Akutan Harbor Navigational Improvements

Appendix G: Environmental

Akutan, Alaska

US Army Corps of Engineers
Alaska District

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EVALUATION UNDER
SECTION 404(b)(1) CLEAN WATER ACT 40 CFR PART 230
Akutan Harbor Navigational Improvements
Akutan, Alaska

1. PROJECT DESCRIPTION

The project intends to create a protected moorage for a ferry vessel that will transport people and cargo between the community of Akutan and its airfield on Akun Island. The recommended plan (Alternative 2) includes construction of a harbor in Surf Bay consisting of a 450-foot-long rubble-mound breakwater; a 120-foot by 120-foot mooring basin; and a -13-foot MLLW deep entrance channel. Also included in the project are a mooring basin and dolphins, pile-supported dock, a small pad for parking and freight loading/unloading, and a road connecting the pad to an area near the Surf Bay Inn.

A. Authority

Section 203 of the Water Resources Development Act (WRDA) of 2000, as amended, provides authority for the U.S. Army Corps of Engineers (USACE) in cooperation with Indian tribes and heads of other federal agencies to study and determine the feasibility of carrying out projects that will substantially benefit Indian tribes. Section 2006 of WRDA 2007 as amended provides for project justification to be pursued for Remote and Subsistence Harbors if certain criteria are met and sufficient NED benefits for project justification are not identified. The Remote and Subsistence Harbors authority specifically states that in conducting a study of harbor and navigation improvements, the Secretary may recommend a project without demonstrating that the improvements are justified solely by NED benefits if the Secretary determines that the improvements meet specific criteria detailed in the authority

B. General Description of Dredged or Fill Material

The primary discharges to waters of the U.S. would be:

a. Placement of quarry-sourced rock construction material (C-rock, B-rock, and armor stone) for the construction of the breakwater; and

b. Placement of terrestrial fill (70,000 to 115,000 cubic yards of coarse sand and gravel) for a temporary construction and drilling/blasting pad.

The rocky, shallow shoreline and high-energy wave environment at the project site may not allow barge-based dredging equipment to access the project area. Because of this, the USACE anticipates that a temporary construction pad of terrestrial fill (70,000 to

115,000 cubic yards of sand and gravel from nearby sources on Akun) would be placed over the project area to allow land-based equipment to reach and dredge the proposed entrance channel and basin. The temporary fill would also help reduce noise and debris impacts from any subsurface blasting. Both the dredged seabed material and the temporary fill would be removed and placed for future beneficial use at a prepared upland stockpile site within the developed airport area on Akun Island.

C. Descriptions of the Proposed Discharge Sites

The placement site for the breakwater and temporary construction fill would be the rocky shoreline of Surf Bay, characterized by a high-energy wave environment, wave-eroded volcanic rock, accompanied by small, narrow beaches of coarse sand and gravel.

D. Descriptions of Discharge Methods

Rock for the breakwaters would be placed by an excavator located on a barge or other floating platform, or from land by an excavator. The temporary construction pad would be placed using front-end loaders and other standard land-based construction equipment.

2. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

The rock breakwaters would create a high-relief rocky substrate very similar to the natural rocky spurs extending into Surf Bay.

B. Water Circulation, Fluctuations, and Salinity Determinations

The proposed breakwater would reduce wave energy within and near the area it encloses, which will cause localized changes to water circulation along the beach. No freshwater streams enter the area enclosed by the breakwater, so no noticeable effects on salinity are anticipated. The temporary construction fill would be removed entirely upon dredging the basin and entrance channel, and so will have no lasting effect on water circulation, fluctuations, or salinity.

C. Suspended Particulate/Turbidity Determinations

The dredged is expected to consist of coarse sands, gravels, and rock fragments, with little in the way of silt-sized particles.

The dredging is expected to be performed with a mechanical clamshell dredge or excavator operated from a crane stationed on a barge and depositing the dredged material into dump trucks for transportation to the upland storage site. A hydraulic ripping attachment to an excavator may be necessary to remove consolidated sediment or weathered bedrock within the dredging prism. In mechanical dredging, the sediment becomes suspended into the water by:

a. the impact of the dredge with the seafloor,
b. the fallback of sediment as the dredge is raised to the surface, and
c. dewatering of the sediment as it is placed on the dump truck.

Placement of rock for the breakwater and constructed uplands is not expected to significantly increase turbidity in the project area, as the substrate contains little in the way of fine particles to be disturbed. Rock and fill material would contain residual fines that may become suspended in the water column and contribute minimally to turbidity. The energetic wave environment and exposure of Surf Bay to tides and currents would rapidly dissipate any suspended sediments.

D. Contaminant Determinations

The project footprint is on and offshore of an unimproved beach, currently adjacent to an area used to launch small watercraft and land cargo barges. The Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program has no records of contaminant releases at or near Surf Beach on Akun Island.

The Clean Water Act Section 404(b)(1) guidelines state, "Dredged or filled material is most likely to be free from chemical, biological, or other pollutants where is composed primarily of sand, gravel, or other naturally occurring inert material. Dredged material so composed is generally found in areas of high current or wave energy…" (40 CFR 230.60). As described in previous sections, the material to be dredged consists of a few feet of wave-driven coarse sand and gravel, on top of much denser formations of weathered bedrock. The USACE determines that the material to be dredged meets the above description from 40 CFR 230.60 and is highly unlikely to have received and retained contaminants.

E. Aquatic Ecosystems and Organism Determinations

Construction of the breakwater would augment the existing high-relief rock substrate provided by the natural rocky spurs. The new breakwater would be expected to recruit similar communities of marine algae and invertebrates.

F. Proposed Discharge Site Determinations

The dredged material would consist of coarse sand, gravel, and crushed rock, with minimal fines. This material would be placed at an existing upland site for subsequent use as needed on Akun Island. Runoff from dewatering would be managed by a Storm Water Pollution Prevention Plan (SWPPP) obtained by the construction contractor.

G. Determination of Cumulative, Secondary Effects on the Aquatic Ecosystem

Construction of the breakwater would augment the existing high-relief rock substrate provided by the natural rocky spurs. The new breakwater would be expected to recruit similar communities of marine algae and invertebrates. The constructed project would be expected to be used by boats currently launching from Akutan and would bring in larger boats (e.g., the fish tender) that currently do not visit Akun. This diversion of the current fleet would create a potentially higher risk of small fuel or other pollutant releases at Akun.

3. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. Adaptation of Section 404 (b)(1) Guidelines to this Evaluation

The proposed project complies with the requirements outlined in the Environmental Protection Agency's Guidelines for Specification of Disposal Sites for Dredged or Fill Material.

B. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem

The placement of material into the aquatic environment for the construction of the rubble mound breakwater is integral to the project purpose of creating a safe maneuvering and mooring area for vessels; no alternative is identified. Material placed to create a temporary construction pad would be removed at the end of the project construction, resulting in no net discharge. The temporary pad will also serve to reduce the impacts of construction blasting on the aquatic environment.

C. Compliance with Applicable State Water Quality Standards

The proposed project will not lead to exceedances of applicable State of Alaska water quality standards.

D. Compliance with Applicable Toxic Effluent Standards or Prohibition under Section 307 of the Clean Water Act

No toxic effluents that would affect water quality parameters are associated with the proposed project. Therefore, the project complies with toxic effluent standards of

Section 307 of the Clean Water Act.

E. Compliance with Endangered Species Act of 1973

The USACE has determined that some Endangered Species Act (ESA) listed marine mammal species may be adversely affected by this project and will initiate formal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) when sufficient project detail has been developed to support a comprehensive analysis of impacts (expected to be in the Pre-construction Engineering and Design Phase). Potential adverse effects on listed species are anticipated to result from blasting at the project site, and not from the discharges of material into the aquatic environment.

F. Evaluation of the Extent of Degradation of the Waters of the United States

There are no municipal or private water supplies in the area that could be negatively affected by the proposed project. Commercial interests would benefit from port improvements. There would be no significant adverse impacts on plankton, fish, shellfish, wildlife, and/or special aquatic sites.

DRAFT

Biological Assessment

Akutan Harbor Navigational Improvements

Prepared by:
U.S. Army Corps of Engineers
Alaska District

June 2023

Executive Summary

The U.S. Army Corps of Engineers (USACE), Alaska District proposes to create a protected navigation feature that would improve efficiency by providing direct access and moorage for a ferry vessel and by providing safer operations for the community of Akutan. This project includes dredging with possible confined underwater blasting, construction of a rubble mound breakwater, and pile driving. The construction of the project has the potential to impact several species listed under the Endangered Species Act. The species, listing status, managing agency, and effects determination are included in Table ES-1.

Table ES-1. Executive summary effects determination.

Species Common Name	Managing Agency	Listed Population	ESA Status	Determination of Effect	Critical Habitat Adversely Modified?
Gray whale	NMFS	W. North Pacific DPS	Endangered	**May effect, not likely to adversely affect**	N/A
Humpback whale	NMFS	W. Pacific DPS	Endangered	**May effect, likely to adversely affect**	**No**
		Mexico DPS	Threatened		
Steller sea lion	NMFS	Western DPS	Endangered	**May effect, likely to adversely affect**	**No**
Sperm whale	NMFS	All	Endangered	**No Effect**	N/A
N. Pacific right whale	NMFS	All	Endangered	**No Effect**	N/A
Fin whale	NMFS	All	Endangered	**No Effect**	N/A
Sunflower sea star	NMFS (Proposed)	All	Threatened	**May effect, likely to adversely affect**	N/A
Northern sea otter	USFWS	Southwest AK DPS	Threatened	**May effect, likely to adversely affect**	No
Steller's eider	USFWS	AK Breeding	Threatened	**May effect, not likely to adversely affect**	N/A
Short-tailed albatross	USFWS	All	Endangered	**No Effect**	N/A

Draft

Biological Assessment

Akutan Navigational Improvements

1. Introduction

The purpose of this Biological Assessment (BA) is to review the proposed dredging, confined underwater blasting, pile driving and related construction activities at Akun Island, Alaska, in sufficient detail to determine whether the project might affect species protected under the federal Endangered Species Act (ESA). A BA is needed because there is a potential for significant impacts to fish and wildlife habitats within the project area that may be caused by the proposed activities. The need for a BA from a regulatory standpoint is due to the fact that there is federal funding and there are federal permits needed for the project. The U.S. Army Corps of Engineers (USACE) will be preparing a 404(b)(1) and the project must fulfill National Environmental Policy Act (NEPA) requirements. USACE will apply for an Incidental Harassment Authorization (IHA) to take marine mammals by Level B (Behavioral) harassment; primarily due to impacts of confined underwater blasting and marine pile-driving. Accordingly, this document is prepared consistent with legal requirements set forth under Section 7 of the Endangered Species Act (19 U.S. Code 1536 (c)).

An Incidental Take Authorization in the form of an Incidental Harassment Authorization (IHA) to take marine mammals by Level B (Behavioral) harassment; primarily due to impacts of confined underwater blasting and pile driving in marine waters will be necessary for this project. The use of an IHA is appropriate because it is not feasible to monitor a roughly 12-kilometer zone for marine mammals and shut down pile driving and blasting until the ESA species leave the area. While it often makes sense to accept the shutdowns on smaller projects with even moderate areas that are ensonified, the risk of long delays for this project justifies obtaining an IHA. Also, there are non-ESA species in the area that are protected by the MMPA. The only regulatory mechanism available to harass the marine mammals that are just MMPA listed is an IHA. All of the harassment is incidental Level B due to pile driving, but an IHA is necessary to continue blasting or pile driving while marine mammals are in the Level B zone.

This Draft BA lays out the rational for which ESA species are considered and the rationale for the preliminary likely effect determinations. Since USACE, has through its analysis, determined that its action “may affect, and is likely to adversely affect” ESA-listed marine mammals, the formal ESA consultation procedures established by 50 CFR 402 et seq. are triggered, which will lead to the development of a Biological Opinion (BO) by the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). Section 7(b)(4)(C) of the ESA further provides that if an endangered or threatened marine mammal is involved, the taking must first be authorized by Section 101(a)(5) of the Marine Mammal Protection Act (MMPA). Other non-ESA species, such the non-ESA listed gray whales and orca whales, will likely be included in the IHA application package. These details will inform the IHA application to help determine estimated take numbers for marine mammals and serve to advance this BA from a draft to a final version. Authorized take numbers from the IHA are necessary to assess the effects under the ESA and allow for accurate completion of the BA and resulting BO.

1.1 Purpose and Need

The purpose is to identify feasible navigational improvements that provide for the safe, reliable, and efficient (cost-effective) transportation of passengers and cargo between the Akutan Airport on Akun Island and community of Akutan located on Akutan Island.

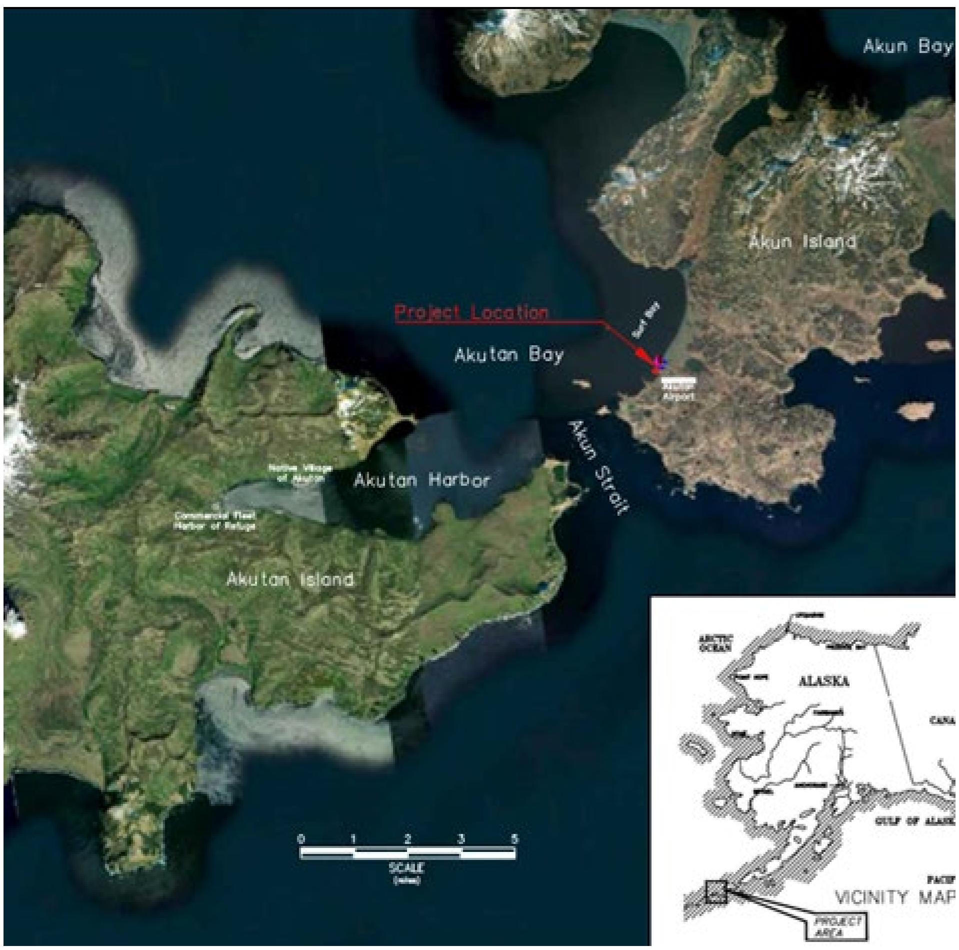

Figure 1. Location and vicinity of Akutan and Akun Islands.

2.0 Project Description

2.1 Location

Akutan Island is approximately 18 miles long and 13 miles wide, with an area of 129 square miles. Akutan Harbor is a glacially formed body of water about 3.9 miles long and approximately 1.8 miles wide at its mouth, narrowing to about 0.6 miles at its head. Akutan Harbor is a large and naturally deep with a relatively flat bottom and accommodates large vessels, including floating processors, and large container and cargo ships that service both Akutan as well as the large adjacent shore-based seafood processing facility. The head of the harbor is a flat valley with a gradually increasing slope, while the northern and southern shorelines are rocky and steep. The inner portion of the harbor is substantially sheltered from incoming Bering Sea swell, and the island's active volcano that blocks much of the prevailing easterly winds of the Aleutian Islands. Akutan Harbor opens to Akutan Bay and Akun Strait to the east. A small boat harbor also called Akutan Harbor is located at the west terminus of Akutan Harbor. A road connecting the community of Akutan to the Akutan Harbor is currently under construction.

2.2 Definition of the Action Area

The action area is defined in the ESA regulations (50 CFR 402.02) as the area within which all direct and indirect effects of the project will occur. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur.

The Action Area for the purposes of this biological assessment includes:

a. The dredged navigation channel and harbor basin
b. The footprint of the breakwaters
c. The ensonified area surrounding the noise sources (pile-driving, dredging, rock ripping, confined underwater blasting, vessel operation)
d. The transit route between Unalaska and Akun Island

While it is uncertain that rock would come from established quarry at Unalaska and the use of this quarry will not be specified in the construction contract, it is the most likely source and is used for analysis in this draft BA. It is possible that this source, and thus the route, might change between this draft BA and the final BA prepared in PED.

The action area for this project and is a combination of the calculated 120 dB isopleth for vibratory pile driving, confined underwater blasting plus an estimated zone that would encompass project related vessel traffic between Akun Island and the potential rock source at Unalaska. The radii for confined underwater blasting and pile driving, the largest zone for construction noise sources, are similar extend approximately 12 kilometers offshore. Figure 2 shows a closer view of the project location.

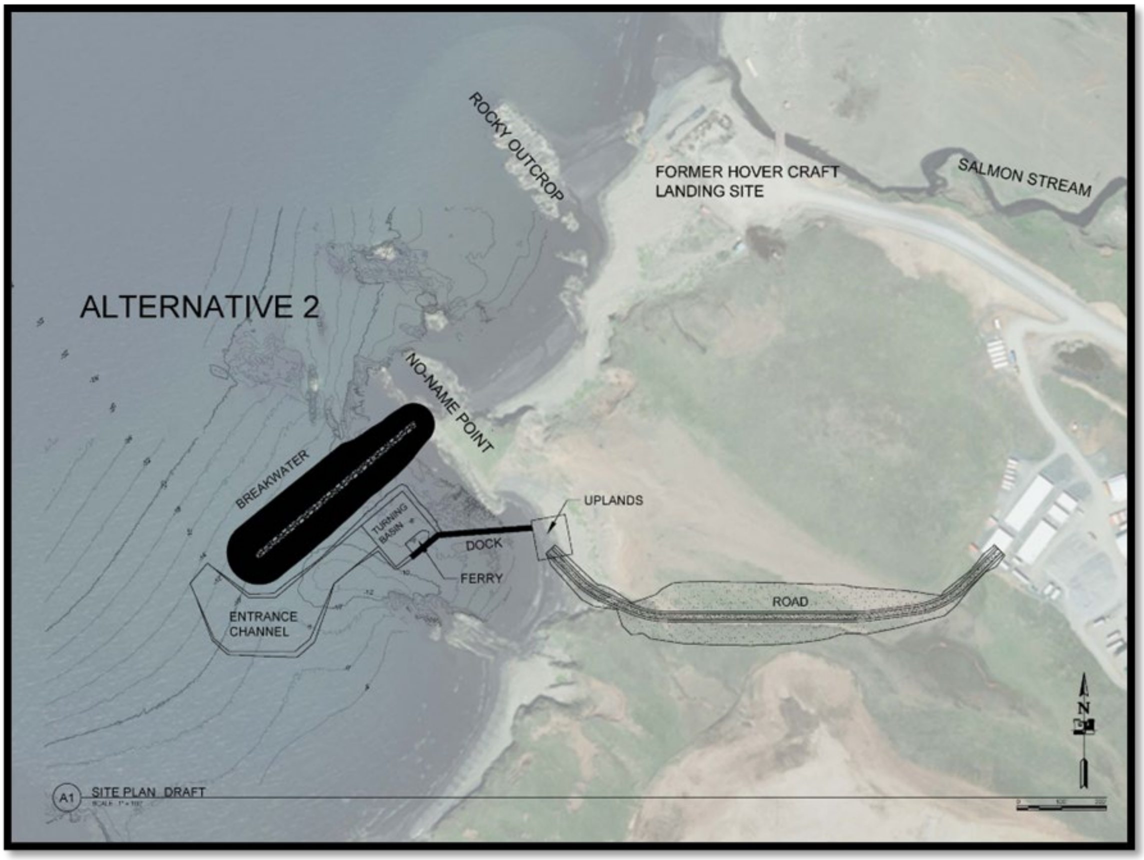

Figure 2. Project area close up view.

2.3 Proposed Action

2.3.1 Project Details

The harbor would be sized to accommodate a design vessel with a length of 58 feet and a draft of 8 feet. The 450-foot-long rubble mound breakwater would protect a 120 foot by 120 foot turning basin. Both the entrance channel and turning basin would have a dredge depth of -13.0 feet. It is anticipated that blasting would be required for the turning basin or entrance channel in this location. The entrance channel would have a minimum width of 60 feet to a maximum width of 120 feet when turning around the nose of the breakwater. Local service facilities required would include a 290 foot long by 12-foot-wide pile-supported dock, turning dolphins, uplands with an area of approximately 0.15 acres for loading/unloading freight from dock, and a 1,100 foot long by 12-foot-wide road connecting the harbor areas with the existing pad to the south of the Surf Bay Inn.

Dredged Material Placement

The placement site will on the existing gravel pad where the Surf Bay Inn is located (Figure 33). The Native Village of Akutan has expressed an interest in the dredged and excavated material as it is usable for construction projects and there is a need for it on the island (i.e., proposed roads to Trident Bay and Lost Harbor). It is costly to bring this sort of material in from remote locations and can make construction projects cost prohibitive.

Confined Underwater Blasting

The precise blasting plan for this project would be developed in PED, but a reasonable scenario for this project for this Draft Biological Assessment purposes involves drilling boreholes for confined underwater blasting in a 12-foot by 12-foot grid pattern over the portion of the dredge prism where solid rock cannot be effectively ripped by mechanical means. It is possible that a much more constrained blasting scenario could be implement if there are only a few scattered rocky outcrops in the dredge prism. The holes in each shot would be separated by at least 15 milliseconds so that for fish and marine mammal impact assessment purposes each hole would be treated individually. It may be possible to fill in the marine area behind the breakwater and use the temporary fill pad to conduct drilling and blasting. This material would then be placed in the uplands for reuse along with the material that would be dredged to achieve the project grade.

Distances to Level A Harassment (lethal or permanent injury) zones, based on similar blasting scenarios for a large dredging project in Unalaska, Alaska range from less than 100 meters in diameter for Steller sea lions to approximately 2,000 meters for harbor porpoises. The calculations done in PED with a more specific blasting plan would determine the exact shutdown distances that would be monitored, but the information from the Unalaska scenario is likely very close to what is expected for Akun. The Level B Harassment zones will also be modeled in PED but are likely to extend about 5,000 meters from the blast site. An IHA would be pursed from NMFS to allow for construction to occur while marine mammals are present in the Level B Zone for both pile driving and confined underwater blasting.

Rock Ripping

A rock ripper would be used to remove rock where a conventional excavator bucket is ineffective. Rock rippers resemble a hydraulic claw that breaks rock by both hydraulic force and vibratory motion. These tools fill a niche between a hydraulic hammer and confined underwater blasting and are often effective for removing moderate quantities of rock as long as there are fracture lines to exploit.

2.3.2 Mitigation Measures

The USACE intends to collect the data required for the IHA during the PED phase of the project, which will provide more detail regarding the specific impacts to protected resources. Well-reasoned and effective mitigations to reduce those impacts will also be developed, in consultation with the managing agency, along with the number of marine mammals that may be taken by harassment. The final mitigation measures for the proposed project cannot be presented prior to the development of the IHA, but the USACE would likely incorporate the following generic mitigation measures in the construction of the project to reduce specific temporary construction impacts on discrete natural resources:

1. Marine Mammal Monitoring – This is a required component of any issued IHA since monitoring is necessary to assess exposures to various harassment by various sources. The Level B zone will be monitored for species presence and abundance and a shutdown zone will be established and monitored to ensure Level A take does not occur (if there are not Level A take allowances) or Level A takes are minimized if allowed.
2. Speed limits for construction vessels to reduce the likelihood of vessel strikes.
3. Shutdown distances are typically limited when constructing with IHAs, but shutdown distances around the dredge and for Level A harassment from pile driving would be established. Avoidance measures for vessels would be developed to minimize harassment when construction vessels are underway, particularly for barge traffic between the project site and Unalaska. These avoidance measures always prioritize safe navigation.

3.0 Description of Species and their Habitats

This section provides a description of the species and their habitat that may be affected by the project. Species listed in Executive Summary table ES-1 that have a “no effect” determination next to them are not discussed further in this section or in subsequent sections. “No effect” determinations are commonly made by the action agency when species have a very low or no chance of being in the action area due to either geographic constraints, seasonal timing, very low abundance, or a combination of some or all of these factors. The resource agency is not obligated to concur or comment on “no effect” determinations made by an action agency.

3.1 Gray Whale – Western North Pacific DPS

Gray whales are found mainly in shallow coastal waters in the North Pacific Ocean. There are two geographic distributions of gray whales in the North Pacific: the eastern North Pacific stock, found along the west coast of North America, and the western North Pacific stock, found along the coast of eastern Asia. Most of the eastern North Pacific stock spends the summer feeding in the northern Bering and Chukchi Seas, but some gray whales have also been reported feeding along the Pacific coast during the summer, in waters off of Southeast Alaska, British Columbia, Washington, Oregon, and northern California. In the fall, gray whales migrate from their summer feeding grounds, heading south along the coast of North America to spend the winter in their wintering and calving areas off the coast of Baja California, Mexico. Calves are born during migration or in the shallow lagoons and bays of Mexico from early January to mid-February. From mid-February to May, eastern North Pacific gray whales can be seen migrating northward along the U.S. west coast. Photo-identification studies indicate that gray whales in this stock move widely within and between areas on the Pacific coast. They are not always observed in the same area each year, and there may be gaps of several years between repeat sightings. Although western and eastern DPS gray were thought to be relatively isolated from each other, recent satellite tagging data have shown that at least some western North Pacific DPS gray whales migrate across the northern Gulf of Alaska, and along the west coast of British Columbia, the United States, and Mexico. The eastern North Pacific population was once listed as endangered under the ESA but has successfully recovered and was delisted in 1994. The western North Pacific population remains low, and its continued survival is questionable. This population is estimated to include fewer than 200 individuals. Small numbers of gray whales could be present in the action area during construction and be exposed to disturbance from project vessels and underwater noise from pile driving. Of the gray whales that may be protected, most are likely to be the non-ESA listed whales. However, whales from the listed western North Pacific DPS are not distinguishable from the majority of gray whales that are only protected under the MMPA. The forthcoming IHA application will cover both the listed DPS and the non-ESA listed whales since both have the potential to be in the project area during the open water period. Hearing abilities of gray whales (low frequency cetaceans) are discussed in detail in Section 5, Effects Analysis.

3.2 Humpback Whale – Mexico and Western North Pacific DPS and Critical Habitat

Humpback whales are either threatened, endangered, or delisted under the Endangered Species Act depending upon which DPS they derive from. According to NMFS guidance, humpback whales observed in the Aleutian Islands, Bering, Chukchi, and Beaufort Seas derive from three recognized North Pacific DPSs: the Western North Pacific DPS, the Hawaii DPS, and the Mexico DPS. Humpback whales deriving from the Western North Pacific DPS, which are listed as Federally endangered, are the least likely to be encountered in Alaskan waters at only 4.4 percent. Humpback whales deriving from the Mexico DPS, which are listed as federally threatened, have a similarly low encounter probability at 11.3 percent. Humpback whales deriving from the Hawaii DPS are not listed under the Endangered Species Act; they are most likely to be encountered in Alaskan waters, at 86.5 percent. It should be noted that among these DPSs, individual whales do not exhibit physical traits that would allow for visual confirmation of population lineage (NMFS 2016).

Humpback whales are migratory, spending the summer feeding in the cold waters of the northern seas and migrating to lower latitudes for breeding and calving. They feed by lunging, open-mouthed, through swarms of small fish and invertebrates and forcing the water through their baleen plates to filter separate the food from the water. Humpback whales are known to traverse the Bering shelf and likely come within visual observation range of the landmass of Nome Furthermore, Humpback whales are gregarious, and often travel together or congregate at areas where food density is relatively high. They are distinguishable among other whales by not only their physical characteristics, large pectoral fins and humped dorsal fin, but they also display frequent rounds of breaching, and fin- and tail-slapping the water's surface. The various DPS (Mexico and Western Pacific DPS) are indistinguishable from the majority of the population that is not listed under the ESA. Small numbers of humpback whales could be present in the action area during construction and be exposed to disturbance from project vessels and underwater noise from pile driving. Humpback whale Critical Habitat is designated in the project area (Eastern Aleutians in general), but the minor and localized project impacts are not expected to adversely modify designated critical habitat. The forthcoming IHA application will cover all humpback whales, but only a small portion of the total allocation authorized for incidental Level B harassment will by from the two listed DPSs. Hearing abilities of humpback whales (low frequency cetaceans) are discussed in detail in Section 5, Effects Analysis.

3.3 Steller Sea Lion - Western DPS and Critical Habitat

Steller sea lions (Eumetopias jubatus) occur in two Distinct Population Segments (DPSs) in Alaska. An eastern U.S. DPS, including animals east of Cape Suckling, Alaska (144°W), was listed as threatened under the ESA until recently being de-listed, and a western U.S. DPS listed as endangered, including sea lions at and west of Cape Suckling (including Norton Sound and the associated project area) (62 CFR 30772, June 5, 1997, and 78 CFR 66140, November 4, 2013).

Steller sea lions are large, sexually dimorphic otarrids, with males attaining 11 feet in length and 2,500 pounds, and females 9.5 feet and 800 pounds. Steller sea lions are dependent upon isolated haulouts and rookery areas; they do not tolerate disturbance in these areas. Although not technically migratory, Steller sea lions move about the entirety of their range as they pursue prey species' seasonal abundances. Steller sea lions are not known to migrate, but individuals disperse widely outside the breeding season (late May to early July). At sea, Steller sea lions commonly occur near the 656-foot (200-meter) depth contour, but have been seen from near shore to well beyond the continental shelf (Kajimura and Loughlin, 1988). Steller sea lions are opportunistic predators, feeding primarily on a wide variety of fishes and cephalopods, including walleye pollock (Theragra chalcogramma), Atka mackerel (Pleurogrammus monopterygius), Pacific herring (Clupea pallasi), capelin (Mallotus villosus), Pacific sand lance (Ammodytes hexapterus), Pacific cod (Gadus macrocephalus), and salmon (Oncorhynchus spp.) (Pitcher, 1981; Merrick et al., 1997). On rare occasions, Steller sea lions prey on seals, and possibly sea otter pups. Overall, populations of Steller sea lions declined precipitously in the decades between the 1950s and 1980s and began to stabilize and slightly increase by the 2000s, but there are trends in either direction depending upon which portion of the species' overall range is sampled. It is likely that Steller sea lion will remain endangered for the foreseeable future.

Small numbers of Steller sea lions could be present in the action area during construction and be exposed to disturbance from project vessels and underwater noise from pile driving. Hearing abilities of sea lions are discussed in detail in Section 5, Effects Analysis.

3.3 Sunflower Sea Star

The sunflower sea star occurs throughout intertidal and subtidal coastal waters of the Northeast Pacific Ocean from the Aleutian Islands, Alaska, to at least northern Baja California, Mexico. They are found to a depth of at least 435 meters on various substrate types, from rocky kelp forests to sand and mud flats.

Sunflower sea stars are broadcast spawners that require close proximity to mates for successful fertilization.

There is no single, systematically collected data set that provides population size or long-term trend data for sunflower sea stars throughout their range. However, from 2013-17, an outbreak of sea star wasting syndrome contributed to precipitous population declines in several areas, with impacts largely progressing sequentially from south to north. Disease, specifically sea star wasting syndrome, is the primary threat to the species. The influence of environmental stressors, including those associated with anthropogenic climate change, on disease risk are unresolved and are a major research focus.

This species is proposed for ESA listing as Threatened, but it has not been officially listed as of the date of this draft assessment.

3.3 Northern Sea Otter - Southwest DPS and Critical Habitat

Along with being listed as threatened under the ESA and as a Species of Special Concern SSC by the ADF&G, sea otters (*Enhydra lutris*) in the United States are also protected from hunting and harassment by the Marine Mammal Protection Act of 1972 (MMPA). There is critical habitat for northern sea otter (*Enhydra lutris kenyoni*) in the waters of Surf Bay, Akutan Bay, and Akutan Harbor. Work is currently underway to characterize important breeding and feeding habitat for northern sea otters in Alaska. Groups of up to 20 otters were observed on several occasions in nearshore areas near the Whaling Station and crab pot storage area in Akutan Harbor during surveys conducted in 2004 (HDR 2004b). During surveys conducted in winter 2006, the number of otters observed was highest in January (22 otters), with declines in February (17 otters), and by March only 7 otters were observed (HDR 2006a). Preferred habitat appears to include protected areas in Akutan Harbor near the village of Akutan and along nearshore habitats at Akun and Green Island. Sea otters were commonly observed in small groups of 1 to 3 otters near all the harbor site alternatives during summer 2022 USACE observations. As all three alternatives are close together, otter numbers were similar at each site as they tended to move around through the general area.

3.3 Steller's eider – Alaska-breeding DPS

The Alaska breeding population of Steller's eider (*Polysticta stelleri*) was listed as a threatened species under the ESA in 1997. Steller's eiders are also listed as a SSC by the ADF&G and protected by the MBTA. Steller's eiders are known to occur in Akutan Harbor during the winter months. No critical habitat is present in the project area. Surveys were conducted by HDR Alaska, Inc. in January, February, and March 2006 to determine the distribution and abundance of Steller's eider in Akutan Harbor, Akun Strait, and Surf Bay along the proposed hovercraft routes. Numbers were highest in January (136), with declines in February (88) and by March only 13 Steller's eider were observed. Preferred habitat appeared to include protected areas within 165 ft to 330 ft of the shoreline. The location of Steller's eider flocks appeared to change frequently to maximize protection from the wind. Steller's eiders were most abundant immediately off the community of Akutan and on the southeast end of Surf Bay.

A boat-based waterfowl survey for Steller's eider was completed in February 2023. Marine nearshore habitat was surveyed at 4 knots along the route shown in Figure 3 starting in Lost Harbor on Akun Island, transiting Akutan Bay, and ending near the old whaling station in Akutan Harbor on Akutan Island.

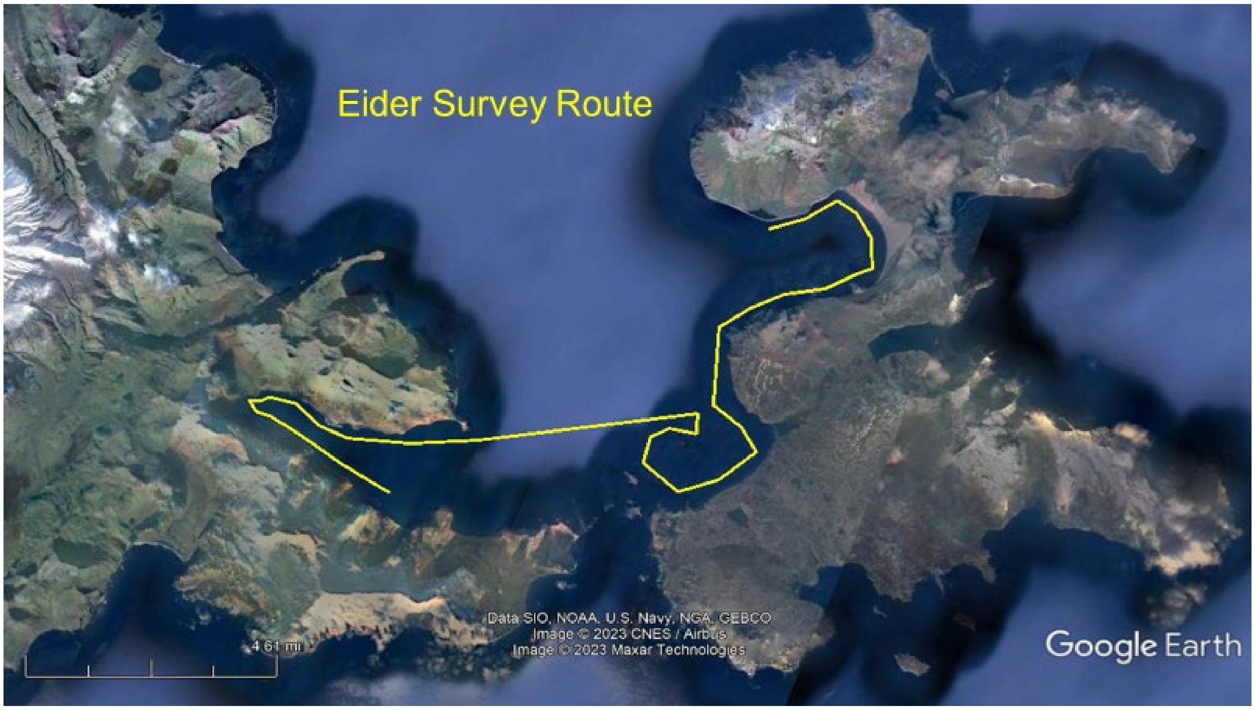

Figure 3. February 2023 Steller's eider survey route.

During this survey, the only Steller's eiders observed were at the head of Akutan Harbor and inside the small boat harbor. There were 8 Steller's eiders indies inside the boat harbor and 24 along the southwest side of Akutan Harbor. Figure 4 shows the areas where these eiders were encountered in yellow polygons.

Figure 4. Steller's eider locations in yellow polygons.

4.0 Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR § 402.02).

Acoustic Impacts

Underwater noise can have a myriad of impacts on marine mammals, including temporary and permanent threshold shifts, masking, behavioral impacts, and interference with echolocation.

Cetaceans like whales and dolphins may be particularly susceptible to hydroacoustic impacts due to their reliance on acoustic information for communication, navigation, and finding food. Numerous studies in the Arctic support the understanding that whales are sensitive to noise from offshore drilling, particularly migrating whales. Feeding whales may be more tolerant to underwater noise than migrating whales. A study by Blackwell et al. (2015) found that bowhead whales react differently to different thresholds of seismic noise. At relatively low cumulative exposure levels (as soon as airguns were just detectable), bowhead whales almost doubled their call rates. Once cumulative exposure levels exceeded 127 dB re 1 μPa2-s, call rates decreased. Bowhead whales went completely silent at received levels over 160 dB re 1 μPa2-s.

Underwater sounds can be broadly classified as ambient and anthropogenic; natural and man-made, respectively. Ambient noise can come from all sorts of sources including animals, tides, currents, ice, seismic activity, and others. It forms the background from which any escalations are compared. Anthropogenic noise is related directly to the actions of people; ship traffic, pile-driving, and blasting are three examples of common sources of anthropogenic noise.

Pinnipeds are less impacted by underwater noise than are cetaceans because pinnipeds do not rely on echolocation for feeding the way that cetaceans do. Pinnipeds are not known to communicate underwater with sound either, so they are not susceptible to acoustic masking in the way that cetaceans are. The prior effects of underwater noise on pinnipeds is general disturbance and threshold shifts from powerful sounds.

Ship strike

Vessels transiting the marine environment have the potential to collide with, or strike, marine mammals (Laist et al. 2001, Jensen and Silber 2003). The probability of strike events depends on the frequency, speed, and route of the marine vessels, as well as distribution of marine mammals in the area. Humpback whales are especially susceptible to ship strike injury and mortality in narrow bottleneck passages (Williams and O'Hara 2010). Laist et al. (2001) found that while all sizes and types of vessel can strike a whale, ships greater than 80 meters and those going faster than 14 knots were most likely to cause severe or fatal injuries.

Baleen whales

Vessel collisions with whales remain a significant management concern, given the increasing abundance of whales foraging in Alaska, as well as the growing presence of marine traffic in Alaska’s coastal waters and in the Norton Sound area. The reduction in Arctic sea ice that has occurred in recent years has renewed interest in using the Arctic Ocean as a potential waterway for coastal, regional, and trans-Arctic marine operations. Climate models predict that the warming trend in the Arctic will accelerate, causing the ice to begin melting earlier in the spring and resume freezing later in the fall, resulting in an expansion of potential shipping routes and lengthening the potential navigation season. Based on these factors, injury and mortality of baleen whales as a result of vessel strike may likely continue, or possibly increase, in the future (Neilson et al., 2012).

Seals and sea lions are less susceptible to impacts from vessel traffic, largely because vessel traffic tends to avoid areas of high ice concentration due to the hazard the ice poses to navigation; reducing the likelihood of a vessel injuring or killing a seal from direct impact. The discharge of hazardous substances related to shipping represents a residual threat to ice seals in the form of acute and chronic toxicity and trophic effects.

Vessel traffic can also present noise and disturbance impacts to ice seals, but pinnipeds are generally less receptive to noise impacts than cetaceans. They also spend a significant portion of their lives above the water, where the hydroacoustic impact pathway is disrupted.

Climate Change

Climate change is a factor potentially affecting the range-wide status of all species (including humans) and is of particular relevance for Arctic species. The general discussion in this Section applies to all species addressed in this Biological Assessment.

Since the 1950s the atmosphere and oceans have warmed, snow and sea ice have diminished in both areal extent and volume, sea level has risen, and concentrations of greenhouse gases have increased. The time period 1983-2012 was likely the warmest 30-year period in the Northern Hemisphere in the last 1400 years. There has been strong scientific consensus over the past two decades that atmospheric temperatures are increasing, affecting many of the earth's climate-related processes. The overwhelming majority of climate scientists agree that human activities, especially the burning of fossil fuels (coal, oil, and gas), are responsible for most of the climate change currently being observed (IPCC, 2014).

Effects to marine ecosystems from increased atmospheric CO2 and climate change include ocean acidification, expanded oligotrophic gyres, and shifts in temperature, circulation, stratification, and nutrient input. Altered oceanic circulation and warming cause reduced subsurface oxygen concentrations. These large-scale shifts have the potential to disrupt existing trophic pathways as change cascades from primary producers to top level predators. Effects to marine mammals could result from changes in the distribution of temperatures suitable for rearing young, the distribution and abundance of prey, and the distribution and abundance of competitors or predators. (Doney et al., 2012)

The potential impacts of climate and oceanographic change on whales and seals will likely affect habitat availability and food availability. Site selection for feeding, breeding, and whale migration may be influenced by factors such as ocean currents and water temperature. For example, there is some evidence from Pacific equatorial waters that sperm whale feeding success and, in turn, calf production rates are negatively affected by increases in sea surface temperature (Smith and Whitehead 1993, Whitehead 1997). Any changes in these factors could render currently used habitat areas unsuitable. Changes to climate and oceanographic processes may also lead to decreased prey productivity and different patterns of prey distribution and availability. Such changes could affect whales and seals that are dependent on those affected prey. Variations in sea-surface temperatures and the extent of sea ice cover during the winter months have been linked to variations in the recruitment of krill (Euphausia spp.) and the reproductive success of krill predators. Different species of whales will likely react to these changes differently. For example, range size, location, and whether or not specific range areas are used for different life history activities (e.g., feeding, breeding) are likely to affect how each species responds to climate change (Learmonth et al. 2006).

Climate change will affect pinnipeds on land where they rest and give birth to young, and at sea where they forage. On land, sea level rise and larger, more frequent storms may reduce or eliminate resting and birthing areas. (Learmonth et al. 2006; NPS 2016). Changes in ocean currents, ocean acidification, and other alterations in climate cycles such as changes in the frequency of El Nino events are likely to alter ocean food webs and affect the abundance and diversity of prey items. These changes may also affect susceptibility to diseases. Some changes may be positive. For example, new suitable habitats may become available for some species (Learmonth et al. 2006, NPS 2016).

The most pronounced warming is expected in the north, exceeding the estimate for mean global warming by a factor or 3, due in part to the "ice-albedo feedback loop." As the reflective areas of Arctic ice and snow retreat, the northern latitudes absorb more heat, exacerbating the warming (NRC 2012). Climate change is projected to have substantial direct and indirect effects on individuals, populations, species, and the structure and function of marine, coastal, and terrestrial ecosystems in the foreseeable future (NRC 2012).

According to the National Aeronautics and Space Administration (NASA), the average September sea ice extent is declining by 12.8% per decade. In 2018, the Arctic ice cap shrank to 1.77 million square miles, tied for the sixth lowest September minimum on record. All indications are that the extent of sea ice will continue to decrease in the future, which will translate to increasing impacts of climate change on ice seals.

5.0 Effects Analysis

The principal impacts to the Action Area that would occur as a result of the proposed action are in-water noise within the zone of influence and elevated vessel strike hazard. Pile driving, marine construction, and dredging generates underwater noise that can potentially result in disturbance to marine mammals in the project area. In addition to disturbance, underwater noise from pile driving is capable of causing injury to marine mammals if they are exposed at close distances.

The proposed activities of primary concern to ESA-listed species include exposure to sounds from pile driving and dredging, confined underwater blasting, general disturbance from the elevated anthropogenic activities associated with construction and operation of the proposed project, and vessel strikes from construction related vessels. Upland project features are ill-defined and would have discountable effects on the ESA-listed marine mammals in the action area, so the effects of those upland features will not be discussed in the effects of the action.

Confined Underwater Blasting

Underwater noise and, more importantly, the rapid rise and fall of pressure levels, would likely extend to about 5 kilometers from shore due to blasting. More precise distance estimates will be developed in PED. Since an IHA would be sought for this project, marine mammals would be exposed to Level B harassment which would impact the most susceptible marine mammals (low frequency cetaceans such as humpback whales) out to 5 kilometers. Phocid seals and otariid seals would be subject to Level B Harassment at smaller distances. Small numbers of Level A harassment (mortality or permanent injury) authorization would be sought as part of this project and blasting shutdowns would be implemented for Level A zones. These zones would be calculated in PED but are expected to be range from a few hundred meters for otariids to approximately 4,000 meters for high frequency cetaceans. Overall, the potential impacts from confined underwater blasting are anticipated to be moderate since they occur over a short period of time (once per day at most for several days) and would likely only expose a small number of marine mammals.

Rock Ripping

The potential effects of rock ripping to marine mammals would be minor. The Level A zone of typical hydraulic rippers is 2-3 meters, whereas the level B zone would be less than the zone for vibratory pile driving (~10 kilometers). Given the small amount of operating time compared to vibratory pile driving and the very small Level A zones, the potential impacts to marine mammals from rock ripping are anticipated to be minor.

Marine Pile-Driving Impacts

The Alaska District does not have source level (SL) sound data for pile-driving in the waters around Akun Island. Effects in the section are rough estimations since there is no design data for the local service facilities as PED is a few years in the future.

Geotechnical investigations will need to be performed within the project footprint during preconstruction engineering and design (PED) to properly characterize the proposed dredge material, evaluate and recommend the suitability of breakwater foundation material, and identify any geological conditions that would require special foundation treatment.

According to Caltrans (2015), sheet pile installation for bridge construction over the Tanana River near Salcha, Alaska in 2012 recorded a peak average amplitude of 140-156 dB at 10 meters from the pile face. Scientific Fishery Systems, Inc. recorded a variety of pile driving operations in the Port of Anchorage in 2008. (SFS, 2009) The SFS study recorded pile-driving sounds from ranges of 31-1207 meters from the source and applied a transmission loss multiplier of 20 to predict the source sound pressure level (SPL). The prediction resulted in an average source SPL of 187 dB and included a range of tides between 18.93 feet MLLW and 30.42 feet MLLW. The tide level significantly affected the propagation of sound energy; higher tides resulted in more efficient transmission of sound energy due to the increased vertical area of the pile in contact with the water.

The NMFS published a notice in the Federal Register on May 23, 2017 announcing the issuance of an incidental harassment authorization for the take of marine mammals incidental to dock replacement project in Unalaska, Alaska citing sound pressure of 163 dB RMS recorded 10 meters from the source. (FR Vol. 82, No. 98, Pg. 23535-23550) This sound was recorded during the use of a vibratory hammer to drive sheet pile and lies within the range of recorded SL for other projects, so the Alaska District has used it to calculate the harassment radii for vibratory installation of sheet pile in the absence of project specific SL data.

Caltrans (2015) also describes several projects involving the use of an impact hammer to drive 36" round piles. The typical received SPLs for pile-driving in water less than 5 meters deep are 208 dB Peak, 190 dB RMS, and 180 dB SEL. The Alaska District has assumed the Caltrans data are acceptable surrogates for the proposed impact pile driving at Akun Island.

The NMFS has promulgated guidance regarding the effects of anthropogenic noise on marine mammals. (NMFS 2018) The NMFS guidance provides information regarding the onset of permanent threshold shift (PTS) in various clades of marine mammals; low-frequency cetaceans, mid-frequency cetaceans, high frequency cetaceans, Phocid pinnipeds, and Otariid pinnipeds. The ESA-listed species included in this biological assessment and their respective generalized hearing ranges are:

- Phocid pinniped (PW)-harbor seals (50 Hz-86 kHz)
- Otariid pinniped (OW)-Steller sea lions and otters (60 Hz-39 kHz)
- Low-frequency (LF) cetaceans (7 Hz-35 kHz)
- Mid-frequency (MF) cetacean- sperm whale (150 Hz-160 kHz)

The impacts of noise on marine mammals are also influenced by the type of noise produced by the activity, broadly classified as impulsive and non-impulsive noise. Impulsive noise is characterized by the rapid increase and decay of sound pressure, while non-impulsive does not have the rapid increase and decay of sound pressure associated with impulsive noise. Both classes of noise can be broadband and brief, but non-impulsive noise can be prolonged, continuous, or intermittent. The use of a vibratory hammer to drive piles is considered non-impulsive, while the use of an impact hammer is considered impulsive.

The MMPA defines "harassment" as "any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment]" (16 U.S.C. § 1362(18)(A)(i)-(ii)).

While the ESA does not define “harass,” NMFS recently issued guidance interpreting the term “harass” under the ESA as to: “create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering” (Wieting 2016). For the purposes of this biological assessment, any action that amounts to incidental harassment under the MMPA—whether Level A or Level B—constitutes an incidental “take” under the ESA and must be authorized by the IHA (Section 10).

As described below, we anticipate that exposures to listed marine mammals from noise associated with the proposed action may result in disturbance (Level B harassment) and/or permanent injury (Level A harassment) under the MMPA; collectively representing “take” under the ESA. Due to the relatively low sound pressure emitted by vibratory pile driving, no Level A harassment, permanent impairment to hearing, or mortalities are anticipated. Impact pile-driving would produce for powerful sounds with the potential to cause permanent injury or hearing damage.

The NMFS guidance provides thresholds for the onset of PTS in the various hearing groups of marine mammals for non-impulsive noise. The PTS threshold for humpback whales is 199 dB, while the PTS threshold for ringed and bearded seals is 201 dB and the PTS threshold for sea lions is 219 dB. The source SPL for vibratory pile driving is assumed to be 178 dB, which is lower than the PTS thresholds for whales, ringed seals, bearded seals, and sea lions. The use of a vibratory hammer to drive sheet pile for the pier and dock does not have the potential to result in permanent threshold shift at the source, so there is no need to determine a PTS radii. As an additional precaution against impacts to protected resources, the USACE will establish a 100 meter exclusion radius around all pile-driving activities. No pile-driving would occur during times when protected species are observed within the exclusion radius.

The harassment threshold for non-impulsive noise, based on behavioral modifications and temporary threshold shift (TTS), is set at 120 dB RMS for all marine mammal species. No injury, serious injury, or mortality of marine mammals would be anticipated as a result of noise above the harassment threshold and below the PTS threshold. Except when vibratory hammers are operated continuously for long periods of time in the presence of marine mammals that do not move away from the noise source, vibratory hammers do not have the potential to cause injury to marine mammals due to the relatively low SPL and lack of potentially injurious sound characteristics (rapid rise and decay of sound pressure).

The harassment threshold for impulsive sound (impact pile-driving) is set at 160 dB RMS. Impulsive sounds are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay. Impact pile-driving has the potential to exceed the permanent threshold shift (PTS) criteria and cause permanent injury to exposed marine mammals.

The NMFS recommends the transmission loss formula TL=15log(R2/R1) to predict the attenuation of underwater noise with respect to the effects of underwater noise on marine mammals; where TL is the transmission loss, R1 is the distance of a known or measured sound level, and R2 is the estimated distance that is required for sound to attenuate to a prescribed acoustic threshold. The formula can be rewritten to predict the attenuation distance, the bounds of which is known as the isopleth, to which the amplitude of the underwater noise would deteriorate to a specified threshold. The modified formula is R2=R1x10^((dBR1-dBt)/15); where R1 is the distance of a known or measured sound level, and R2 is the estimated distance that is required for sound to attenuate to a prescribed acoustic threshold, dBR1 is the amplitude of the sound measured at the distance R1, dBt is the specified acoustic threshold.

Vibratory Hammer Pile-Driving

Assuming a transmission loss coefficient of 15, a received SPL of 163 dB at 10 meters, and the 120 dB acoustic threshold for harassment the practical spreading loss model would provide a harassment isopleth of 7,356 meters from the source.

$$R2=10\times10^{((163-120)/15)}$$

$$R2=7{,}356.422545m$$

A harassment isopleth of 7,356 meters around each of the sheet pile docks produces an area of ensonification exceeding the 120 dB harassment threshold of 111.2 square kilometers for the pile driven project features, after removing the terrestrial portion of the radii. This does not account for the impact of the breakwaters on sound propagation. The breakwaters would likely be constructed prior to the docks, so their presence could have an attenuating impact on the hydroacoustic contours, but the extent of the potential attenuation is unknown.

Observation of an area so large would present tremendous implantation challenges and costs. The additional time associated with observing the ensonified area and shutting down operations in the event a protected species enters the ensonified area would present unacceptable delays to the completion of the project considering the cost of mobilizing to the project location, the limited duration of the construction season, and the challenges of marine construction in such remote area. The Alaska District intends to prepare an IHA application during the design phase of the project and collect specific observation data regarding the abundance and distribution of ESA-listed species in order to determine the potential exposures of protected species to anthropogenic marine noise. Without the direct observation data required for the IHA, the quantification of takes under the definition of harassment is not possible.

Impact Hammer Pile-Driving

Harassment

Assuming a transmission loss coefficient of 15, a received SPL of 190 dB at 10 meters, and the 160 dB acoustic threshold for harassment the practical spreading loss model would provide a harassment isopleth of 1,000 meters from the source.

$$R2=10 \times 10^{((190-160)/15)}$$

$$R2=1000m$$

A harassment isopleth of 1,000m around each of the dolphins would create an area of 5.6 square kilometers of water that would be ensonified beyond the 160 dB threshold for harassment from impulsive sound. This area calculation does not account for the effects of the breakwaters on sound propagation.

The District employed the same methodology to estimate the zonation of hydroacoustic noise described in the previous section. Area 1 is 2.22 km2, Area 2 is 0.58 km2, and area 3 is 2.65 km2.

Injury

<u>Phocid pinnipeds</u>. Assuming a transmission loss coefficient of 15, a received SPL of 190 dB at 10 meters, and the 185 dB acoustic threshold for PTS, the practical spreading loss model would provide a PTS isopleth of 22 meters from the source.

$$R2=10 \times 10^{((190-185)/15)}$$

$$R2=22.5m$$

<u>Ottarid pinnipeds.</u> Assuming a transmission loss coefficient of 15, a received SPL of 190 dB at 10 meters, and the 203 dB acoustic threshold for PTS, the practical spreading loss model would provide a PTS isopleth of 1 meter from the source.

$$R2=10 \times 10^{((190-203)/15)}$$

$$R2=1.4m$$

<u>Mid-frequency cetaceans</u>. Assuming a transmission loss coefficient of 15, a received SPL of 190 dB at 10 meters, and the 185 dB acoustic threshold for PTS, the practical spreading loss model would provide a PTS isopleth of 1 meter from the source.

$$R2=10 \times 10^{((190-185)/15)}$$

$$R2=22.5m$$

<u>Low-frequency cetaceans</u>. Assuming a transmission loss coefficient of 15, a received SPL of 190 dB at 10 meters, and the 183 dB acoustic threshold for PTS, the practical spreading loss model would provide a PTS isopleth of 29 meter from the source.

$$R2=10 \times 10^{((190-183)/15)}$$

$$R2=29.3m$$

The areas ensonifed by acoustic energy of a magnitude sufficient to cause injury to marine mammals is small enough that the Alaska District could effective observe and shut down work in the event of marine mammal incursion. There would be no “Level A” take of marine mammals.

Dredging

The USACE would employ a mechanical dredge, likely a clamshell or hydraulic excavator dredge, to excavate virgin sediment to the project depth of -26 feet MLLW for the navigation channel and turning basin. A mechanical dredge would also construct the construction access channel to -10 feet MLLW. The dredged material from these navigation features would be placed in the near shore region about 1.2 miles west of the pier. Dredging and dredged material placement has the potential to create noise, turbidity, direct physical, and vessel strike impacts.

Vessels transiting the marine environment have the potential to collide with, or strike, marine mammals (Laist et al. 2001, Jensen and Silber 2003). The probability of strike events depends on the frequency, speed, and route of the marine vessels, as well as distribution of marine mammals in the area. Humpback whales are especially susceptible to ship strike injury and mortality in narrow bottleneck passages (Williams and O'Hara 2010). Laist et al. (2001) found that while all sizes and types of vessel can strike a whale, ships greater than 80 meters and those going faster than 14 knots were most likely to cause severe or fatal injuries.

Mechanical dredges are relatively stationary, so there is a minimal potential for vessel strike impacts during dredging. The dredge plant would excavate sediment and place the material on a barge for transportation to the placement location. The barge would only be capable of traveling about 8 knots, which minimizes the potential for impacting ESA-listed species by vessel strike.

Bucket dredging noise can be delineated into six distinct events to complete a single cycle. These events are repeated every time the bucket is deployed and retrieved. The first event is winch noise as the boom and bucket are swung into position and the bucket is lowered. The bucket striking the water surface creates a splash noise detectable at short distances. The second event is the noise of the bucket striking the sediment surface. This is followed by the noise of the bucket closing and capturing the dredged material. The fourth event is the noise of the bucket jaws contacting each other. The bucket is raised by the winch, creating the fifth noise. The sixth and final noise of the cycle is the sound of the material being dumped into the scow. The amplitude of the second, third, and sixth event are strongly influenced by the granularity of the sediment that is being excavated. Coarse material produces for powerful sounds than fine material. Winching noise is produced at a higher frequency than the other event noises, so it attenuates more quickly. Bucket dredging is classified as a repetitive class of sound, rather than continuous.

Clark, et al., recorded the clamshell dredge *Viking* dredging sand and gravel from Cook Inlet in 2001. The *Viking* is a 1,475 hp clamshell dredge with a 11.5-cubic meter bucket. Clark recorded sounds digging sounds between 113-107 dB at distances of 158-464 meters from the source, respectively. Assuming a transmission loss coefficient of 15 for the practical spreading calculation, a received level of 113 dB at a range of 158 meters indicates a SL of 146 dB. The same calculation using a received level of 107 dB at a range of 464 meters indicates a SL of 147 dB.

The equipment used to dredge at Akun would be similar in scale to the *Viking* and could be assumed to generate noise of a similar amplitude. The amplitude of the sounds produced by dredging near Akutan would be similar to the amplitude of the sounds produced by the *Viking* dredging in Cook Inlet.

Assuming a SL of between 146-147 dB, the dredging noise would be below the PTS threshold at the source, so the dredging noise would not have the potential to seriously injure or kill low-frequency cetaceans or Phocid seals. The sound would attenuate to the 120 dB harassment threshold between 54-63 meters from the source. The Corps would establish a 75-meter exclusion radius around the dredge to monitor for the presence of ESA-listed species and halt dredging operations as soon as safely possible in the event a protected species enters or appears on a course to enter the exclusion radius.

Considering the observation of a 75-meter exclusion radius around the dredge plant and support vessels, the underwater noise produced by dredging may affect, not likely to adversely affect, ESA-listed species.

6.0 Determination of Effects

6.1 Gray Whale – Western North Pacific DPS

The project ***May Affect*** gray whales because:

- Acoustic harassment from pile driving.
- Acoustic harassment from confined underwater blasting.
- Acoustic harassment from dredging.
- Additional vessel traffic during construction.

The project is ***Not Likely to Adversely Affect*** gray whales because:

- Of mitigation measures that would shut down work to avoid exposing a gray whale to levels classified as “take”.
- Of the extreme low numbers of these whales in Alaskan waters

6.2 Humpback Whale – Western Pacific DPS and Mexico DPS

The project ***May Affect*** humpback whales because:

- Acoustic harassment from pile driving.
- Acoustic harassment from confined underwater blasting.
- Acoustic harassment from dredging.
- Additional vessel traffic during construction.

The project is ***Likely to Adversely Affect*** humpback whales because:

- Of exposure to underwater noise from vibratory pile driving and dredging. This would be limited to Level B harassment.
- Of exposure to confined underwater blasting effects. This would be limited to Level B harassment.

6.3 Steller Sea Lion - Western DPS

The project ***May Affect*** sea lions because:

- Acoustic harassment from pile driving.
- Acoustic harassment from confined underwater blasting.
- Acoustic harassment from dredging.
- Additional vessel traffic during construction.

The project is ***Likely to Adversely Affect*** sea lions because:

- Of exposure to underwater noise from vibratory pile driving and dredging. This would be limited to Level B harassment.
- Of exposure to confined underwater blasting effects. This would be limited to Level B harassment.

6.4 Sunflower Sea Star

The project ***May Affect*** sunflower sea stars because:

- Physical destruction from dredging and blasting.

The project is ***Likely to Adversely Affect*** sunflower sea stars because:

- The risk of mortality is high with dredging.

6.5 Northern sea otter – Southwest AK DPS

The project ***May Affect*** otters because:

- Acoustic harassment from pile driving.
- Acoustic harassment from confined underwater blasting.
- Acoustic harassment from dredging.
- Additional vessel traffic during construction.

The project is ***Likely to Adversely Affect*** otters because:

- Of exposure to underwater noise from vibratory pile driving and dredging. This would be limited to Level B harassment.
- Of exposure to confined underwater blasting effects. This would be limited to Level B harassment.

6.6 Steller's eider – Alaskan Breeding DPS

The project ***May Affect*** Steller's eiders because:

- Changes in vessel use patterns and increased risk of petroleum spills

The project is ***Not Likely to Adversely Affect*** Steller's eiders because:

- Of the low numbers of Steller's eiders along the corridor between Akutan and Akun
- Avoidance mitigation measures to steer clear of eiders on the water
- Preventative measures to reduce the likelihood and magnitude of fuel or oil spills.

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8. Preparer

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June 17, 2023

CEPOA-PMC-E

Ms. Judith Bittner
State Historic Preservation Officer
Office of History and Archaeology
550 West 7th Avenue, Suite 1310
Anchorage, AK 99501-3565

Dear Ms. Bittner:

The U.S. Army Corps of Engineers (USACE), Alaska District, has begun the study for the Akutan Harbor Navigational Improvements Feasibility Study on Akun Island for the community of Akutan, Alaska (Section 1, T70S, R111W, USGS Quad Unimak A-5, Seward Meridian; Figure 1). This study is being conducted under the authority of Section 203 of the Water Resources Development Act (WRDA) of 2000, as amended, Section 1156 of WRDA 1986, as amended, and Section 2006 of WRDA 2007, as amended. In compliance with Section 106 of the National Historic Preservation Act of 1966, the purpose of this letter is to notify you of a Federal undertaking [36 CFR § 800.3(c)(3)] and to seek your concurrence on an assessment of effect [36 CFR § 800.5(d)(2)].

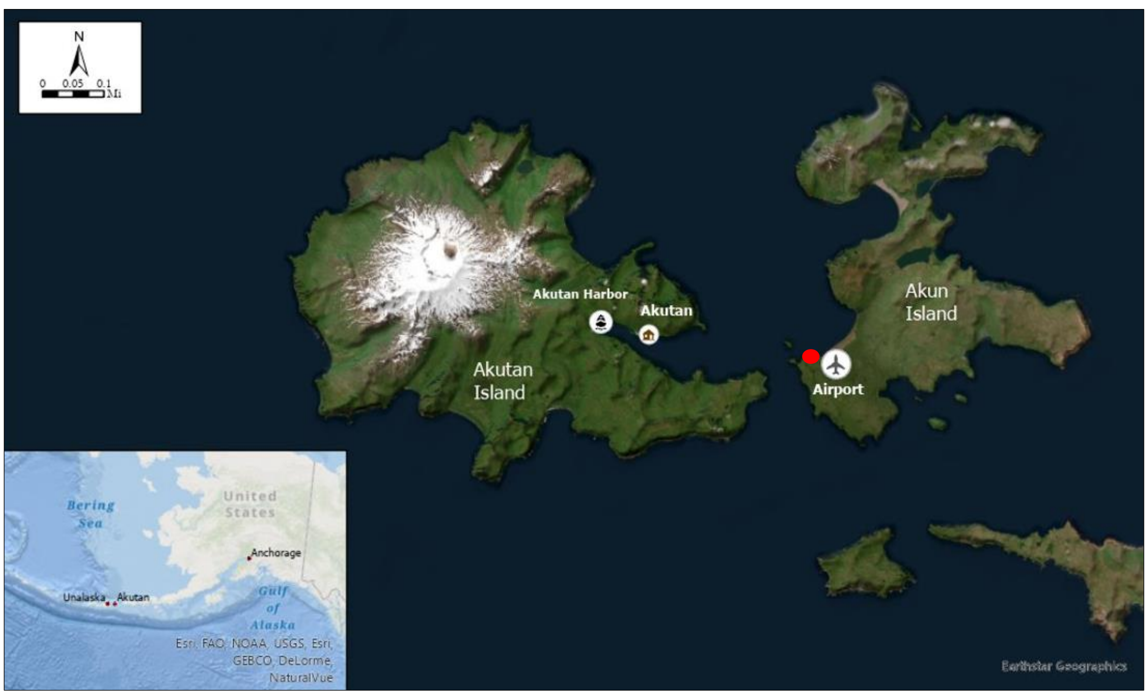

Figure 1. Overview of Akutan and Akun Islands, with project area in red circle.

Historical Background

The early history of the Aleutian Islands is not well understood. The cultural phases used by archaeologists have been created by weaving together data collected from excavations from different islands (Table 1). The eastern Aleutian Islands have been occupied by the Unangan since at least 9,000 years before present (BP) (Knecht and Davis 2001). The oldest known occupation on Akun Island occurred at the Sanaĝan site, which was radiocarbon dated to approximately 5,000 BP (CRC 2016).

Table 1. Known cultural phases in the general Aleutian areas (CRC 2016).

Cultural Phase	Approximate Dates	Cultural Materials
Early Anangula Phase	9000–7000 BP	Large stone blades, microblades, burins, scrapers, stone vessels, abraders, net sinkers, bowls, oil lamps, and ocher grinders.
Late Anangula Phase	7000–4000 BP	Bifacial retouched tools, stemmed projectile points, “bell-shaped” scrapers, bipointed and leaf-shaped projectile points, composite fishhooks, gorges, eyed needles, and bi-laterally barbed harpoon points.
Margaret Bay Phase	4000–3000 BP	Bone socket pieces, wedges with drill holes, bone bi-points, unilateral barbed harpoons, labrets, ground slate tools, ground jet ornaments, stemmed stone points, bullet shaped points, scrapers, polished adzes, fine pressure flaked stone, and incised artwork.
Amaknak Phase	3000–1000 BP	Toggling harpoons, foreshafts, wide variety of knife and scrapers, with stylistic additions to barbing styles, highly decorated hunting equipment.
Late Aleutian Phase	1000–200 BP	Ground slate tools replaced almost all chipped stone tools, with continuation of bone tools from earlier phases.

Russian Period

The Russian Period begins in AD 1741, when the Bering Expedition first arrived in the Aleutian Islands. Russian fur traders first entered the Krenitzin Islands, which include Akun Island, in 1766, 25 years later. Captain Afanasii Ocheredin of the *Sv. Pavel* ordered one of his crew foremen, Matvei Polozkov, to explore the area in August the following year. Polozkov established his main camp on Akun Island but left contingents on Akutan and other islands in the Krenitzin group (Black 1999).

An expedition commanded by Captain Krenitzyn dropped anchor in Captains Bay in Unalaska Island in 1768. During the voyage, Krenitzyn sent his navigator to shore for fresh drinking water on Akutan Island, where he noted the presence of a summer village with five houses. In an expedition led by Captain Levashev three weeks later, his navigator reported that, while searching for a suitable harbor at Akutan Island, he encountered a settlement of two semi-subterranean dwellings (Black 1999).

All six islands of the Krenitzin group were inhabited by Unangan communities as late as 1790. Akun boasted seven villages in 1790 (Agida, Chulka, Saa, Kadan linaguk, Kazhik, Sinnagak, and Nukaginax), with an estimated population of 548 to 685. Only three villages remained by 1821, on Akutan, Avatanak, and Akun islands. Their Russian names were Artel’novskoe, Seredki, and Recheshnoe (Black 1999). The settlement at Chulka on Akun was the residence of the Russian-American Company *baidarshchik*, or crew chief, who responsible for the entire Krenitzin group. In 1838, a smallpox epidemic decimated the regional population, but both Akutan and Akun continued to be prosperous (Black 1999).

American Period

The American Period begins with the purchase of Alaska from Russia by the United States of American in AD 1867. Eleven years later, the Western Fur and Trading Company opened a trading station at a protected location in Akutan Bay, which attracted Unangan from elsewhere in the region, including Akun Island. The new residents of Akutan built the first Russian Orthodox Church on the island later that year. The Alaska Commercial Company bought the outpost in 1879 and hired Hugh McGlashan to run the store. Although Chulka on Akun continued to be used as a seasonal hunting camp for many years, Akutan had become the sole village occupied year-round by 1879. McGlashan purchased the Akutan trading post in the 1890s (Black 1999; McGowan 1999; Turner and Turner 1974).

The community of Akutan experienced significant development during the early 1900s. The construction of a whaling processing station by the Pacific Whaling Company was completed in 1912, as well as the Alexander Nevsky Chapel in 1918 to replace the previous Russian Orthodox Church (DCRA 2022). A Post Office was established at Akutan in 1914, as it had become the primary community in the Krenitzin Islands (Orth 1967).

Project Description

USACE, in collaboration with its Non-Federal Sponsors, the Native Village of Akutan and the Aleutians East Borough, is conducting a study to determine the feasibility of constructing a small boat harbor along the northwestern shore of Akun Island. In 2012, the State of Alaska Department of Transportation & Public Facilities (DoTP&F) and the Federal Aviation Administration (FAA) constructed an airport on Akun Island in support of the community on neighboring Akutan Island. The proposed small boat harbor would help facilitate the local transfer of airplane passengers to the community of Akutan.

The proposed small boat harbor will be comprised of General Navigation Features (GNF) (e.g., turning basin, breakwater) and Local Service Facilities (LSF) (e.g., dock, access road). GNF will be constructed by USACE and the LSF is the responsibility of the project’s Non-Federal Sponsors. All components, both GNF and LSF, are taken into account in order to identify the Area of Potential Effect and assess possible future effects.

At the current stage of this Feasibility Study, USACE and the Non-Federal Sponsors have narrowed down the proposed alternatives to a Tentatively Selected Plan (TSP) through an analysis of the benefits and costs of design differences focused primarily on wind strength and the corresponding wave strength within the cove at No-Name Point, south of the present hovercraft landing pad (Figures 2 and 3). This location was determined through identifying engineering limitations, environmental constraints, and community concerns along the shoreline of Surf Bay, with the highest likelihood of project success as determined through economic benefits.

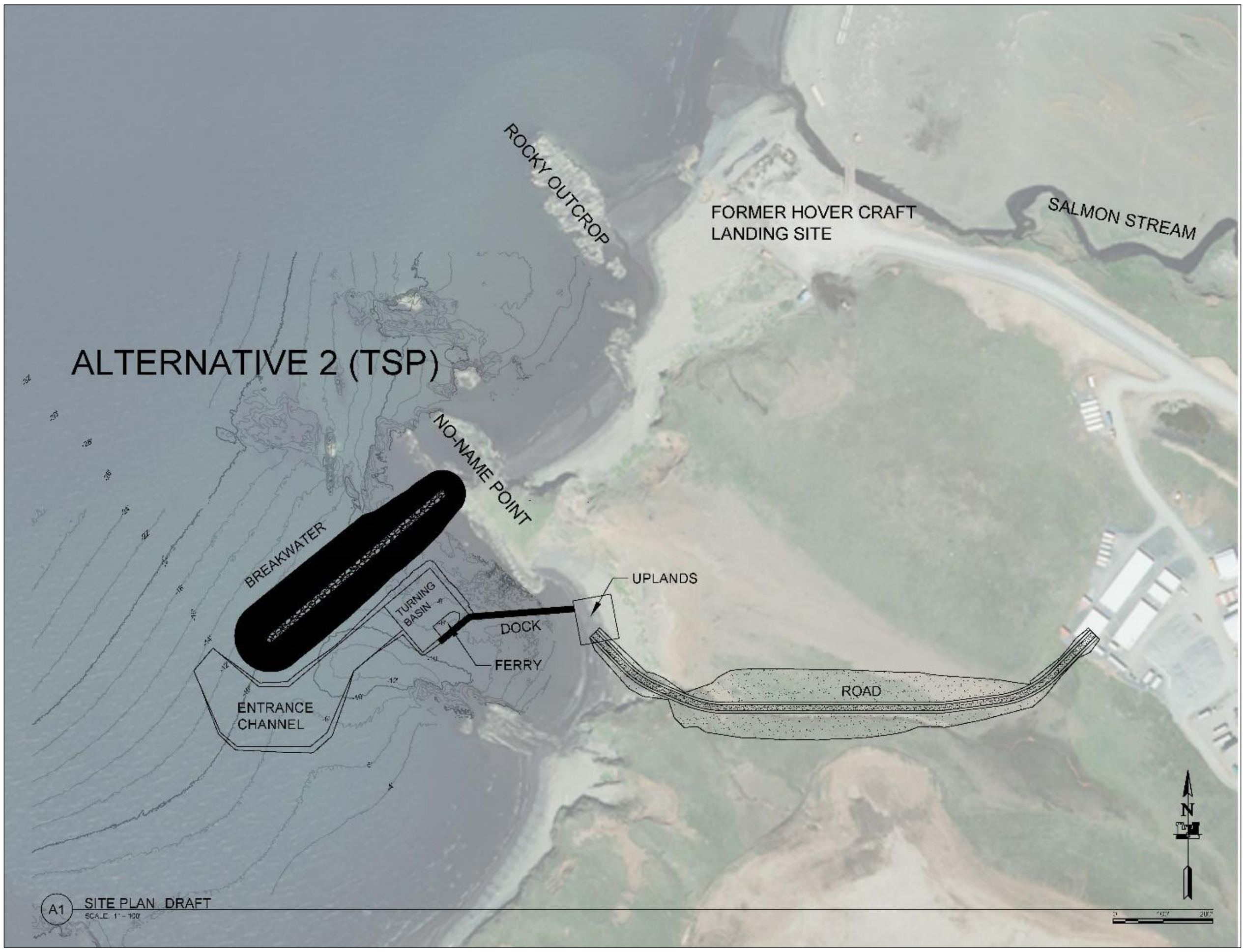

Figure 2. Tentatively Selected Plan: small boat harbor south of No-Name Point.

Figure 3. Shoreline and upland of the project area; the airport is obscured behind the hill.

If the proposed TSP is accepted and Congress funds the next stage of the project, additional geotechnical investigations will occur during the Pre-Engineering and Design (PED) phase. These investigations will include: (1) drilling up to five offshore 8-inch-diameter boreholes to a depth of up to 30 feet below the ocean floor within the proposed entrance channel and turning basin; and (2) drilling up to ten onshore 8-inch diameter boreholes into bedrock within the proposed road route and where the proposed breakwater would tie into the base of No-Name Point.

Assessment of Effect

The Area of Potential Effect (APE) for the proposed undertaking encompasses both the GNF and LSF components of the TSP (Figure 4). The Alaska Heritage Resources Survey (AHRS) indicates that the APE is within the Surf Bay Archaeological District (UNI-00103) (Table 2, Figure 5). This general area has been extensively surveyed and tested during previous work associated with construction of the airport and hovercraft landing site, as well as academic projects (Table 3). Cultural resources have been identified throughout the APE and, in areas where testing has not occurred, there is a high probability that subsurface cultural resources are present. This includes the proposed breakwater's shoreline toe, as well as dock attachments to the shoreline and access roads to the nearby airport.

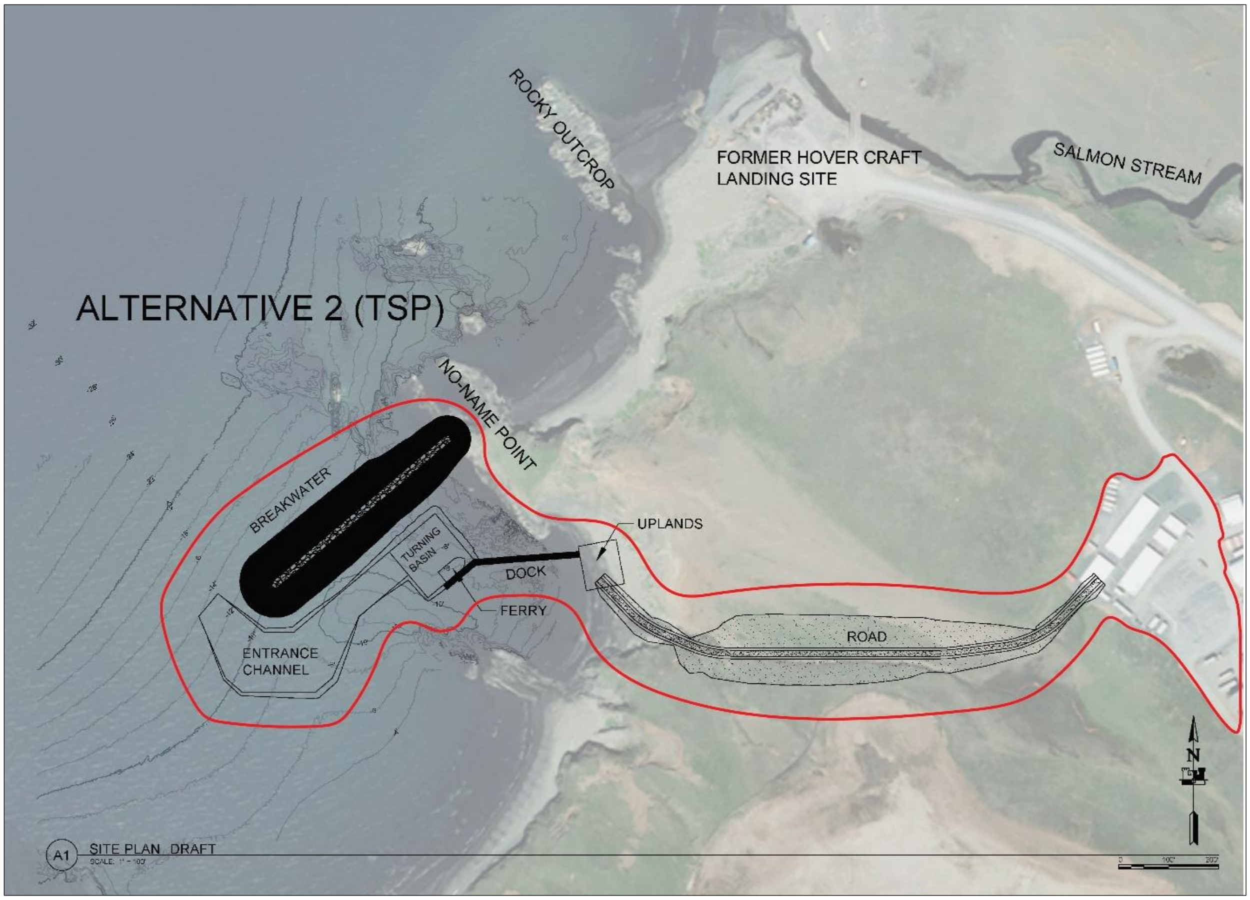

Figure 4. Area of Potential Effect outlined in red.

Table 2. Known cultural resources in the vicinity of the project area (AHRS 2023; CRC 2016).

AHRS No.	Site Name	Description	NRHP Status	In APE
UNI-00002	Chulka	Abandoned village site	Contributing to UNI-00103	No
UNI-00003	Islelo Hotsprings	Village site suggested to be contemporaneous with Chulka	Contributing to UNI-00103	No
UNI-00012	Islelo Blowout	Blowout containing unworked flakes and broken tools	Contributing to UNI-00103	No
UNI-00013	Islelo Camp	Band of charcoal ash, broken bifacial points, and flakes, approx. 75 cm below surface	Contributing to UNI-00103	No
UNI-00035	Sagthatana	Burial ground and refuge. Barabaras and kayak burials	Contributing to UNI-00103	No
UNI-00103	Surf Bay Archaeological District	A series of small lithic scatters along the shore and inland, partially buried remains of an older structure, point fragments and other lithics, fire reddened rock, etc.	Eligible	Yes
UNI-00104	Surf Bay Landing Site	No description in the AHRS	Contributing to UNI-00103	No
UNI-00125	Sanaĝan	*In situ* cultural materials, badly eroded	Contributing to UNI-00103	Yes
UNI-00126	Surf Bay Midden	Midden site with lithic artifacts and fauna	Contributing to UNI-00103	No

UNI-00127	Ship Mast	Ship's mast on the beach lodged among driftwood and partially embedded in the sand	Unevaluated	No
UNI-00128	UNI-00128	Dense artifacts including fire cracked rock, burned cobbles, flaked cobbles, chert, slate, and obsidian debitage	Contributing to UNI-00130	No
UNI-00129	UNI-00123	Ring of stones containing a hearth and lithic debitage	Contributing to UNI-00130	No
UNI-00130	North Surf Bay Village	At least 6 housepits and smaller (possibly storage) pits	Contributing to UNI-00103	No

Table 3. Previous archaeological investigations on Akun Island.

Dates	Principal Investigator	Type	References
1953	Philip T. Spaulding	Survey	Spaulding & Pierce 1954
1971	Theodore P. Bank II	Survey	Bank 1974
1970–1973	Christy G. Turner	Survey, Excavation	Turner 1972, 1974, 2002; Turner & Turner 1974; Holland 1992
1989	Brian Hoffman	Survey	personal communication
2005–2011	Michael R. Yarborough	Survey, Excavation	CRC 2006, 2010, 2016; Morrison 2016
2021	Joseph E. Sparaga	Site Visit	personal communication

Figure 5. Cultural resource locations in the Surf Bay Archaeological District (AHRS 2023).

National Oceanic and Atmospheric Administration (NOAA) Wrecks and Obstructions Database

The NOAA Wrecks and Obstructions Database, also called the Automated Wreck and Obstruction Information System (AWOIS), identifies one known shipwreck near the proposed project area (NOAA 2022). This shipwreck is classified as visible, but submerged and dangerous at an unknown depth that is always submerged. There are two additional wrecks to the north of the project area, in Lost Harbor; both are classified as visible. All three of these wrecks are outside of the APE.

Bureau of Ocean and Energy Management (BOEM) Shipwreck Database

The BOEM Shipwreck Database lists eight instances of shipwrecks, damages, or collisions in the vicinity of Akun Island (Table 4). The *Martindale*, which sunk in 1969, is the only historic shipwreck in the database that sank near the proposed project area.

Table 4. BOEM Shipwreck Database results for the greater Akun Island Area (BOEM 2011).

Vessel Name	Vessel Type	Year	Location	Narrative
Dora	Steamer	1910	At Akun Island passage, Unimak Pass	Stranded; got off.
Paramita	Cannery Bark, 3-masted	1914	Lost Harbor, Akun Island	Both anchors dragged in heavy wind and the vessel's hull was pierced by rocks off Ugamak Island.
Wanick	Gas screw halibut boat	1919	At Lost Harbor, Akun Island	Stranded and lost.
Star of Falkland	Schooner, steel hulled	1928	Akun Head, on the outer side of Unimak Pass	Blown onto Akun Head in a fog and gale and the hull ripped open. The ship was destroyed, but all hands safely reached shore
Sundown	Diesel screw	1952	On Akun Island, Aleutian Islands	Stranded and lost.
Cape Spencer	Oil screw	1964	South shore at Akun Bay	Stranded and lost.
Martindale	Diesel screw	1969	In Surf Bay, SW coast of Akun Island	Stranded and lost.
Viking King	Crabber	1971	Off Akun Island, near Unalaska	Swamped and sank.

Previous archaeological investigations and reports from Akutan residents have demonstrated that the proposed undertaking’s APE is likely to have extensive subsurface archaeological features and cultural materials. Specifically, the Sanaĝan site (UNI-00125) and the Surf Bay Archaeological District (UNI-00103), both of which are comprised of predominantly subsurface cultural materials and features, are within the APE. Due to the ground-disturbing nature associated with the construction of both the GNF and LSF components of the proposed small boat harbor, USACE believes that this project has the potential to have an adverse effect on historic properties.

Conclusion

The purpose of the Akutan Harbor Navigational Improvements Feasibility Study is to determine the feasibility of developing a small boat harbor on Akun Island to facilitate the community of Akutan's access to the airport on Akun Island. Following a thorough review of existing information as well as soliciting information during a public meeting in Akutan and conducting a site visit, USACE has applied the criteria of adverse effect to the historic properties within the APE: the Surf Bay Archaeological District (UNI-00103) and the Sanaĝan site (UNI-00125). The proposed Tentatively Selected Plan involves the construction of a breakwater harbor on the south side of No-Name Point and associated uplands developments. This has the potential to alter, directly or indirectly, the significant characteristics of these two historic properties.

Following 36 CFR § 800.5(d)(2), USACE seeks your concurrence on our determination that the proposed undertaking will result in an **adverse effect** on historic properties. We invite you to participate in the development of a Programmatic Agreement to resolve this adverse effect in accordance with 36 CFR § 800.6(a) and 36 CFR § 800.14(b)(1)(ii). If you have any questions about this project, please contact me by phone at 907-753-2672, or by email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Senior Archaeologist
Environmental Resources Section

cc:
Richard Stepetin, President, Akutan Traditional Council
Sarah Stepetin, Director of Tribal Transportation, Akutan Traditional Council
Joe Bereskin, Mayor, City of Akutan
Anne Bailey, Assistant Borough Administrator, Aleutians East Borough
Josephine Shangin, President, Akutan Corporation
Karen Pletnikoff, Environmental & Safety Program Manager, Aleutian Pribilof Islands Association
Ben Leon-Guerrero, Lands Manager, Aleut Corporation
Haliehana Stepetin, Assistant Professor of Alaska Native Studies, University of Alaska Anchorage
Virginia Hatfield, Executive Director, Museum of the Aleutians

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From: Spegon, Jennifer <jennifer_j_spegon@fws.gov>
Sent: Thursday, June 22, 2023 2:48 PM
To: Cooper, Douglass <douglass_cooper@fws.gov>; Rouse, Michael B CIV USARMY CEPOA (USA) <Michael.B.Rouse@usace.army.mil>; Hoffman, Christopher CIV USARMY CEPOA (USA) <Christopher.A.Hoffman@usace.army.mil>
Subject: [Non-DoD Source] Fw: [EXTERNAL] FWCA Coordination Akutan Island

Greetings all:

Sorry for the delayed response, I'm working remotely on a Seabird Project in the N. Pacific. Internet is spotty at best.

Chris Hoffman and I discussed working together through the BA and IHA process. This would be through email and ESA correspondence instead of writing a CAR. Given the project attributes and resources (as I understand them), we could also review the NEPA this way as well.

Jennie Spegon

From: Rouse, Michael B CIV USARMY CEPOA (USA) <Michael.B.Rouse@usace.army.mil>
Sent: Thursday, June 22, 2023 11:20 AM
To: Cooper, Douglass <douglass_cooper@fws.gov>
Cc: Hoffman, Christopher CIV USARMY CEPOA (USA) <Christopher.A.Hoffman@usace.army.mil>; Spegon, Jennifer <jennifer_j_spegon@fws.gov>
Subject: [EXTERNAL] FWCA Coordination Akutan Island

[URL Verdict: Neutral][Non-DoD Source] Re: Emailing: Draft Akutan Feasibility Report 15 June 2023.pdf

SK Seanbob Kelly - NOAA Federal <seanbob.kelly@noaa.gov>
To Hoffman, Christopher CIV USARMY CEPOA (USA)
Cc Rouse, Michael B CIV USARMY CEPOA (USA); Olson, John V POA; Sean McDermott - NOAA Federal

Reply | Reply All | Forward | ...

Fri 6/23/2023 10:10 AM

You responded on Friday, June 23, 2023 11:32 AM.
If there are problems with how this message is displayed, click here to view it in a web browser.

Hello Chris,
As requested I have put together some initial concerns and potential conservation recommendations, as part of our early EFH coordination on this project.
We recognize how important the small harbor would be to the community and the project footprint is relatively small compared to other projects in Alaska. That being said, please consider the following points in your EFH assessment for the proposed project.

1. The conclusion of effects should use the term "adversely affect EFH" instead of 'moderately impact'. It better reflects the regulations and the effects.
2. The conclusion should acknowledge a permanent conversion of habitat, though limited in scope.
3. The blasting will have potential effects on a number of species, including salmon occupying the nearshore and migrating in and out of the nearby salmon stream. Please confirm timing windows for blasting and construction will be in place to protect salmon. [The mammal review will be more significant here, who is your contact at PRD?]
4. Describe how the project's footprint and blasting have been minimized through our early coordination and site selection process.
4. Describe how the adverse impacts to EFH can be minimized with the proposed mitigation measures. Moreover, describe how the permanent loss of habitat (or conversion of habitat) will not be mitigated, that is, no compensatory mitigation is being offered.

Let me know if you have any questions.
Seanbob

--
Seanbob Kelly (pronouns: he/him/his)
Fisheries Habitat Biologist
NOAA Fisheries | U.S. Department of Commerce
Office: (907) 271-5195
www.fisheries.noaa.gov

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