALL BOAT HARBOR DREDGING

The Corps of Engineers 2009 project condition survey and a 2010 National Oceanic and Atmospheric Administration (NOAA) tidal datum update revealed that the entrance channel depth is 3 feet below mean lower low water (MLLW), far shallower than the -8 feet MLLW project depth. The entire harbor basin is also above project depth despite maintenance dredging in 1971 and 1993, and the project may not have been originally constructed to the intended depth due to inadequate tidal data at the time. Vessels frequently hit bottom trying to access the harbor, and must take care to seek out the deeper portions of the channel for entry and exit (USACE 2011).

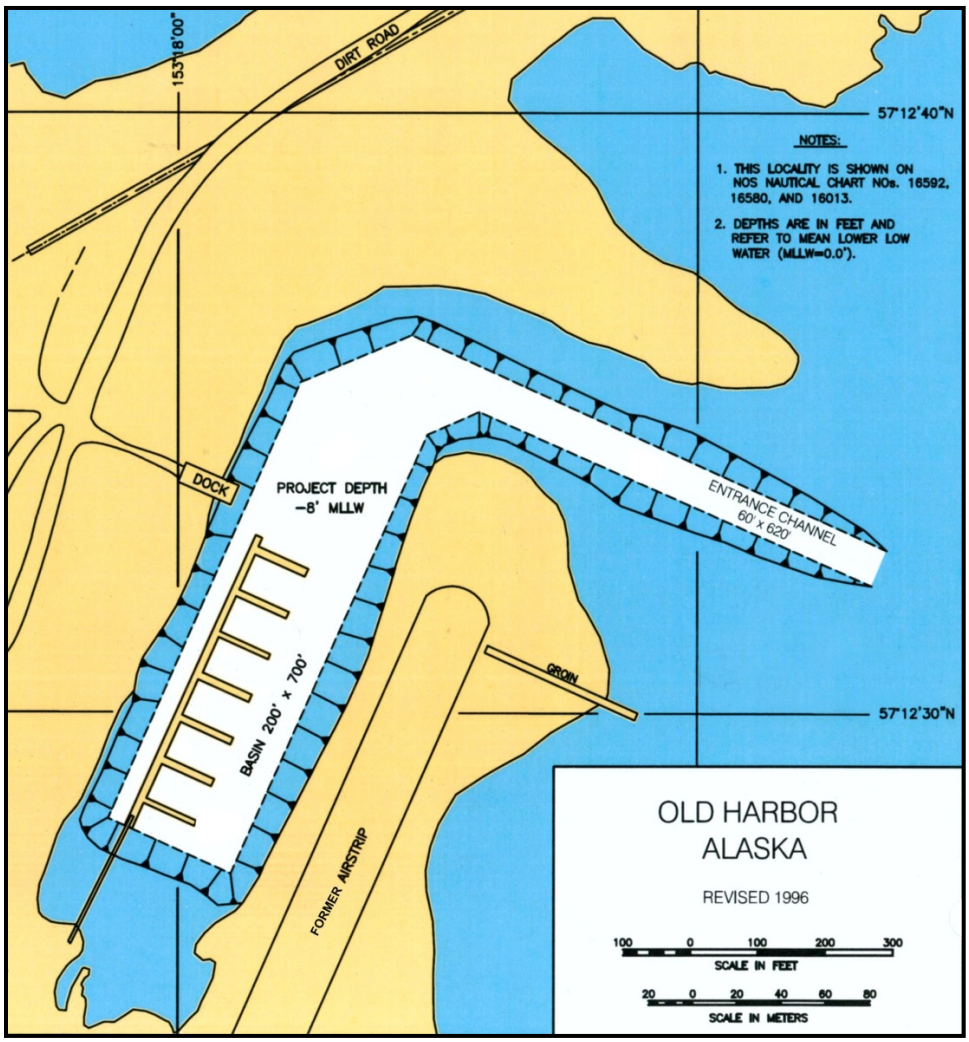

Figure A-1. Layout of Federal dredging project (USACE 2011).

An estimated 50,000 cubic yards of sediment must be removed from the harbor basin and entrance channel to return the harbor depths to -8 feet MLLW. Most of the material is sands and gravels suitable for construction, so dredged material is expected to be stockpiled upland in the vicinity of the harbor basin. If the stockpiled material meets State of Alaska contaminant limits, it would be available for local use as fill.

The Corps expects that either a barge-mounted excavator or clam-shell dredge would be used for dredging. The dredged material would be accumulated on a barge, then transferred to a dump truck, or where location permits deposited directly into the truck. Along the gradually-sloping shoreline on the west side of the basin, some dredging may also be conducted using an excavator on the shore.

Because of the coarse nature of the dredged material, the small extent of contaminated sediment, and the close confines of the harbor basin, the Corps considers the risk of spreading chemical contamination beyond the harbor basin during dredging to be small, and determines that the use of a silt curtain in this setting would not provide significant additional environmental benefit. The Corps therefore does not propose to require the use of a silt curtain for this project.

The coarse-grained dredged material is expected rapidly dewater in the process of being dredged and transported, and contain minimal free water by the time it is stockpiled on shore. For that reason, no dewatering basins would be constructed; the dredged material would be immediately stockpiled in the upland locations shown in figure A-2. Dredged material from the areas of PCP and fuel contamination would each be segregated and stockpiled on liners separately from the non-contaminated dredged material. The non-contaminated dredged material would not be placed on liners, but all stockpiles would be covered to reduce infiltration of precipitation and dust generation. The stockpiles of suspected contaminated material would be sampled and analyzed for contamination levels; the results of those analyses and consultation with the Alaska Department of Environmental Conservation would determine whether that segregated dredged material could be used for local purposes, or must be disposed of at an appropriate off-site facility.

The in-water dredging work is expected to take about 50 days, although the entire project, including mobilization and management of the stockpile areas, may take 5 to 6 months.

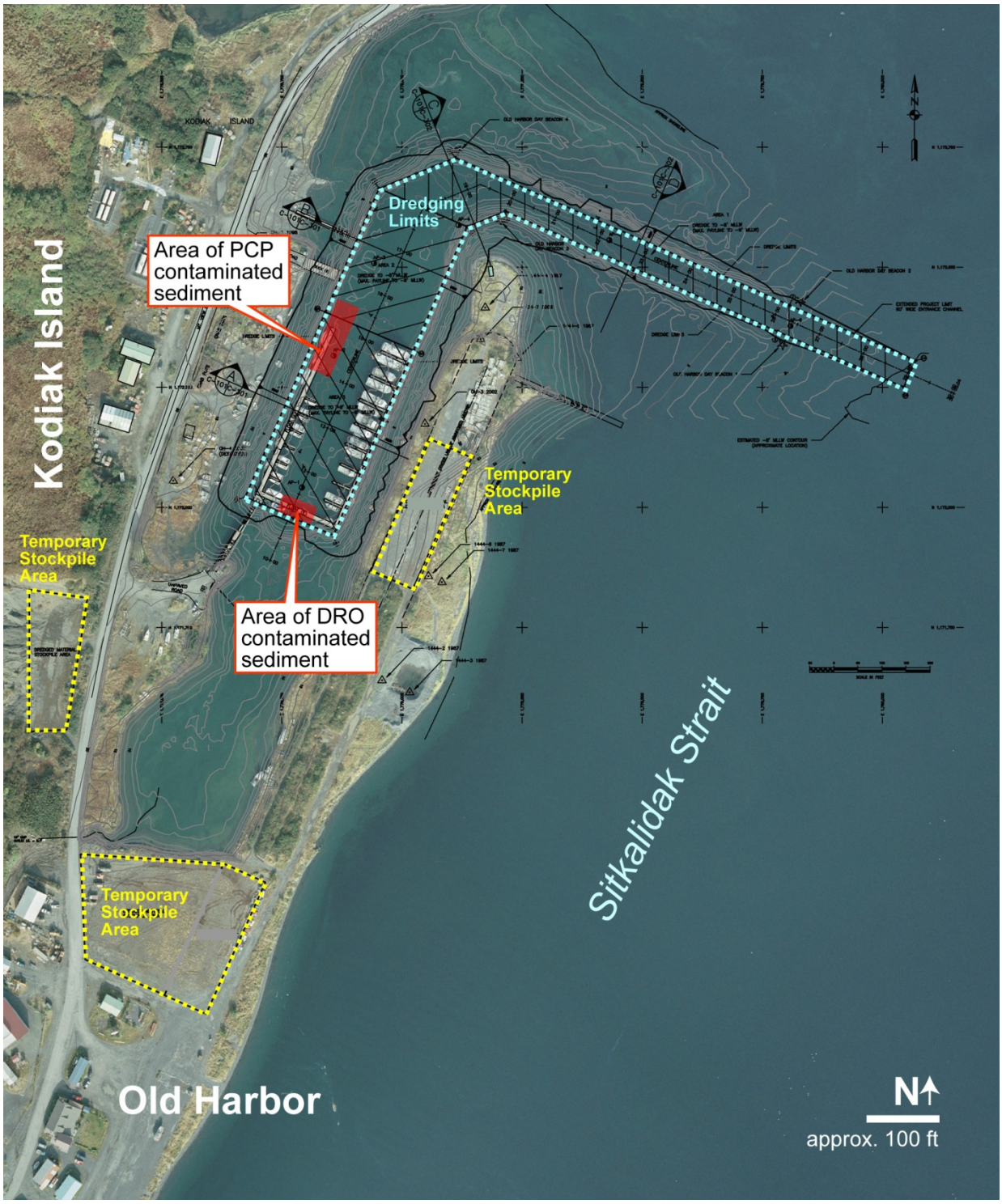

Figure A-2. Layout of harbor dredging limits, and proposed dredged material handling areas.

APPENDIX B
DESCRIPTIONS OF ESSENTIAL HABITAT

Descriptions of Essential Fish Habitat in the vicinity of Old Harbor, Alaska

Groundfish – Gulf of Alaska (GOA) Fishery Management Plan

Walleye Pollock

Eggs
EFH for walleye pollock eggs is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m), upper slope (200 to 500 m), and intermediate slope (500 to 1,000 m) throughout the Gulf of Alaska (GOA).

Larvae
EFH for larval walleye pollock is the general distribution area for this life stage, located in epipelagic waters along the entire shelf (0 to 200 m), upper slope (200 to 500 m), and intermediate slope (500 to 1,000 m) throughout the GOA.

Early Juveniles
No EFH description determined**.** Limited information exists to describe walleye pollock early juvenile larval general distribution.

Late Juveniles
EFH for late juvenile walleye pollock is the general distribution area for this life stage, located in the lower and middle portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf along the throughout the GOA. No known preference for substrates exists.

Adults
EFH for adult walleye pollock is the general distribution area for this life stage, located in the lower and middle portion of the water column along the entire shelf (0 to 200) and slope (200 to 1,000 m) throughout the GOA. No known preference for substrates exists.

Pacific Cod

Eggs
EFH for Pacific cod eggs is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and upper (200 to 500 m) slope throughout the GOA wherever there are soft substrates consisting of mud and sand.

Larvae
EFH for larval Pacific cod is the general distribution area for this life stage, located in pelagic waters along the inner (0 to 50 m) and middle (50 to 100 m) shelf throughout the GOA wherever there are soft substrates consisting of mud and sand.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
EFH for late juvenile Pacific cod is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf throughout the BSAI wherever there are soft substrates consisting of sand, mud, sandy mud, and muddy sand.

Adults
EFH for adult Pacific cod is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf throughout the GOA wherever there are soft substrates consisting of sand, mud, sandy mud, muddy sand, and gravel.

Arrowtooth Flounder

Eggs
No EFH description determined; insufficient information is available.

Larvae
EFH for larval arrowtooth flounder is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and slope (200 to 3,000 m) throughout the GOA.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
EFH for late juvenile arrowtooth flounder is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf and upper slope (200 to 500 m) throughout the GOA wherever there are softer substrates consisting of gravel, sand, and mud.

Adults
EFH for adult arrowtooth flounder is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50), middle (50 to 100 m), and outer (100 to 200 m) shelf and upper slope (200 to 500 m) throughout the GOA wherever there are softer substrates consisting of gravel, sand, and mud.

Rock Sole

Eggs
No EFH description determined; insufficient information is available.

Larvae
EFH for larval rock sole is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and upper slope (200 to 1,000 m) throughout the GOA.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
EFH for late juvenile rock sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand, gravel, and cobble, as depicted.

Adults
EFH for adult rock sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand, gravel, and cobble.

Flathead Sole

Eggs
EFH for flathead sole eggs is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and slope (200 to 3,000 m) throughout the GOA
.

Larvae
EFH for larval flathead sole is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and slope (200 to 3,000 m) throughout the GOA.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
EFH for juvenile flathead sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf throughout the GOA wherever there are softer substrates consisting of sand and mud.

Adults
EFH for adult flathead sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf throughout the GOA wherever there are softer substrates consisting of sand and mud.

Sculpins

Eggs
No EFH description determined; insufficient information is available.

Larvae
No EFH description determined; insufficient information is available.

Juveniles
EFH for juvenile sculpins is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), outer shelf (100 to 200 m) and portions of the upper slope (200 to 500 m) throughout the GOA wherever there are substrates of rock, sand, mud, cobble, and sandy mud.

Adults
EFH for adult sculpins is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), outer shelf (100 to 200 m) and portions of the upper slope (200 to 500 m) throughout the GOA wherever there are substrates of rock, sand, mud, cobble, and sandy mud.

Skates

Eggs
No EFH description determined; insufficient information is available.

Larvae
No EFH description determined; insufficient information is available.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
No EFH description determined; insufficient information is available.

Adults
EFH for adult skates is the general distribution area for this life stage, located in the lower portion of the water column on the shelf (0 to 200 m) and the upper slope (200 to 500 m) throughout the GOA wherever there are of substrates of mud, sand, gravel, and rock.

Sharks

Eggs
No EFH description determined; insufficient information is available.

Larvae
No EFH description determined; insufficient information is available.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
No EFH description determined; insufficient information is available.

Adults
No EFH description determined; insufficient information is available.

Forage Fish Complex—Eulachon, Capelin, Sand Lance, Sand Fish, Euphausiids, Myctophids, Pholids, Gonostomatids, etc.

Eggs
No EFH description determined; insufficient information is available.

Larvae
No EFH description determined; insufficient information is available.

Early Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
No EFH description determined; insufficient information is available.

Adults
No EFH description determined; insufficient information is available.

Squid

Eggs
No EFH description determined; insufficient information is available.

Young Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
EFH for older juvenile squid is the general distribution area for this life stage, located in the entire water column, from the sea surface to sea floor, along the inner (0 to 50 m), middle (50 to 100 m), and outer (200 to 500 m) shelf and the entire slope (500 to 1,000 m) throughout the GOA.

Adults
EFH for adult squid is the general distribution area for this life stage, located in the entire water column, from the sea surface to sea floor, along the inner (0 to 50 m), middle (50 to 100 m), and outer (200 to 500 m) shelf and the entire slope (500 to 1,000 m) throughout the GOA.

Octopus

Eggs
No EFH description determined; insufficient information is available.

Young Juveniles
No EFH description determined; insufficient information is available.

Late Juveniles
No EFH description determined; insufficient information is available.

Adults
No EFH description determined; insufficient information is available.

Descriptions of Essential Fish Habitat
in the vicinity of Old Harbor, Alaska

Alaska Stocks of Pacific Salmon

Pink Salmon

Freshwater Eggs

EFH for pink salmon eggs is the general distribution area for this life stage, located in gravel substrates in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes.*

Freshwater Larvae and Juveniles

EFH for larval and juvenile pink salmon is the general distribution area for this life stage, located in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* (ADF&G 1998a) and contiguous rearing areas within the boundaries of ordinary high water during the spring, generally migrate in darkness in the upper water column. Fry leave streams in within 15 days and the duration of migration from a stream towards sea may last 2 months.

Estuarine Juveniles

Estuarine EFH for juvenile pink salmon is the general distribution area for this life stage, located in estuarine areas, as identified by the salinity transition zone (ecotone) and the mean higher tide line, within near-shore waters and generally present from late April through June.

Marine Juveniles

Marine EFH for juvenile pink salmon is the general distribution area for this life stage, located in all marine waters off the coast of Alaska from the mean higher tide line to the 200-nautical-mile (nm) limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Marine Immature and Maturing Adults

EFH for immature and maturing adult pink salmon is the general distribution area for this life stage, located in marine waters off the coast of Alaska to depths of 200 m and range from the mean higher tide line to the 200-nm limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean. Mature adult pink salmon frequently spawn in intertidal areas and are known to associate with smaller coastal streams.

Freshwater Adults

EFH for pink salmon is the general distribution area for this life stage, located in freshwaters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and wherever there are spawning substrates consisting of medium to course gravel containing less than 15 percent fine sediment (less than 2-mm-diameter), 15 to 50 cm in depth from June through September.

Chum Salmon

Freshwater Eggs
EFH for chum salmon eggs is the general distribution area for this life stage, located in gravel substrates in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes*.

Freshwater Larvae and Juveniles
EFH for larval and juvenile chum salmon is the general distribution area for this life stage, located in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and contiguous rearing areas within the boundaries of ordinary high water and contiguous rearing areas within the boundaries of ordinary high water during the spring. Juveniles generally migrate in darkness in the upper water column. Fry leave streams within 15 days and the duration of migration from a stream towards sea may last 2 months
.

Estuarine Juveniles
Estuarine EFH for juvenile chum salmon is the general distribution area for this life stage, located in estuarine areas, as identified by the salinity transition zone (ecotone) and the mean higher tide line, within near-shore waters from late April through June.

Marine Juveniles
Marine EFH for juvenile chum salmon is the general distribution area for this life stage, located in all marine waters off the coast of Alaska to approximately 50 m in depth from the mean higher tide line to the 200-nm limit of the EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Marine Immature and Maturing Adults
EFH for immature and maturing adult chum salmon is the general distribution area for this life stage, located in marine waters off the coast of Alaska to depths of 200 m and ranging from the mean higher tide line to the 200-nm limit of the EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Freshwater Adults
EFH for chum salmon is the general distribution area for this life stage, located in freshwaters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and wherever there are spawning substrates consisting of medium to course gravel containing less than 15 percent fine sediment (less than 2-mm diameter); finer substrates can be used in upwelling areas of streams and sloughs from June through January.

Sockeye Salmon

Freshwater Eggs

EFH for sockeye salmon eggs is the general distribution area for this life stage, located in gravel substrates in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes*.

Freshwater Larvae and Juveniles

EFH for larval and juvenile sockeye salmon is the general distribution area for this life stage, located in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and contiguous rearing areas within the boundaries of ordinary high water. Juvenile sockeye salmon require year-round rearing habitat. Fry generally migrate downstream to a lake or, in systems lacking a freshwater lake, to estuarine and riverine rearing areas for up to 2 years. Fry out migration occurs from approximately April to November and smolts generally migrate during the spring and summer.

Estuarine Juveniles

Estuarine EFH for juvenile sockeye salmon is the general distribution area for this life stage, located in estuarine areas, as identified by the salinity transition zone (ecotone) and the mean higher tide line, within near-shore waters. Under-yearling, yearling, and older smolts occupy estuaries from March through early August.

Marine Juveniles

Marine EFH for juvenile sockeye salmon is the general distribution area for this life stage, located in all marine waters off the coast of Alaska to depths of 50 m and range from the mean higher tide line to the 200-nm limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean from midsummer until December of their first year at sea.

Marine Immature and Maturing Adults

EFH for immature and maturing adult sockeye salmon is the general distribution area for this life stage, located in marine waters off the coast of Alaska to depths of 200 m and range from the mean higher tide line to the 200-nm limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Freshwater Adults

EFH for sockeye salmon is the general distribution area for this life stage, located in freshwaters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and wherever there are spawning substrates consisting of medium to course gravel containing less than 15 percent fine sediment (less than 2-mm diam.). Finer substrates can be used in upwelling areas of streams and sloughs from June through September. Sockeye often spawn in lake substrates as well as in streams.

Chinook Salmon

Freshwater Eggs

EFH for Chinook salmon eggs is the general distribution for this life stage, located in gravel substrates in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes.*

Freshwater Larvae and Juveniles

EFH for larval and juvenile Chinook salmon is the general distribution area for this life stage, located in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* (ADF&G 1998a) and contiguous rearing areas within the boundaries of ordinary high water. Juvenile Chinook salmon out-migrate from freshwater areas in April toward the sea and may spend up to a year in major tributaries or rivers, such as the Kenai, Yukon, Taku, and Copper Rivers.

Estuarine Juveniles

Estuarine EFH for juvenile Chinook salmon is the general distribution area for this life stage, located in estuarine areas, as identified by the salinity transition zone (ecotone) and the mean higher tide line, within near-shore waters. Chinook salmon smolts and post-smolt juveniles may be present in these estuarine habitats from April through September.

Marine Juveniles

Marine EFH for juvenile Chinook salmon is the general distribution area for this life stage, located in all marine waters off the coast of Alaska from the mean higher tide line to the 200-nm limit of the EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean. Juvenile marine Chinook salmon are at this life stage from April until annulus formation in January or February during their first winter at sea.

Marine Immature and Maturing Adults

EFH for immature and maturing adult Chinook salmon is the general distribution area for this life stage, located in marine waters off the coast of Alaska and ranging from the mean higher tide line to the 200-nm limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Freshwater Adults

EFH for adult Chinook salmon is the general distribution area for this life stage, located in fresh waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* wherever there are spawning substrates consisting of gravels from April through September.

Coho Salmon

Freshwater Eggs

EFH for coho salmon eggs is the general distribution area for this life stage, located in gravel substrates in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes*.

Freshwater Larvae and Juveniles

EFH for larval and juvenile coho salmon is the general distribution area for this life stage, located in those waters identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and contiguous rearing areas within the boundaries of ordinary high water. Fry generally migrate to a lake, slough, or estuary and rear in these areas for up to 2 years.

Estuarine Juveniles

Estuarine EFH for juvenile coho salmon is the general distribution area for this life stage, located in estuarine areas, as identified by the salinity transition zone (ecotone) and the mean higher tide line, within near-shore waters. Juvenile coho salmon require year-round rearing habitat and also migration habitat from April to November to provide access to and from the estuary.

Marine Juveniles

Marine EFH for juvenile coho salmon is the general distribution area for this life stage, located in all marine waters off the coast of Alaska from the mean higher tide line to the 200-nm limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Marine Immature and Maturing Adults

EFH for immature and maturing adult coho salmon is the general distribution area for this life stage, located in marine waters off the coast of Alaska to 200 m in depth, and ranges from the mean higher tide line to the 200-nm limit of the U.S. EEZ, including the GOA, EBS, Chukchi Sea, and Arctic Ocean.

Freshwater Adults

EFH for coho salmon is the general distribution area for this life stage, located in freshwaters as identified in ADF&G's *Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* and wherever there are spawning substrates consisting mainly of gravel containing less than 15 percent fine sediment (less than 2-mm diameter) from July to December.