ST. GEORGE HARBOR IMPROVEMENT FEASIBILITY STUDY

APPENDIX G: 404(B)(1) CLEAN WATER ACT EVALUATION

ST. GEORGE, ALASKA

U.S. Army Corps of Engineers
Alaska District

EVALUATION UNDER

SECTION 404(b)(1) CLEAN WATER ACT 40 CFR PART 230

St. George Harbor Improvement Feasibility Study

Saint George, Alaska

1.0 Project Description and Background

1.1 Location

Saint George Island is the southernmost, and second largest of a group of five historically volcanic islands that compose the Pribilof Archipelago, located approximately 760 miles west of Anchorage and 220 miles north by northwest of Unalaska Island in the southern Bering Sea. The nearest inhabitation to Saint George is the city of Saint Paul on Saint Paul Island, approximately 45 miles northwest of Saint George. Saint George's position at the western margin of Alaska's continental shelf puts it in close proximity to the much deeper waters of the Bering Sea's abyssal plain. The abrupt change in seafloor elevation occurring at the continental slope facilitates natural upwelling processes; as a result, surface waters in the region are some of the most productive on the planet.

The city of Saint George is in the Aleutians West Census Area and had a population of 102 at the 2010 census. The city is located in a small bight on the north shore of Saint George Island. The surrounding topography is fairly steep, rising to 200' within a half mile of the coast. A mile inland the elevation increases dramatically, going from 400' to 600' above sea level in just about 600 horizontal feet. Saint George Island is treeless, like most of the Aleutian and Pribilof Islands. The vegetation is dominated by plants in the heath family, which are well adapted for the poor acidic soils found in the Pribilof and Aleutian Islands. The climate of St. George is controlled by the cold waters of the Bering Sea. The maritime location results in cool weather year round, and a narrow range of mean temperatures varying from 24 to 52. Average precipitation is 23 inches, with 57 inches of snowfall. Cloudy, foggy weather is common during summer months.

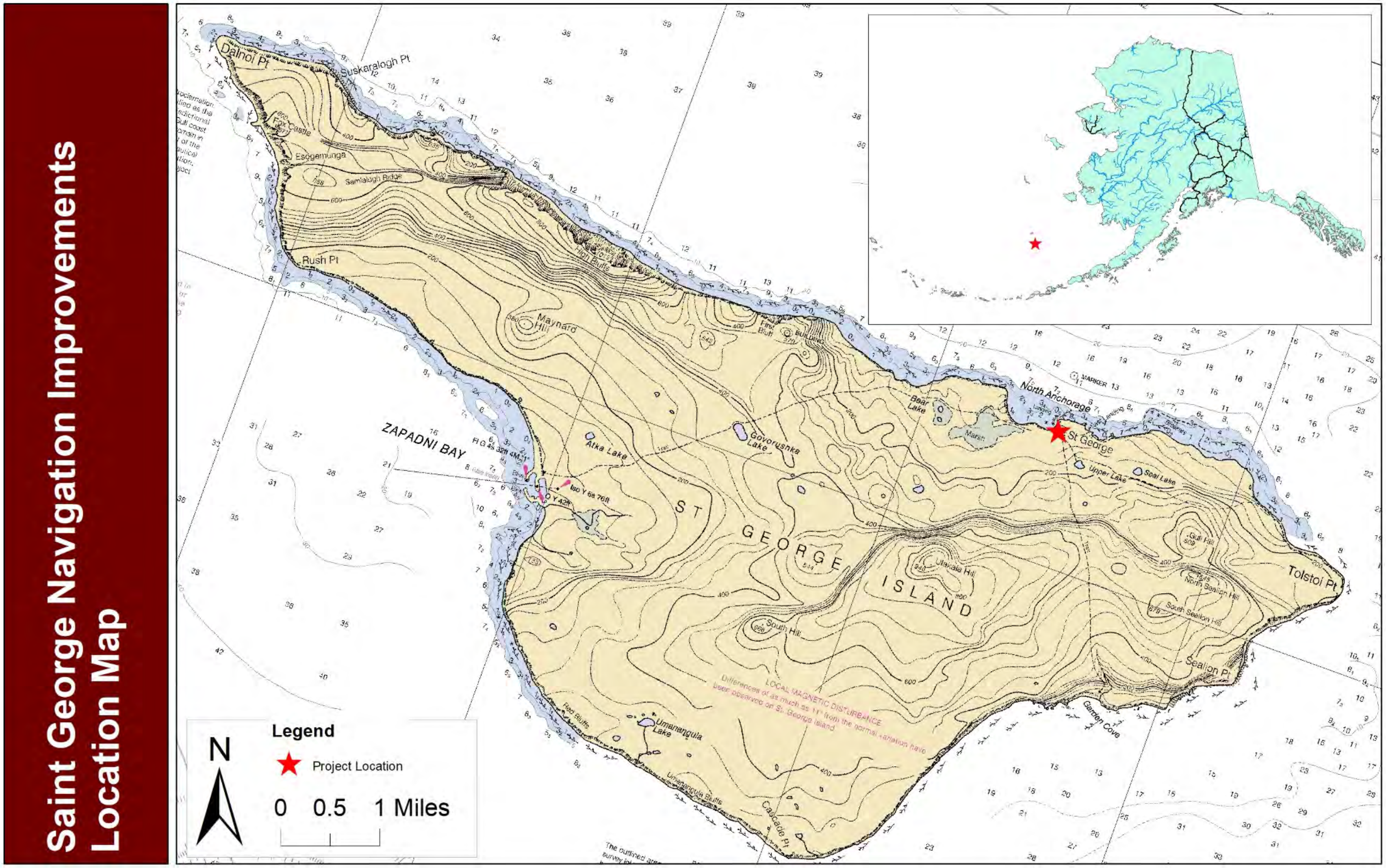


Figure 1. Map depicting the location of the Saint George Navigation Improvement Project in relation to Saint George Island and the State of Alaska (inset)

1.2 Project Description:

The Alaska District proposes to construct a port facility on the north side of Saint George Island. This project would consist of a 450-foot wide by 550-foot-long mooring basin dredged to -20 feet MLLW protected by a 1,731-foot-long north breakwater and a 250-foot-long stub breakwater at the west edge of the basin. Primary armor stone on the north breakwater has a median weight of 10 tons. The basin connects to the Bering Sea with a 250-foot wide navigation channel dredged to -25 feet MLLW. Inner harbor facilities include approximately 4.0-acres of backlands area filled to +10 feet MLLW with a 300-foot-long pile supported dock and a concrete boat launch ramp to -5 feet MLLW for full tide launching access. (Figure 2) The rubblemound breakwater structure would be constructed utilizing standard design, incorporating three layers of consecutively smaller boulders to efficiently dissipate wave energy. The outer layer, the A rock layer, consists of large multi-ton armorstone that would be subject to the majority of the wave energies. Second, a B rock layer, comprised of slightly smaller, yet substantial boulders adds a redundant layer of protection for the smaller innermost boulders that make up the C rock layer, or core of the breakwater structure

The north breakwater would require approximately 85,000 CY of armor stone, 54,000 CY of B rock and 80,000 CY of core rock. The stub breakwater would require approximately 9,000 CY of armor stone, 6,500 CY of B rock and 5,000 CY of core rock. The basin and navigation channel would require removal of 353,052 CY of material to reach the proposed maximum pay depths for the project. Backlands construction requires approximately 45,000 CY of fill. The sediments removed from the mooring basin and navigation channel would be placed in waters of the United States north of the project area for the purpose of constructing a habitat creation reef.

The material source for breakwater construction would be offsite from an established quarry such as Cape Nome or Granite Cove on Kodiak Island. Construction of the North Breakwater is most likely to be performed with land-based equipment. The breakwater core would be constructed to above the tide range to allow the placing equipment to drive the breakwater core and place B and A rock layers to protect the work in progress. Core rock would likely be transported and staged on the breakwater with off-road dump trucks, then shaped to the design prism by an excavator. Near the west end of the breakwater, an excavator on a barge may be required to shape the toe and benches of the breakwater where the seabed is deeper. Backlands would be constructed concurrently with the breakwater to build a staging area for breakwater material.

Dredging of course material could occur concurrently with stone production. Initial observations of the site indicate that blasting is likely to be required for dredging. Due to the proximity of the fur seal rookery and seabird colony, drilling and dredging would be confined to 1 November through 30 April. However, dredging would produce lower levels of impacts than blasting, considering appropriate mitigation measures, and could likely occur throughout the year. Some dredging of unconsolidated materials prior to constructing the breakwaters would provide access for construction barges to the breakwater sites. The total estimated duration of construction is three to five years.

The dredged material would be transported about one mile offshore and discharged in waters of the United States for the purpose of constructing a rocky reef intended to enhance blue king crab (BKC) habitat in the area.

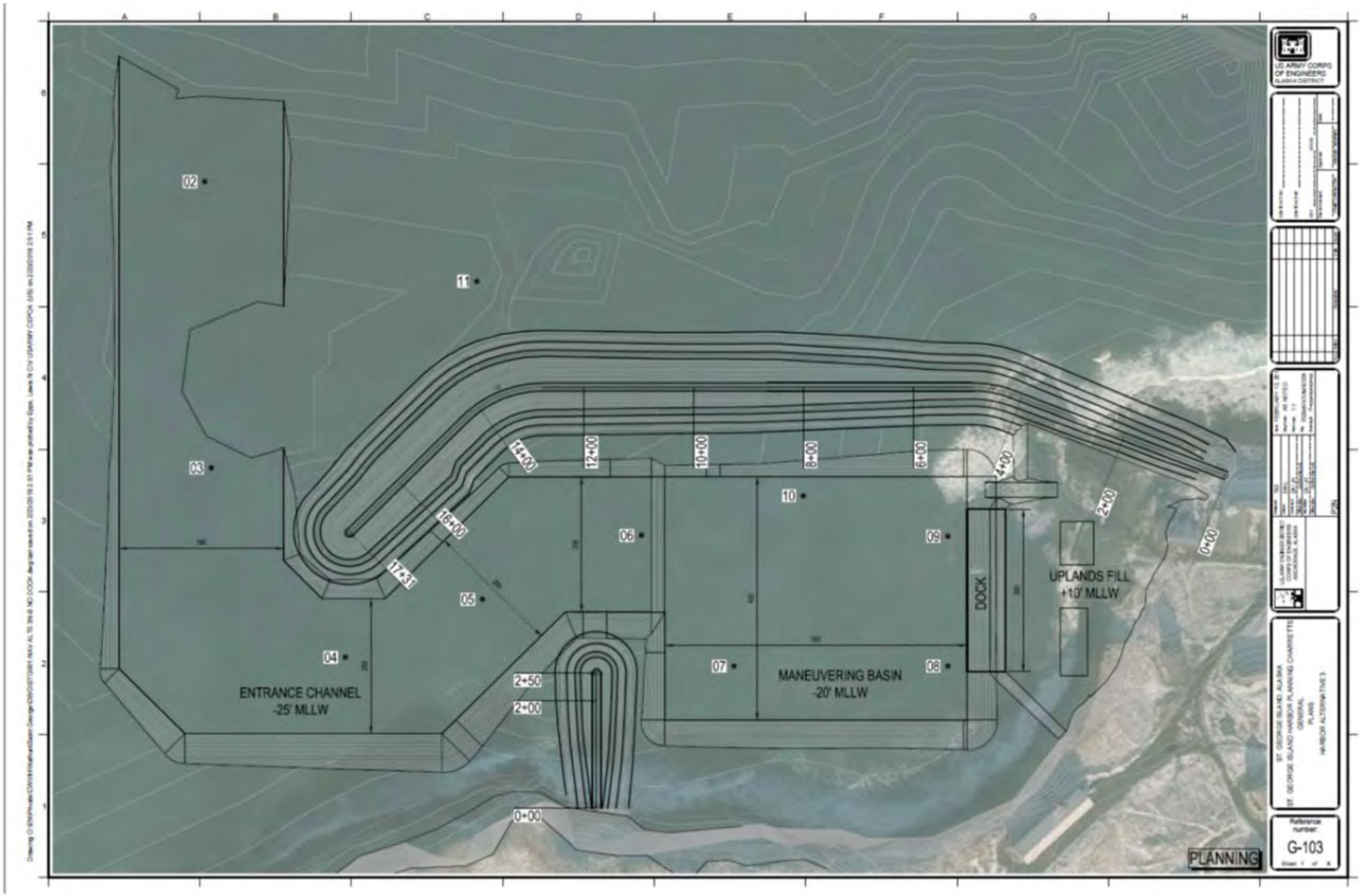


Figure 2 Saint George Navigation Improvements Recommended Plan Concept Drawing

1.3 Purpose and need:

The purpose of the project is to increase the safe accessibility of marine navigation to the community of Saint George, Alaska. The need for the project is to reduce hazards to better provide safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet; all of which are critical to the long term viability of the mixed subsistence-cash economy of Saint George.

1.4 Authority:

This General Investigations study is being conducted under authority granted by Section 4010 of the Water Resources Development Act (WRDA) of 2007, Public Law 110-114 which authorizes a study to determine the feasibility of providing navigation improvements at St. George, Alaska.

Additionally, Section 1322 of the WRDA of 2016, (b)(2) *Expedited Completion of Feasibility Studies*, authorizes the Secretary to move directly into preconstruction engineering and design (PED) if the project is justified. Implementation guidance was published 12 February 2018.

> *EXPEDITED COMPLETION OF FEASIBILITY STUDIES. The Secretary shall give priority funding and expedite completion of the reports for the following projects, and, if the Secretary determines that the project is justified in the completed report, proceed directly to project preconstruction, engineering, and design in accordance with section 910 Of the Water Resources Development Act of 1986 (33 U.S.C. 2287):*
>
> *(A) The project for navigation, St. George Harbor, Alaska*

The project is utilizing the authority of Section 2006 of WRDA, 2007, Remote and Subsistence Harbors, as modified by Section 2104 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) and further modified by Section 1105 of WRDA 2016. The 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 National Economic Development (NED) benefits, if the Secretary determines that the improvements meet specific criteria detailed in the authority. Following are the criteria outlined in the authority along with a description of how this study satisfies them:

1. The community to be served by the improvements is at least 70 miles from the nearest surface accessible commercial port and has no direct rail or highway link to another community served by a surface accessible port or harbor; or the improvements would be located in the State of Hawaii or Alaska, the Commonwealth of Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, the United States Virgin Islands; or American Samoa:

   The project is in Alaska.

2. The harbor is economically critical such that over 80 percent of the goods transported through the harbor would be consumed within the region served by the harbor and navigation improvement as determined by the Secretary, including consideration of information provided by the non-Federal interest; and

Based upon their weight, commodities transported in the future with-project condition were analyzed to determine that more than 80 percent of the goods transported through the harbor would be consumed within the region. The community served by the project was determined to be the island of St. George and the immediately surrounding marine area (about a 25-mile radius).

To provide economic opportunities for the community, consistent with the authority, alternatives supporting fish and crab product exports from the island are considered. However, these exports were projected to weigh less than 20% of the total weight going through the harbor when considering market and institutional factors such as Community Development Quotas (CDQ) and prices. Total imports minus total exports was used in the projection. Imports included the weight of fuel, the weight of freight and construction materials, and the weight of raw fish. Exports included the weight of processed fish products leaving the island. Exports are estimated to make up 14.1% of harbor throughput on average, with a high estimate of 18.7%, and low estimate of 11.3%.

3. The long-term viability of the community in which the project is located, or the long-term viability of a community that is located in the region that is served by the project and that will rely on the project, would be threatened without the harbor and navigation improvement.

   The cultural identity of Alaska Native Tribes is highly dependent upon subsistence activities tied to specific locations and deep historical knowledge of land and subsistence resources. Rural economies in Alaska, including that which exists on St. George, can be characterized as a mixed, subsistence-cash economy in which the subsistence and cash sectors are interdependent and mutually supportive. The ability to successfully participate in subsistence activities is highly dependent on the opportunity to earn some form of monetary income and access the resources needed to engage in subsistence activities. Without a safe and functioning harbor, economic opportunities in the community would continue to be hindered and the costs of basic essential goods required to support a subsistence lifestyle would remain prohibitively high, contributing to continued out-migration from St. George. When subsistence communities are forced to disband due to high costs of essential goods, including fuel, tribal identities and cultural communities are endangered. Reductions in costs of such basic essential goods are essential to community viability. In addition, a safe and functioning harbor would provide opportunities for development of a local economy based upon the marine resources of the region. Such economic opportunities are essential for supporting the mixed, subsistence-cash economies common throughout rural Alaska, combating out-migration, and helping to ensure the viability of the community of St. George.

While determining whether to recommend a project under the criteria above, the Secretary will consider the benefits of the project to the following:

- Public health and safety of the local community and communities that are located in the region to be served by the project and that will rely on the project, including access to facilities designed to protect public health and safety;
- Access to natural resources for subsistence purposes;
- Local and regional economic opportunities;
- Welfare of the local population; and
- Social and cultural value to the local community and communities that are located in the region to be served by the project and that will rely on the project.

As indicated above, navigation improvements at St. George meet all the above criteria to recommend a project. Compliance with the criteria of the authority were confirmed by the USACE Vertical Team during an In-Progress Review conducted on January 23, 2018.

1.5 General Description of Dredged or Fill Material:

The project components included in this analysis include the 1,731-foot long north breakwater, the 250-foot long stub breakwater, 4.0-acres of fill placed for the creation of backlands, and placement of dredged material into WOUS for the construction of a rock reef. Portions of the north breakwater (0.34-acres) are coincidental to the inner harbor facilities area, so the total area of fill would be slightly less than the sum of the four harbor features.

The north breakwater would include a cumulative volume of 219,000 cubic yards of armor stone, B rock, and core rock and cover approximately 8.3-acres. The stub breakwater would include a cumulative volume of 20,500 cubic yards of armor stone, B rock, and cover rock and cover approximately 0.8 acres. The backlands require 45,000 cubic yards of fill and would cover an approximate total of 4.0-acres, but only about 3.6-acres would be in addition to the North Breakwater fill. The total volume of fill for all harbor construction features included in this analysis is about 284,500 cubic yards and the area of fill is about 12.8 acres.

A small portion of the project components would be constructed in the terrestrial environment above the high tide line and would not be considered aquatic impacts. The Alaska District applied best professional judgment to conduct a remote-based delineation of aquatic and terrestrial distribution of project features in order to quantify impacts to waters of the United States for the purpose of this analysis document. In general, approximately 11.9 acres of the 12.8 acres would be constructed in waters of the United States. The remaining 0.9 acres would be constructed above the terrestrial area above the high tide line. (Figure 3)

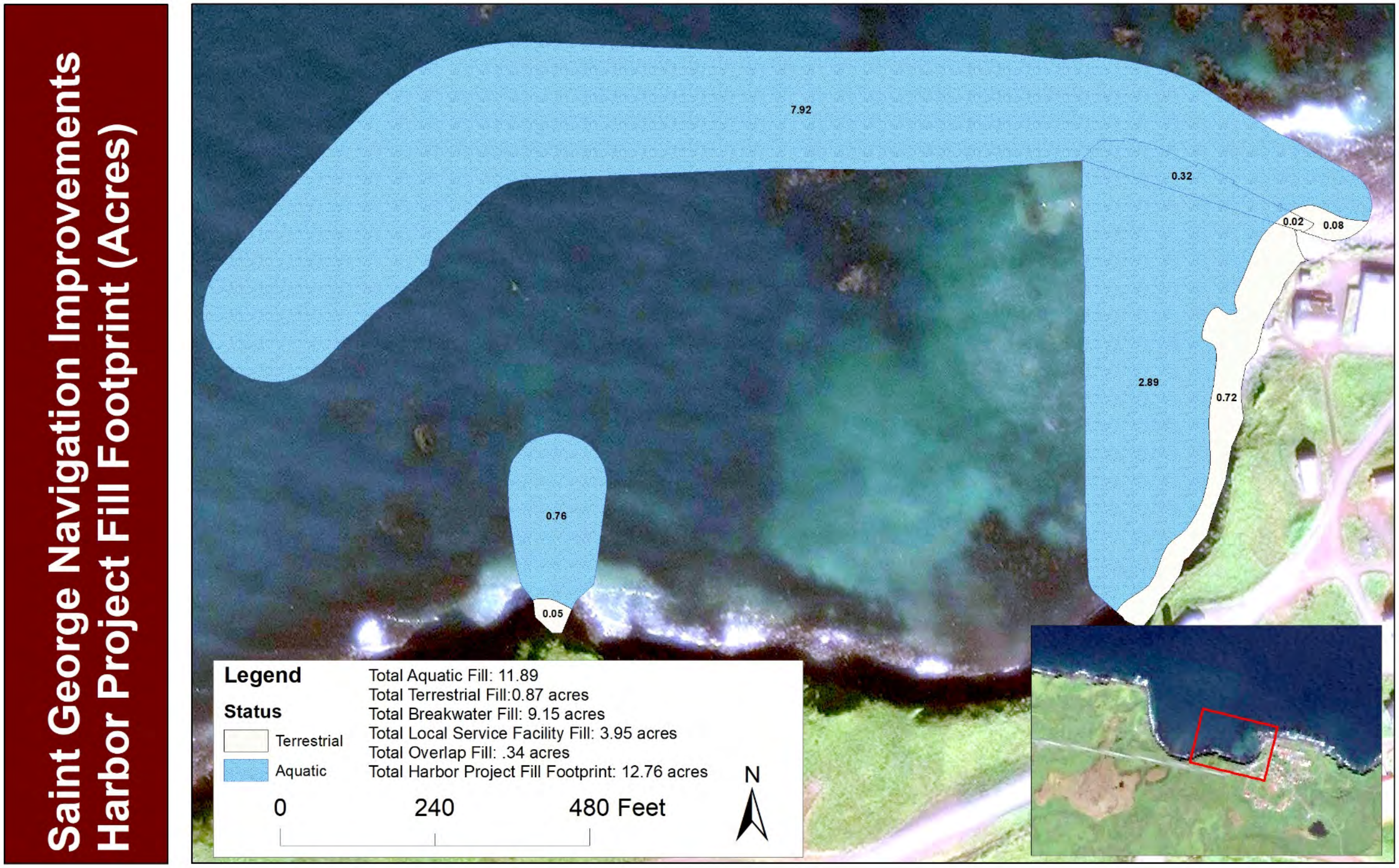


Figure 3 Harbor Fill Footprint with Respect to High Tide Line

The proposed North Anchorage Harbor entrance channel and maneuvering basin are planned to be dredged to a depth of -25 feet and -20 feet MLLW, respectively. The thickness of sediment and depth to bedrock is unknown within the proposed harbor entrance channel and maneuvering basin. For estimating purposes, the District anticipates bedrock would be encountered very near the surface, three feet or less, within the south side of the entrance channel and maneuvering basin. The thickness of surface sediment may gradually get thicker as the entrance channel moves north away for the shoreline. Drilling and controlled blasting of bedrock would be required within the navigation channel and harbor basin before material can be mechanically dredged by clamshell or long-reach excavator. Dredge cuts in the surface sediment can be assumed to be stable at slopes of 1.5 horizontal to 1 vertical. Dredge cuts in bedrock may be cut at slopes of 0.25 horizontal to 1 vertical.

The habitat creation reef would contain all of the dredged material generated from the transition dredging and subsequent maintenance dredging, 353,052 cubic yards of blasted igneous bedrock. All dredged material that would be placed on the reef is exempt from chemical testing and determined to be suitable for in-water placement. The sediment in the project area is believed to be uncontaminated by anthropogenic pollutants based on the site history and physical characteristics of the material. There are no known sources of contamination present in the project area; i.e., no industrial facilities, refueling stations, antifouling agent operations, pulp mills, or other risk factors have ever been sited near the proposed project location. The material that would be dredged is consolidated olivine that predates the Industrial Revolution and has never been exposed to pollutants. The substrate is not considered to be a carrier of contaminants because of it is predominantly coarse and contains little to no organic material.

1.6 Description of the proposed discharge site:

The Alaska District would collect more detailed information regarding the geotechnical and bathymetric conditions of the proposed discharge site during the Preliminary Engineering and Design (PED) phase of the project, if the project is selected to advance to that stage. In the absence of detailed information, this analysis will rely on remote sensing and form some assumptions regarding the generic conditions.

Saint George lies within the US Fish and Wildlife Service (USFWS) Alaska Maritime National Wildlife Refuge and portions of the island are owned and managed by the USFWS. The USFWS manages the land for the conservation, protection, and overall enhancement of the fish, wildlife, plants, and their habitats for the benefit of all Americans. Most of the remaining land on Saint George Island is owned by the local Native Corporation.

The North Breakwater, Stub Breakwater, backlands, and boat launch would be constructed in the bight forming the North Anchorage adjacent to the city of Saint George. The North Anchorage bight represents the most enclosed section of coastline on the north shore of Saint George Island, which is likely one of the primary reasons the city was established in that location. The marine sediments in the bight are presumably basaltic bedrock overlain by sands, gravels, shell hash, cobbles, and boulders. The presence of the bight forms an area of relative protection from wave energy, so the sediments in the bight are likely dominated by a smaller grain size than the surrounding, more exposed area by virtue to the reduced energy allowing relatively fine grain material to be deposited. Aerial photography interpretation suggests the presence of the bight may allow the accretion of light colored sand in the project area. (Figure 4)

Bathymetric surveys have not been completed in the project location, but the nautical chart for the area indicates that water depths range from about 6’ to about 22’ in the areas where the breakwaters would be constructed. The backlands would be constructed in an area that is fouled with boulders and currently inaccessible to navigation. The low intertidal area is dominated by cobble and there are areas of sand in the back-beach. (Figure 5) The low intertidal and subtidal areas are colonized by various macrophytes including dragon kelp. There are no known areas of rooted aquatic vegetation.

The presence of the City of Saint George in its current location, even though the existing harbor and airport are on the other side of the island, suggest the proposed project area has unique and desirable attributes including natural protection from wave energy. If the preceding assumption is accepted, transitive logic demands the acceptance of the rarity of the functions and values of the waters of the United States located in the proposed project area.

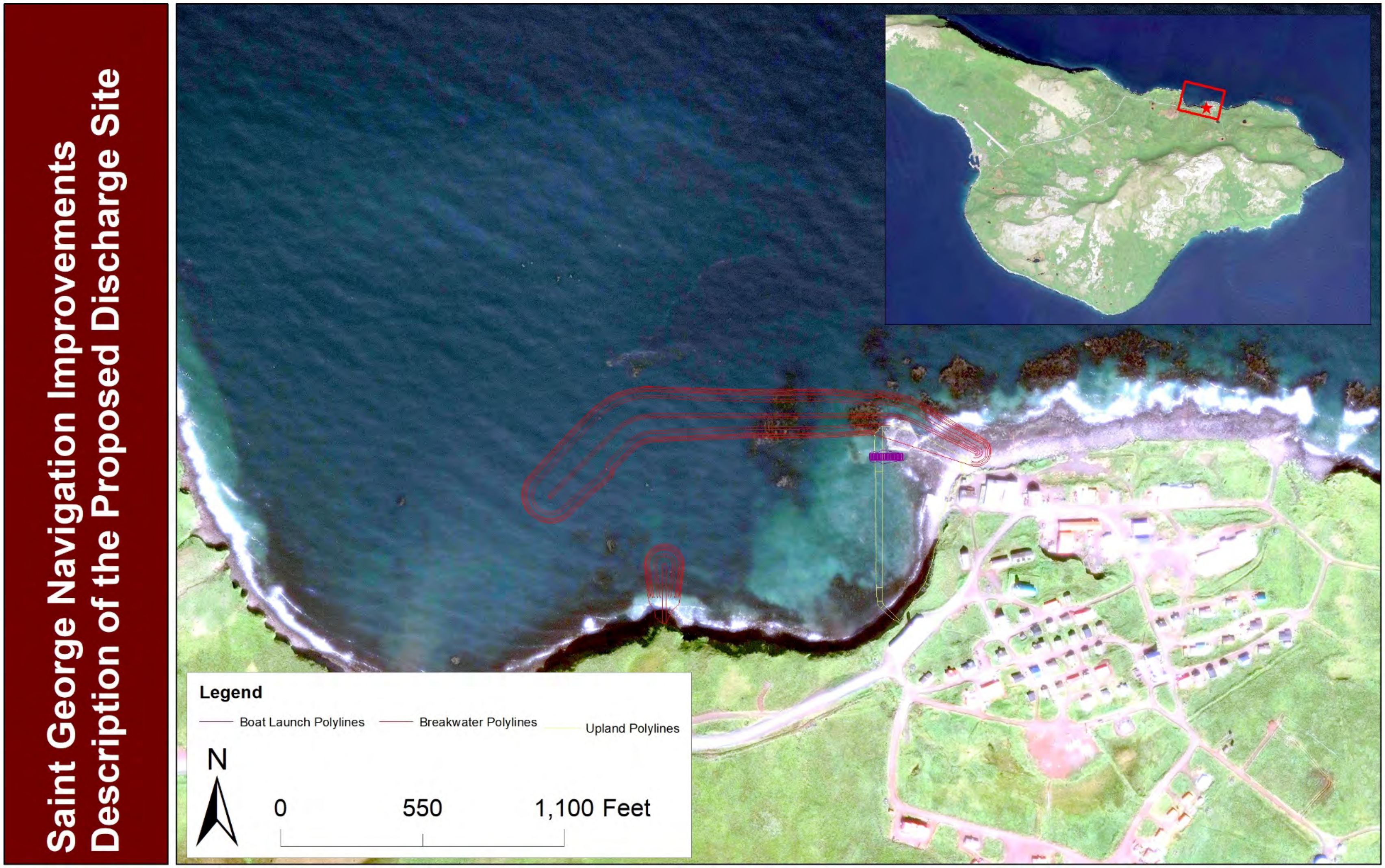


Figure 4 Configuration of the Proposed Discharge with Respect to Natural Features

Figure 5 Coastline in the Proposed Discharge Area

The habitat creation reef would be configured to optimize its utility to the target species, blue king crab (BKC). Habitat association from the Bering Sea-Aleutian Island (BSAI) Fishery Management Plan (FMP) indicate that BKC utilize waters and substrate between 40 meters and 200 meters in depth at various life stages. Considering the depth requirements of the design species, the Alaska District has identified a potential reef construction site close the proposed harbor site. (Figure 5) The center of the zone is approximately 1.25-miles from the project area.

Geotechnical data has not been collected for the dredged material placement area, but the USACE biodiversity survey in June 2019 included a substantial benthic videography component. The nature of the substrate from within the tentatively identified placement area is described as sand in nautical chart 1638. There are areas of gravel and shells identified on the chart outside of the bounds of the placement area. The descriptions from the nautical chart were corroborated by the USACE biodiversity survey.

Video from the June 2019 camera surveys indicate the majority of the substrate in the placement area is sand. The sand appears to be fairly dark in color and contains light-reflecting particles. Considering the properties of the sand in the video, it is likely that the olivine rock that forms the island of Saint George is the parent material and the sand was produced by the mechanical weathering of the rock over the course of several millennia since the island was thrust forth from the sea. The surface of the sand is configured in waves and appears to be dominated by fairly large-sized particles. There is no visible plume emanating from the impact of the camera on the seafloor, which indicates that small-sized particles have either been washed from the area by ocean currents or hydrodynamic conditions have never allowed the precipitation of small-sized particles.

Areas of variable shell litter density exist throughout the proposed placement area and there are areas with multiple sand dollars inside the field of view concurrently. In general, the area surveyed by the USACE benthic video team appears to be a relatively featureless expanse of gradually sloping subaqueous plains.

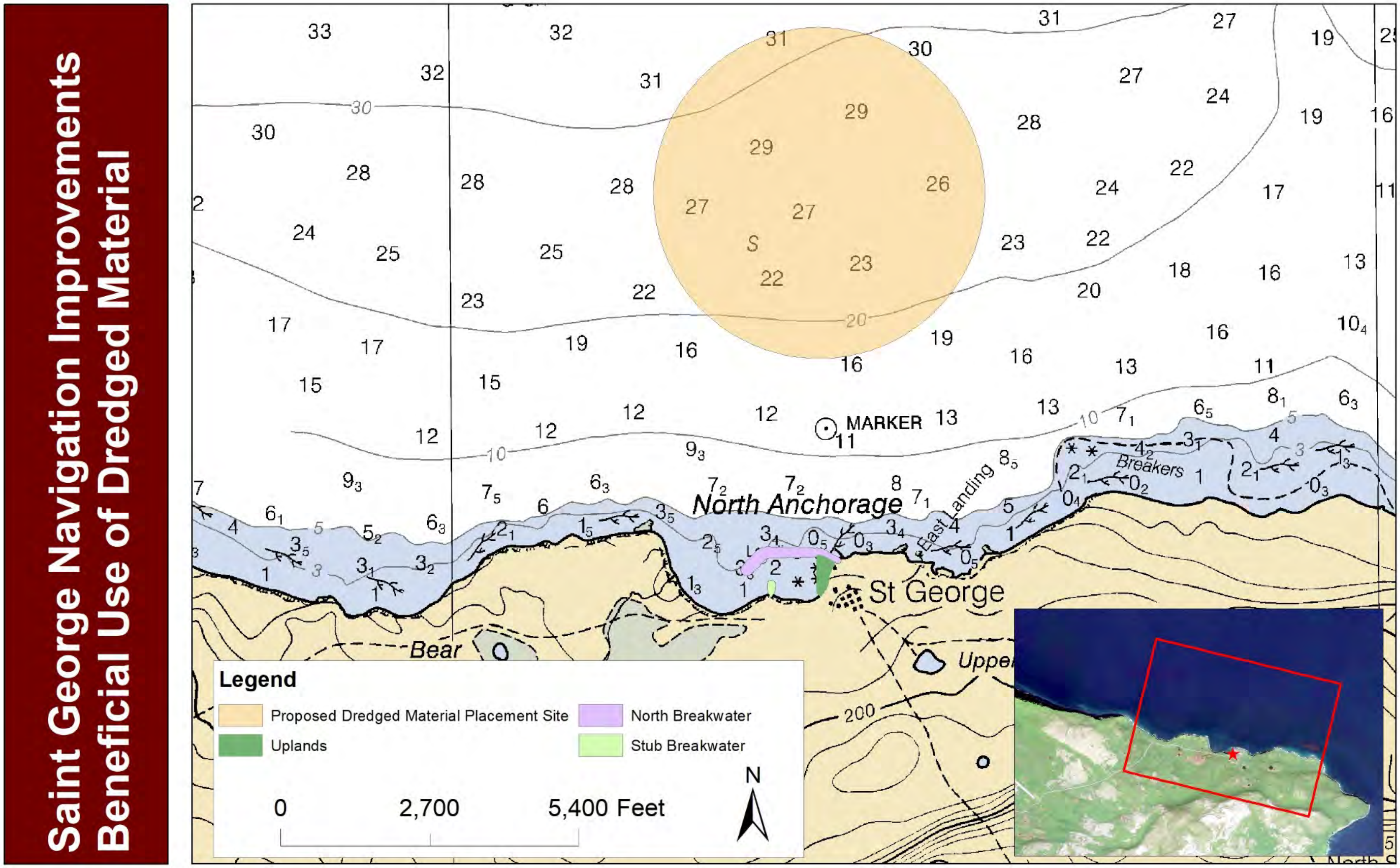


Figure 6 Proposed Habitat Creation Reef Location

1.7 Description of Proposed Discharge Method:

Major construction features for the Recommended Plan include rubble mound north and spur breakwaters, dredging, pile supported docks, and inner harbor facilities fill areas. (Figure 6) The material source for breakwater construction would be offsite from an established quarry such as Cape Nome or Granite Cove on Kodiak Island. The material source would most likely be far enough away from the site that rock production would need to significantly lead placement operations to ensure that the construction crew on site has enough material delivered to the site for a full season of work. Stone production in the quarry and delivery to the site would likely be the first project tasks undertaken.

Construction of the North Breakwater is most likely to be performed with land-based equipment. The breakwater core would be constructed to above the tide range to allow the placing equipment to drive the breakwater core and place B and A rock layers to protect the work in progress. Core rock would likely be transported and staged on the breakwater with off-road dump trucks, then shaped to the design prism by an excavator. Near the west end of the breakwater, an excavator on a barge may be required to shape the toe and benches of the breakwater where the seabed is deeper. Backlands would be constructed concurrently with the breakwater to build a staging area for breakwater material. The boat ramp would be designed and constructed by the local sponsor and the Alaska District does not have any specific information regarding the construction methodology or timing of that project feature.

Dredged material would be transported from the harbor location to the discharge site by barge and would dump the material at specified locations in order to construct the reef in accordance with the detailed plans developed in the PED stage of the project. The design scow has a 3,000 cubic yard capacity and would likely carry about 2,500 cubic yards per transit to the placement area; requiring approximately 172 transits to the placement area to transport the entire 353,052 cubic yards of dredged material expected to be generated over the course of the construction project.

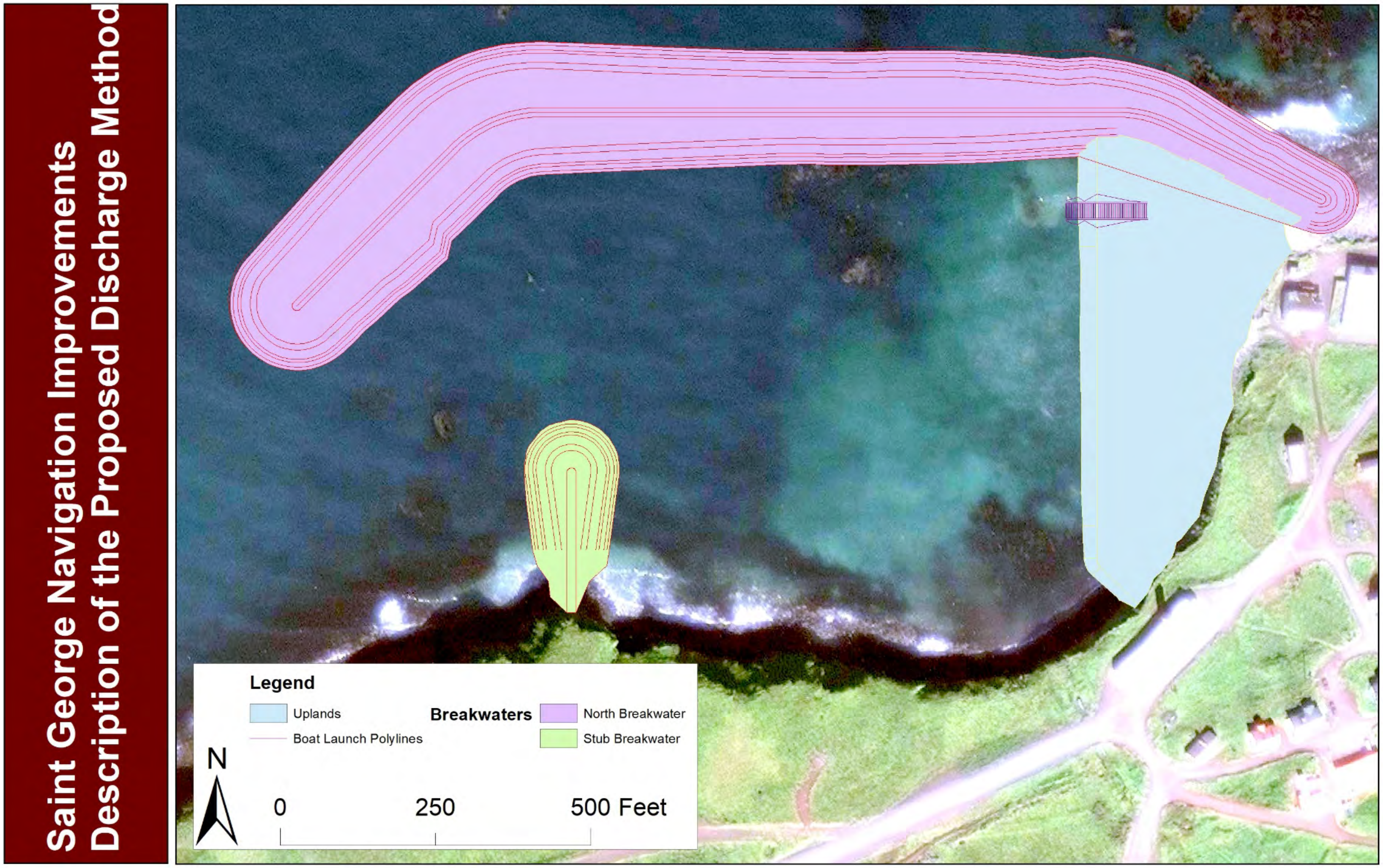


Figure 7. Saint George Navigation Improvements Project Features

2.0 Factual Determinations (40 CFR 230.11)

2.1 Physical Substrate Determination (40 CFR 230.11(a)):

In general, the Saint George Navigation Improvement project area is dominated by volcanic parent material weathered by glaciation. Soil development is likely retarded by the cool climate and relatively young age of the Pribilof Archipelago; the Pribilof area is thought to have built up during the late Pleistocene era. The area may have achieved relatively high elevation, but subsided though a combination of fissuring, faulting, and lava outpouring to its current elevation. The coastal sediments are likely of terrestrial origin, as there is no other source of sediments in the area.

The coast of Saint George Island is generally quite steep and almost completely ringed by cliffs; there are only a couple areas (including the proposed project area) on the island with shallow coastal gradients. Many large boulders are scattered along the water's edge. These boulders are likely composed of igneous rock generated by the volcanic birth of the island. The boulders create eddies and break up wave energy, allowing suspended sediment to precipitate in the interstitial leeward areas. The submerged areas have a relatively thin covering of boulders, cobbles, and sand over what is assumed to be intact bedrock. Initial site observations indicate blasting would be required to dislodge the rock prior to dredging.

The placement of fill material for the construction of the North and Stub Breakwaters would not present more than minor alterations to the physical substrate of the proposed project area. The Breakwaters would be armored with 10 ton rock, which would provide substantially similar rugosity and complexity of surficial material as the naturally occurring boulders in the area. The armor rock would provide the same basic physical properties as the naturally occurring rock, so it would be readily colonized by locally occurring macrophytes and invertebrates.

The construction of the 4.0-acre backland area would result in the permanent loss of 2.9-acres of protected subtidal land, converting it into a commercial/industrial type of terrestrial area. The area that would be converted is apparently quite rare in the vicinity, which includes all of Saint George Island. The loss of this area would be offset by the creation of a new, larger, protected submerged area formed by the construction of the breakwaters. The breakwaters would provide protection to nearly 16-acres of submerged lands. Sediment transport in the area is not well-understood, but the construction of a breakwater extending from the northeast headland could disrupt longshore sediment transport. Review of the aerial photography suggest the subtidal surficial sediments in the eastern portion of the project area may be dominated by sand. If this is true, the dredging would remove the sand and the construction of the breakwater would prevent sand from returning. East-west sediment transport is likely the dominant direction of drift due to the prevailing wave orientation, so the sand that had previously been moved into the eastern portion of the project area may be translocated to the region of the bight west of the breakwater.

The placement of 353,052 cubic yards of blasted bedrock for the construction of a reef would represent a significant alteration of the bathymetry off the north coast of Saint George Island. The ocean floor would become more complex and some smooth, sandy bottom habitat would be permanently lost. This loss would be offset by the creation of rocky reef habitat, which is rare in the immediate area and has been identified by the Bering Sea-Aleutian Island crab Fishery Management Plan (FMP) as a requisite for blue king crab (BKC). Blue king crab are a species of concern in the Bering Sea and efforts are underway to improve the stock.

BKC are known to require the interface of vertical, rocky areas and flat, sandy or muddy areas. Large amounts of this physical habitat type would be create by the construction of a rocky reef extending away from St. George Island.

2.2 Water circulation, fluctuations, and salinity determinations (40 CFR 230.11(b)):

Water velocity would decrease in the area impacted by the construction of the breakwater by the interruption of wave energy. Saint George is very isolated and exposed to hundreds of miles of fetch in all directions, with the exception of the small amount of energy interruption provided by Saint Paul Island. The interruption of wave energy would be the intent of the project in order to provide safe moorage for vessels. The reduced water velocity inside the harbor could promote the precipitation of small grain sediments, but there is not a source of sediment in the immediate area so it is unclear how any fine material would come to be inside the harbor. There is no indication the changes water circulation patterns would have a measurable impact on dissolved oxygen in the harbor due to the relatively small size and shallow depth of the harbor.

The proposed project would have no effect on salinity or water level fluctuations induced by the tides.

2.3 Suspended particulate/turbidity determination (40 CFR 230.11(c)) :

The construction of a breakwater could temporarily elevate turbidity levels through substrate disturbance from the placement of fill material and armor rock. The sediments in the project area are generally very coarse and not susceptible to suspension. Any sediments that were suspended would settle quickly and the unimpeded movement of ocean currents would quickly dilute apparent turbidity to below detectable limits.

Dredging and the placement of dredged material would suspend sediment from the excavation and discharge of marine sediments. The discharged dredged material would also suspend sediment from the seafloor in the placement area as the dredged material strikes the seafloor. Turbidity would temporarily increase in the vicinity of the placement area as the sediment is released from the scow; but the depth of the water, energetic nature of the hydrodynamic environment, and substantially similar nature of dredged material and placement area substrate ensure the turbidity impacts to water quality would be temporary and insignificant.

2.4 Contaminant determinations (40 CFR 230.11(d)):

The rock and gravel placed for the backfill will be clean material free of contaminants. The finished project will not introduce new contaminants. There is no known source of contamination at or near the project site that would be mobilized or exacerbated by this project. The dredged material is exempt from chemical analysis based on the site history and physical characteristics. There have been no known industrial-type activities with the potential to contaminate the dredged materials in the project area. The large grain-size, low concentration of organic material, and high energy levels further support the assumption that the material is not a carrier of contaminants.

2.5 Aquatic ecosystems and organism determination (40 CFR 230.11(e)):

The total area of impacts to aquatic ecosystems is about 11.9-acres. The construction of the two breakwaters would impact about 9-acres, effectively converting the naturally occurring rocky sub-tidal habitat to a mix of engineered rocky sub-tidal, intertidal, and supratidal habitat. The rocky sub-tidal habitat that would be lost to the construction of the breakwaters is very abundant in the area and the conversion of 9-acres of rocky sub-tidal to an assemblage of more complex habitat types would not present a significant negative impact within the context of the Saint George Island coast. The breakwaters would have abundant vertical surfaces and hard substrate for the attachment of sessile animals like anemones and macrophyte assemblages. The large rock would create refugia in the interstitial voids for small fish and invertebrates. The construction of the breakwater would represent a permanent conversion of habitat and a temporary decrease in productivity in the area as the existing biota would be displaced or destroyed by the placement of the breakwater material. The area would quickly recover and is expected to come to rest at a higher productivity rate than the pre-project rate due to the additional complexity created by the breakwaters.

The construction of the backlands would result in the permanent loss of about 2.9-acres of relatively low energy sandy and rocky subtidal habitat, not including the overlapping 0.3 acres of aquatic habitat that would be lost to the construction of the North Breakwater. This habitat would be replaced by commercial/industrial backlands, likely a gravel parking area. The face seaward face of the backlands would be stabilized by armor rock, creating complex habitat in the same manner as the breakwaters. The construction of the breakwater would also provide protection for approximately 16-acres of subtidal habitat, offsetting the loss of the 2.9-acres of protected subtidal habitat lost to the backlands. The nature of the substrate would be permanently altered; aerial photography indicates the existing substrate in the area that would be impacted by the construction of the backlands is covered in light colored sand, but the dredging of the harbor would remove that sand and replace it with exposed bedrock. The construction of the breakwaters would prevent the basin from infilling, so the conversion from mixed sandy/rocky substrate to rock would be permanent. It is unknown how much alternate mixed sandy/rocky habitat is available in the vicinity, but the same imagery that supports the assumption the existing substrate contain some sand suggest there are abundant sandy area in along the north shore of Saint George Island. The impact to ecosystems and organisms would be minor.

The discharge of the dredged material would be configured so that new blue king crab habitat is created. Long term impacts associated with dredged material placement would be presented by the creation of a rocky reef extending perpendicular from the coast of St George Island. This reef would significantly alter the nature of the seabed by increasing the complexity of the area.

The District enlisted the USACE Engineering Research and Development Center (ERDC) to model the discharge using Short Term Fate of Dredged Material (STFATE) based on feasibility level information and assumptions. A distinct mound is predicted to be formed. The mound would approximate a truncated rectangular pyramid.

The height of the pyramid would be about 5 feet and the top area of the pyramid would approximate the area of the hopper of the dump scow, approximately 140 feet long and 35 feet wide. The side slopes of the pyramid would be about 1V : 10H. Therefore, the base of the pyramid would be a rectangle approximately 240 feet long and 135 feet wide. A few inches of fine rock would likely extend another 30 feet in all directions beyond the toe of the pyramid.

Greater detail regarding the precise configuration of the placement would be developed collaboratively with NMFS HCD and other stakeholders during the PED phase of the project. The District's feasibility level plans for placement include the discharge of dredged material by the scow-load, spaced approximately 100 feet apart. This would produce a reef at least 5 feet tall extending nearly 3 miles from the nearshore terminus.

Blue king crab require complex habitat for all demersal life stages. Sand, gravel, cobble, and rocks are necessary substrate types for mature, late juvenile, early juvenile, and egg life stages. Blue king crab (BKC) are associated with slumps, rockfalls, debris, channels, ledges, pinnacles, reefs, and vertical walls between 0 and 200 meters deep.

BKC generally spend the 3.5-4 months after hatching as pelagic larva in water between 40-60 meters deep before settling out into complex benthic habitat areas. The larvae are planktonic, as their limited ability to swim is greatly outweighed by the effects of ocean currents on their horizontal movements. There is some evidence BKC larvae intentionally move vertically through the water column on a daily basis. Because BKC larvae are pelagic plankton, the placement of dredged material to create habitat does not consider the larval life stage and no effort is made to create or enhance larval BKC habitat requirements beyond ensuring the benthic habitat is confined to the epipelagic zone in waters less than 200 meters deep.

2.6 Proposed disposal site determination (40 CFR 230.11(f)):

The construction of a port would require the dredging of 353,052-cubic yards of rock and other sediments. This material would be used to construct a reef offshore of Saint George Island. The use of the material beneficially is evaluated under the Clean Water Act. The entire volume of dredged material would be used beneficially; however, the placement of the dredged materials would have temporary and highly localized impacts to water quality.

2.7 Determination of cumulative effects on the aquatic ecosystem (40 CFR 230.11(g)):

The completed project will have negligible cumulative effects because there is a low likelihood of additional development projects in the area that would impact rocky intertidal and sub-tidal habitat. There are no known plans to construct any additional marine infrastructure in the vicinity of St. George. Given the extremely high construction costs and remoteness of the area, there is very low probability of independent project development; i.e., any prospective marine construction proposal would require outside (most likely government) investment. The requirement for public investment in projects of a similar type in the vicinity of St. George increases the visibility of potential cumulative impacts and supports the determination that cumulative effects on the aquatic ecosystem are negligible.

2.8 Determination of secondary effects on the aquatic ecosystem (40 CFR 230.11(h))

The presence of a port would result in additional vessels in the area and there would be a corresponding increase in the potential for oil spills and other sources of anthropogenic contamination. The port would translocate the vessel traffic that currently calls on Zapadni Bay to the proposed site near the city of Saint George, but is unlikely to recruit additional vessels. The establishment of an improved port on Saint George Island is expected to enable safer navigation and could reduce the potential for spills cause by the unintentional grounding of vessels from wave action; so there could be a net reduction of spills in the waters off Saint George Island.

3.0 Findings of Compliance or Non-Compliance with Restrictions on Discharge

3.1 Adaptation of the Section 404(b)(1) Guidelines to this evaluation:

The proposed activity complies with the requirements set forth in the Environmental Protection Agency's Guidelines for the Specification of Disposal Sites for Dredged or Fill Material, there were no adaptations.

3.2 Evaluation of availability of practicable alternatives to the proposed discharge site which would have less adverse impact on the aquatic ecosystem:

The principle discharge to waters of the U.S. proposed in this project is the placement of fill material for the construction of two breakwaters and backlands for the creation of a harbor near the city of Saint George. The purpose of the project is to increase the safe accessibility of marine navigation to the community of St. George, Alaska. The need for the project is to reduce hazards to better provide safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet; all of which are critical to the long term viability of the mixed subsistence-cash economy of St. George. The Alaska District's Feasibility Report and Environmental Assessment evaluates alternatives for meeting the project purpose. The Alaska District considered seven alternatives in Zapadni Bay and three alternatives in the North Anchorage, as well as the No Action Alternative. Alternatives were analyzed according to criteria specified in the USACE Engineering Regulation 1105-2-100 to determine the recommended plan. Environmental impact, in conjunction with project cost and benefits (i.e., practicability), is one of several criteria considered in the alternatives analysis process.

The seven Zapadni Bay alternatives were not carried forward for further consideration in the Feasibility Report because modeling results demonstrated that all of the proposed harbor configurations exacerbated dangerous conditions within the harbor and the alternatives that did improve mooring conditions, did so only marginally and at excessive construction costs. The four remaining alternatives (N-1, N-2, N-3, and N-4) at the North Anchorage were evaluated based on their respective cost effectiveness. Cost effectiveness is derived by analyzing the cost of an alternative relative to the benefits (moorage and access days). Of the four North Anchorage alternatives, N-3 (the Recommended Plan) would provide the greatest benefits relative to cost. N-4 would provide fewer benefits relative to cost compared to N-3, but more than N-2 and N-1. An analysis comparing the relative cost to benefit between N-2 and N-1 was not conducted. N-3 would have the greatest spatial (project footprint and the amount of dredge materials produced) and temporal (duration of construction activities) environmental impacts. N-2 would have similar, but lesser, spatial impacts compared to N-3. The breakwater dimensions and inner harbor facilities are the same, but the entrance channel and maneuvering basin would be dredge to a shallower depth and yield less dredge material (353,052 vs. 230,000 cubic yards). N-4 would have less spatial impacts compared to N-2 due to its smaller breakwater (1,731 vs. 1,100 feet long) and reduced dredging requirements for entrance channel and maneuvering basin. N-4 would yield 150,000 cubic yards. N-1 would have the smallest spatial impact with a breakwater of 775 feet and dredging requirements entrance channel and launch area yielding 10,000 cubic yards. The temporal impacts of the alternatives would correspond to the spatial impacts (in rank order N-3, N-2, N-4, and N-1) and would be due to the construction time required, especially the drilling and blasting. Although N-1 would have the least environmental impacts among the four North Anchorage alternatives, it was not a practicable alternative. N-1 is not a practicable alternative because it fails to provide access to the crabber fleet, cargo vessels, and fuel barge. Without a crabber fleet the community would be unable to develop a subsistence-cash economy and without access for the barge and cargo vessels, fuel and commodity prices would continue to be exceedingly high. Similarly, N-4 is not practicable either. While it does provide access for the barge and cargo vessels, it does not provide access for the crabber fleet, without which no viable economy can be established. Alternative N-2, does provide access for access for the barge, cargo vessels, and the crabber fleet. However, only about 25% of the crabber fleet would have access, which would be marginal to support a viable economy. Additionally, N-2 provides a fraction of the crabber fleet compared N-3 (85%) and roughly similar costs (N-2, $166.5M; N-3, $175.7M). Combined these factors greatly reduce the practicability of N-2. The District selected N-3 as the Recommended (and least environmentally damaging and practicable) Plan based on its potential to support a mixed subsistence-cash economy and reduce the cost of shipping goods to the community of St. George.

3.3 Compliance with applicable state water quality standards:

The proposed construction project would not be expected to have an appreciable adverse effect on water supplies, recreation, growth and propagation of fish, shellfish and other aquatic life, or wildlife. It would not be expected to introduce petroleum hydrocarbons, radioactive materials, residues, or other pollutants into the waters of the United States. The Alaska District has obtained a Certificate of Reasonable Assurance from the Alaska Department of Environmental Conservation Water Quality Division dated 15 January 2020.

3.4 Compliance with applicable toxic effluent standards or prohibition under Section 307 of the Clean Water Act:

No toxic effluents that would affect water quality are associated with the proposed project. Therefore, the project complies with the toxic effluent standards of Section 307 of the Clean Water Act.

3.5 Compliance with the Endangered Species Act of 1973:

Federally-threatened or endangered pinnipeds that are known to occur within and adjacent to the waters of the North Anchorage include the threatened bearded seal (*Erignathus barbatus*), threatened ringed seal (*Phoca hispida*) arctic subspecies, and endangered Steller sea lion (*Eumetopias jubatus*) Western Distinct Population Segment (DPS), the latter of whose designated critical habitat includes all of the marine waters surrounding St. George Island.

Federally-endangered cetaceans commonly occur in St. George's offshore waters and include fin whale (*Balenoptera physalus*), humpback whale (*Megaptera novaeangliae*) Mexico DPS and western North Pacific DPS, north Pacific right whale (*Eubalaena japonica*), sperm whale (*Physeter macrocephalus*), and western north Pacific gray whale (*Eschrichtius robustus*).

Federally-threatened Northern sea otters (*Enhydra lutris kenyoni*) Southwest Alaska DPS are not abundant, but are known to occur within and adjacent to the waters of the North Anchorage.

The Alaska District will prepare a biological assessment to analyze the proposed project's impacts on ESA-listed species during the feasibility phase. The product of the biological assessment will be a determination of effects on ESA-listed species, which will dictate the consultation framework required for compliance with the ESA.

3.6 Compliance with specified protection measures for marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972:

No marine sanctuaries are present near the project site. However, the community of St. George has proposed the creation of the St. George Unangan Heritage National Marine Sanctuary which would include all of the waters surrounding St. George Island and has been in coordination with the National Oceanic and Atmospheric Administration's National Ocean Service Office of National Marine Sanctuaries. The community's proposal is being reviewed against similar proposals from different geographic regions.

3.7 Evaluation of extent of degradation of the waters of the United States:

The proposed activity could result in the loss or conversion of about 11.9-acres of coastal marine water of the United States. The remaining coastline of Saint George Island is relatively undeveloped and under very little development pressure. There would be no significant adverse impacts to plankton, fish, shellfish, or wildlife within the context of the waters of the United States in the vicinity of Saint George.

3.8 Appropriate and practicable steps taken to minimize potential adverse impacts of the discharge on the aquatic environment:

The Alaska Department of Environmental Conservation (ADEC) Water Quality Certificate of Reasonable Assurance includes the following best management practices to reduce the potential for negative impacts on water quality:

> 1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.
>
> 2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid,

antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Northern Alaska at (907) 451-2121 during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.

The Alaska District will complete formal consultation under Section 7 of the ESA during the PED phase to determine the proposed project's impacts to threatened and endangered species. The ESA consultation will result in mitigation measures to avoid and minimize the proposed project's impacts to threatened and endangered species. Mitigation measures will likely include:

- A work window that confines drilling and blasting to a period from 1 November through 30 April.
- Marine mammal observers to survey the action area during construction.
- Exclusion radii; inside of which marine mammals would trigger a work stoppage.
- Environmental windows to schedule work in less-impactful seasons
- Regular reports to the managing agency documenting the occurrence of shut-downs
- Other appropriate measures to be determined during the Section 7 consultation

3.9 Public interest determination:

On the basis of the guidelines the proposed site of the discharge of fill material is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

FINDING OF COMPLIANCE

For the Construction of Navigation Improvements at Saint George, Alaska

1. No significant adaptations of the guidelines were made relative to this evaluation.

2. The principle discharge to waters of the U.S. proposed in this project is the construction of two breakwaters and supporting backlands for the proposed Navigation Improvements at Saint George. The harbor and entrance channel would be dredged and the dredged material would be used for the construction of a rocky reef to enhance blue king crab habitat

3. The planned discharge would not violate any applicable State water quality standards, or violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

4. The proposed discharge will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be significantly adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values will not occur.

5. The proposed site of construction and discharge is specified as complying with the 40 CFR 230 Guidelines for the Specification of Disposal Sites for Dredged or Fill Material, when considered with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.

THE STATE of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

January 15, 2020

U.S. Army Corps of Engineers, Alaska District
Attn: CEPOA-PM-C-ER, Michael Salyer
P.O. Box 6898
JBER, Alaska 99506-0898

Re: USACE Alaska District, Saint George Island Navigational Improvements
ER-20-002, Bering Sea

Dear Mr. Salyer:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for placement of dredged and/or fill material in waters of the U.S., including wetlands and streams, associated with navigational improvements on Saint George Island, Alaska.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 20 days of the permit decision. Visit http://dec.alaska.gov/commish/review-guidance/ for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, PO Box 111800, Juneau, AK 99811-1800; Location: 410 Willoughby Avenue, Suite 303, Juneau within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

By copy of this letter we are advising the U.S. Army Corps of Engineers of our actions and enclosing a copy of the certification for their use.

Sincerely,

James Rypkema
Program Manager, Storm Water and Wetlands

Enclosure: 401 Certificate of Reasonable Assurance

cc: (with encl.)
Matthew Ferguson, USACE, Anchorage
Megan Marie, ADF&G/Habitat, Anchorage
Anchorage USFWS Field Office
Matt LaCroix, EPA, AK Operations

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

In accordance with Section 401 of the Federal Clean Water Act (CWA) and the Alaska Water Quality Standards (18 AAC 70), a Certificate of Reasonable Assurance, is issued to USACE, Alaska District, CEPOA-PM-C-ER (Attn: Michael Salyer) at P.O. Box 6898, JBER, Alaska 99056-0898 for placement of dredged and/or fill material in waters of the U.S. including wetlands and streams in association with navigational improvements on Saint George Island, Alaska.

The Alaska District plans to construct a port facility on the north side of Saint George Island. The purpose of the project is to increase the safe accessibility of marine navigation to the community of Saint George. The need for the project is to reduce hazards to provide better safe navigation of subsistence and cargo vessels, fuel barges, and a limited commercial fleet, all of which are critical to the long term viability of the mixed subsistence case economy of Saint George. The project would consist of a mooring basin and navigation channel protected by north breakwater and stub breakwater, dock, boat launch, and constructed uplands. The dredged material excavated from the entrance channel and mooring basin would be placed approximately one mile offshore to create a rocky reef to enhance blue king crab habitat. The reef would be constructed inside of a 6,000 foot diameter circle (centered at Latitude 56.622088. Longitude -169.550108). The exact configuration would be developed in the next phase of the project, in consultation with NMFS, to maximize the habitat benefits of the reef.

A state issued water quality certification is required under Section 401 because the proposed activity will be authorized by a U.S. Army Corps of Engineers permit (ER-20-002) and a discharge of pollutants to waters of the U.S. located in the State of Alaska may result from the proposed activity. Public notice of the application for this certification was given as required by 18 AAC 15.180 in the Corps Public Notice ER-20-002 posted from November 21 to December 21, 2019.

The proposed activity is located within Section 29, T. 41 S., R. 129 W., Seward Meridian, Latitude 56.6000° N., -169.5417° W., in Saint George, Alaska.

The Department of Environmental Conservation (DEC) reviewed the application and certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the CWA and the Alaska Water Quality Standards, 18 AAC 70, provided that the following additional measures are adhered to.

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.

2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Central Alaska at (907) 269-3063, during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.

3. The permittee must stabilize any dredged material (temporarily or permanently) stored on upland property to prevent erosion and subsequent sedimentation into jurisdictional waters of the United States. The material must be contained with siltation control measures to preclude reentry into any waters of the U.S., including wetlands.

4. Fill material (including dredge material) must be clean sand, gravel or rock, free from petroleum products and toxic contaminants in toxic amounts.

5. All dredging shall be conducted so as to minimize the amount of dredge material and suspended sediments that enter the Bering Sea. Appropriate Best Management Practices (BMPs) will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to, the following:

    - Eliminating multiple bites while the bucket is on the seafloor
    - No stockpiling of dredged material on the seafloor
    - No seafloor leveling
    - Slowing the velocity (i.e., increasing the cycle time) of the ascending loaded clamshell bucket through the water column
    - Pausing the dredge bucket near the bottom while descending and near the water line while ascending
    - Placing filter material over the barge scuppers to clear return water
    - If dewatering runoff is discharged from the barge, silts must be removed prior to direct or indirect discharge to the Bering Sea.

This certification expires five (5) years after the date the certification is signed. If your project is not completed by then and work under U.S. Army Corps of Engineers Permit will continue, you must submit an application for renewal of this certification no later than 30 days before the expiration date (18 AAC 15.100).

Date: January 15, 2020

James Rypkema, Program Manager
Storm Water and Wetlands

ST. GEORGE HARBOR IMPROVEMENT FEASIBILITY STUDY

APPENDIX H: ESSENTIAL FISH HABITAT

ST. GEORGE, ALASKA

U.S. Army Corps of Engineers
Alaska District

Prepared by:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 6898
ELMENDORF AFB, ALASKA 99506-0898

November 2019

Table of Contents

List of Figures

List of Acronyms

EFH	Essential Fish Habitat
NMFS	National Marine Fisheries Service
USACE	United States Army Corps of Engineers
CFR	Code of Federal Regulations
WRDA	Water Resources Development Act
PED	Preconstruction Engineering and Design
USC	United States Code
MLLW	Mean Lower Low Water
CY	Cubic Yards
MPRSA	Marine Preservation, Research, and Sanctuaries Act
BKC	Blue King Crab
NOAA	National Oceanic and Atmospheric Administration
USFWS	United States Fish and Wildlife Service
AMNWR	Alaska Maritime National Wildlife Refuge
SL	Source Level
hp	Horsepower
dB	decibel
ADFG	Alaska Department of Fish and Game
IFR	Integrated Feasibility Report
WOUS	Waters of the United States
FMP	Fishery Management Plan
kW	kilowatt

1.0 INTRODUCTION

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 the 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 U.S. Army Corps of Engineers’ (Corps’) 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.

In June 2019, the Alaska District organized a benthic survey to the project area to collect information on the nature of the substrate, benthic and demersal ecology, and water column in the dredged material placement area, breakwater footprint, and dredge prism. The data collected in the June 2019 biological surveys were incorporated into this analysis and the Integrated Feasibility Report (IFR) and used in conjunction with literature reviews and other remote data collection methods to draw conclusions regarding the potential impacts associated with the Alaska District’s proposed action.

The Alaska District is evaluating the construction features and placement of dredged materials in waters of the United States (WOUS) under the Clean Water Act 404(b)1 Guidelines for Specification of Disposal Sites for Dredged or Fill Material. Additional information regarding the proposed project’s impacts to WOUS are found in the 404(b)1 assessment appended to the IFR.

2.0 PROJECT PURPOSE

The purpose of the project is to increase the safe accessibility of marine navigation to the community of St. George, Alaska. The need for the project is to reduce hazards to provide safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet, all of which are critical to the long term viability of the mixed subsistence-cash economy of St. George.

Dangerous wave and seiche conditions at the existing harbor limits opportunities for safe access and moorage to the current fleet. Both these conditions reduce subsistence opportunities and impacts the delivery of goods to the community and imperils the long-term viability of the community. Since crab rationalization established individual fishing and harvesting quotas (enacted circa 2000 with full implementation by the 2005/2006 season), commercial fishing vessels all but abandoned St. George as an option to deliver catch due to it being cost-prohibitive compared with the risk of damages and delays. The community is legally entitled to a percentage of the CDQ from APICDA for crab; however, without a safe harbor, St. George is unable to realize that revenue benefit and the crab is delivered to neighboring St. Paul. The cost of fuel is exorbitant (>$7/gallon on St. George vs. ~$3/gallon on St. Paul) because of the necessary inclusion of anticipated delays and operating costs associated with delivering to St. George. Due to vessel delays and the risk of damages, consumables are flown into the community at a cost of $1.58 more per pound than ocean-going vessels could deliver.

The cultural identity of Alaska Native Tribes is highly dependent upon subsistence activities tied to specific locations and deep historical knowledge of land and subsistence resources. Rural economies in Alaska, including that which exists on St. George, can be characterized as a mixed, subsistence-cash economy in which the subsistence and cash sectors are interdependent and mutually supportive. The ability to successfully participate in subsistence activities is highly dependent on the opportunity to earn monetary income and access the resources needed to engage in subsistence activities. The hindering of economic opportunities in the community would continue, and the costs of basic essential goods required to support a subsistence lifestyle would remain prohibitively high without a safe and functioning harbor.

Oppressive economic conditions contribute to continued out-migration from St. George. Inadequate attendance resulted in closure of the school following the 2016/2017 school year when enrollment fell below minimum thresholds for State funding. Similar phenomena have recently occurred in the remote Alaskan communities of Adak, Rampart, and Clarks Point. St. George has taken steps including implementing a distance learning program for children remaining on the island, assuming upkeep and maintenance of the school, and recruitment of families to the island to ensure that the school is in position to reopen if enrollment again surpasses that minimum threshold. Economic opportunities that a safe and functioning harbor could provide continues to be the missing component.

3.0 PROJECT AUTHORITY

This General Investigations study is being conducted under authority granted by Section 4010 of the Water Resources Development Act (WRDA) of 2007, Public Law 110-114 which authorizes a study to determine the feasibility of providing navigation improvements at St. George, Alaska.

Additionally, Section 1322 of the WRDA of 2016, (b)(2) *Expedited Completion of Feasibility Studies*, authorizes the Secretary to move directly into preconstruction engineering and design (PED) if the project is justified. Implementation guidance was published 12 February 2018.

> *EXPEDITED COMPLETION OF FEASIBILITY STUDIES. The Secretary shall give priority funding and expedite completion of the reports for the following projects, and, if the Secretary determines that the project is justified in the completed report, proceed directly to project preconstruction, engineering, and design in accordance with section 910 Of the Water Resources Development Act of 1986 (33 U.S.C. 2287):*
>
> *(A) The project for navigation, St. George Harbor, Alaska*

4.0 PROJECT AREA

St. George Island is the southernmost and second largest of a group of five historically volcanic islands that compose the Pribilof Archipelago, located approximately 760 miles west of Anchorage and 220 miles north by northwest of Unalaska Island in the southern Bering Sea. St. George's position at the western margin of Alaska's continental shelf puts it near the much deeper waters of the Bering Sea's abyssal plain. The abrupt change in seafloor elevation occurring at the continental slope facilitates natural upwelling processes; as a result, surface waters in the region are some of the most productive on the planet.

While St. George Island and its slightly larger northern neighbor, St. Paul Island, are currently inhabited, Otter, Walrus, and Sea Lion Rock Islands are not. As a group, as well as independently, the islands are ecologically significant and are known as "the Galapagos of the north" due to their rich fisheries, abundance of colonial seabirds, and Steller sea lion and northern fur seal rookeries.

St. George Island falls within the overarching boundary of the Alaska Maritime National Wildlife Refuge; portions of its surface landmass are owned and managed by the U.S. Fish and Wildlife Service for conservation, protection, and the overall enhancement of fish, wildlife, plants, and their habitats for the continuing benefit of the American people. St. George Island is difficult to access by airplane or boat due to the wave, wind, and fog climate of the central Bering Sea.

The city of St. George is in the Aleutians West Census Area and had a population of 102 at the 2010 census. The city's location is in a small bight on the north shore of St. George Island. The surrounding topography is fairly steep, rising to 200' within a half-mile of the coast. A mile inland the elevation increases dramatically, going from 400' to 600' above sea level in just about 600 horizontal feet. St. George Island is treeless, like most of the Aleutian and Pribilof Islands. The vegetation is dominated by plants in the heath family, which are well adapted for the poor acidic soils found in the Pribilof and Aleutian Islands. The cold waters of the Bering Sea control the climate of St. George.

The maritime location results in cool weather year-round, and a narrow range of mean temperatures varying from 24 to 52. Average precipitation is 23 inches, with 57 inches of snowfall. Cloudy, foggy weather is common during summer months.

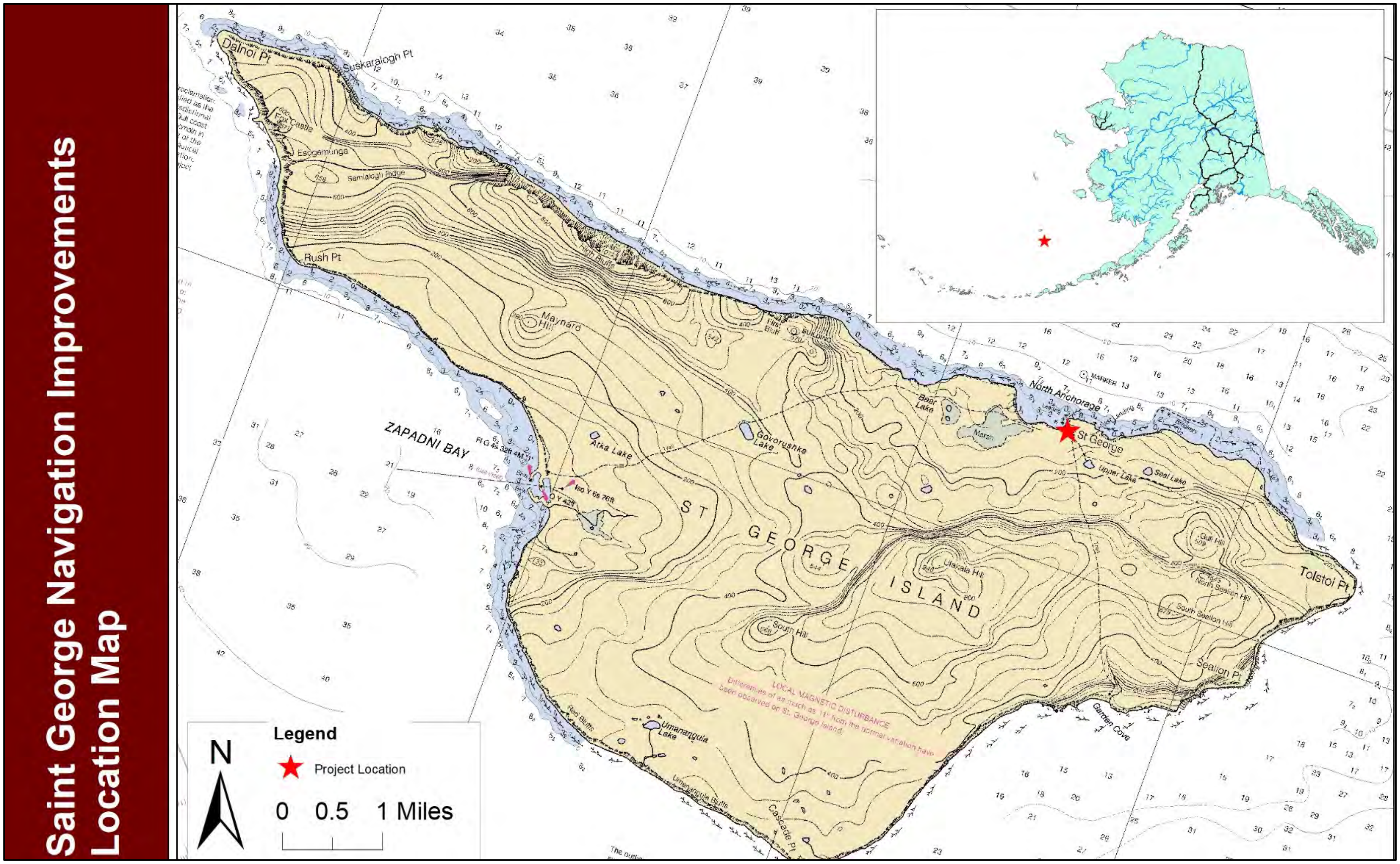


Figure 1. St. George Navigation Improvements Location Map

5.0 PROJECT DESCRIPTION

The Alaska District (District) proposes to construct a port facility on the north side of St. George Island. This project would consist of a 450-foot wide by 550-foot-long mooring basin dredged to -20 feet mean lower low water (MLLW) protected by a 1,731-foot-long north breakwater and a 250-foot-long spur breakwater at the west edge of the basin. Primary armor stone on the north breakwater has a median weight of 10 tons. The basin connects to the Bering Sea with a 250-foot wide navigation channel dredged to -25 feet MLLW. Inner harbor facilities would be created by filling an area to +10 feet MLLW, with a 300-foot-long pile-supported dock and a concrete boat launch ramp to -5 feet MLLW for full tide launching access. (Figure 2). The rubblemound breakwater structure would be constructed utilizing standard design, incorporating three layers of consecutively smaller boulders to efficiently dissipate wave energy. The outer layer, the A rock layer, consists of large multi-ton armorstone that would be subject to the brunt of the wave energies. Second, a B rock layer, comprised of slightly smaller, yet substantial boulders adds a redundant layer of protection for the smaller innermost boulders that make up the C rock layer, or core of the breakwater structure

The north breakwater would require approximately 85,000 cubic yards (CY) of armor stone, 54,000 CY of B rock and 80,000 CY of core rock. The stub breakwater would require approximately 9,000 CY of armor stone, 6,500 CY of B rock, and 5,000 CY of core rock. The basin and navigation channel would require the removal of 353,052 CY of material to reach the proposed maximum pay depths for the project. Construction of the area for inner harbor facilities would require approximately 45,000 CY of fill. The sediments removed from the mooring basin and navigation channel would be placed in ocean waters north of the project area. The placement would be designed to create habitat for blue king crab. The District has identified a suitable dredged material placement location approximately 1 mile offshore (Figure 3).

The material source for breakwater construction would be offsite from an established quarry such as Cape Nome or Granite Cove on Kodiak Island. Construction of the North Breakwater is most likely to be performed with land-based equipment. The breakwater core would be constructed to above the tide range to allow the placing equipment to drive the breakwater core and place B and A rock layers to protect the work in progress. Core rock would likely be transported and staged on the breakwater with off-road dump trucks, then shaped to the design prism by an excavator. Near the west end of the breakwater, an excavator on a barge may be required to shape the toe and benches of the breakwater where the seabed is deeper. The area for inner harbor facilities would be constructed concurrently with the breakwater to build a staging area for breakwater material.

Dredging could occur concurrently with stone production. Initial observations of the site indicated that blasting is likely to be required for dredging; this may require special scheduling considerations due to the proximity of the fur seal rookery. Scheduled delays could be incurred due to the presence of marine mammals near the blasting zone during dredging operations. Dredging would produce relatively low levels of impacts, considering appropriate mitigation measures, than blasting and could likely occur throughout the year. Some dredging prior to constructing the breakwaters would provide access for construction barges to the breakwater sites. The total estimated duration of construction is three to five years.

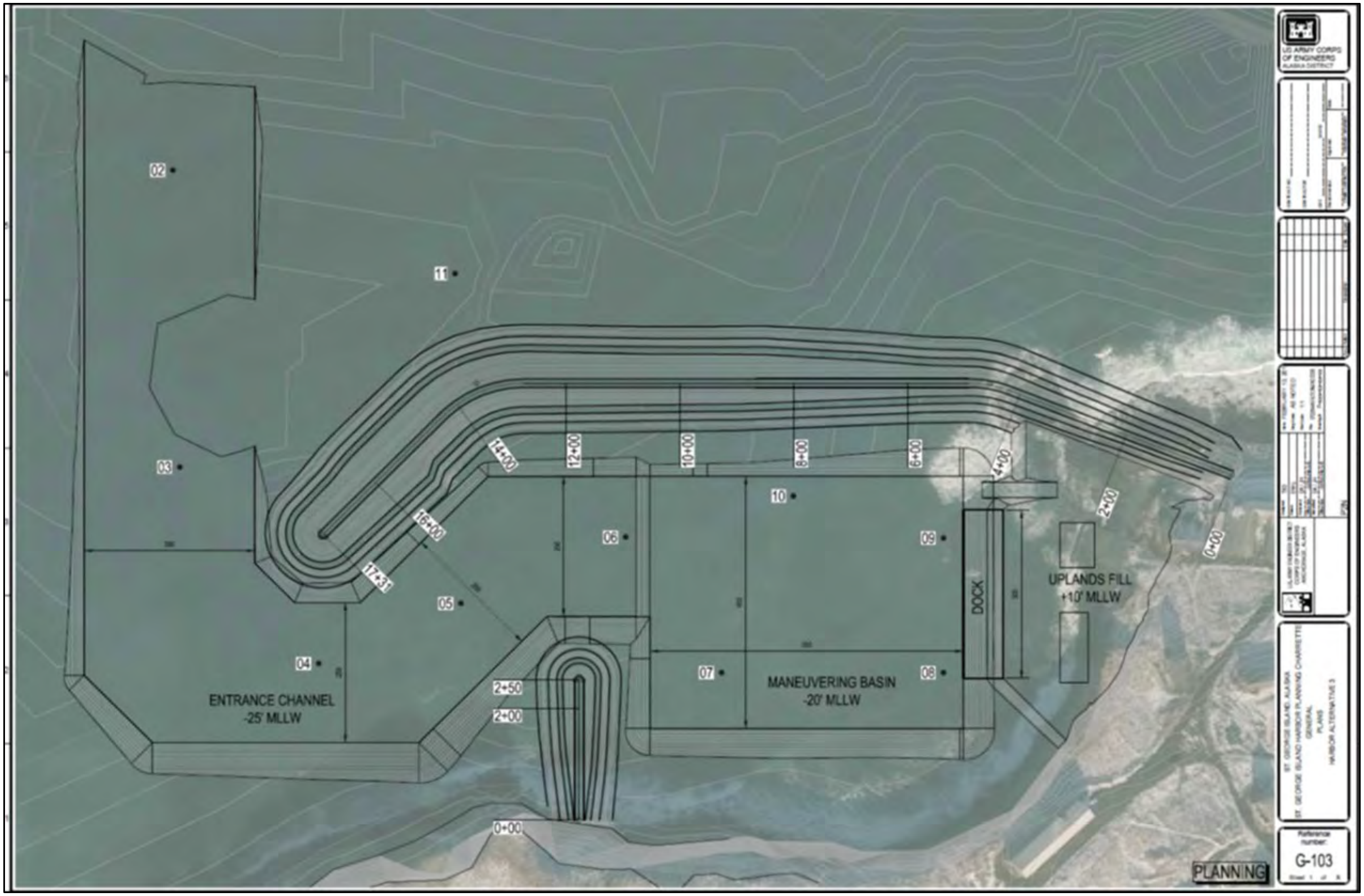


Figure 2. St. George Navigation Improvements Project Features Concept Drawing

The District assumes the breakwater foundations located at the North Anchorage Harbor site would most likely consist of relatively thin layers of medium dense to dense sediments consisting of coarse-grained soils with cobbles and boulders. The depth to bedrock may vary greatly, but for evaluation purposes it was assumed bedrock would be within 10-feet of the seafloor since the proposed breakwater alignments are close to shore.

The proposed North Anchorage Harbor entrance channel and maneuvering basin are planned to be dredged to a depth of -25 feet and -20 feet MLLW, respectively. The thickness of sediment and depth to bedrock is unknown within the proposed harbor entrance channel and maneuvering basin. For estimating purposes, the District anticipates bedrock would be encountered near the surface, three feet or less, within the south side of the entrance channel and maneuvering basin. The thickness of surface sediment may gradually get thicker as the entrance channel moves north away for the shoreline. Drilling and controlled blasting of bedrock would be required within the navigation channel and harbor basin before material can be mechanically dredged by clamshell or long-reach excavator. Dredge cuts in the surface sediment can be assumed to be stable at slopes of 1.5 horizontal to 1 vertical. Dredge cuts in bedrock may be cut at slopes of 0.25 horizontal to 1 vertical.

The weather would strongly influence timing of the dredging and marine construction. The exposure of the site and Pribilof Islands in general places seasonal constraints on constructability. Winter construction is currently considered infeasible due to weather, leaving the summer and shoulder seasons as the only realistic times of the year for marine construction.

Environmental windows to reduce the proposed project’s impacts on marine mammals would further restrict the construction timing. The District’s Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) consultation would develop the final work avoidance windows; but given the proximity to fur seal rookeries and the abundance of marine mammal usage in the area, a prohibition on blasting between mid-August and November is likely to be imposed as mitigation. Additional windows to protect nesting birds may be incorporated into the final project design. Seabird nesting in cliffs and burrow colonies occurs between 15 May and 15 September in the Pribilof Islands

The construction material would likely be delivered to St. George Island in the summer before construction to avoid the worst part of the year for weather impacts. The blasting would be conducted before the environmental windows to minimize impacts to biological resources. Drilling is expected to last 488 days, and blasting is expected to last 369 days. These durations would be distributed across the five-year construction schedule.

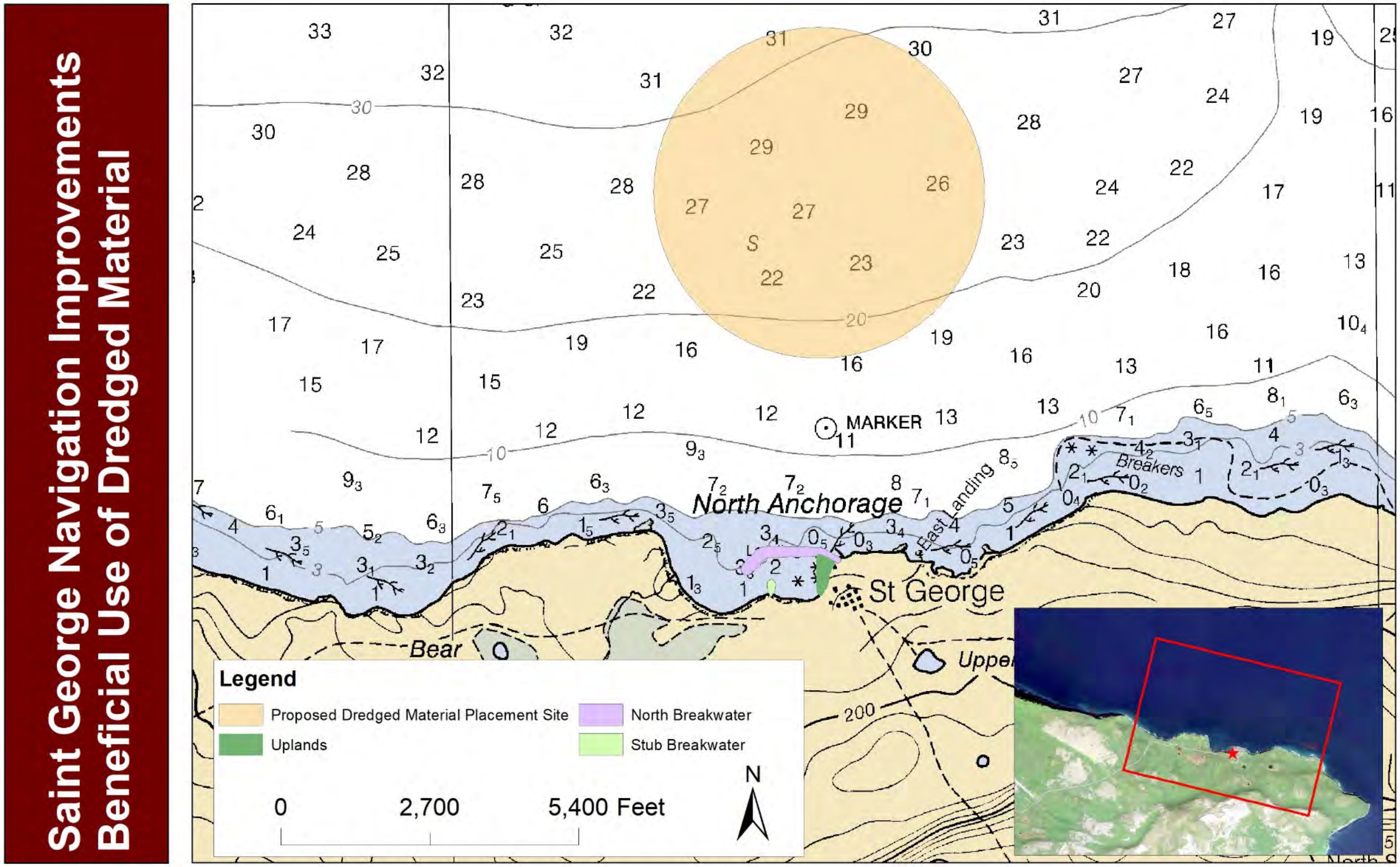


Figure 3. St. George Navigation Improvements Project Features with Respect to Habitat Creation Reef Site

6.0 ESSENTIAL FISH HABITAT

6.1 Federally Managed Species in the Project Area

EFH is defined by the Magnuson-Stevens Fishery Conservation and Management Act as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Section 305(b)(2) of the Magnuson-Stevens Act requires Federal action agencies to consult with National Oceanic and Atmospheric Administration (NOAA) NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

St. George Island does not exhibit any anadromous waters or streams that would traditionally be associated with salmonids and their allies, as would be defined under AS 16.05.871(a). However, the marine waters surrounding St. George Island, from the shoreline outward, are designated as EFH for blue king crab, tanner crab, rex sole, walleye pollock, snow crab, Alaska plaice, Greenland turbot, arrowtooth flounder, rock sole, flathead sole, sculpin, Pacific cod, skate, chum salmon, pink salmon, coho salmon, sockeye salmon, and king salmon.

The species list generated by the National Marine Fisheries Service’s essential fish habitat (EFH) mapping tool for the Pribilof region was used to generalize marine fish diversity in the nearshore waters of St. George Island. USACE conducted vessel-based fisheries surveys in June of 2019 utilizing crab pots and underwater video collection methodologies, seas at that time were too rough to attempt trawl surveys. Figure 4 depicts the survey stations with respect to depth and the bounds of the survey area. USACE biologists identified the zone of dredged material placement siting feasibility by considering the economically viable transport distance, sensitive habitat areas, nature of the substrate, bathymetry, intensity of vessel traffic, and other factors. Pot survey stations were distributed within the zone of siting feasibility in order to capture relevant data from a representative range of depths and substrate types.

The USACE also collected benthic video from the survey area to contribute to the body of knowledge regarding the local benthos. The video revealed very low habitat complexity and biotic diversity. Some areas were home to a handful of sand dollars and hermit crabs, and there was evidence of marine snail habitation (egg cases);otherwise, the area appears desolate.

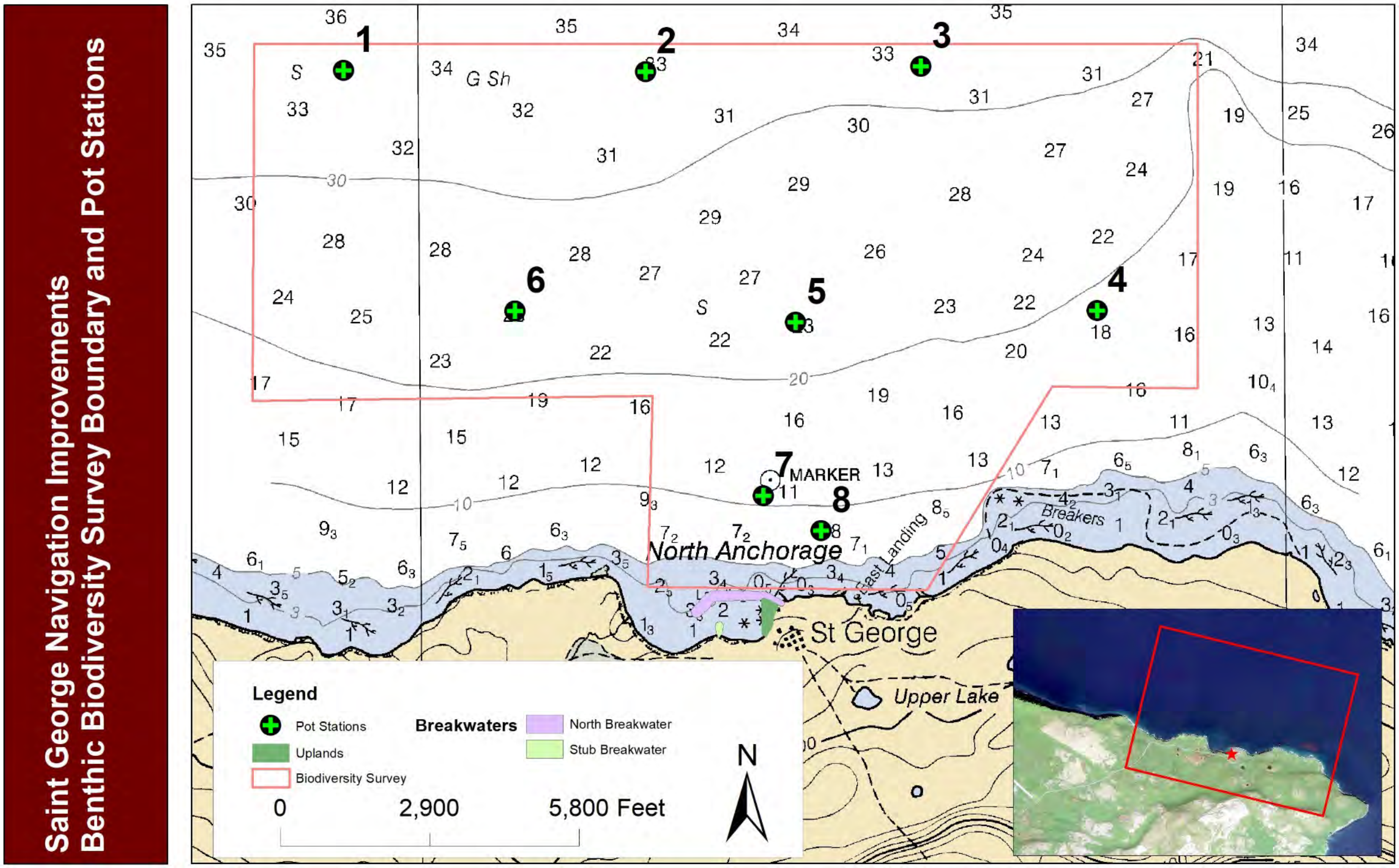


Figure 4. June 2019 USACE Biodiversity Survey Pot Stations

USACE's pot surveys proved to be indeterminate; only a single species of finfish was encountered in the crab pots and again captured on video, the yellow Irish lord (*Hemilepidotus jordani*), sculpin common to the region. The results of the pot sampling are displayed in Figures 5 and 6. USACE biologists also did not conduct seine surveys at the beach areas of Village Cove, as the substrate is far too rocky to sample effectively. While conducting intertidal habitat observations in early June2019, USACE biologists encountered two deceased smooth lumpsuckers (*Aptocyclus ventricosus*) in the wrack near the high tide line on the sandy beach areas of Village Cove.

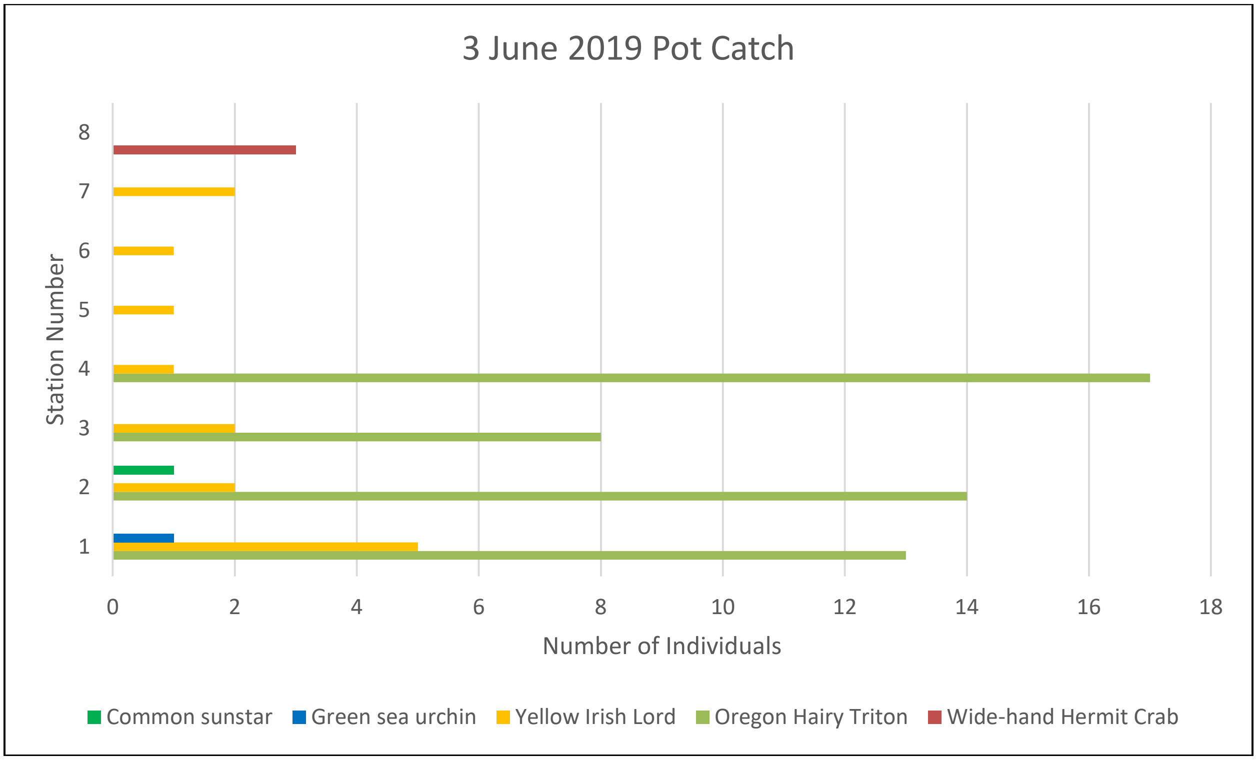


Figure 5. 3 June 2019 Pot Catch Results

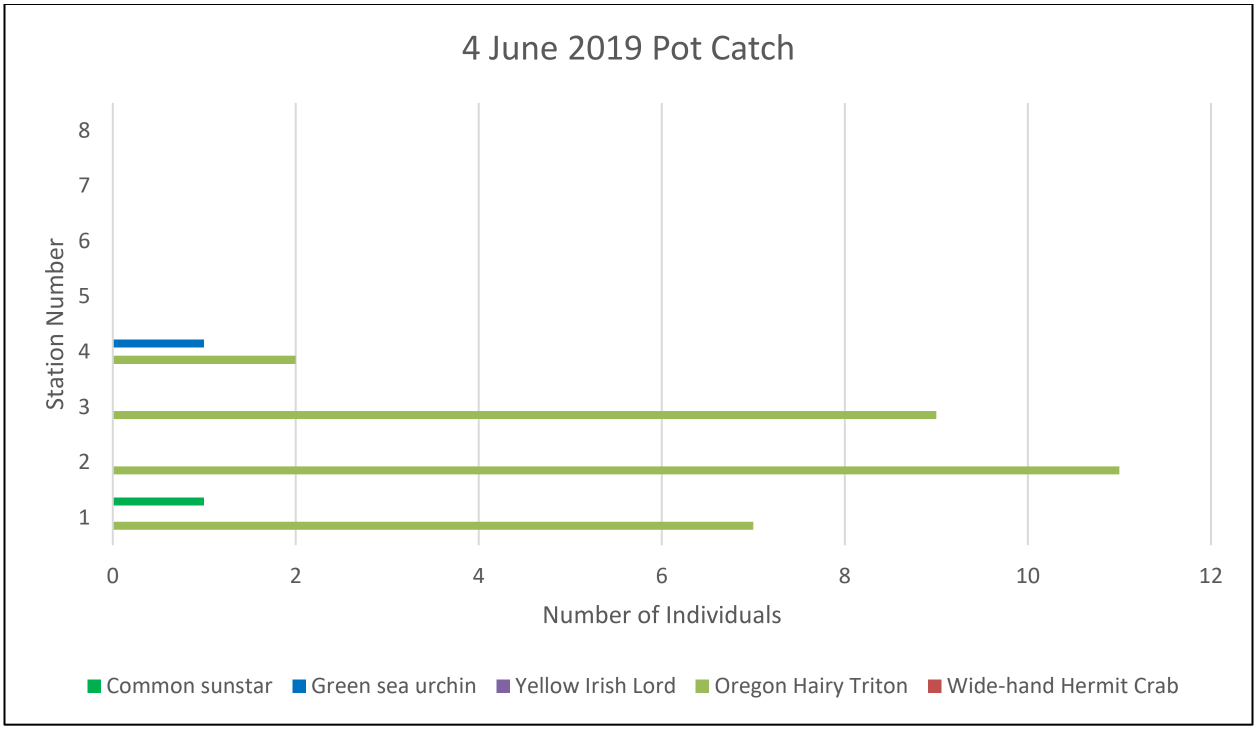


Figure 6. 4 June 2019 Pot Catch Results

According to the NMFS EFH habitat mapping tool, the following marine fish species are managed under the Groundfish of the Bering Sea Aleutian Islands (BSAI) Fishery Management Plan (FMP), the FMP for the Salmon Fisheries in the EEZ Off Alaska and are indicated as potentially occurring within the various habitat types occurring in the marine waters in close proximity to the Pribilof Islands:

- Alaska plaice (*Pleuronectes quadrituberculatus*)
- Alaska skate (*Bathyraja parmifera*)
- Aleutian skate (*Bathyraja aleutica*)
- Arrowtooth flounder (*Atheresthes stomias*)
- Atka mackerel (*Pleurogrammus monopterygius*)
- Bigmouth sculpin (*Hemitripterus bolini*)
- Dover sole (*Microstomus pacificus*)
- Dusky rockfish (*Sebastes ciliatus*)
- Flathead sole (*Hippoglossoides elassodon*)
- Great sculpin (*Myoxocephalus polyacanthocephalus*)
- Kamchatka flounder (*Atheresthes evermanni*)
- Northern rock sole (*Lepidopsetta polyxystra*)
- Northern rockfish (*Sebastes polyspinis*)
- Pacific cod (*Gadus macrocephalus*)
- Pacific ocean perch (*Sebastes alutus*)

- Rex sole (*Glyptocephalus zachirus*)
- Rougheye rockfish (*Sebastes aleutianus*)
- Sablefish (*Anoplopoma fimbria*)
- Southern rock sole (*Lepidopsetta bilineata*)
- Walleye Pollock (*Gadus chalcogrammus*)
- Yellow Irish lord (*Hemilepidotus jordani*)
- Yellowfin sole (*Limanda aspera*)
- Greenland Turbot (*Reinhardtius hippoglossoides*)
- Chinook salmon (*Oncorhynchus tshawytscha*)
- Chum salmon (*Oncorhynchus keta*)
- Pink salmon (*Oncorhynchus gorbuscha*)
- Sockeye salmon (*Oncorhynchus nerka*)
- Coho salmon (*Oncorhynchus kisutch*)

USACE conducted nearshore subtidal and nearshore inter-tidal surveys for marine invertebrates in early June of 2019. Nearshore subtidal surveys were conducted via vessel deployed crab pots and underwater videography. Nearshore intertidal surveys were conducted on foot at low tide along the beach areas of Village Cove. Eight individual crab pots were baited, deployed, and allowed to fish for approximately twenty hours. After twenty hours, the recovered crab pots had its contents processed, rebaited, and redeployed. The crab pots were allowed to fish for another approximate twenty-hour period. At which point the recovered crab pots had their contents processed and then stowed on deck. Four species encountered while employing crab pot sampling methodology were marine invertebrate. The most commonly encountered marine invertebrate was the Oregon hairy triton (*Fusitriton oregonensis*) n=64, followed by common Sunstar (*Crossaster papposus*) n=3, Widehand hermit crab (*Elassochirus tenumanus*) n=3, and green urchin n=2, respectively. No encounters of commercially relevant species of marine invertebrate while employing crab pot sampling methodology occurred. Marine invertebrates that are commercially relevant or that derive habitat protections under the BSAI FMP include blue king crab (*Paralithoides platypus*), red king crab (*Paralithoides camtschaticus*), tanner crab (*Chionoecetes bairdi*), and octopus (*Enteroctopus dofleini*).

Benthic invertebrates were notably absent in areas that displayed rapidly moving currents and along the sand wave-type substratum. There were tube worm casings in places where the substrate was mud or sandy mud. Also observed along the sandy mud substrate were two varieties of anemones (*Metridium farcimen*) and another variety not identified to genus. Invertebrate diversity increased once the substrate began to transition to shell hash and rocky reef. Also, there were various hermit crabs, sponges, scallops, green urchins, common Sunstar, and chitons. Video quality was not robust enough to identify smaller organisms to species.

Intertidal marine invertebrates observed during USACE's survey included blue mussels (family *Mytilidae*), limpets, chitons, various small snails, green urchins, giant green anemone (*Anthopleura xanthogrammica*), and barnacles.

6.2 Nature of the Substrate in the Project Area

The Alaska District will collect more detailed information regarding the geotechnical and bathymetric conditions of the proposed discharge site during the Preliminary Engineering and Design (PED) phase of the project if the project is selected to advance to that stage. In the absence of detailed information, this analysis will rely on remote sensing and form some assumptions regarding the generic conditions.

The North Breakwater, Stub Breakwater, the area for inner harbor facilities, and boat launch would be constructed in the bight forming North Anchorage next to the city of St. George. One of the primary reasons of city's establishment in this location is due to the North Anchorage bight being the most enclosed section of coastline on the north shore of St. George Island. The marine sediments in the bight are presumably basaltic bedrock overlain by sands, gravels, shell hash, cobbles, and boulders. The presence of the bight forms an area of relative protection from wave energy, so the sediments in the bight are likely dominated by a smaller grain size than the surrounding, more exposed area by virtue to the reduced energy allowing relatively fine grain material to be deposited (Figure 7).

Bathymetric surveys have not been completed in the project location, but the nautical chart for the area indicates that water depths range from about 6' to about 22' in the areas where the breakwaters would be constructed. The area designated for construction of inner harbor facilities would be an area that is fouled with boulders and currently inaccessible to navigation. Cobble dominates the low intertidal area, and there are areas of sand in the back-beach (Figure 5). Various macrophytes, including dragon kelp, colonize the low intertidal and subtidal areas. . There are no known areas of rooted aquatic vegetation.

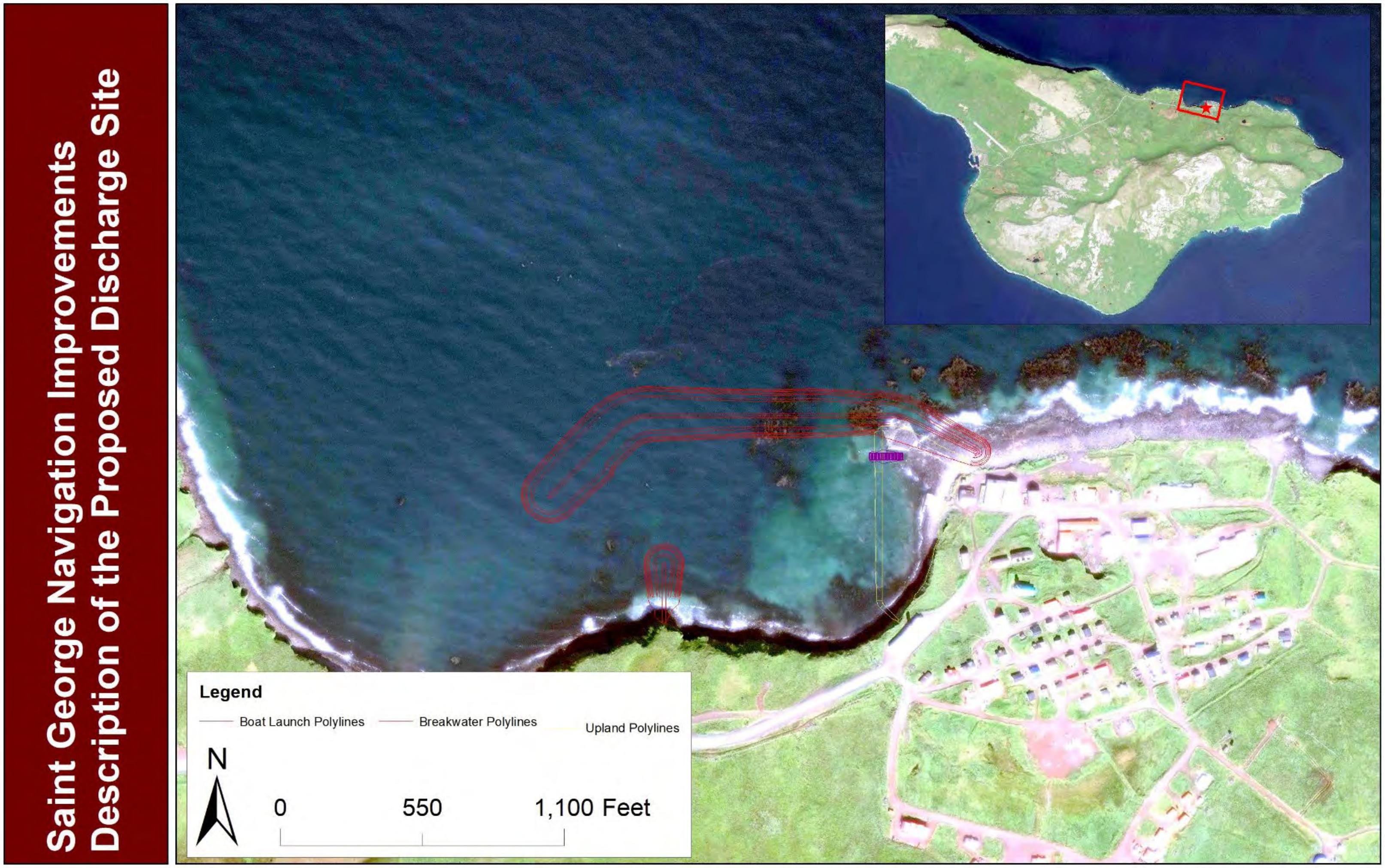


Figure 7. Description of the Proposed Discharge Site

6.3 Nature of the Substrate in the Placement Area

Geotechnical data has not been collected for the dredged material placement area, but the USACE biodiversity survey in June 2019 included a substantial benthic videography component. Nautical chart of 1638 describes the nature of the substrate from within the tentatively identified placement area as sandy. There are areas of gravel and shells identified on the chart outside of the bounds of the placement area. The USACE biodiversity survey corroborated the descriptions from the nautical chart.

Video from the June 2019 camera surveys indicate the majority of the substrate in the placement area is sand. The sand appears to be fairly dark in color and contains light-reflecting particles. Considering the properties of the sand in the video, it is likely that the olivine rock that forms the island of St. George is the parent material, and the mechanical weathering of the rock produced the sand throughout several millennia since the island was thrust forth from the sea. The surface of the sand is configured in waves and appears to be dominated by fairly large-sized particles. There is no visible plume emanating from the impact of the camera on the seafloor, which indicates that small-sized particles have been washed from the area by ocean currents or hydrodynamic conditions have never allowed the precipitation of small-sized particles.

Areas of variable shell litter density exist throughout the proposed placement area, and there are areas with multiple sand dollars inside the field of view concurrently. In general, the area surveyed by the USACE benthic video team appears to be a relatively featureless expanse of gradually sloping subaqueous plains.

7.0 ASSESSMENT OF POTENTIAL PROJECT IMPACT ON ESSENTIAL FISH HABITAT

Per the 1996 amendments to the MSFCMA, USACE has initiated consultation and coordination with the NMFS regarding the potential effects of the recommended plan action on EFH. Impacts from implementation of project alternatives would result in short-term or minor alterations of EFH for marine species and species such as rockfish, flatfish, gadids, salmonids, and crabs. These alterations would include temporary increases in turbidity in the future harbor location during dredging and in the placement area during discharge, as well as noise and elevated anthropogenic activity levels related to construction.

Substantial permanent impacts would also be realized from the dredging and placement of dredged material in the placement area. The bottom composition in the placement area would become more complex due to the placement of cobble and boulders, creating refuge and additional habitat for forage species. The bottom composition in the harbor area would become homogenized as the dredging creates uniform basins at the project design depth. The construction of the breakwaters would alter hydrodynamic conditions and increase the vertical surface area.

The types of impacts that would possibly affect EFH species/species complexes (five Pacific salmon species, the sculpin complex, flatfish, rockfish, crabs, and forage fish) known or highly likely to occur within the project area are described as discrete project components and separated into short-term and long- term impacts.

7.1 Transitional Dredging

Transitional dredging would have little direct effect on mature fish inhabiting the project area, as their mobility allows them to avoid construction activities (e.g., mechanical dredging, generated turbidity, vessel movements, and underwater construction noise). No long-shore movements of juvenile fish would be disrupted by maintenance dredging.

7.1.1 Short-term impacts

Short-term impacts include: direct mortality to some sessile organisms, or those without the means to evade, through smothering or crushing; water quality impacts in the form of temporarily increased levels of turbidity resulting from dredging; noise disturbance from operation of heavy equipment, cranes, or barges; disturbance from increased construction-related workboat traffic in the project area and along supply routes; and a temporary increase in waterborne noise from the excavation of harbor sediments and operation of equipment including boats, barges, and support vessels.

Direct Mortality. Transitional dredging has the potential to entrain, displace, injure, smother, and kill demersal and benthic organisms. The probability of injury, impact, or death is inversely related to the affected taxon’s mobility; i.e., a sessile animal is more likely to be impacted than a motile organism because the sessile organism lacks the ability to move away from the dredge or placement area as the disturbance occurs. Crabs and, to a lesser extent, shrimp would be more susceptible to impact than flatfishes, which would, in turn, be more vulnerable than demersal fishes like sculpin and cod.

The construction project area is likely sparsely populated with some sea urchins and anemone, which would almost certainly be killed by the dredge; but otherwise mostly devoid of marine life. The project area is considered to be very poor in terms of fish/shellfish productivity by the local populace, and the results of the June 2019 research pot fishing event corroborate that characterization. Results from the June biodiversity survey are displayed in Figures 5 and 6. The immediate direct impact on FMP species from dredging is negligible, but there would likely be a short term impact on the forage taxa of FMP species.

Water Quality Impacts. Transitional dredging would result in temporarily elevated concentrations of suspended sediment as fine-grained particles are disturbed by the dredge and released as the bucket is drawn up through the water column. The sediment in the project area is believed to be uncontaminated by anthropogenic pollutants based on the site history and physical characteristics of the material. There are no known sources of contamination present in the project area; i.e., no industrial facilities, refueling stations, antifouling agent operations, pulp mills, or other risk factors have ever been sited near the proposed project location. The material that would be dredged is consolidated olivine that predates the Industrial Revolution and has never been exposed to pollutants. The substrate is not considered to be a carrier of contaminants because it is predominantly coarse and contains little to no organic material.

The sole water quality consideration is the temporary elevation of turbidity in the immediate project area, but the water velocity in the area is great enough that any increases in turbidity would be quickly diluted to below perceptible levels. There are no vegetated shallows or other sensitive habitat areas in the vicinity that would be negatively impacted by the ephemeral increase in localized apparent turbidity.

Juvenile salmon have been shown to avoid areas of high turbidities (Servizi 1988), although they may seek out areas of moderate turbidity (10 to 80 NTU), presumably as refuge against predation (Cyrus and Blaber 1987a and 1987b). Feeding efficiency of juveniles is impaired by turbidities in excess of 70 NTU, well below sublethal stress levels (Bisson and Bilby 1982). Reduced preference by adult salmon homing to spawning areas has been demonstrated where turbidities exceed 30 NTU (20 mg/L suspended sediments). However, Chinook salmon exposed to 650 mg/L of suspended volcanic ash were still able to find their natal water (Whitman et al. 1982).

Based on these data, it is unlikely that short-term (measured in hours based on tidal exchange frequency), and localized elevated turbidities generated by the proposed action would directly affect EFH juvenile or adult salmonids and EFH groundfish, such as flatfish, sculpins, and rockfish that may be present. Potential impacts would be further minimized by conducting all in-water work within approved regulatory.

Elevated Activity and Noise. Transitional dredging would result in temporary increases in the amount of anthropogenic activity and underwater noise in the project area during construction and after construction is completed, due to the presence of a harbor where there had previously been a semi-enclosed bight and austere landing area.

The USACE would employ a mechanical dredge, likely a clamshell dredge, to excavate virgin sediment to the project depth of -25 feet MLLW for the entrance channel and -20 feet MLLW for the turning basin. The dredged material from these navigation features would be placed in the nearshore region north of the project location for the construction of the BKC reef, requiring the operation of a tug and scow to transport dredged material from the project location to the placement area.

Mechanical dredges are relatively stationary, so the noise source would not move around 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 would produce a relatively constant, low-frequency noise.

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 an 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 an SL of 146 dB. The same calculation using a received level of 107 dB at a range of 464 meters indicates an SL of 147 dB.

The equipment used to dredge the St. George Harbor navigation channel and turning basin would be similar in scale to the Viking and could be assumed to generate noise of a similar amplitude. The St. George dredging would likely produce more powerful sounds due to the coarser grain-size sediment that would be excavated, but it would be difficult to predict how much more powerful the sounds would be. Therefore, it is appropriate to state that the amplitude of the sounds produced by dredging near St. George would be equal to or greater than the amplitude of the sounds produced by the Viking dredging in Cook Inlet.

Assuming a source level (SL) of between 146-147 dB, the dredging noise would be below 180 dB at the source, which is below the Alaska Department of Fish and Game (ADFG) reporting threshold for hydroacoustic monitoring in fish-bearing waters. The sound would attenuate to 120 dB between 54-63 meters from the source. The area inside the 120 dB isopleth is thought to be of low-quality fish habitat based on the Corps' June biodiversity survey, and the impacts of underwater noise on FMP species from dredging is negligible. The transportation of dredged material to the placement location would produce sounds of similar amplitude and would also result in negligible impacts on FMP species.

7.1.2 Long-term impacts

The dredging of the entrance channel and turning basin would create a relatively uniform depth within the dredge prism and uncover in-situ bedrock. This would present a permanent alteration of the habitat inside the dredge prism, changing the areas with sandy substrate to bare rock. The presence of a breakwater would likely prevent sand from infilling the basin, so the alteration of the nature of the substrate is expected to be permanent. The dredging would facilitate consistent vessel access to the new harbor and increase the amount of anthropogenic activity in the area.

Substrate Alteration. The areas within the entrance channel and turning basin dredge prism appear to be mixed sandy and rocky substrate types (Figure 8). Nearshore sandy areas may provide habitat for flatfishes, sculpins, and the forage fish complex. The conversion of these sandy areas to bare rock may reduce the suitable habitat for taxa adapted for life in sandy environs, but increase the habitat available for invertebrates requiring hard attachment substrate and finfish that require crevices and bare rock.

Increased Activity. The presence of a harbor on the north shore of St. George Island would increase the amount of general disturbance to the aquatic environment due to an increase in the number and size of the vessels that call on the area. There would likely be refueling and boat maintenance activities in the harbor area as well, which would increase the potential for fuel, oil, and other hazardous material spills. There are no known sensitive habitat areas that would be exposed to the impacts of increased activity in the immediate vicinity. The operation of the harbor would be subject to best management practices associated with spill prevention and cleanup, reducing the likelihood and impacts of a potential spill.

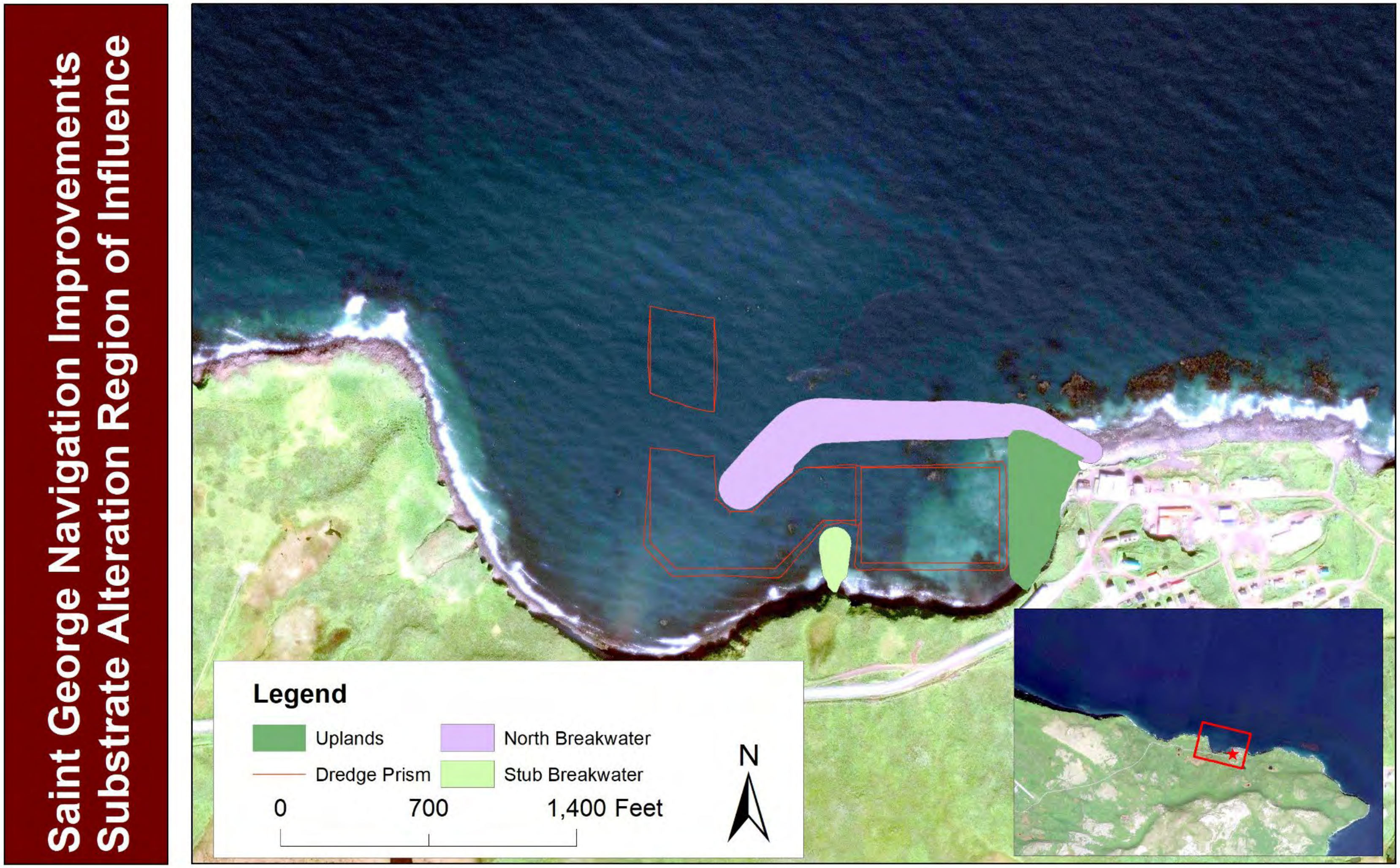


Figure 8. Substrate Alteration Region of Influence

7.2 Dredged Material Placement

Fine-grain material released from the dredge scow would be dispersed and have no measurable impact on the bottom habitat. The sediment plume disturbed by the impact of the cobble and boulder material would be of the same nature as the surrounding area. There would also be short-term impacts on forage fish that are important prey for species with designated EFH. Permanent impacts on the nature of the substrate offshore would be presented by the placement of dredged material.

7.2.1 Short-term impacts

Direct Mortality. The placement of dredged material has the potential to entrain, displace, injure, smother, and kill demersal and benthic organisms. The probability of injury, impact, or death is inversely related to the affected taxon’s mobility; i.e., a sessile animal is more likely to be impacted than a motile organism because the sessile organism lacks the ability to move away from the placement area as the disturbance occurs. Crabs and, to a lesser extent, shrimp would be more susceptible to impact than flatfishes, which would, in turn, be more vulnerable than demersal fishes like sculpin and cod.

The placement area is sparsely populated with marine snails, sculpins, and some urchins, some of which would almost certainly be killed by the placement. The placement area is considered to be very poor in terms of fish/shellfish productivity by the local populace, and the results of the June 2019 research pot fishing event corroborate that characterization. Results from the June biodiversity survey are displayed in Figures 5 and 6. The immediate direct impact on FMP species from placement is negligible, but there would likely be a short term impact on the forage taxa of FMP species.

Water Quality. Turbidity would temporarily increase in the vicinity of the placement area as the sediment is released from the scow; but the depth of the water, energetic nature of the hydrodynamic environment, and substantially similar nature of dredged material and placement area substrate ensure the turbidity impacts to water quality would be temporary and insignificant. All dredged material that would be placed on the reef is exempt from chemical testing and determined to be suitable for in-water placement in accordance with the Alaska District’s 404(b)1 analysis. The Alaska Department of Environmental Conservation has determined that an Anti-Degradation Analysis for the proposed project is not warranted due to the low level of potential impact to water quality.

Waterborne Noise. Waterborne noise would result from construction activities, such as the noise generated directly by work vessels (propulsion, power generators, on-board cranes, etc.) or by activities conducted by those vessels (e.g., clamshell dredging and placing material into the barge).

Underwater noise or sound pressure from construction activities can have a variety of impacts on marine biota, especially fish and marine mammals. The most adverse impacts are associated with activities like underwater explosions and impact pile driving that produce a sharp sound through the water column (Hastings and Popper, 2005). However, in-water activities associated with the Corps' proposed dredging (e.g., work vessel traffic and operation) do not have the potential to generate the type and intensity of sound pressures that would result in adverse impacts to fish. At levels of sound resulting from the work activities anticipated, the primary reaction of EFH fish species/species complexes is expected to be simply a movement away from the work area. Groundfish species such as flatfish, rockfish, and sculpins may be present year-round so that they may move out of the area during the construction period as well.

7.2.2 Long-term impacts

The discharge of the dredged material would be configured so that new blue king crab habitat is created. Long term impacts associated with dredged material placement would be presented by the creation of a rocky reef extending perpendicular from the coast of St George Island. This reef would significantly alter the nature of the seabed by increasing the complexity of the area.

The District enlisted the USACE Engineering Research and Development Center (ERDC) to model the discharge using Short Term Fate of Dredged Material (STFATE) based on feasibility level information and assumptions. A distinct mound is predicted to be formed. The mound would approximate a truncated rectangular pyramid.

The height of the pyramid would be about 5 feet, and the top area of the pyramid would approximate the area of the hopper of the dump scow, approximately 140 feet long and 35 feet wide. The side slopes of the pyramid would be about 1V:10H. Therefore, the base of the pyramid would be a rectangle approximately 240 feet long and 135 feet wide. A few inches of fine rock would likely extend another 30 feet in all directions beyond the toe of the pyramid.

Greater detail regarding the precise configuration of the placement would be developed collaboratively with NMFS HCD and other stakeholders during the PED phase of the project. The District's feasibility level plans for placement include the discharge of dredged material by the scow-load, spaced approximately 100 feet apart. This would produce a reef at least 5 feet tall, extending nearly 3 miles from the nearshore terminus.

Blue king crab requires complex habitat for all demersal life stages. Sand, gravel, cobble, and rocks are necessary substrate types for mature, late juvenile, early juvenile, and egg life stages. Blue king crabs (BKC) are associated with slumps, rockfalls, debris, channels, ledges, pinnacles, reefs, and vertical walls between 0 and 200 meters deep.

BKC generally spend the 3.5-4 months after hatching as pelagic larva in water between 40-60 meters deep before settling out into complex benthic habitat areas. The larvae are planktonic, as their limited ability to swim is greatly outweighed by the effects of ocean currents on their horizontal movements. There is some evidence BKC larvae intentionally move vertically through the water column on a daily basis. Because BKC larvae are pelagic plankton, the placement of dredged material to create habitat does not consider the larval life stage, and no effort is made to create or enhance larval BKC habitat requirements beyond ensuring the benthic habitat is confined to the epipelagic zone in waters less than 200 meters deep.

Considering what is known about the existing conditions in the placement area (gently sloping featureless expanses of sand mixed with shell litter), the introduction of a rocky reef would create ideal BKC habitat. BKC are known to prefer the interface of complex rocky, vertical structure, and areas of sand, mud, and shell liter. The presence of sand dollars and marine snails (known BKC prey item) confirms nominal forage base exists in the placement area. Low capture during the June 2019 pot surveys indicate few natural BKC predators are present in the area. The placement site is not known to be productive for trawling or any other types of fishing, so the District has no reason to anticipate adverse impacts to competing user groups.

7.3 Maintenance Dredging

Maintenance dredging is expected to be required on a ten-year interval. Sand and gravel would fill in the dredge prism at a rate of approximately 1,000 cubic yards per year until the authorized project depth is no longer available, at which time a mechanical dredge would remove the material and place it on the reef (Figure 3).
The maintenance dredging would create short and long term effects similar to transition dredging, except the magnitude of the effect would be much less due to the volume of material and intensity of the dredging effort.

7.4 Marine Construction

The construction of the two breakwaters and area for inner harbor facilities would convert nearshore subtidal habitat to dry land and vertical structure. There would be short term impacts from the construction and long-term impacts from the habitat alteration.

7.4.1 Short Term Impacts

Direct Mortality. The placement of rock for the construction of the two breakwaters and the inner harbor facilities infrastructure has the potential to crush, smother, kill, or injure aquatic organisms in the project area. The potential for harm is inversely related to mobility; i.e., animals with greater mobility (such as finfish) are less likely to be harmed by the construction than animals with lower mobility (like anemones or urchins).

Water Quality Impacts. The marine construction would have the potential to increase the turbidity in the immediate project area by introducing entrained fine-grained sediments into the water column from the rock used for construction. The placement of rock on the seafloor may also suspend local sediments, contributing to temporarily elevated turbidity. The sediment that may be suspended by construction is not a carrier of contaminants due to the site history and physical characteristics of the material, and the only negative water quality impact that may be caused by the marine construction is temporarily elevated turbidity. The turbidity would return to ambient levels within a short radius of the construction activities due to the large size of the particles and the great hydrodynamic energy.

Increased Activity and Noise Levels. The construction of two breakwaters and the marine infrastructure would increase the amount of noise and human activity in the project area for a period of up to five years. The amplitude of the noise is not expected to be great enough to cause damage to fish or other aquatic resources, but the presence of additional humans may cause disturbance. The project area is naturally energetic, and the action of the surf may act to mask the additional disturbance.

7.4.2 Long-Term Impacts

Habitat Alteration. The construction of the full navigation improvement project would include the 1,731-foot long north breakwater, the 250-foot long stub breakwater, approximately 4.0 acres of fill placed for the creation of area for inner harbor facilities, and 0.1-acre concrete boat ramp. Portions of the boat ramp (0.08-acres) and north breakwater (0.34-acres) are coincidental to the inner harbor facilities area, so the total area of fill would be slightly less than the sum of the four features.

The north breakwater would include a cumulative volume of 219,000 cubic yards of armor stone, B rock, and core rock and cover approximately 8.3-acres. The stub breakwater would include a cumulative volume of 20,500 cubic yards of armor stone, B rock, and cover rock and cover approximately 0.8 acres. The area for the inner harbor facilities would require 45,000 cubic yards of fill and would cover a total of 4.0-acres, but only about 3.6-acres would be in addition to the North Breakwater fill. The concrete boat ramp would be mostly contained within the area for the inner harbor facilities fill footprint, but a small portion consisting of 0.02 acres would extend beyond the west margin of the fill. The total volume of fill for all features is about 284,500 cubic yards, and the area of fill is about 12.8 acres.

The North breakwater would represent the loss of about 8.3-acres of poorly characterized subtidal habitat, replacing it with relatively steep, rocky subtidal, intertidal, and supratidal habitat. The Stub breakwater would convert about 0.8-acres, and the area for the inner harbor facilities would convert about 4.0-acres. The conversion of these habitats would be a permanent increase in the complexity of the area.

Increased Activity and Noise Levels. The presence of a harbor facility where there had previously been a semi-enclosed bight would increase the amount of human activity in the area, by design. The amplitude of the noise is not expected to present meaningful impacts to EFH. The additional human activity in the area increases the amount of fuel, oil, and other hazardous material usage, which presents a corresponding increase in the potential for hazardous material spills.

7.5 Drilling and Blasting

The project description includes the drilling and blasting of submerged bedrock to dislodge the material and allow it to be removed by the mechanical dredge. Drilling for the placement of charges is expected to last for 488 non-consecutive days, and blasting is expected to occur on 369 non-consecutive days. These days would be distributed throughout the five-year construction duration.

7.5.1 Short-term Impacts

Underwater noise would be produced by the drill rig. Precise information regarding the source sound pressure produced by drilling is not available, but a 120 kW drill with 83 mm drill bit operating at 1500 RPM was measured producing, 145 dB at frequencies between 30 and 2000 Hz. (Erbe and McPherson, 2017) The amplitude of drilling noise is not sufficient to present meaningful impacts to EFH or FMP species.
The intact bedrock inside the dredge prism would have to be blasted to enable dredging to occur. Impacts on marine fish as a result of underwater explosions are dependent upon a variety of factors: animal size and depth, charge size and depth, depth of the water column, and distance between the animal and the charge. Gas-containing organs, the (swim bladders), are most vulnerable to blast injury. Severe injury to these organs is presumed to lead to mortality. Data on blast injury to marine fish is limited because those factors which determine the extent of an injury may not be known at the time that the potential exposure occurred. Aside from the immediate death and recovery of an animal, an animal could sustain injury and never be observed or recovered.

Mortalities from the blasting may be mitigated to an unknown degree by drilling activities that would be a prerequisite; i.e., the noise from drilling may deter fish from entering the immediate area or cause fish in the area to leave for proximal alternative habitats. Fish that remained or entered the shockwave radii and are killed by the blast could attract other fish and detritivorous benthic invertebrates like crabs into the area to be exposed to subsequent blasts. The Alaska District does not possess adequate data regarding the precise configuration of the blasting or the fish assemblages that would be exposed to the blast to quantify the effects of blasting on FMP species.

7.5.2 Long-term Impacts

The Alaska District does not expect the drilling and blasting to present any long-term impacts beyond those described in the dredging section; 7.1.2.

8.0 MITIGATION

Mitigation Measures. “Mitigation” is the process used to avoid, minimize, and compensate for the environmental consequences of an action. Incorporating the following mitigation measures and conservation measures into the recommended corrective action will help to ensure that no significant adverse impacts would occur to EFH and EFH-managed species/species complexes and other fish and wildlife resources in the project area.

- The proposed action shall confine blasting and drilling to periods between 1 November through 30 April, which is outside peak seabird nesting, marine mammal whelping, rearing, and abundance is expected to be greatest in the project area.
- To minimize the danger to marine mammals from project-related vessels, speed limits (e.g., less than 8 knots) shall be imposed on vessels moving in and around the project area.
- Project-related vessels and barges shall not be permitted to ground themselves on the bottom during low tide periods unless there is a human safety issue requiring it.
- A construction oil spill prevention plan shall be prepared.
- Project-related vessels shall not travel within 3,000 feet of designated Steller sea lion or fur seal critical habitat (haulouts or rookeries).
- The Corps will conduct post-dredge bathymetry surveys to ensure that only the material identified to be dredged was removed to the authorized depth.
- A scow barge will be loaded so that enough of the freeboard remains to allow for safe movement of the barge and its material on the route to the offloading site to be identified.

9.0 CONCLUSIONS AND DETERMINATION OF EFFECT

The project actions described above have the potential to affect the EFH for several BSAI groundfish species (e.g., rockfish, sculpin, and flatfish), crab, and for Alaska stocks of Pacific salmon.

Some FMP species individuals and forage base for FMP species would be temporarily lost through direct mortality from dredging, the placement of dredged material, marine construction, and blasting, but these effects would be localized and temporary. Short-term effects in the form of avoidance because of noise disturbances, boat traffic, and turbidity would be intermittent and low level. No significant negative long-term effects are expected.

The potential effects of turbidity would be intermittent and low level. No adverse impacts related to circulation and harbor-flushing is expected. Year-round resident EFH species such as rockfish, flatfish, and sculpins would likely respond by temporarily moving out of work areas during construction.

The proposed construction would likely occur over a period of five years and within an anticipated in-water work window. Seasonal work restrictions would minimize any impacts to nesting birds and marine mammals.

Potential impacts to EFH and EFH-managed species/species complexes are likely to be highly localized, temporary, and minimal, and not reduce the overall value of EFH in the Bering Sea. The aforementioned mitigation measures would be implemented to offset the potential unavoidable impacts of the Corps' activity. The construction of a reef intended to provide habitat for BKC would represent a substantial beneficial impact of the project. Therefore, the Corps concludes that its Federal action may affect but is not likely to adversely affect EFH and EFH-managed species/species complexes for BSAI groundfish, crab, and Alaska stocks of Pacific salmon.

10.0 REFERENCES

Alaska Fisheries Science Center. 2010. Blue King Crab fact sheet. National Marine Fisheries Service, National Oceanic and Atmospheric Administration, US Department of Commerce.

Bisson, P.A., and R.E. Bilby, 1982. Avoidance of Suspended Sediment by Juvenile Coho Salmon. North American Journal of Fisheries Management, 4:371-374.

Carr, H., and E. Amaral, 1981. Review of the Potential for Artificial Reefs along Coastal Massachusetts. In Proc. Oceans '81, p. 765-769.

Cyrus, D.P., and S.J.M. Blaber, 1987a. The Influence of Turbidity on Juvenile Marine Fishes in Estuaries. Part 1: Field Studies at Lake St. Lucia on the Southeastern Coast of Africa. Journal of Experimental Marine Biology and Ecology, 109:53-70.

Cyrus, D.P., and S.J.M. Blaber, 1987b. The Influence of Turbidity on Juvenile Marine Fishes in Estuaries. Part 2: Laboratory Studies, Comparisons with Field Data and Conclusions. Journal of Experimental Marine Biology and Ecology, 109:71-91.

Erbe, C and McPherson, C. 2017. Underwater noise from geotechnical and standard penetrations testing. The Journal of the Acoustical Society of America 142. https://doi.org/10.1121/1.5003328

Hastings, M.C. and A.N. Popper, 2005. Effects of Sound on Fish. Prepared for the California Department of Transportation by Jones and Stokes, Sacramento, California.

Lewis, L., J. Davenport, and T. Kelly, 2002. A Study of the Impact of a Pipeline Construction on Estuarine Benthic Invertebrate Communities. Estuar. Coast. Shelf Sci. Vol. 55, no. 2, pp. 213- 221.

Servizi, J.A., 1988. Sublethal Effects of Dredged Sediments on Juvenile Salmon. C.A. Simenstad, editor. Effects of Dredging on Anadromous Pacific Coast Fishes. University of Washington, Seattle, Washington.

Underwood, A., 2000. Experimental Ecology of Rocky Intertidal Habitats: What are We Learning? J. Exp. Mar. Biol. Ecol. Vol. 250, no. 1-2, pp. 51-76.

Whitman, R.P., T.P. Quinn, and E.L. Brannon, 1982. Influence of Suspended Volcanic Ash on Homing Behavior of Adult Chinook Salmon. Transactions of the American Fisheries Society, 111:63-69.

Zheng, J. and Ianelli, J. 2018. Saint Matthew Island blue king crab stock assessment 2018. BSAI Crab SAFE, September 2018. Alaska Department of Fish and Game/National Oceanic and Atmospheric Administration.

ATTACHMENT 1

Description of Essential Fish Habitat (EFH) for the Groundfish Resources of the Bering Sea-Aleutian Island Management Area

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 BSAI

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 BSAI

Early Juveniles: EFH for early juvenile walleye pollock is the habitat-related density 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 throughout the BSAI. Relative abundance of age 1 pollock is used as an early indicator of year-class strength and is highly variable (presumably due to survival factors and differential availability between years).

Late Juveniles: EFH for late juvenile walleye pollock is the habitat-related density 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 throughout the BSAI. Substrate preferences, if they exist, are unknown.

Adults: EFH for adult walleye pollock is the habitat-related density area for this life stage, located in the lower and middle portion of the water column along the entire shelf (~10 to 200 m) and slope (200 to 1,000 m) throughout the BSAI. Substrate preferences, if they exist, are unknown.

Pacific Cod

Eggs: No EFH description determined. Insufficient information is available. Pacific cod eggs, which are demersal, are rarely encountered during surveys in the BSAI.

Larvae: EFH for larval Pacific cod is the habitat-related density area for this life stage, located in epipelagic waters along much of the middle (50 to 100 m) and outer (100 to 200 m) Eastern Bering Sea (EBS) shelf, with hotspots in the vicinity of the middle shelf north of Unimak Pass and the Pribilof Islands. The habitat-related density area of larval Pacific cod in the Aleutian Islands (AI) is unknown.

Early Juveniles: EFH for early juvenile Pacific cod is the habitat-related density area for this life stage, centered over the middle (50 to 100 m) EBS shelf between the Pribilof Islands and the Alaska Peninsula and broadly similar to the habitat-related density area for larval Pacific cod, but not extending as far north. The habitat-related density area of early juvenile Pacific cod in the AI is unknown.

Late Juveniles: EFH for late juvenile Pacific cod is the habitat-related density area for this life stage, including nearly all of the EBS shelf (0 to 200 m) and upper slope (200 to 500 m), with highest abundances in the inshore portions of the central and southern domains of the EBS shelf, and broadly throughout the AI at depths up to 500 m.

Adults: EFH for adult Pacific cod is the habitat-related density area for this life stage, including nearly all of the EBS shelf and slope, with highest abundances in the central and northern domains over the middle (50 to 100 m) and outer (100 to 200 m) shelf, and broadly throughout the AI at depths up to 500 m.

<u>Sablefish</u>

Eggs: No EFH description determined. Insufficient information is available. Scientific information notes the rare occurrence of sablefish eggs in the BSAI.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: No EFH description determined. Information is insufficient. Early juveniles have generally been observed in inshore water, bays, and passes, and on shallow shelf pelagic and demersal habitat.

Late Juveniles: EFH for late juvenile sablefish is the general distribution area for this life stage, located in the lower portion of the water column, varied habitats, generally softer substrates, and deep shelf gulleys along the slope (200 to 1,000 m) throughout the BSAI.

Adults: EFH for adult sablefish is the general distribution area for this life stage, located in the lower portion of the water column, varied habitats, generally softer substrates, and deep shelf gulleys along the slope (200 to 1,000 m) throughout the BSAI.

<u>Yellowfin Sole</u>

Eggs: EFH for yellowfin sole eggs is the general distribution area for this life stage, found to the limits of inshore ichthyoplankton sampling over a widespread area, to at least as far north as Nunivak Island.

Larvae: EFH for yellowfin sole larvae is the general distribution area for this life stage. Larvae have been found to the limits of inshore ichthyoplankton sampling over a widespread area, to at least as far north as Nunivak Island.

Early Juveniles: EFH for early juvenile yellowfin sole is the general distribution area for this life stage, located in the lower portion of the water column within nearshore bays and 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 mainly of sand. Upon settlement in nearshore areas, juveniles preferentially select sediment suitable for feeding on meiofaunal prey and burrowing for protection. Juveniles are separate from the adult population, remaining in shallow areas until they reach approximately 15 cm. Most likely are habitat generalists on abundant physical habitat.

Late Juveniles: EFH for late juvenile yellowfin sole is the general distribution area for this life stage, located in the lower portion of the water column within nearshore bays and 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 mainly of sand.

Adults: EFH for adult yellowfin sole is the general distribution area for this life stage, located in the lower portion of the water column within nearshore bays and 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 mainly of sand.

Greenland Turbot

Eggs: No EFH description determined. Insufficient information is available.
Larvae: EFH for larval Greenland turbot is the general distribution area for this life stage, located principally in benthypelagic waters along the outer shelf (100 to 200 m) and slope (200 to 3,000 m) throughout the BSAI and seasonally abundant in the spring.

Early Juveniles: EFH for early juvenile Greenland turbot 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 and upper slope (200 to 500 m) throughout the BSAI wherever there are softer substrates consisting of mud and sandy mud.

Late Juveniles: EFH for late juvenile Greenland turbot is the habitat-related density 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 and upper slope (200 to 500 m) throughout the BSAI wherever there are softer substrates consisting of mud and sandy mud.

Adults: EFH for late adult Greenland turbot is the habitat-related density area for this life stage, located in the lower and middle portion of the water column along the outer shelf (100 to 200 m), upper slope (200 to 500 m), and lower slope (500 to 1,000 m) throughout the BSAI wherever there are softer substrates consisting of mud and sandy mud,.

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, found in epipelagic waters located in a demersal habitat throughout the shelf (0 to 200 m) and upper slope (200 to 500 m).

Early Juveniles: EFH for early juvenile arrowtooth flounder is the general distribution area for this life stage, located in a demersal habitat of the inner (0 to 50 m) and middle (50 to 100 m) shelf.

Late Juveniles: EFH for late juvenile arrowtooth flounder is the habitat-related density 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 BSAI wherever there are softer substrates consisting of gravel, sand, and mud.

Adults: EFH for adult arrowtooth flounder is the habitat-related density 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 BSAI wherever there are softer substrates consisting of gravel, sand, and mud.

Kamchatka Flounder

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile Kamchatka flounder is the general distribution area for this life stage, located in a demersal habitat of the middle (50 to 100 m) and outer (100 to 200 m) shelf.

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

Adults: EFH for adult Kamchatka flounder is the general distribution area for this life stage, located in the lower portion of the water column along the middle (50 to 100 m), and outer (100 to 200 m) shelf and slope waters down to 600 m throughout the BSAI wherever there are softer substrates consisting of gravel, sand, and mud.

Northern Rock Sole

Eggs: No EFH description determined. Insufficient information is available.

Larvae: EFH for larval northern 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 BSAI.

Early Juveniles: EFH for early juvenile northern 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 to100 m), and outer (100 to 200 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand, gravel, and cobble. Upon settlement in nearshore areas from 1-40 m deep, juveniles preferentially select sediment suitable for feeding on meiofaunal prey and burrowing for protection but may be prevented from settling inshore by the seasonal inner front. Juveniles are separate from the adult population, remaining in shallow areas until they reach approximately 15-20 cm. Most likely are habitat generalists on abundant physical habitat.

Late Juveniles: EFH for late juvenile northern 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 to100 m), and outer (100 to 200 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand, gravel, and cobble.

Adults: EFH for adult northern 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.

Southern Rock Sole

Eggs: No EFH description determined. Insufficient information is available.

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

Early Juveniles: EFH for early juvenile Southern rock sole is the general distribution area for this life stage, located in the lower portion of the water column within nearshore bays and 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 mainly of sand.

Late Juveniles: EFH for late juvenile Southern rock sole is the general distribution area for this life stage, located in the lower portion of the water column within nearshore bays and 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 mainly of sand.

Adults: EFH for adult Southern 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 soft substrates consisting mainly of sand, gravel, and cobble.

Alaska Plaice

Eggs: EFH for Alaska plaice eggs 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 500 m) throughout the BSAI in the spring.

Larvae: EFH for Alaska plaice larvae is the general distribution area for this life stage. Pelagic larvae are primarily collected from depths greater than 200 m, with the majority occurring over bottom depths ranging from 50 to 100 m. Densities of preflexion stage larvae are concentrated at depths 10 to 20 m.

Early Juveniles: No EFH description determined. Insufficient information is available.

Late Juveniles: No EFH description determined. Insufficient information is available.

Adults: EFH for adult Alaska plaice 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 and mud.

Rex Sole

Eggs: EFH for rex sole eggs is the general distribution area for this life stage, located in epipelagic waters throughout the shelf (0 to 200 m) and upper slope (200 to 300 m).

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile rex sole is the general distribution area for this life stage, located in a demersal habitat of the inner (0 to 50 m) and middle (50 to 100 m) shelf.

Late Juveniles: EFH for late juvenile rex sole is the habitat-related density 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 substrates consisting of gravel, sand, and mud.

Adults: EFH for adult rex sole is the habitat-related density 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 substrates consisting of gravel, sand, and mud.

Dover Sole

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile Dover sole is the general distribution area for this life stage, located in a demersal habitat of the inner (0 to 50 m) and middle (50 to 100 m) shelf.

Late Juveniles: EFH for late juvenile Dover sole is the habitat-related density area for this life stage, located in the lower portion of the water column along the middle (50 to 100 m), and outer (100 to 200 m) shelf and upper slope (200 to 500 m) throughout the BSAI wherever there are substrates consisting of sand and mud.

Adults: EFH for adult Dover sole is the habitat-related density area for this life stage, located in the lower portion of the water column along the middle (50 to 100 m) and outer (100 to 200 m) shelf, and upper (200 to 500 m) and intermediate (500 to 1000 m) slope throughout the BSAI wherever there are substrates consisting of sand and mud.

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 BSAI in the spring.

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 BSAI.

Early Juveniles: EFH for early juvenile flathead sole is the habitat-related density area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m) and middle (50 to 100 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand and mud.

Late Juveniles: EFH for late juvenile flathead sole is the habitat-related density 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 and mud.

Adults: EFH for adult flathead sole is the habitat-related density 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 and mud.

Pacific Ocean Perch

Eggs: No EFH description determined. Insufficient information is available.

Larvae: EFH for larval Pacific ocean perch is the general distribution area for this life stage, located in pelagic waters along the middle and outer shelf (50 to 200 m) and slope (200 to 3,000 m) throughout the BSAI.

Early Juveniles: EFH for early juvenile Pacific ocean perch is the general distribution area for this life stage, located throughout the water column along the entire shelf (0 to 200 m).

Late Juveniles: EFH for late juvenile Pacific ocean perch is the habitat-related density area for this life stage, located in the middle to lower portion of the water column along middle shelf (50 to 100 m), outer shelf (100 to 200 m), and upper slope (200 to 500 m) throughout the BSAI wherever there are substrates consisting of boulders, cobble, gravel, mud, sandy mud, or muddy sand.
Adults: EFH for adult Pacific ocean perch is the habitat-related density area for this life stage, located in the lower portion of the water column along the outer shelf (100 to 200 m) and upper slope (200 to 500 m) throughout the BSAI wherever there are substrates consisting of cobble, gravel, mud, sandy mud, or muddy sand.

Northern Rockfish

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile northern rockfish is the general distribution area for this life stage, located throughout the water column along the entire shelf (0 to 200 m.

Late Juveniles: EFH for late juvenile northern rockfish is the habitat-related density area for this life stage, located in the middle and lower portions of the water column along the outer shelf (100 to 200 m) throughout the BSAI.

Adults: EFH for adult northern rockfish is the habitat-related density area for this life stage, located in the middle and lower portions of the water column along the outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates of cobble and rock.

Shortraker Rockfish

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile shortraker rockfish is the general distribution area for this life stage, located in pelagic waters throughout the middle and outer (50 to 200 m) shelf and slope (200 to 3,000 m).

Late Juveniles: EFH for late juvenile shortraker rockfish is the habitat-related density area for this life stage, located in the lower portion of the water column along the outer shelf (100 to 200 m) and upper slope (200 to 500 m) regions throughout the BSAI wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Adults: EFH for adult shortraker rockfish is the habitat-related density area for this life stage, located in the lower portion of the water column along the outer shelf (100 to 200 m) and upper slope (200 to 500 m) regions throughout the BSAI wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Blackspotted Rockfishes

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile blackspotted/rougheye rockfish is the general distribution area for this life stage, located in pelagic waters throughout the middle and outer (50 to 200 m) shelf and slope (200 to 3,000 m).

Late Juveniles: EFH for late juvenile blackspotted/rougheye rockfish is the general distribution area for this life stage, located in the lower portion of the water column along the upper slope (200 to 500 m) regions throughout the BSAI wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Adults: EFH for adult blackspotted/rougheye rockfish is the habitat-related density area for this life stage, located in the lower portion of the water column along the upper slope (200 to 500 m) regions throughout the BSAI wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Rougheye Rockfishes

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile blackspotted/rougheye rockfish is the general distribution area for this life stage, located in pelagic waters throughout the middle and outer (50 to 200 m) shelf and slope (200 to 3,000 m).

Late Juveniles: EFH for late juvenile blackspotted/rougheye rockfish is the general distribution area for this life stage, located in the lower portion of the water column along the upper slope (200 to 500 m) regions throughout the BSAI wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Adults: EFH for adult blackspotted/rougheye rockfish is the habitat-related density area for this life stage, located in the lower portion of the water column along the upper slope (200 to 500 m) regions throughout the BSAI wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Yelloweye Rockfish

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.

Dusky Rockfish

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile dusky rockfish is the general distribution area for this life stage, located in the pelagic waters along the entire shelf (0 to 200 m) and slope (200 to 3,000 m) throughout the BSAI.

Late Juveniles: EFH for late juvenile dusky rockfish is the habitat-related density area for this life stage, located in the middle and lower portions of the water column along the outer shelf (100 to 200 m) and upper slope (200 to 500 m) throughout the BSAI wherever there are substrates of cobble, rock, and gravel.

Adults: EFH for adult dusky rockfish is the habitat-related density area for this life stage, located in the middle and lower portions of the water column along the outer shelf (100 to 200 m) and upper slope (200 to 500 m) throughout the BSAI wherever there are substrates of cobble, rock, and gravel.

Thornyhead Rockfish (Shortspine)

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Early Juveniles: EFH for early juvenile thornyhead rockfish is the habitat-related density area for this life stage, located in epipelagic waters along the middle and outer shelf (50 to 200 m) and upper to lower slope (200 to 1,000 m) throughout the BSAI.

Late Juveniles: EFH for late juvenile thornyhead rockfish is the habitat-related density area for this life stage, located in the lower portion of the water column along the middle and outer shelf (50 to 200 m) and upper to lower slope (200 to 1,000 m) throughout the BSAI wherever there are substrates of mud, sand, rock, sandy mud, muddy sand, cobble, and gravel.

Adults: EFH for adult thornyhead rockfish is the habitat-related density area for this life stage, located in the lower portion of the water column along the middle and outer shelf (50 to 200 m) and upper to lower slope (200 to 1,000 m) throughout the BSAI wherever there are substrates of mud, sand, rock, sandy mud, muddy sand, cobble, and gravel.

Atka Mackerel

Eggs: EFH for Atka mackerel eggs is the general distribution area for this life stage, located in a demersal habitat along the shelf (0 to 200 m). There are widespread observations of nesting sites throughout the Aleutian Islands; however, observations are not complete for the entire area.

Larvae: EFH for larval Atka mackerel is the general distribution area for this life stage, located in epipelagic waters along the shelf (0 to 200 m), upper slope (200 to 500 m), and intermediate slope (500 to 1000 m) throughout the BSAI.

Early Juveniles: No EFH description determined. Insufficient information is available.

Late Juveniles: EFH for late juvenile Atka mackerel is the general distribution area for this life stage, located in the entire water column, from sea surface to the sea floor, along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates of gravel and rock and in vegetated areas of kelp.

Adults: EFH for adult Atka mackerel is the habitat-related density area for this life stage, located in the entire water column, from sea surface to the sea floor, along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates of gravel and rock and in vegetated areas of kelp. Habitat related densities of Atka mackerel are available, usually at depths less than 200 m and generally over rough, rocky, and uneven bottom near areas where tidal currents are swift.

Bigmouth Sculpins

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Juveniles: EFH for juvenile bigmouth sculpin is the habitat-related density area for this life stage, located in the deeper waters offshore (100 and 300m) in the Bering Sea and Aleutian Islands.

Adults: EFH for adult bigmouth sculpins is the habitat-related density 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 shelf (100 to 200 m) and portions of the upper slope (200 to 500 m) throughout the BSAI wherever there are substrates of rock, sand, mud, cobble, and sandy mud.

Great Sculpins

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Juveniles: EFH for juvenile great sculpin is the habitat-related density area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) wherever there are substrates of sand and muddy/sand bottoms.
Adults: EFH for adult great sculpins is the habitat-related density 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 shelf (100 to 200 m) and portions of the upper slope (200 to 500 m) throughout the BSAI wherever there are substrates of rock, sand, mud, cobble, and sandy mud.

Alaska Skate

Eggs: No EFH description determined. Insufficient information is available.

Larvae: Not applicable, skates emerge from egg fully formed.

Early Juveniles: EFH for early juvenile 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Late Juveniles: EFH for late juvenile skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Adults: EFH for adult skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Aleutian Skate

Eggs: No EFH description determined. Insufficient information is available.

Larvae: Not applicable, skates emerge from egg fully formed.

Early Juveniles: EFH for early juvenile 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Late Juveniles: EFH for late juvenile skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Adults: EFH for adult skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Bering Skate

Eggs: No EFH description determined. Insufficient information is available.

Larvae: Not applicable, skates emerge from egg fully formed.

Early Juveniles: EFH for early juvenile 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Late Juveniles: EFH for late juvenile skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Adults: EFH for adult skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Mud Skate

Eggs: No EFH description determined. Insufficient information is available.

Larvae: Not applicable, skates emerge from egg fully formed.

Early Juveniles: EFH for early juvenile 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Late Juveniles: EFH for late juvenile skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Adults: EFH for adult skates is the habitat-related density 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 BSAI wherever there are of substrates of mud, sand, gravel, and rock.

Octopus

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 octopus is the habitat-related density area for this life stage, located in demersal habitat throughout the intertidal, subtidal, shelf (0 to 200 m), and slope (200 to 2,000 m).

Yellow Irish Lord

Eggs: No EFH description determined. Insufficient information is available.

Larvae: No EFH description determined. Insufficient information is available.

Juveniles: EFH for juvenile yellow Irish lord is the habitat-related density area for this life stage, located from the subtidal areas near shore to the edge of the continental shelf (0 to 200 m) throughout the BSAI.

Adults: EFH for adult yellow Irish lord is the habitat-related density area for this life stage, located from the subtidal areas near shore to the edge of the continental shelf (0 to 200 m) throughout the BSAI.

ATTACHMENT 2

Description of Essential Fish Habitat (EFH) for the Crab Resources of the Bering Sea-Aleutian Island Management Area

Red King Crab

Eggs: Essential fish habitat of the red king crab eggs is inferred from the general distribution of egg-bearing female crab. (See also Adults.)

Larvae: No EFH Description Determined. Insufficient information is available.

Early Juveniles: No EFH Description Determined. Insufficient information is available.

Late Juveniles: EFH for late juvenile red king crab is the general distribution area for this life stage, located in bottom habitats along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting of rock, cobble, and gravel and biogenic structures such as boltenia, bryozoans, ascidians, and shell hash.

Adults: EFH for adult red king crab is the general distribution area for this life stage, located in bottom habitats along the nearshore (spawning aggregations) and the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting of sand, mud, cobble, and gravel.

Blue King Crab

Eggs: Essential fish habitat of the blue king crab eggs is inferred from the general distribution of egg-bearing female crab. (See also Adults.)

Larvae: No EFH Description Determined. Insufficient information is available.

Early Juveniles: No EFH Description Determined. Insufficient information is available.

Late Juveniles: EFH for late juvenile blue king crab is the general distribution area for this life stage, located in bottom habitats along the nearshore where there are rocky areas with shell hash and the inner (0 to 50), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting of rock, cobble, and gravel.

Adults: EFH for adult blue king crab is the general distribution area for this life stage, located in bottom habitats along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting of sand and mud adjacent to rockier areas and areas of shell hash.

Golden King Crab

Eggs: Essential fish habitat of golden king crab eggs is inferred from the general distribution of egg-bearing female crab. (See also Adults.)

Larvae: No EFH Description Determined. Insufficient information is available.

Early Juveniles: No EFH Description Determined. Insufficient information is available.

Late Juveniles: EFH for late juvenile golden king crab is the general distribution area for this life stage, located in bottom habitats along the along the upper slope (200 to 500 m), intermediate slope (500 to 1,000 m), lower slope (1,000 to 3,000 m), and basins (more than 3,000 m) of the BSAI where there are high-relief living habitats, such as coral, and vertical substrates, such as boulders, vertical walls, ledges, and deep water pinnacles.

Adults: EFH for adult golden king crab is the general distribution area for this life stage, located in bottom habitats along the along the outer shelf (100 to 200 m), upper slope (200 to 500 m), intermediate slope (500 to 1,000 m), lower slope (1,000 to 3,000 m), and basins (more than 3,000 m) of the BSAI where there are high relief living habitats, such as coral, and vertical substrates such as boulders, vertical walls, ledges, and deep water pinnacles.

<u>Tanner Crab</u>

Eggs: Essential fish habitat of Tanner crab eggs is inferred from the general distribution of egg-bearing female crab. (See also Adults.)

Larvae: No EFH Description Determined. Insufficient information is available.

Early Juveniles: No EFH Description Determined. Insufficient information is available.

Late Juveniles: EFH for late juvenile Tanner crab is the general distribution area for this life stage, located in bottom habitats along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting mainly of mud.

Adults: EFH for adult Tanner crab is the general distribution area for this life stage, located in bottom habitats along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting mainly of mud.

<u>Snow Crab</u>

Eggs: Essential fish habitat of snow crab eggs is inferred from the general distribution of egg-bearing female crab. (See also Adults.)

Larvae: No EFH Description Determined. Insufficient information is available.

Early Juveniles: No EFH Description Determined. Insufficient information is available.
Late Juveniles: EFH for late juvenile snow crab is the general distribution area for this life stage, located in bottom habitats along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting mainly of mud.

Adults: EFH for adult snow crab is the general distribution area for this life stage, located in bottom habitats along the inner (0 to 50 m), middle (50 to 100 m), and outer shelf (100 to 200 m) throughout the BSAI wherever there are substrates consisting mainly of mud.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

December 6, 2019

Colonel Phillip J. Borders
U.S. Army Corps of Engineers
P.O. Box 6898
JBER, Alaska, 99506-0898

Re: Essential Fish Habitat Assessment for St. George Navigation Improvements

Dear Colonel Borders:

The National Marine Fisheries Service (NMFS) has reviewed the U.S. Army Corps of Engineers' (USACE) Essential Fish Habitat (EFH) Assessment for Navigation Improvements on the island of St. George, Alaska. The purpose of the proposed project is to increase the safe accessibility of marine navigation for subsistence vessels, fuel barges, cargo vessels, and a limited commercial fishing fleet. The navigation improvements are considered critical to the long-term viability of the mixed subsistence-cash economy of the community of St. George. The proposed project is a newly constructed port facility on the northern shore of St. George Island, consisting of a dredged mooring basin protected by a north breakwater and a stub breakwater at the west edge of the basin and connected to the Bering Sea by a dredged navigation channel. The establishment of the breakwaters will result in the loss of 12 acres of subtidal habitat. Inner harbor facilities would include 2.6 acres of filled uplands area with a pile-supported dock and a concrete boat launch ramp dredged for full tide small boat launch access.

Essential Fish Habitat

The project area is identified as EFH for blue king crab (BKC), *Lithodes aequispinus,* red king crab (RKC), *Paralithodes camtshaticus*, and groundfish species as noted in USACE's EFH Assessment. In the Bering Sea, BKC exist in discrete populations around the Pribilof Islands as well as other areas like St. Matthew and St. Lawrence Islands. NMFS and the State of Alaska cooperatively managed BKC stocks in the Bering Sea through the North Pacific Fishery Management Council's (NPFMC) Fishery Management Plan for the Bering Sea/Aleutian Islands King and Tanner Crabs. The Pribilof Islands BKC supported a pot fishery from the 1970's until 1998 when the fishery was closed due to low stock abundance. The stock is considered 'overfished' by the NPFMC and NMFS.

Avoidance, Minimization, and Mitigation

The proposed action may affect adversely affect EFH. However, USACE proposes to minimize the project's impacts by incorporating many mitigation measures into the project design from early coordination with NMFS. Efforts to minimize impacts to EFH include in-work windows, work vessel restriction timing, and best management practices to reduce the likelihood of oil spills. In addition, USACE intends to mitigate the permanent loss of benthic habitat by creating new complex vertical habitat, which will come in two forms: 1) new breakwater structures in the harbor and 2) dredged material placed in the disposal area.

The dredged material will establish three miles of rocky reef intended to create new BKC habitat, extending perpendicular from the coast, at an average height of approximately five feet above the seafloor. NMFS notes this reef would alter the existing seafloor and should increase marine species complexity of the area; however, the benefit to BKC via the creation of this new habitat complexity is not assured.

Similar to RKC, BKC is considered a shallow water species. Adult male BKC may be found at depths near 70 m and some adult crab are observed at depths up to 200 m. BKC juveniles are also known to settle on rocky substrate, however, data suggests shell-hash habitat is also particularly important and preferred over rocky substrate, unlike RKC. This suggests the new rocky habitat structures could benefit RKC more than BKC. Complex habitat is not a requirement for late juvenile or mature crabs, which are most often found on soft bottoms.

Additionally, NMFS recognizes the low density of predators in the project area currently; however, predators will likely recruit to this habitat along with any crabs. Moreover, data suggests RKC and BKC are likely limited by larval supply and not constrained by habitat in the Pribilof Islands. Thus, due to a lack of selection for rocky habitat, a likely increase in predators, and limited larval supply, an increase in the availability of complex vertical structures would represent an overall minimal net increase in benthic productivity. Thus, any habitat complexity provided by this project is unlikely to provide any significant increase in the BKC population. However, long-term monitoring of vertical habitat structure could inform future EFH consultations and enhance mitigation measures in the region.

NMFS does not anticipate any negative interactions with fishing activities at the proposed disposal site (rocky reef). Further, subsistence and commercial halibut fishing occur on the other side of the island and interactions are highly unlikely. Bottom trawling is also prohibited in marine waters surrounding the Pribilof Islands.

Conclusions

NMFS looks forward to continued coordination with USACE as the Alaska District initiates the Preliminary Engineering and Design (PED) phase of the proposed project. The lack of detail regarding geotechnical and bathymetric conditions limits the USACE's ability to determine the likelihood of adverse impacts to EFH. Should the new data collected during the PED phase cause the Corps to revisit its determination of affect, or modify the project significantly from the current preferred alternative, please inform NMFS of any such changes in order to reassess our determination. If you have any questions regarding our comments on this project, please contact Seanbob Kelly at seanbob.kelly@noaa.gov or (907) 271-5195 or Lydia Ames at lydia.ames@noaa.gov or (907) 271-5002.

Sincerely,

for Robert D Mecum

James W. Balsiger, Ph.D.
Administrator, Alaska Region

cc:
Hoffman, Christopher A CIV USARMY CEPOA, Christopher.A.Hoffman@usace.army.mil
Rouse, Michael B CIV USARMY CEPOA, Michael.B.Rouse@usace.army.mil
Salyer, Michael R CIV USARMY CEPOA, Michael.R.Salyer@usace.army.mil
Phillips, Reese B (Brand) CIV, Reese.B.Phillips@usace.army.mil
Upah, Cynthia S CIV USARMY CEPOA, Cynthia.S.Upah@usace.army.mil
Sexauer, Bruce R CIV USARMY CEPOA, Bruce.R.Sexauer@usace.army.mil

ST. GEORGE HARBOR IMPROVEMENT FEASIBILITY STUDY

APPENDIX I: DRAFT BIOLOGICAL ASSESSMENT

ST. GEORGE, ALASKA

U.S. Army Corps of Engineers
Alaska District

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), Alaska District proposes to construct a small boat harbor facility on the north side of Saint George Island. The purpose of the project is to increase safe navigational access. USACE's project is needed to reduce existing hazards and better facilitate the safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet; all of which are critical to the long term viability of the mixed subsistence-cash economy of Saint George. This project would consist of a 450-foot wide by 550-foot-long mooring basin dredged to -20 feet MLLW protected by a 1,731-foot-long north breakwater and a 250-foot-long stub breakwater at the west edge of the basin. Primary armor stone on the north breakwater has a median weight of 10 tons. The basin connects to the Bering Sea with a 250-foot wide navigation channel dredged to -25 feet MLLW. Inner harbor facilities include 3.55 acres of inner harbor facilities area filled to +10 feet MLLW with a 300-foot-long pile supported dock and a concrete boat launch ramp to -5 feet MLLW for full tide launching access. 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.

Common Name	**Species Name**	**Listing Status**	**Managing Agency**	**Effects Determination**
Steller Sea Lion	*Eumetopias jubatus*	*Endangered* – Western DPS	NMFS	May affect, likely to adversely affect
Steller Sea Lion Critical Habitat	N/A	N/A	NMFS	May affect, not likely to adversely modify
Humpback Whale	*Megaptera novaeangliae*	*Endangered* - Western North Pacific DPS	NMFS	May affect, likely to adversely affect
Humpback Whale	*Megaptera novaeangliae*	*Threatened* - Mexico DPS	NMFS	May affect, likely to adversely affect
Northern Sea Otter	*Enhydra lutris kenyoni*	*Threatened – Southwest Alaska DPS*	USFWS	No effect
Fin Whale	*Balaenoptera physalus*	*Endangered*	NMFS	No effect

North Pacific Right Whale	*Eubalena japonica*	*Endangered*	NMFS	No effect
Sperm Whale	*Physeter macrocephalus*	*Endangered*	NMFS	No effect
Gray Whale	*Eschrichtius robustus*	*Endangered*	NMFS	No effect
Ringed Seal	*Phoca hispida*	*Threatened* - Arctic subspecies	NMFS	May affect, likely to adversely affect
Bearded Seal	*Erignathus barbatus*	*Threatened* - Beringia DPS	NMFS	May affect, likely to adversely affect

Table ES-1. Executive Summary Effects Determination

LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
ADFG	Alaska Department of Fish and Game
BA	Biological Assessment
BMP	best management practice
CFR	Code of Federal Regulations
CY	cubic yard
dB	decibels
dBA	A-weighted decibels
DOT&PF	Alaska Department of Transportation and Public Facilities
DPS	Distinct Population Segment
EBS	Eastern Bering Sea
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FAA	Federal Aviation Administration
GOA	Gulf of Alaska
HP	horsepower
IHA	Incidental Harassment Authorization
km	kilometer
LOA	Letter of Authorization
MMPA	Marine Mammal Protection Act
MLW	mean low water
MLLW	mean lower low water
NEPA	National Environmental Policy Act
nm	nautical mile
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	NOAA’s National Marine Fisheries Service
NOI	Notice of Intent
PTS	permanent threshold shift
TTS	temporary threshold shift
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U. S. Geological Survey

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

The purpose of this Biological Assessment (BA) is to review a proposed navigation improvement project at Saint George, Alaska in sufficient detail to determine whether the project might affect species protected under the Endangered Species Act (ESA). This assessment is required because there exists the potential for impacts to fish and wildlife habitats within the project area that may be caused by the construction and/or use of a navigation channel, local service facilities, and attendant project features. Concurrently, the U.S. Army Corps of Engineers (USACE) has prepared an analysis in accordance with Section 404(b)(1) of the Clean Water Act (CWA), and the project must fulfill National Environmental Policy Act (NEPA) requirements. This document is prepared consistent with legal requirements set forth under Section 7 of the Endangered Species Act (19 U.S.C. 1536 (c)).

An Incidental Take Authorization in the form of a Letter of Authorization (LOA) under the Marine Mammal Protection Act (MMPA) to take marine mammals by Level B (Behavioral) harassment, primarily due to impacts of confined underwater blasting and the drilling, excavation, and placement of those materials in marine waters, would be necessary for this project, as USACE has determined that the project will affect marine mammals, including ESA-listed marine mammals. A project involving a single year of work would require an Incidental Harassment Authorization (IHA), but an LOA would be more appropriate for projects that will take place over a period of up to five years.

This Draft BA lays out the rationale 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 species (which for this project are 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). 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). Since northern fur seals (marine mammals entitled to protection under the MMPA) are not ESA listed, they will not be discussed in this BA other than to state here that they would be part of the LOA application package prepared in Preconstruction, Engineering, and Design phase of the St. George Navigation Improvements Project. Critical project construction details, primarily a detailed blasting plan, will not be available until further analysis in PED. These details would inform the LOA application to help determine estimated take numbers for marine mammals and serve to advance this BA from a draft to a final version.

1.1 Purpose and Need

The purpose of the project is to increase the safe accessibility of marine navigation to the community of St. George, Alaska. The need for the project is to reduce existing hazards to safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet; all of which are critical to the long term viability of the mixed subsistence-cash economy of St. George.

Currently, dangerous wave and seiche conditions at St. George's existing Zapadni Bay harbor, which was constructed during the 1980s, limit the opportunities for safe access and moorage to the existing fleet. This reduces subsistence opportunities and impacts delivery of goods to the community and imperils the long-term viability of the community. Since crab rationalization established individual fishing and harvesting quotas (enacted circa 2000 with full implementation by the 2005/2006 season), commercial fishing vessels have abandoned St. George as an option to deliver catch due to it being cost prohibitive compared with the risk of damages and delays. The community is legally entitled to a percentage of the Community Development Quota from the Aleutian Pribilof Island Community Development Association for crab; however, without a safe access to a harbor, St. George is unable to realize that revenue benefit, and crab is delivered to neighboring St. Paul. Due to vessel delays and the risk of damages, consumables are flown into the community at a cost $1.58 more per pound than ocean going vessels could deliver.

In 1973, after 110 years of using Alaska Aleut Natives on St. George Island to harvest and skin fur seals and their pelts for profit, the Federal Government, acting through the Department of Commerce, National Marine Fisheries Service (NMFS), stopped commercial fur sealing on St. George Island. This was done as a matter of Federal wildlife conservation policy. In the early 1980s, the Department of Commerce proposed that Congress change the Fur Seal Act and permit NMFS to withdraw from property ownership and municipal management of St. George Island. Congress, the State of Alaska, and all concerned parties recognized that, without a boat harbor, this Federal phase out would cause an effective "termination" of the Native community. Lacking harbor infrastructure to support commercial fishing, indigenous peoples would need to resume commercial fur sealing, contrary to Federal policy. Therefore, a goal of harbor construction has long been to transform the local economy from being dependent upon the government managed seal harvest to a self-sustaining economy that could benefit from the abundant marine resources of the Bering Sea. The commitments of the

Federal Government to construct a harbor at St. George were included in the Fur Seal Act Amendments of 1983, P.L. 98-129.

An aerial photograph of St. George's existing harbor at Zapadni Bay, which was constructed in the early 1980s with the intent to meet the goal of transforming the modest local economy to a marine based economy is shown in Figure 1. However, due to problems experienced with the harbor's geometry as constructed, the residents of St. George have not attained a stable and sustainable marine resource economy sufficient to support their mixed, subsistence-cash economy. The survival of the community is dependent upon a more accessible harbor as there can be no viable long-term economy on St. George without it.

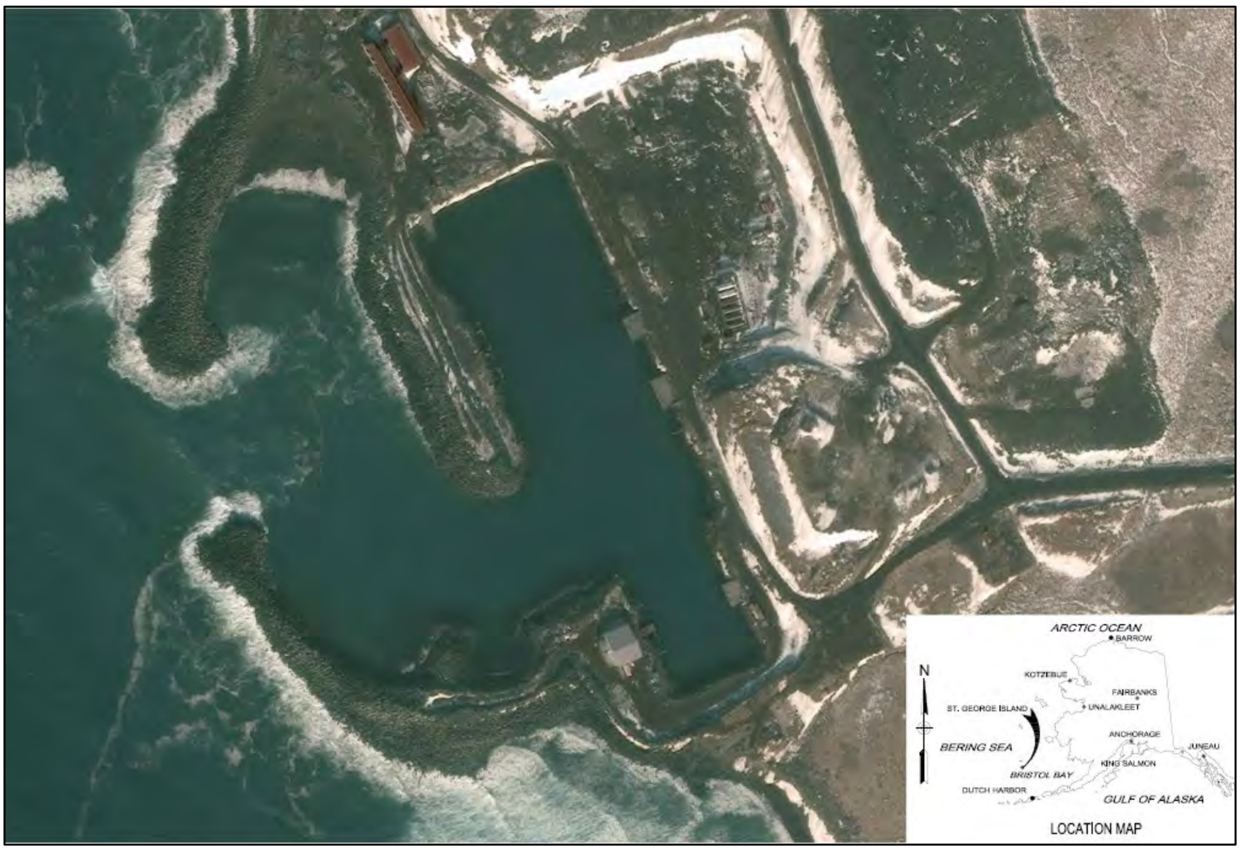


Figure 1. Aerial Image of the Existing Harbor

USACE proposes to alleviate St. George's existing navigational inefficiencies through the implementation of a new breakwater-protected small boat harbor located on the north side of St. George Island. The new breakwater protected harbor is designed to support the Bering Sea crabber fleet, with a 1,730 foot long north breakwater that would protect a 550 foot by 450 foot maneuvering basin dredged to -20 feet MLLW. Based upon envisioned environmental windows and logistic challenges that are inherent with construction projects in the Bering Sea, the total estimated performance period for construction of the project is a minimum of 3 years, but likely would be up to 5 years.

2.0 PROJECT DESCRIPTION

2.1 Location

St. George Island is the southernmost, and second largest of a group of five historically volcanic islands that compose the Pribilof Archipelago, located approximately 760 miles west of Anchorage and 220 miles north by northwest of Unalaska Island in the southern Bering Sea (Figure 2).

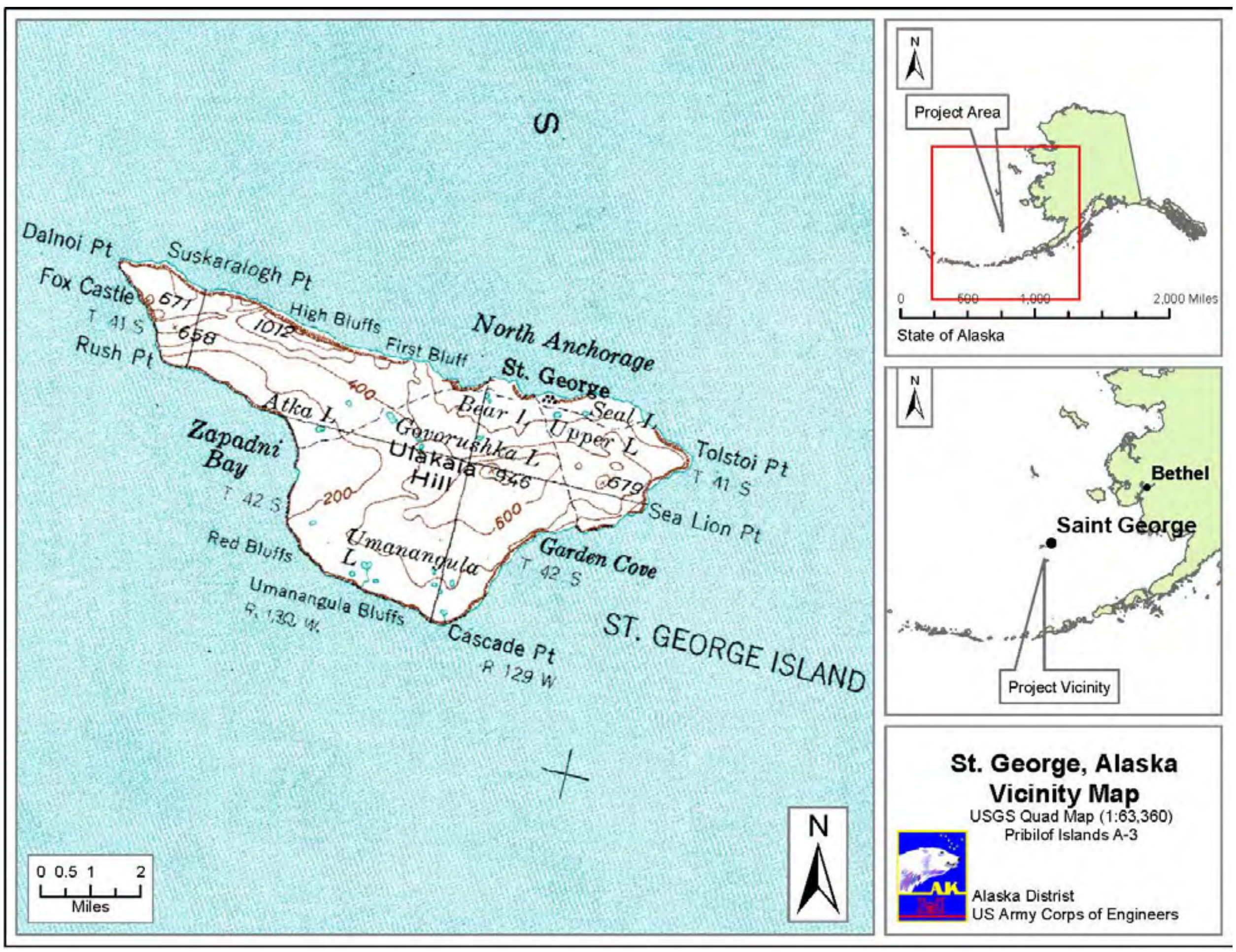


Figure 2. Location and vicinity map.

St. George's position along the western margin of Alaska's continental shelf puts it in close proximity to the much deeper waters of the Bering Sea's abyssal plain. The abrupt change in seafloor elevation occurring at the continental shelf facilitates natural upwelling processes. Ocean depths in the waters surrounding St. George do not regularly exceed 70 fathoms. However, some 75 miles to the west-southwest, the water depth is greater than 3,000 fathoms. National Oceanic and Atmospheric Administration's (NOAA) Chart 16380 describes the physical characteristics of St. George Island's nearshore areas as rocky, and gradually increasing in depth from the shoreline to 25 to 45 fathoms 3 miles from the shore (Figure 3).

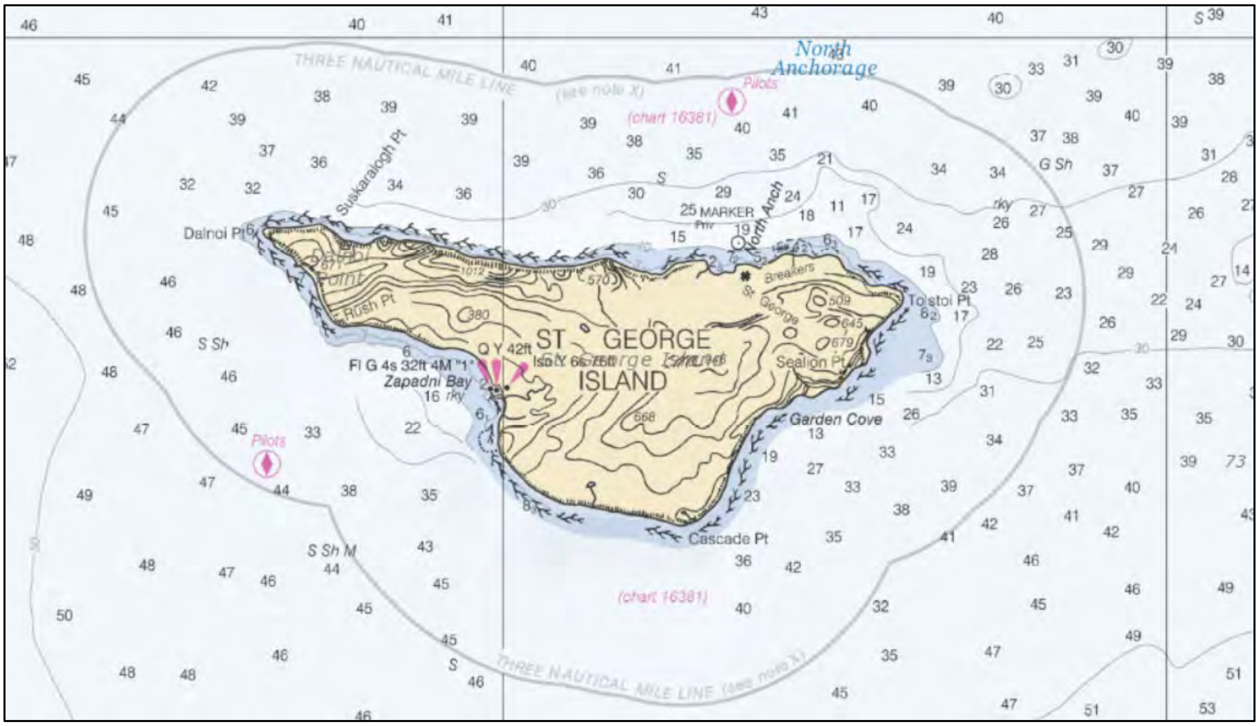


Figure 3. NOAA chart for Saint George Island marine waters.

The City of St. George is situated on the northeast shore of St. George Island. USACE's proposed project location lies immediately west of the village of St. George (Figure 4). Village Cove, as it is commonly referenced, had once supported the village's primary export, fur seal skins, and incorporated an improved small boat landing facility. Today, the improved landing area lies derelict and is not used for any type of vessel operations (Figure 5).


Figure 4. Inner portion of Village Cove that would be part of the new inner harbor.

Figure 5. St. George's derelict small boat landing area.

2.2 Definition of Action Area

The "action area" includes all areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (i.e. the project footprint). The action area is usually larger than the project footprint and extends out to a point where no measurable effects from the project occur. The action area for this project is broken into two distinct areas (Figure 6). The north action area (Figure 7) is a radius of seven kilometers from the harbor site and is based on the projected distance of Level B (behavioral) disturbance for low frequency cetaceans from confined underwater blasting assuming the largest size possible (100 kg/220 lbs.). The effects analysis assume a maximum charge size of 110 lbs. but to be conservative in determining the action area the larger zone for the 220 lb. charge is used. This is the greatest distance calculated for any construction noise and also encapsulates the zone of increased vessel traffic from the new harbor. Beyond this zone, marine traffic is considered to be indistinguishable from existing vessel traffic.

Another action area is located on the south side of Saint George Island (Figure 8). This one is due to increased vessel traffic from barge traffic bringing in rock and other material and equipment for the project. At least 100 barge loads of material would be required for this project, although it is not possible to determine if they would mostly show up in one season or spread out over several. It is also not possible to determine where the material would come from. It could come in from the north (Nome) or from the south (Dutch Harbor or beyond).

Figure 6. North and south action area boundaries. Red star represent the project site and the yellow star is the existing harbor in Zapadni Bay.

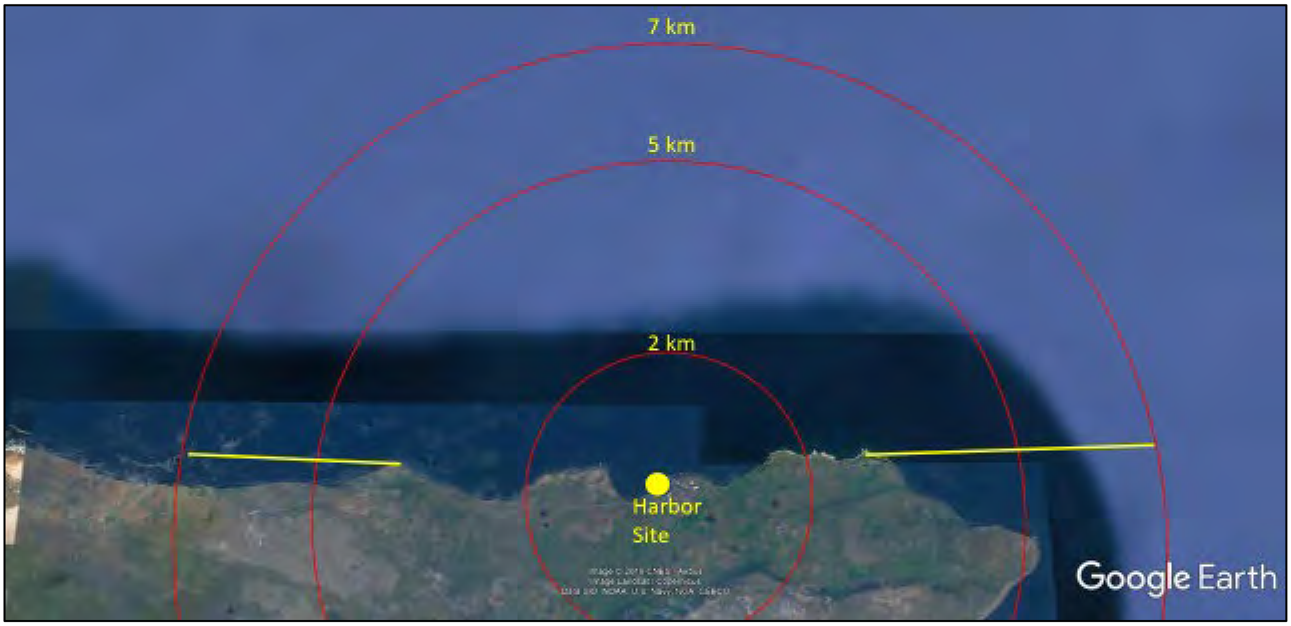


Figure 7. North action area detail.

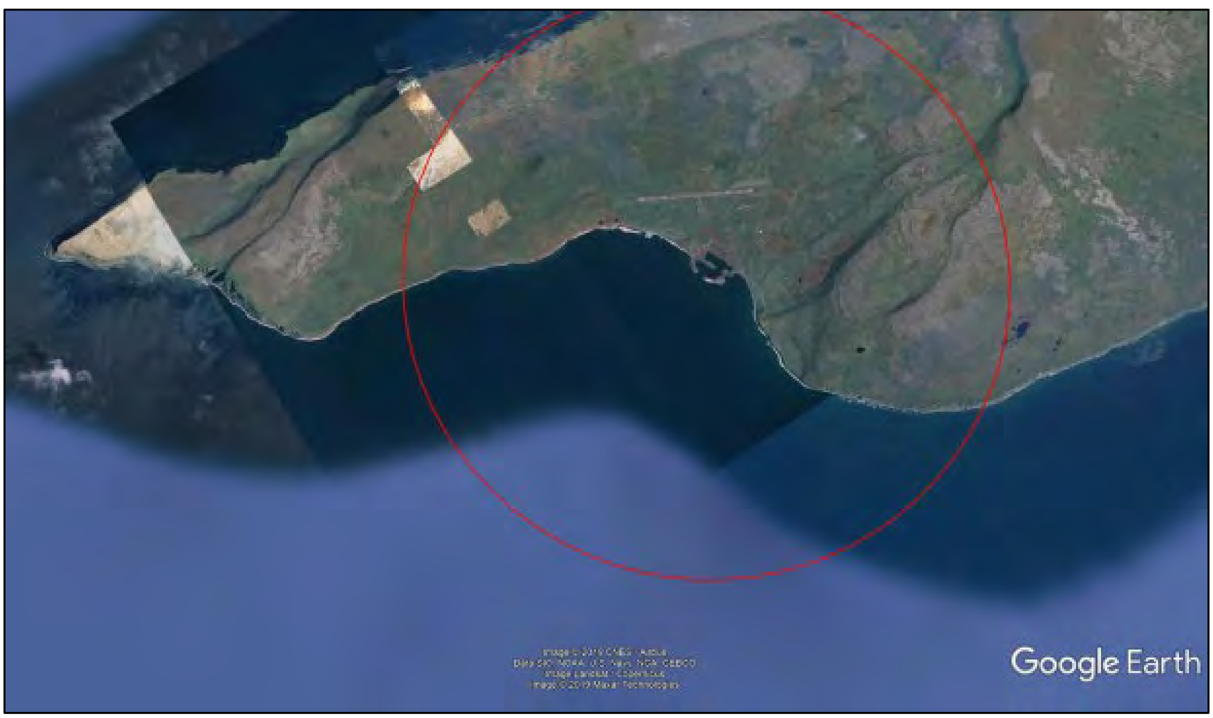


Figure 8. South action area detail. Four kilometer action area zone around the harbor in Zapadni Bay due to vessel traffic from material deliveries.

2.3 Proposed Action

2.3.1 Project Details

USACE's proposed project is designed to realize maximum economic benefit by being able to support vessel classes of the existing Bearing Sea crabber fleet. However, the overall design includes a protected boat launch and recovery area for the local subsistence fleet. A new 1,731 foot long North Breakwater with 10 ton armor stone and a crest elevation of +25 feet MLLW would protect a new 550 foot by 450 foot maneuvering basin, a 300 foot dock and concrete launch ramp (Figure 9). A 250 foot long Spur Breakwater with 10 ton armor stone and a crest height of +20 feet would be constructed inside the North Breakwater from the base of the cliffs along the south edge of the harbor to filter waves diffracted around the nose of the North Breakwater. The rubblemound breakwater structure would be constructed utilizing standard design, incorporating three layers of consecutively smaller boulders to efficiently dissipate wave energy. The outer layer, the A rock layer, would consist of large multi-ton armorstone that would be subject to the majority of the wave energies. Second, a B rock layer, comprised of slightly smaller, yet substantial boulders adds a redundant layer of protection for the smaller innermost boulders that make up the C rock layer, or core of the breakwater structure. The maneuvering basin would be dredged to -20 feet MLLW with a transition zone and an entrance channel dredged to -25 feet MLLW. The entrance channel maintains a 300 foot width from deep water to the end of the breakwater and includes widened turning section outside the breakwater nose. The channel narrows to 250 feet wide at the breakwater nose.

Figure 9. New harbor design.

The new breakwater would be subject to storm waves from the north and use a design wave height of 15 feet. This results in an average armor stone weight of 10 tons when constructed at a 2H:1V slope. The inner slopes of the breakwater would be constructed at 1.5H:1V except at the breakwater nose where the 2H:1V slope is wrapped around and carried through for 50 feet. Where inner harbor facilities abut the breakwater, the A rock extends over the crest for the full width but is omitted from the harbor side slope. This results in the inner harbor facilities fill being placed against B rock.

The launch ramp will be a precast concrete structure constructed at a 13% slope with vertical curves meeting highway design guidance to allow vehicular launching and recovery operations.

The 300-foot-long pile supported dock is planned as a concrete deck on steel piles with a marine fender system. The deck would be precast and post-tensioned in place to minimize the volume of concrete and grout required to be cast in place on site. Inner harbor facilities include 3.55 acres of inner harbor facilities area filled to +10 feet MLLW.

Breakwater construction would typically be performed under a USACE administered contract to ensure that minimum construction requirements are met during construction. The breakwater would use several layers of stone armor to achieve wave protection and filtering criteria. All material used in the construction of these project features would be of a self-compacting nature consisting of rock spalls or dredged tailings that can be placed underwater by excavator bucket, skip box, or dump scow. Fill prisms and “C” rock layers would be randomly placed and controlled by construction survey to assure that design elevations and layer thicknesses were met. Larger stone, typically “B” rock and “A” rock layers would be placed selectively by an excavator with an articulated thumb or crane with rock tongs to achieve minimum stone to stone contact requirements. Placement of stone would likely be performed by equipment mounted on a barge until the breakwaters were built up above the tide range, then placement would be with an excavator on the top of the breakwater.

The underlying material at all proposed dredge sites is assumed to be bedrock and would require preparatory drilling and confined underwater blasting followed by mechanical dredging to reach design depths. Dredging features typically include a 2 foot allowance for overdredge to ensure that the minimum required depth is met. Blasting also requires a minimum 2 foot depth allowance to ensure that minimum depth is achieved, so blasting patterns would need to be established to loosen material to 4 feet below the minimum required depths designed for the selected plan. The dredge machinery would load a scow, which would deliver the dredged material to an offshore beneficial utilization placement site. Multiple scows may be used to provide for continuous dredging operations.

Confined underwater blasting is the recommended pretreatment for what is currently assumed to be igneous, olivine bedrock that underlays the project design depths. Geotechnical borings and subsequent unconfined compressive strength tests will inform the blasting plan (drill hole depths, spacing, and charge weight per delay). Drilling and charge placement will likely be accomplished via spud barge, but the precise details of this project element are unknown at this time. “Confined” blasting is the practice of stemming the explosive charge with crushed gravel or similarly angular-edged substance so that blast energies are confined to the underlying rock bed and explosive gasses are not allowed to escape.

The blasting plan for this project would be developed in PED, but a reasonable scenario for this project for planning and evaluating environmental impacts involves drilling boreholes for confined underwater blasting in a 12-foot by 12-foot grid pattern over the dredge prism. This would result in approximately 5,000 bore holes drilled to between -21 and -26 MLLW. Drilling to two feet over the target depth would ensure that everything down to the design depth is completely fractured. Drilling would likely take place from a barge with a drilling template and a production rate of 40 holes per day, with one blast of those 40 holes daily. This would allow the entire drilling and blasting operation to theoretically take place over about 125 days for the 5,000 holes and likely require three years to complete. This is because work windows would be confined to the period from 1 November to 30 April to conform to mitigation measures. However, relatively calm weather is needed for drilling and blasting and the open work window corresponds to the periods when the weather is the worst and the north side of the island and completely unprotected during wind with any northerly component. The short period of daylight in the winter is an additional limiting factor as blasting would have to occur during daylight hours for overall safety and to be able to observe marine mammals. The hours of daylight during construction would need to be estimated in order to account for additional labor hours, potential shutdown, and additional costs associated with any additional stipulations for blasting. The 40 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. The blasting plan would have a safety plan communicated to local mariners to cover associated signals and restricted access periods.

USACE assumes that the Local Service Facilities (LSF) would be constructed under the same contract for the Federal features of the project. The LSF include the non-Federal dredging areas, docks, fender systems, mooring dolphins and bollards, launch ramps, utilities, fuel tanks, access roads, and road bed surfaces. The non-Federal dredging portions of the project are represented by the area adjacent to the proposed dock faces out to an offset distance of approximately two vessel beams in width. Staging and laydown areas are also considered LSF. These would be constructed concurrently with the harbor project.

As part of the construction of the project, concrete navigation marker bases would be constructed at the heads of the new breakwaters. Coordination with the U.S. Coast Guard Aids to Navigation Office will be conducted to ensure that necessary marking of the new entrance channel is considered.

The material source for A and B rock would be offsite from an established quarry such as Cape Nome or Granite Cove on Kodiak Island. The material source would most likely be far enough away from the site that rock production would need to significantly lead placement operations to ensure that the construction crew on site has enough material delivered to the site for continuous or seasonal work. Stone production in the quarry and delivery to the site would likely be the first project tasks undertaken.

Construction of the North Breakwater would most likely to be performed with land based equipment. The breakwater core would be constructed to above the tide range to allow the placing equipment to drive the breakwater core and place B and A rock layers to protect the work in progress. Core rock would likely be transported and staged on the breakwater with off-road dump trucks, then shaped to the design prism by an excavator. Near the west end of the breakwater, an excavator on a barge may be required to shape the toe and benches of the breakwater where the seabed is deeper. Inner harbor facilities would be constructed concurrently with the breakwater to build staging areas for breakwater material.

Dredging could occur concurrently with stone production; initial dredging and blasting would occur between late fall and spring to protect nearby fur seal rookeries. Dredging opportunities during these months are limited due to adverse weather and the blasting program could take three or more years to complete. Some preparatory dredging prior to constructing the breakwaters would provide access for construction barges to the breakwater sites. The total estimated performance period for construction the project is a minimum of 3 years and likely would be 5 1/2 years.

The local sponsor would be responsible for operation and maintenance of the completed mooring areas and LSF portion of the project. The Federal Government would be responsible for maintenance of the breakwaters (except for the road prism and surfaces, and docks and other local service facilities) and the general navigation features (GNF) of the project.

The breakwaters have been designed to be stable for the 50-year predicted wave conditions. Therefore, no significant loss of stone from the rubblemound structures is expected over the life of the project. It is estimated that at the worst case, 2.5 percent of the armor stone would need to be replaced every 25 years. Because stone quality would be strictly specified in the project construction contracts, little to no armor stone degradation would be anticipated. A quantity of 2,100 CY of A-Rock would be required for replacement on the North and Spur Breakwaters at year 25.

Maintenance dredging would be conducted on an estimated 10-year cycle. The entrance channel and maneuvering area would require dredging of approximately 10,000 CY. A dredged material management plan would be developed for the project in which a long-term beneficial utilization option would be identified. For purposes of this study, it is assumed that the entrance channel and maneuvering area material would be disposed of in the beneficial use placement area approximately 1 mile north of the project location. Clamshell bucket dredging equipment with a scow barge would likely be used for maintenance dredging. Dredged material characteristics should be easier to remove than construction dredging of the area as blasting would not be required for maintenance.

Features associated with the proposed project are divided into two broad categories based on the responsibility for construction and maintenance; GNF and LSF. USACE would be responsible for the construction and maintenance of the GNF and the non-Federal sponsor would be responsible for the construction and maintenance of the LSF. Because both categories of features would be required for a functional project, the impacts of both categories are considered in this Biological Assessment.

- GNF:
  - Drill, confined blast, and dredge navigation channel to -27ft MLLW (includes 2 ft of overdepth).
  - Drill, confined blast, and dredge maneuvering basin to -22ft MLLW.
  - Maneuvering basin and navigation channel estimated dredge volume: 353,052 CY.
  - Placement of dredged sediments at the beneficial use placement site.
  - Emplacement of North Breakwater: Approximately 219,000 CY of rock.
  - Emplacement of Spur Breakwater: Approximately 20,500 CY of rock.
  - Inner harbor facilities: Approximately 45,000 CY of dredge material may be used as fill for inner harbor facilities.

- LSF features:
  - Non-Federal dredging areas; the areas adjacent to the proposed dock faces out to an offset distance of approximately two vessel beams in width (to be conducted concurrently with GNF dredging).
  - Pile driving, installation of docks, fender systems, mooring dolphins, and bollards, launch ramp, utilities, access roads, and road bed surfaces.
  - Project laydown and staging areas.

St. George Island is accessible only by air and sea, and even then, only when environmental conditions permit. Barge and supporting vessels would have to navigate the Bering Sea to the existing harbor before debarking any construction related equipment and materials. Once ashore, a single road connects the village of St. George to the existing harbor; it runs approximately 5 miles in either direction. Laydown areas would be emplaced at the discretion of the local sponsor and staging actions would commence shortly afterward.

2.3.2 Conservation Measures

Confined underwater blasting would be limited to the period from 1 November through 30 April to minimize impacts to northern fur seals (an MMPA species, not ESA listed). Saint George Island has numerous fur seal rookeries and these seals are abundant in the project area from May through October. This timing window conservation measure is primarily for fur seals, but it does shift the confined underwater blasting to winter where it could means a greater impact on ice seals. These ice seals would normally be minimally impacted with normal summer construction, but this timing will shift some potential impact to them. Overall, the potential magnitude of the impact on ice seals will likely be far less than the impact on the abundant fur seals during breeding season.

2.3.3 Mitigation Measures

The USACE is required by the Planning and Guidance Notebook (ER 1105-2-100) to consider mitigation throughout the planning process and each alternative plan shall include mitigation as determined appropriate. According to Appendix C of the Planning and Guidance Notebook (PGN):

(12) Mitigation. Mitigation includes:

> (a) Avoiding the impact altogether by not taking a certain action or part of an action;
>
> (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
>
> (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
>
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
>
> (e) Compensating for the impact by replacing or providing substitute resources or environments. “Replacing" means the replacement of fish and wildlife resources in-kind. "Substitute" means the replacement of fish and wildlife resources out-of-kind. Substitute resources, on balance, shall be at least equal in value and significance as the resources lost.

The USACE began developing mitigation objectives in the early stages of plan formulation and coordinated with the managing agencies for the respective species that may be affected by the proposed project in order to reduce impacts through avoidance and minimization. The proposed project would include provisions for aquatic organism passage to reduce potential impacts of a perpendicular-to-shore structure to migration. Consideration of the local sediment maintenance was included in dredged material disposition planning, contributing to the decision to place the material in the near-shore region in order to mitigate coastal erosion.

Because USACE has determined that the 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 by NMFS. Section 7(b)(4)(C) of the ESA provides that if an endangered or threatened marine mammal is involved, the incidental taking (in this case, through harassment) must first be authorized by Section 101(a)(5) of the MMPA through a LOA or Incidental Harassment Authorization (IHA) prior to the issuance of a Biological Opinion.

The USACE intends to collect the data required to apply for the LOA during the PED phase of the project, which will provide more detail regarding the specific impacts to marine mammals, including ESA-listed marine mammals. Well-reasoned and effective mitigations to reduce those impacts will also be developed, in consultation with NMFS, along with the predicted 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 LOA, 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:

<u>Mitigation measures for dredging</u>

Marine Mammals

To minimize the risk of harm to listed marine species from dredging, vessel strikes, and dredged material disposal the Corps would agree to implement the following mitigation measures:

1. The Corps will stop work when a protected species is observed approaching or within the 164 ft. (50 m) exclusion zone of the project operations.
2. If a protected species enters or appears likely to enter the exclusion zone, project vessels will stop work as soon as practicable in order to prevent exposing protected species to sounds capable of causing harassment. Project vessels and operators will not compromise human safety when determining the practicability of shutting down equipment; i.e., tidal, current, and weather conditions may make it impossible to safely shut-down operation immediately.

3. In the event of a shutdown caused by protected species entering the exclusion zone, work will not restart until the protected species are observed leaving the exclusion zone or an appropriate time (15 minutes for pinnipeds and 30 minutes for whales) has passed from the last protected species sighting within the exclusion zone has elapsed.
4. The Corps will ensure that project vessels do not exceed 13 knots in order to minimize exposure of protected species to vessel strike hazards.
5. Vessels will avoid multiple changes in direction and speed when within 900 ft (274 m) of whales and also operate the vessel(s) to avoid causing a whale to make multiple changes in direction.

Water Quality

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.
2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3).
3. All dredging shall be conducted so as to minimize the amount of dredge material and suspended sediments that enter the water column. Appropriate Best Management Practices (BMPs) will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to, the following:

- Eliminating multiple bites while the bucket is on the seafloor
- No stockpiling of dredged material on the seafloor

Mitigation measures for pile-driving

To minimize the risk of harm to listed marine species from pile driving, the USACE would agree to implement the following mitigation measures:

1. One or more protected species observers (PSOs), able to accurately identify and distinguish species of Alaska marine mammals, will be present before and during all in-water construction activities.

2. Prior to in-water construction activities, an exclusion (i.e., shut-down) zone will be established. For this project, the exclusion zone includes all marine waters within 50 meters of the sound source.
3. Pile-driving will not be conducted unless all waters within and adjacent to the exclusion zone are clearly visible.
4. The PSO(s) will be positioned such that the entire exclusion zone is visible to them (e.g., situated on a platform, elevated promontory, boat or aircraft).
5. The PSO(s) will have the following to aid in determining the location of observed listed species, to take action if listed species enter the exclusion zone, and to record these events:
6. Binoculars
7. Two-way radio communication with construction foreman/superintendent
8. A log book of all activities which will be made available to USACE and NMFS upon request
9. The PSO(s) will have no other primary duty than to watch for and report on events related to marine mammals.
10. The PSO(s) will be in direct communication with on-site project lead and will have shutdown authority.
11. The PSO(s) will scan the exclusion zone for the presence of listed species for 30 min before any pile-driving or removal activities take place.
12. If any listed species are present within the exclusion zone, pile-driving and removal activities will not begin until the animal(s) has left the exclusion zone or no listed species have been observed in the exclusion zone for 15 min (for pinnipeds) or 30 min (for cetaceans).
13. Throughout all pile-driving activity, the PSO(s) will continuously scan the exclusion zone to ensure that listed species do not enter it.
14. If any listed species enter, or appear likely to enter, the exclusion zone during pile-driving or removal activities, all pile-driving activity will cease immediately. Pile-driving activities may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, pile-driving activity may begin 15 min (for pinnipeds) or 30 min (for cetaceans) after the animal is last observed in the area. Note: If a marine mammal is first observed within the exclusion zone during construction operations, the PSO will notify NMFS immediately after ordering a shut-down of operations.
15. Ramp-up (soft start) procedures will be applied prior to beginning pile-driving activities each day and/or when pile-driving hammers have been idle for more than 30 min:
16. For impact pile-driving, contractors will be required to provide an initial set of three strikes from the hammer at 40 percent energy, followed by a 30-sec waiting

period. This procedure shall be repeated two additional times prior to operational impact pile driving.

17. Monthly PSO reports and a final PSO report will be provided to NMFS.

a) The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the fifth day of the month following the end of the reporting period.

b) PSO report data will also include the following for each listed marine mammal observation or "sighting event" if repeated sightings are made of the same animal(s):

i. Species, date, and time for each sighting event.

ii. Number of animals per sighting event; and number of adults/juveniles/calves per sighting event.

iii. Primary, and, if observed, secondary behaviors of the marine mammals in each sighting event.

iv. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard, and defined coordinate system).

v. Time of the most recent pile-driving or other project activity prior to marine mammal observation.

vi. Environmental conditions as they existed during each sighting event, including Beaufort Sea state, weather conditions, visibility (km/mi), lighting conditions, and percent ice cover.

c) A final technical report will be submitted to NMFS within 90 days after the final pile has been driven for the project. The report will summarize all activities associated with the proposed action, and results of marine mammal monitoring conducted during the in-water project activities. The final technical report will include items from the list above as well as the following:

i. Summaries of monitoring efforts including total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors that affect visibility and detectability of marine mammals.

ii. Analyses on the effects from various factors that may have influenced detectability of marine mammals (e.g., sea state, number of observers, fog, glare, and other factors as determined by the PSOs).

iii. Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover.

iv. Effects analyses of the project activities on listed marine mammals.

v. Number of marine mammals observed (by species) during periods with and without project activities (and other variables that could affect detectability), such as:
1. Initial marine mammal sighting distances versus project activity at time of sighting.
2. Observed marine mammal behaviors and movement types versus project activity at time of sighting.
3. Numbers of marine mammal sightings/individuals seen versus project activity at time of sighting.
4. Distribution of marine mammals around the action area versus project activity at time of sighting.

Mitigation measures for confined underwater blasting

a) USACE would agree to implement the following mitigation measures:
b) For in-water construction, heavy machinery activities other than blasting (e.g., dredging), if a marine mammal comes within 50 meters (m), the Corps must safely cease operations and/or reduce vessel speed to the minimum level required to maintain steerage and safe working conditions. If an operation requires completion due to safety reasons, that operation may be completed. The monitoring of this 50-m shutdown zone may be conducted by construction personnel as they perform their other duties.
c) The Corps must conduct briefings for blasting supervisors and crews, the monitoring team, and the Corps staff each day prior to the start of all blasting activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.
d) The Corps must establish shutdown zones.
e) The Corps must establish Level B harassment monitoring zones.
f) Marine mammal monitoring must take place from 30 minutes prior to a scheduled blast through 1 hour post-blast. A blast must not occur until observers have declared the shutdown zone clear of marine mammals.
g) In the event of a delay or shutdown of activity resulting from marine mammals in the shutdown zone, animals must be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior must be monitored and documented. If a marine mammal is observed within an established shutdown zone, blasting must be delayed. Blasting must not occur until the animal has voluntarily left and been visually confirmed beyond the shutdown zone, or 30

minutes have passed without subsequent detection of the marine mammal, or up until 1 hour before sunset (to accommodate post-blast monitoring).

h) If blasting is delayed for a reason other than marine mammal presence, and this delay will be greater than 30 minutes, marine mammal monitoring does not need to occur during the delay. However, if monitoring is halted, a new period of the 30-minute pre-blast monitoring must occur before the rescheduled blast. 3
i) Blasting must not occur if the established shutdown zones cannot be entirely monitored and cleared, due to weather conditions or other obstructions.
j) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zone, a blast must not occur. Activities must not resume until the animal has been confirmed to have left the area or the observation time period has elapsed, as indicated in condition 4(f) above, has elapsed.
k) The Corps must conduct blasting only during daylight hours, no earlier than 30 minutes after sunrise and no later than 1 hour before sunset. Non-blasting activities may occur outside of these time windows.
l) Blasting Measures
a) Stemming procedures must be used for blasting.
b) The Corps individual daily blasts must be composed of no more than 60 delayed charges.
c) Charges must be no closer than 4 feet from other charges.
d) The weight of explosive per delayed charge must not exceed 200 pounds.

5. Monitoring Measures

USACE would agree to abide by the following marine mammal and acoustic monitoring measures:

(a) Marine mammal monitoring must be conducted in accordance with the final Marine Mammal Monitoring Plan.
i. During blasting, there must be a minimum of two land-based PSOs and one PSO on the barge used for blasting operations, with no duties other than monitoring.
ii. The monitoring position of the observers must identified in consideration of the following characteristics:

1. Unobstructed view of blasting area;

2. Unobstructed view of all water within the shutdown zone;

3. Clear view of operator or construction foreman in the event of radio failure (lead biologist); and

4. Safe distance from activities in the construction area.

(b) Marine mammal monitoring during blasting must be conducted by PSOs in a manner consistent with the following:

i. PSOs will have no other assigned tasks during monitoring periods.
ii. At least one PSO must have prior experience working as a marine mammal observer during construction activities.
iii. Other PSOs may substitute education (degree in biological science or related field) or training for experience.
iv. Where a team of three or more PSOs are required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience working as a marine mammal observer during construction.

(c) PSOs must have the following additional qualifications:

i. Ability to conduct field observations and collect data according to assigned protocols.
ii. Experience or training in the field identification of marine mammals, including the identification of behaviors.
iii. Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
iv. Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior.
v. Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(d) Acoustic and overpressure monitoring of the test blast and at least one production blast must be conducted. The following data, at minimum, must be collected during acoustic monitoring and reported:

i. Hydrophone/pressure transducer equipment and methods: model and make of recording device, frequency response and sensitivity of the hydrophone(s), signal gain, sampling rate, distance of the recording devices from the blasts where recordings were made; depth of recording devices.

ii. Number of charges and the weight of each charge detonated during the blasts.
iii. Representative spectra (in power spectral density format dB re 1 µPa2 /Hz) and waveform of blasts.

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 Saint George harbor 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, NMFS in this case, is not obligated to concur or comment on “no effect” determinations made by an action agency.

3.1 Steller Sea Lion

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 Unalaska Island and the associated project area) (62 CFR 30772, June 5, 1997, and 78 CFR 66140, November 4, 2013).

Steller sea lions range throughout the entirety of the Bering Sea and have known rookery and haulout sites throughout the Pribilof Islands. They were first listed as endangered under the Endangered Species Act in 1990. Steller sea lions once came ashore at St. George Island to breed and whelp in the thousands, but were systematically extirpated from breeding grounds by local hunters who valued their skins and meat, and also later by Federal policies aimed at reducing competition to the fur seals. Although no pups have been recorded on St. George since 1916 (NMFS 2008), locations of the historic rookeries are known. Steller sea lion haul out sites on St. George are shown in Figure 10.

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. They are frequently observed transitioning through and foraging in the nearshore waters of Village Cove and the North fur seal rookery. 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.

3.2 Steller Sea Lion Critical Habitat

Critical habitat has been designated for Steller sea lion Western DPS, and is defined as a 20-nautical mile buffer around all major haul-out and rookeries with their associated terrestrial, air, and aquatic zones. It also includes three large offshore foraging areas near Shelikof Strait, Bogoslof, and Seguam Pass. All of St. George's surrounding waters fall under the critical habitat designation for Steller sea lion. Known haulouts are located at Danloi Point and South Rookery and are shown in Figure 9. Designated critical habitat exists in a 20-nautical mile zone around these two haulouts and is shown as the shaded area in Figure 10.

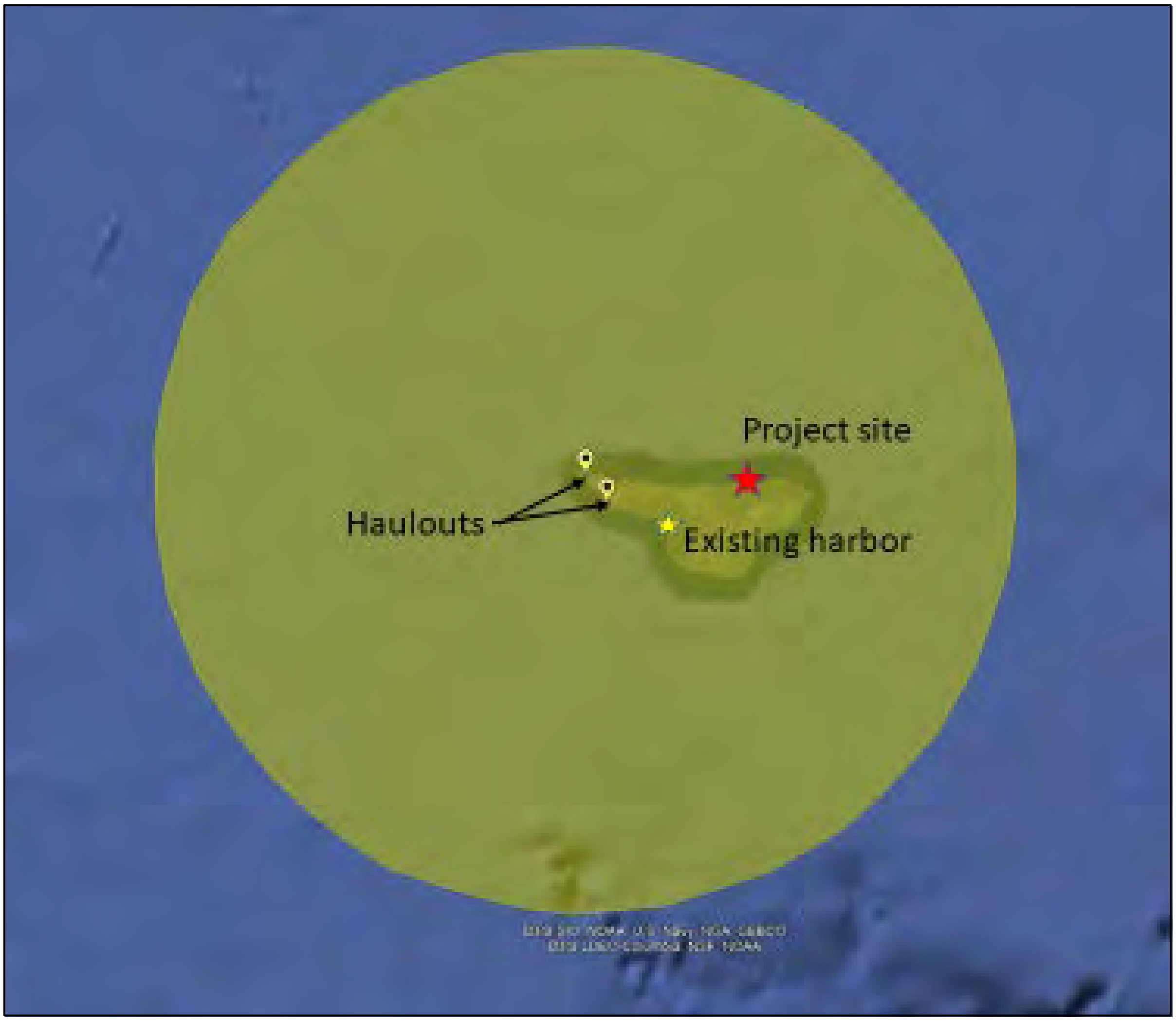


Figure 10. Steller sea lion critical habitat (yellow shaded zone) 20-nautical mile zones around the two haulouts. The project site and existing harbor are also noted.

3.3 Humpback Whales

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 are part of three recognized North Pacific DPSes: the Western North Pacific DPS, the Hawaii DPS, and the Mexico DPS. Humpback whales from the Western North Pacific DPS, which are listed as Federally endangered, are the least likely to be encountered in Alaskan waters, with an encounter probability of only 4.4 percent. Humpback whales from the Mexico DPS, which are listed as federally threatened, have a similarly low encounter probability at 11.3 percent. Humpback whales from the Hawaii DPS are not listed under the Endangered Species Act; they are the most likely to be encountered in Alaskan waters, at 86.5 percent. It should be noted that among these DPSes, 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 St. George. 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.

3.4 Ringed Seal

Ringed seals exhibit a circumpolar distribution and are found in all seasonally ice covered seas in the Northern Hemisphere. The ringed seal Arctic subspecies is listed as threatened under the Endangered Species Act. According to NMFS distribution maps, the nearshore waters of the Pribilof Islands appear to be the species’ southern-most range extent. Ringed seals are closely associated with sea ice, they use it for hauling out, pupping, nursing and molting, they follow its recession north in the springtime. Currently, a reliable population estimate of Alaska’s stock is unavailable, and the data utilized in past estimates is over ten years old.

Despite their typically strong association with sea ice, they have been observed several hundred miles south in the eastern Aleutian Islands in small numbers. In spring 2018, over 50 were observed in Unalaska; a clear indication that they can be found well south of the sea ice edge and could therefore be present around Saint George during winter or spring confined underwater blasting.

Ringed seals have a small head; a short cat-like snout; and a plump body. Their coat is dark with light-colored rings on their back and sides, and a light-colored belly. Their small foreflippers have thick, strong claws that are used to maintain breathing holes through 6 feet or more of ice.

Ringed seals grow to an average length of 4 to 4.5 feet with weights ranging from 110 to 150 pounds. The average weight of a ringed seal pup at birth is about 10 pounds.

Ringed seals eat a wide variety of mostly small prey. They rarely prey on more than 10 to 15 species in any specific geographic location, and not more than two to four of these species are considered important prey. Despite regional and seasonal variations in the diet of ringed seals, fishes of the cod family tend to dominate the diet in many areas from late autumn through spring. Crustaceans appear to become more important in many areas during the open-water season and often dominate the diet of young seals. While foraging, ringed seals dive to depths of up to 150 feet or more.

Ringed seals can live in areas that are completely covered with ice. They use their sharp claws to make and maintain their own breathing holes through the ice, which may be 6 feet or more in thickness. In winter through early spring, they also carve out lairs in snowdrifts over their breathing holes. As the temperatures warm and the snow covering their lairs melts during spring, ringed seals transition from lair use to basking on the surface of the ice near breathing holes, lairs, or cracks in the ice as they undergo their annual molt. Ringed seals do not live in large groups and are usually found alone, but they may occur in large groups during the molting season, gathered around cracks or breathing holes in the ice.

3.5 Bearded Seal

Bearded seals exhibit circumpolar distribution and are closely associated with the presence of sea ice, they utilize it for hauling out, pupping, nursing, and molting in the spring and early summer. Bearded seal Beringia DPS is listed as threatened under the Endangered Species Act. NMFS distribution maps for bearded seal show their southern-most range extent to be the Bering shelf and nearshore waters of the Pribilof Islands. Reliable population abundance data on bearded seals is unavailable. While Saint George is near the fringe of their range during years where the pack ice extends far to the south, there is a moderate likelihood that at least some bearded seals could be in the action area during winter blasting where they could exposed to Level B harassment. It is difficult to distinguish seal species in open water unless they are very close to the observer, so bearded seals are included in this BA since they would be part of an LOA application package in the future. Their inclusion in an LOA application is based on the fact that they could be in the area (the multi-kilometer action area for blasting) and remain undetected and thus exposed to Level B harassment.

Bearded seals are the largest species of Arctic seal. They grow to lengths of about 7 to 8 feet and range from about 575 to 800 pounds. In some regions, females appear to be slightly larger than males. Bearded seals have generally unpatterned gray to brown coats, large bodies, and small square fore flippers. They have a short snout with thick, long white whiskers, which gives this species its "beard."

Bearded seals primarily feed on or near the sea bottom on a variety of invertebrates (e.g., shrimps, crabs, clams, and welks) and some fish (e.g., cod and sculpin). While foraging, they typically dive to depths of less than 325 feet. They do not like deep water and prefer to forage in waters less than 650 feet deep where they can reach the ocean floor. Still, adult bearded seals have been known to dive to depths greater than 1,600 feet.

Bearded seals tend to prefer sea ice with natural openings, though they can make breathing holes in thin ice using their heads and/or claws. Sea ice provides the bearded seal and its young some protection from predators, such as polar bears, during whelping and nursing. Sea ice also provides bearded seals a haul-out platform for molting and resting. Bearded seals are solitary creatures and can be seen resting on ice floes with their heads facing downward into the water. This allows them to quickly escape into the sea if pursued by a predator. Bearded seals also have been seen sleeping vertically in open water with their heads on the water surface.

Bearded seals are extremely vocal, and males use elaborate songs to advertise breeding condition or establish aquatic territories. These vocalizations, which are individually distinct, predominantly consist of several variations of trills, moans, and groans. Some trills can be heard for up to 12 miles and can last as long as 3 minutes.

4.0 ENVIRONMENTAL BASELINE

“Environmental baseline” refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. 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. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline. (50 CFR § 402.02).

4.1 Steller Sea Lion

The western DPS includes all Steller sea lions originating from rookeries west of Cape Suckling (144° west longitude). The western stock of Steller sea lions decreased from an estimated 220,000 to 265,000 animals in the late 1970s to less than 50,000 in 2000.

While the western population has been increasing slowly overall since about 2003, it is still declining quickly in large areas of its range. Steller sea lions are exposed to a variety of human-caused and natural threats. Some of the most pressing ones are discussed below.

Effects of Fisheries on Prey

Cumulative and annual commercial fishery removals may result in temporal and seasonal changes in distribution and abundance of primary prey, prey reduction, and changes in prey size; they may also cause ecosystem effects. All of these may affect Steller sea lions' ability to reliably access sufficient prey to sustain the health, reproduction, and survival of individuals and support sustained increase and eventual recovery of the population.

Climate Change

Global climate change is expected to have profound impacts on arctic and sub-arctic marine ecosystems. This may affect the composition, spatial and temporal distribution, and abundance of prey available to Steller sea lions.

Predation

The primary predators of Steller sea lions are killer whales and humans. Sharks also prey on them in some locations.

Toxic Substances

Contaminants enter ocean waters from many sources, such as oil and gas development, wastewater discharges, runoff, and other industrial processes. Once in the environment, these substances move up the food chain and accumulate in top predators. They can harm Steller sea lions' immune and reproductive systems.

Human-Caused Injuries

Steller sea lions may be disturbed by vessels approaching from the water, by aircraft, and by approach from the land. When disturbed, they may flee toward the water—sometimes in mass stampedes, during which pups and other smaller animals may be crushed or injured by larger ones. In addition, they can fall victim to retaliation (such as shooting) by frustrated boaters and fishermen.

Vessel Strikes

Inadvertent vessel strikes can injure or kill Steller sea lions. Vessel strikes are likeliest in areas where Steller sea lions are concentrated for feeding or rafting, or near large haulouts or rookeries from which large numbers of animals will be in transit.

Entanglement

Entanglement and ingestion of fishing gear and marine debris is known to contribute to Steller sea lion injury and mortality. Steller sea lions can become entangled in fishing gear, either swimming off with the gear attached or becoming anchored. Once entangled, sea lions may drag and swim with attached gear for long distances, ultimately suffering fatigue, compromised feeding ability, or severe injury that may lead to reduced reproductive success and death.

Current data indicate entanglement rates are greater in Southeast Alaska than in areas west of 144° west longitude. West of the regulatory boundary, entanglement is rarely observed during research cruises or reported by the public. However, not all entangled animals strand (e.g., they may drown) and not all stranded animals are found or reported. This is true especially in the most remote parts of the range of this species.

Illegal Feeding

Feeding of sea lions is illegal and can lead to close interactions between humans and sea lions that pose risks to both. Feeding-related problems include changes in sea lion behavior; habituation; aggression toward humans; negative impacts to fisheries; and entanglement, injury, and death of animals.

4.2 Humpback Whale

Humpback whales are exposed to a variety of human-caused and natural threats. Some of the most pressing ones are discussed below.

Vessel Strikes

Inadvertent vessel strikes can injure or kill humpback whales. Humpback whales are vulnerable to vessel strikes throughout their range, but the risk is much higher in some coastal areas with heavy ship traffic. The occurrence of vessel strikes around Saint George is unknown.

Entanglement

Humpback whales can become entangled by many different gear types including moorings, traps, pots, or gillnets. Once entangled, if they are able to move the gear, the whale may drag and swim with attached gear for long distances, ultimately resulting in fatigue, compromised feeding ability, or severe injury, which may lead to reduced reproductive success and death. There is evidence to suggest that most humpback whales experience entanglement over the course of their lives, but are often able to shed the gear on their own. However, the portion of whales that become entangled and do not survive is unknown. The occurrence of entanglements around Saint George is unknown.

Vessel-Based Harassment

Whale watching vessels, recreational boats, and other vessels may cause stress and behavioral changes in humpback whales. Because humpback whales are often found close to shore and active near the surface, they tend to be popular whale watching attractions. There are several areas where U.S.-managed stocks of humpback whales are the center of whale watching industries, including: The Gulf of Maine (particularly within the Stellwagen Bank National Marine Sanctuary), the southeastern U.S. and West Indies, California, Alaska (particularly southeast Alaska), and the Hawaiian Islands. There are no commercial whale watching operations within hundreds of miles of Saint George or in the entirety of the Bering Sea.

4.3 Ringed Seal

The Arctic ringed seal is the most abundant of the five ringed seal subspecies. Although no accurate estimate exists, there are probably more than 2 million Arctic ringed seals worldwide.

There is one recognized stock of (Arctic) ringed seals in U.S. waters: the Alaska stock. The estimated population size for this stock is over 300,000 individuals.

Although subsistence harvest of Arctic ringed seals occurs in some parts of this subspecies' range, harvest levels appear to be sustainable. While the United States does not allow commercial harvest of marine mammals, such harvests are permitted in other portions of the species' range. This has caused population declines in some regions in the past but have generally been restricted since then.

Climate Change Effects on Sea Ice and Snow

Many aspects of the ringed seal's life cycle depend directly on the species' sea ice habitat. As such, the ongoing and anticipated reductions in the extent and timing of ice cover, especially on-ice snow cover, stemming from climate change (warming) poses a significant threat to this species.

Entanglement in Fishing Gear

Arctic ringed seals are seldom caught in fishing gear because their distribution does not coincide with intensive fisheries in most areas. Bycatch likely occurs on some level in the Sea of Okhotsk. Drowning in fishing gear is a significant source of mortality for

Saimaa ringed seals (which occur in Lake Saimaa, Finland) and Ladoga ringed seals (which occur in Lake Ladoga, Russia).

Additional Factors of Potential Concern

The continuing decline in summer sea ice in recent years has renewed interest in using the Arctic Ocean as a potential waterway for coastal, regional, and trans-Arctic marine operations, which pose varying levels of threat to Arctic ringed seals depending on the type and intensity of the shipping activity and its degree of spatial and temporal overlap with the seals. Offshore oil and gas exploration and development could also impact ringed seals. The most significant risk that these activities pose is accidentally or illegally discharging oil or other toxic substances, which would have immediate and potentially long-term effects. Ringed seals could also be directly affected by noise and physical disturbance of habitat associated with such activities.

4.4 Bearded Seal

There is no accurate population count at this time, but it is estimated that there are probably over 500,000 bearded seals worldwide. Although subsistence harvest of bearded seals occurs in some parts of the species' range, there is little or no evidence that these harvests currently have or are likely to pose a significant threat. While the United States does not allow commercial harvest of marine mammals, such harvests are permitted in some other portions of the species' range; however, there is currently no significant commercial harvest of bearded seals and significant harvests seem unlikely in the foreseeable future.

Climate Change Effects on Sea Ice

Bearded seals rely on the availability of suitable sea ice over relatively shallow waters for use as a haul-out platform for giving birth, nursing pups, molting, and resting. As such, ongoing and anticipated reductions in the extent and timing of ice cover stemming from climate change (warming) pose a significant threat to this species.

Additional Factors of Potential Concern

The continuing decline in summer sea ice in recent years has renewed interest in using the Arctic Ocean as a potential waterway for coastal, regional, and trans-Arctic marine operations, which pose varying levels of threat to bearded seals depending on the type and intensity of the shipping activity and its degree of spatial and temporal overlap with the seals. Offshore oil and gas exploration and development could also potentially impact bearded seals. The most significant risk posed by these activities is the accidental or illegal discharge of oil or other toxic substances because of their immediate and potentially long-term effects. Noise and physical disturbance of habitat associated with such activities could also directly affect bearded seals.

5.0 EFFECTS ANALYSIS

"Effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR § 402.02).

The proposed activities of primary concern to ESA-listed species considered in this assessment include exposure to sounds from confined underwater blasting, pile driving and dredging, general disturbance from the elevated anthropogenic activities associated with construction and operation of the proposed project, and vessel strikes from the new marine traffic patterns that would develop as a direct result of the proposed project. Inner harbor facilities 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 inner harbor facilities features will not be discussed in this section. In analyzing effects to species, we consider the action's timing, duration, nature of effect, and the frequency, intensity, and severity of disturbance.

5.1 Ice Considerations

Ice extent is a major factor in the effects analysis for this project because two of the species in this assessment, ringed and bearded seals, are ice-associated and the confined underwater blasting portion of this project would occur in the winter/spring to avoid impacts to the abundant northern fur seals that are present during the summer and fall.

An historical sea ice coverage assay was conducted through the sea ice atlas website, which utilizes various historic data to correlate sea ice presence, relative density, and timing in an area (Figures 11-13). This assay was performed to determine the likelihood of sea ice coverage at the north side of St. George Island that it might be used as a surrogate for the presence of ice-associated marine mammals that utilize sea ice as an integral part of their life history. Sea ice concentrations were investigated at 57.0°N, 169.5°W, approximately 25 miles north of USACE's proposed project as the sea ice atlas analysis tool does not allow for a finer scale analysis.

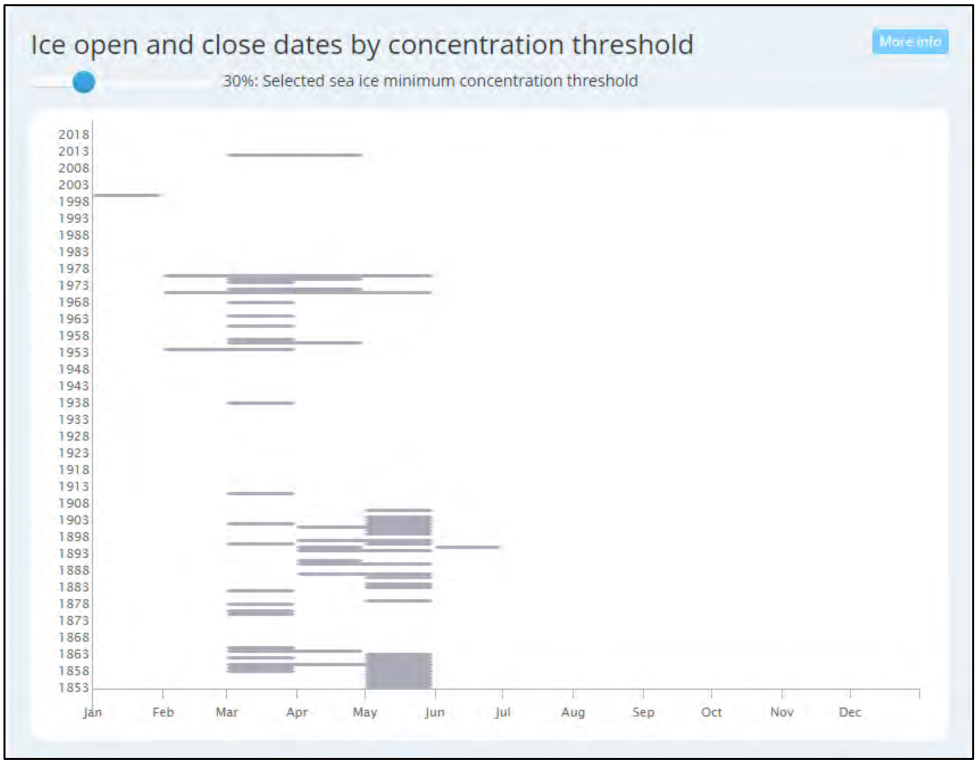


Figure 11. 30% ice coverage historical data

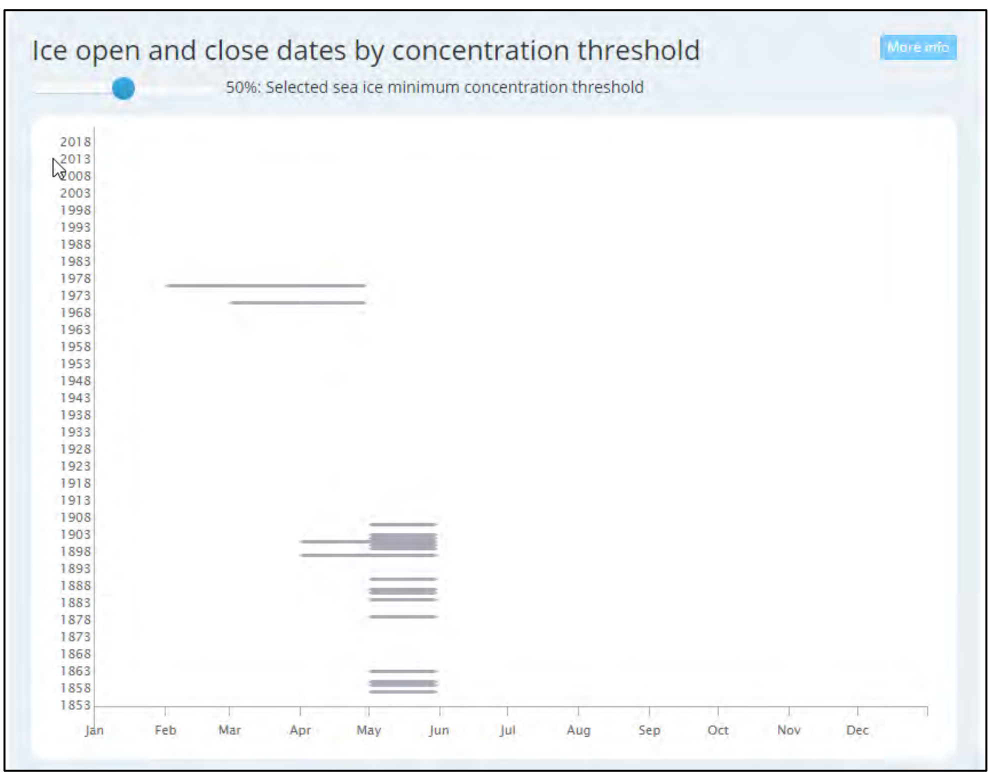


Figure 12. 50% ice coverage historical data

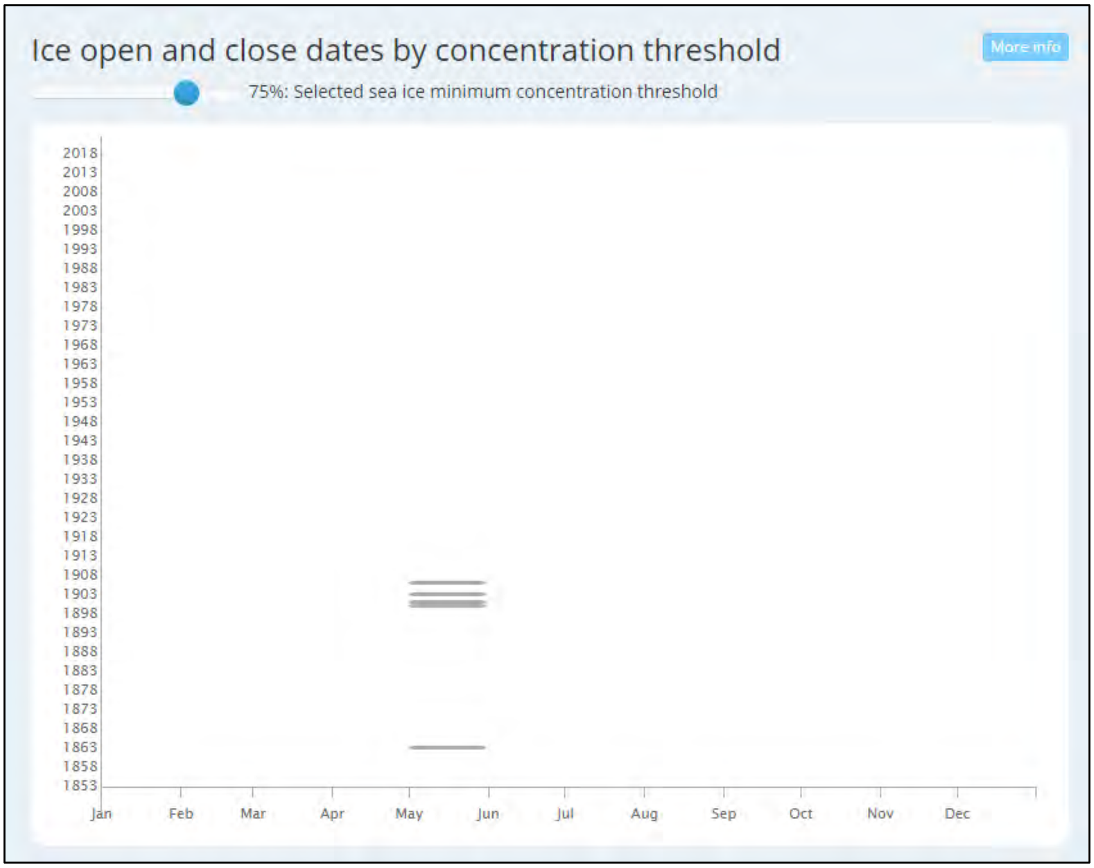


Figure 13**.** 75% ice coverage historical data

Sea ice would impact winter construction activities at the north site for blasting and dredging, discussed later in this assessment. To account for the presence of ice sheets at St. George, a 60% ice coverage criteria was used. Two events were noted in March and April in 1970 and 1976 and eight May events were noted from 1859 to 1906. Over the 165 year period of record, there were ten occurrences of ice concentration which roughly corresponds to a 6% occurrence of pack ice at the north site. Impacts of these occurrences, were they to occur during construction of this project, would likely to represent delays to project construction of up to two months. While winter construction is possible, construction with sea ice present is not possible.

Overall, there is a very low chance that sea ice would be present during construction. The absence of a nearby sea ice edge certainly diminishes the likelihood of encountering ringed and bearded seals, but it does not eliminate the chance of affecting these seals with behavioral disturbance from confined underwater blasting that would occur in winter or early spring. For this reason, these two species of ice seals are included in this assessment.

5.2 Confined Underwater Blasting Considerations Common to All Marine Mammals

Confined underwater blasting has the potential to affect marine mammals due to in-water shock waves. Because blasting would occur during winter, there is a possibility of affecting ice seals to some unknown extent due to confined underwater blasting. Steller sea lions can be present around Saint George at any time of the year, thought their seasonal abundance is not understood and makes an effects analysis difficult at this point in terms of magnitude of the impact. Humpback whales have a near zero probability of being in the action area in winter, but could be present if blasting continued into spring. Overall, the likelihood of humpbacks whales in the action area for blasting is very low. Humpbacks have a greater likelihood of being affected by other project construction and utilization factors.

As shown in Table 1, explosions can have effects to marine mammals ranging from behavioral disturbance, through temporary or permanent threshold shift and other physical injury to mortality. As with sound waves, potential effects to marine mammals depend on the distance of the animal from the source. The NMFS regulatory threshold for confined underwater blasting for sea lions is 195 dB re 1µpa.

Table 1. Explosive Criteria for Marine Mammals

Group	Species	Behavior		Slight Injury			Mortality
		Behavioral (for ≥2 pulses/24 hours)	TTS	PTS	Gastro-Intestinal Tract	Lung	
Low-frequency Cetaceans	Mysticetes (e.g. humpback whale)	167 dB SEL (LF_{II})	172 dB SEL (LF_{II}) or 224 dB peak SPL	187 dB SEL (LF_{II}) or 230 dB peak SPL			
Mid-frequency Cetaceans	Most delphinids, medium and large toothed whales	167 dB SEL (MF_{II})	172 dB SEL (LF_{II}) or 224 dB peak SPL	187 dB SEL (MF_{II}) or 230 dB peak SPL	237 dB SPL or 104 psi	$39.1 M^{1/3} (1+[D_{Rm}/10.081])^{1/2}$ Pa-sec Where: M = mass of the animals in kg D_{Rm} = depth of the receiver (animal) in meters	$91.4 M^{1/3} (1+[D_{Rm}/10.081])^{1/2}$ Pa-sec Where: M = mass of the animals in kg D_{Rm} = depth of the receiver (animal) in meters
High-frequency Cetaceans	Porpoises and *Kogia* spp.	141 dB SEL (HF_{II})	146 dB SEL (HF_{II}) or 195 dB peak SPL	161 dB SEL (HF_{II}) or 201 dB peak SPL			
Phocidae	Hawaiian monk, elephant, and harbor seal	172 dB SEL (P_{WI})	177 dB SEL (P_{WI}) or 212 dB peak SPL	192 dB SEL (P_{WI}) or 218 dB peak SPL			
Otariidae	Sea lions and fur seals	195 dB SEL (O_{WI})	200 dB SEL (O_{WI}) or 212 dB peak SPL	215 dB SEL (O_{WI}) or 218 dB peak SPL			

Source: Finneran and Jenkins 2012

Confined blasts have up to a 60-90 percent decrease in the strength of the shock wave released to the water compared to open water blasts of the same charge weight (Nedwell and Thandavamoorthy, 1992; Hempen *et al*., 2007).

USACE used a recently utilized an “confined underwater blasting effects” model (Goldstein *et al.* 2015) to determine effects of blasting associated with a harbor project in Valdez, Alaska. The same criteria for the model are planned for the Saint George project, so the model outputs from that project provide a good indication of what can be expected when blasting in Saint George for this dredging project. This model is specifically designed to calculate safety radii for shock waves from confined underwater explosives with sequential delays -- the identical blasting scenario proposed in Saint George. As well as considering confined charges, the new model takes into account the number of charges in a shot (a shot is all of the charges strung together with delays between each charge), the timing separation (delays) between the charges (~15ms for this project), the physical separation distance between charges (12 foot by 12 foot borehole spacing), and the maximum potential total charge weight in a shot (weight of each charge times the number of charges). The model produces an output for a single charge as well as an output for a shot with multiple charges with delays.

The model was run with four charge sizes (22, 55, 110, and 220 lbs.) with a number of sequential charges, up to a total shot weight of approximately 5000 lb., with15 millisecond delays between each charge on a 12 foot by 12 foot grid pattern. The resulting radii, out to the behavioral threshold decibel levels for humpback whales, Steller sea lions, and phocid seals (167dB, 195dB and 172 dB SEL respectively) were used to calculate potential effects on marine mammals for this project. The anticipated charge size for the confined underwater blasting in Saint George is approximately 110 lbs.

The survey and potential impact assessment approach used in this project is very different from the manner used for most other marine construction projects. For example, a project that involved in-water pile driving would typically take the number of a marine mammal species observed over perhaps 100 hours of observation effort in a month (e.g. 10 sea lions) and then multiply that number by 3 since there would be 300 hours of pile driving in a month. The result would be 30 sea lions exposed to underwater noise from pile driving. Confined underwater blasting is a completely different scenario; the effects of a single shot might last 1 second, so even 30 individual shots in a month would only lead to 30 seconds of exposure. If we treated underwater blasting like pile driving, we would have to assume that 10 sea lions observed in 100 hours of observation would equate to 0.0008 sea lions exposed in 30 seconds of blasting. This is clearly not a realistic approach since it means the action would essentially impact zero marine mammals no matter when blasting occurs.

Field surveys for marine mammals covered in this assessment have not been conducted to date, but will occur in PED. When survey data are collected, Corps biologists will approach the survey data in a very conservative manner in terms of potential impacts by assuming the maximum number of each species observed at any one time in each month would be present for each shot during that month. Each shot would involve 40 boreholes with 15 milliseconds between each hole. This would appear as one blast, but the temporal separation between holes means that the impact to marine mammals from the charge is not additive. At this point, it is uncertain how many shots may be possible per month. The number will likely hinge on whether given the exposed conditions at the site, winter drilling and blasting, and limited daylight to work in the winter months. Confined underwater blasting will take place during winter over a few- year period due to the low production rates of blasted rock and potential shutdown days that are likely.

5.3 Effects to Species from all Impact Categories

Steller Sea Lions and their Critical Habitat

For confined underwater blasting, the model output for Steller sea lion regulatory threshold (187-dB threshold) for a single 110 lb. charge is 313 meters. When delays are used between charges, the 187-dB threshold for forty 110 lb. charges (with 15 millisecond delays) is only 519 meters. This measurement is the projected extent of the behavioral effects (Level B) zone for this project for Steller sea lions using the anticipated blasting scenario.

The likely Level B zone for Steller sea lions for this project is approximately 519 meters. One hundred twenty total shots are planned for this project, with 42 shots over the winter period each winter for three years. There are no survey data for Steller sea lion in winter and spring, so it is not possible to calculate the number that would be impacted by blasting. A worst case scenario is assumed that would place three Steller sea lions in the 519-meter radius for each blast. Given the 519-meter radius from the project site and the worst-case scenario for sea lions, approximately 375 sea lions would be exposed to Level B harassment from confined underwater blasting assuming a total of approximately 125 shots over three years. This number is likely very conservative and it is likely that many of these exposures would be re-exposures of the same sea lions. No blasting would be allowed when sea lions are present in the Level A zone. The size of this zone has not been calculated at this time, but it would be much smaller than the 519-meter Level B zone.

For sea lions that use benthic habitat at the dredging site for foraging, there would be a period after dredging when this area would likely be unproductive. This period might last for a year or two until the area recolonizes with fish and invertebrates.

Pile driving for this project would occur inside the harbor footprint after the breakwater is constructed, this greatly reducing the sound exposure to the area seaward of the entrance channel. Sufficient details do not exist for this project to determine the actual zone that would be ensonified by Level A and Level B harassment for pile driving, but it is typical for these zones to extend between four and 7 kilometers from the source. Without species abundance data, it is not possible to determine the number of sea lions that would be impacted, by since the breakwater would be constructed first and the exposure pathway would be very narrow, it is likely that the number of sea lions exposed would be low.

The anticipated potential impacts from the proposed project are presented in Table 2.

Table 2. Potential Project Impacts to Steller Sea Lions

Activity	Potential Impact Level
Drilling (for blast holes)	Sound levels are below in-water threshold levels for noise. Moderate adverse effects for disturbance due to the presence of the drill barge and associated traffic. Potential effects would be limited to the period of construction.
Blasting	Moderate effects due to disturbance from pressure waves in the Level B zone, no blasting allowed in with animals in Level A zone. Disturbance from blasting could lead to displacement from the Level B zone for a short period of time. Potential effects are limited to a short duration after the blast. Up to 375 Steller sea lions could be disturbed over a roughly two-month period, though the actual number is likely far lower. Disturbance could trigger responses ranging from leaving the area to no visible response at all.
Dredging	Dredging would take place after the area is drilled and blasted and would likely occur in blasted areas concurrent with drilling in other areas of the footprint. Underwater noise is anticipated to be audible, but not above regulatory thresholds for marine mammals. Dredging would likely be by clamshell or hydraulic extended-reach excavator**.**

Dredged Material Placement	Moderate adverse effects during disposal due to vessel activity and temporary increases in turbidity. Beneficial effects as the area is used by fish and invertebrates with the benefits increasing over time.
Pile Driving	Low numbers of Steller sea lions would be exposed to Level B harassment from pile driving during construction. Additional details are necessary to more accurately determine the potential impacts from pile driving.
Harbor Operation	Harbor use would lead to increased vessel traffic in the action area, but given timing of commercial seasons, disturbance and increased risk of vessel strikes would be limited to time periods surrounding seasonal openings and closures when most vessels are transiting through the area.

Overall, the greatest potential impacts to Steller sea lions from this action are moderate and limited to the time period of construction. Beneficial impacts from the placement of the dredged material are likely to increase over time as the material colonizes with fish and invertebrates. The project area is within the extent of the 20 nautical mile distance from major haulouts and that is considered critical habitat, but the two haulouts are between eight and ten nautical miles away from the project site and are on the opposite side of the island. Changes in the habitat at the project site and potential impacts during construction would have minimal effects on designated critical habitat. Mitigation includes stemmed charges, delays between charges, and observed shutdown radii to ensure blast do not occur when marine mammals are within a distance that would cause mortality or permanent injury.

Humpback whales

For confined underwater blasting, the model output for the humpback regulatory threshold (167-dB re 1µPa threshold) for a single 110 lb. charge is 3,130 meters. When delays are used between charges, the 187-dB threshold for forty 110 lb. charges (with 15 millisecond delays) is 5,185 meters. This distance is the projected extent of the behavioral effects (Level B) zone for this project for humpback whales using the anticipated blasting scenario in Saint George.

The likely Level B zone for humpback whales for this project is approximately 5,185 meters. Approximately one hundred twenty five shots are planned for this project, with 42 shots over the winter period each winter for three years. There are no survey data for humpback whales in winter and spring, so it is not possible to calculate the number that would be impacted by blasting. A worst case scenario is assumed that would place one humpback whale in the 5,185 meter radius for a total of 20 of the 125 blasts over three years. The reason for this low assumption is that there are likely few humpback whales in this area and their presence only overlaps for a small portion of the blasting season (i.e. spring). No blasting would be allowed when whales are present in the Level A zone. The size of this zone has not been calculated at this time, but it would be much smaller than the 5,185-meter Level B zone.

Humpback whales do not forage on the bottom, so alterations to the benthic habitat at the dredge and dredged material placement site are not relevant considerations for humpback whales.

Pile driving for this project would occur inside the harbor footprint after the breakwater is constructed, this greatly reducing the sound exposure to the area seaward of the entrance channel. Sufficient details do not exist for this project to determine the actual zone that would be ensonified by Level A and Level B harassment for pile driving, but it is typical for these zones to extend between four and 7 kilometers from the source. Without species abundance data, it is not possible to determine the number of whales that would be impacted, by since the breakwater would be constructed first and the exposure pathway would be very narrow, it is likely that the number of whales exposed would be low.

The anticipated potential impacts from the proposed project are presented in Table 3.

Table 3**.** Potential Project Impacts to Humpback Whales

Activity	**Potential Impact Level**
Drilling (for blast holes)	Sound levels are below in-water threshold levels for noise. Moderate adverse effects for disturbance due to the presence of the drill barge and associated traffic. Potential effects would be limited to the period of construction.
Blasting	Moderate effects due to disturbance from pressure waves in the Level B zone, no blasting allowed in with animals in Level A zone. Disturbance from blasting could lead to displacement from the Level B zone for a short period of time. Potential effects are limited to a short duration after the blast. Up to 20 humpback whales could be disturbed over the three years of blasting, thought the actual number is likely far

	lower. Disturbance could trigger responses ranging from leaving the area to no visible response at all.
Dredging	Dredging would take place after the area is drilled and blasted and would likely occur in blasted areas concurrent with drilling in other areas of the footprint. Underwater noise is anticipated to be audible, but not above regulatory thresholds for marine mammals. Dredging would likely be by clamshell or hydraulic extended-reach excavator.
Dredged Material Placement	Moderate adverse effects during disposal due to vessel activity and temporary increases in turbidity. Beneficial effects as the area is used by fish and invertebrates with the benefits increasing over time. While humpback whales would not forage on the reef directly, they could benefit by an overall enrichment in the area.
Pile Driving	Low numbers of humpback whales would be exposed to Level B harassment from pile driving during construction. Additional details are necessary to more accurately determine the potential impacts from pile driving.
Harbor Operation	Harbor use would lead to increased vessel traffic in the action area, but given timing of commercial seasons, disturbance and increased risk of vessel strikes would be limited to time periods surrounding seasonal openings and closures when most vessels are transiting through the area.

Overall, the potential impacts to humpback whales from this action are moderate and limited to the time period of construction. The proportion of whales that might be impacted by this project (which is very conservatively estimated) is only a small portion of the overall number or humpback whales that forage throughout the much larger area of Pribilof Islands. Additionally, of the conservatively estimated 20 whales exposed to exposed to Level B harassment, only about 15 percent of the humpback whales in the Pribilofs are listed as threatened or endangered under the Endangered Species Act. Accordingly, only 3 listed whales might be exposed to Level B harassment, although all 20 are protected under the Marine Mammal Protection Act. Mitigation includes stemmed charges, delays between charges, and observed shutdown radii to ensure blast do not occur when marine mammals are within a distance that would cause mortality or permanent injury.

Ringed Seals and Bearded Seals

Ringed seals and bearded seals are both phocid seals and are grouped together for this effects analysis since they have the same functional hearing group and are both ice-associated seals that could be present during winter or spring blasting. These seals would not be present in the action area during dredging, material placement, or pile driving.

For confined underwater blasting, the model output for phocid seal regulatory threshold (172-dB threshold) for a single 110 lb. charge is 1,760 meters. When delays are used between charges, the 172-dB threshold for forty 110 lb. charges (with 15 millisecond delays) is only 2,916 meters. 2,916 meters is the projected extent of the behavioral effects (Level B) zone for this project for phocid seal using the anticipated blasting scenario.

The likely Level B zone for phocid seals for this project is approximately 2,916 meters. One hundred twenty total shots are planned for this project, with 42 shots over the winter period each winter for three years. There are no survey data for either of these seals in winter and spring, so it is not possible to calculate the number that would be impacted by blasting. A worst case scenario is assumed that would place seven phocid seals of each species (i.e. seven ringed and seven bearded) in the 2,916-meter radius for each blast. Given the 2,916-meter radius from the project site and the worst-case scenario for each seal, approximately 875 ringed seals and 875 bearded seals would be exposed to Level B harassment from confined underwater blasting assuming a total of approximately 125 shots over three years. This number is likely very conservative and it is likely that many of these exposures would be re-exposures of the same seals. No blasting would be allowed when seals are present in the Level A zone. The size of this zone has not been calculated at this time, but it would be much smaller than the 2,916-meter Level B zone.

For seals that use benthic habitat at the dredging site for foraging, there would be a period after dredging when this area would likely be unproductive. This period might last for a year or two until the area recolonizes with fish and invertebrates. The dredged material placement site would likely be a productive foraging site for these two species of ice seals as it colonizes over time.

Pile driving for this project would occur inside the harbor footprint after the breakwater is constructed, this greatly reducing the sound exposure to the area seaward of the entrance channel. Pile driving would also occur in the summer when these two species of seals are hundreds of miles north of the action area. Pile driving for this project would have no impact on ringed or bearded seals.

The anticipated potential impacts from the proposed project are presented in Table 4.

Table 4. Potential Project Impacts to ringed and bearded seals

Activity	Potential Impact Level
Drilling (for blast holes)	Sound levels are below in-water threshold levels for noise. Moderate adverse effects for disturbance due to the presence of the drill barge and associated traffic. Potential effects would be limited to the period of construction.
Blasting	Moderate effects due to disturbance from pressure waves in the Level B zone, no blasting allowed in with animals in Level A zone. Disturbance from blasting could lead to displacement from the Level B zone for a short period of time. Potential effects are limited to a short duration after the blast. Up to 875 ringed seals and 875 bearded seals could be disturbed over a roughly three-year period, thought the actual number is likely far lower. Disturbance could trigger responses ranging from leaving the area to no visible response at all.
Dredging	None. Seals would not be in the area during dredging due to seasonal migration.
Dredged Material Placement	Beneficial effects as the area is used by fish and invertebrates with the benefits increasing over time.
Pile Driving	None. Seals would not be in the area during dredging due to seasonal migration.
Harbor Operation	Harbor use would lead to increased vessel traffic in the action area, but given timing of commercial seasons, disturbance and increased risk of vessel strikes would be limited to time periods surrounding seasonal openings and closures when most vessels are transiting through the area.

Overall, the greatest potential impacts to ice seals from this action are moderate and limited to the time period of construction. Beneficial impacts from the placement of the dredged material are likely to increase over time as the material colonizes with fish and invertebrates. Mitigation includes stemmed charges, delays between charges, and observed shutdown radii to ensure blast do not occur when marine mammals are within a distance that would cause mortality or permanent injury.

6.0 DETERMINATION OF EFFECTS

6.1 Steller Sea Lion

The project ***May Affect*** Steller sea lions due to:

- Acoustic harassment from confined underwater blasting.
- Acoustic harassment from vibratory pile driving.
- Acoustic harassment from dredging.
- Additional harassment from harbor operation.

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

- The timing of confined underwater blasting, dredging, pile driving and Steller sea lion presence will likely overlap. It is possible that Steller sea lions will be present in the Level B zone and experience behavioral harassment from confined underwater blasting, dredging, and pile driving. This would be limited to Level B (Behavioral) harassment.

6.1.1 Steller Sea Lion Critical Habitat

The project would *Not Likely Adversely Modify* Steller sea lion critical habitat because:

- Only a very small portion of designated Critical Habitat will be modified by construction (habitat alteration) and impacts to habitat during construction (disturbance) will be small scale and temporary.

6.2 Humpback Whale

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

- Acoustic harassment from confined underwater blasting.
- Acoustic harassment from vibratory pile driving.
- Acoustic harassment from dredging.
- Additional harassment from harbor operation.

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

- The timing of confined underwater blasting, dredging, pile driving and humpback whale presence will likely overlap. It is possible that humpback whales will be present in the Level B zone and experience behavioral harassment from confined underwater blasting, dredging, and pile driving.

6.3 Ringed Seal

The project ***May Affect*** ringed seals because:

- Acoustic harassment from confined underwater blasting.

The project is ***Likely to Adversely Affect*** ringed seals because:

- The timing of confined underwater blasting and ringed seal presence will likely overlap. It is possible that ringed seals will be present in the Level B zone and experience behavioral harassment from confined underwater blasting. This would be limited to Level B (Behavioral) harassment.

6.4 Bearded Seal

The project ***May Affect*** bearded seals because:

- Acoustic harassment from confined underwater blasting.

The project is ***Likely to Adversely Affect*** bearded seals because:

- The timing of confined underwater blasting and bearded seal presence will likely overlap. It is possible that bearded seals will be present in the Level B zone and experience behavioral harassment from confined underwater blasting. This would be limited to Level B (Behavioral) harassment.

7.0 LIST OF PREPARERS

Chris Hoffman, Biologist, U.S. Army Corps of Engineers, Alaska District
Michael Rouse, Biologist, U.S. Army Corps of Engineers, Alaska District

8.0 REFERENCES

Alaska Department of Fish and Game (ADFG). 2010. On-line anadromous waters catalog of Alaska. Online: http://www.sf.adfg.state.ak.us/SARR/awc/index.cfm/FA/maps.interactive.

Alaska Department of Fish and Game (ADFG). 2018. Polar Bear Fact Page. Electronic document: http://www.adfg.alaska.gov/index.cfm?adfg=polarbear.printerfriendly.

Alaska Department of Fish and Game (ADFG). 2019. Species Profile: Animals. Available online: https://www.adfg.alaska.gov/index.cfm?adfg=animals.main Retrieved 1 May 2019.

Allen, B.M and R.P. Angliss. 2010. Alaska marine mammal stock assessments, 2009. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-206, 276 p.

Allen, B.M., and R.P. Angliss. (2014) Alaska marine mammal stock assessments. 2013. U.S. Dep. Commer., NOAA Tech. Memo. NMFSAFSC- 277, 294 pp.

Atkinson, Shannon. 1997. Reproductive biology of seals. Reviews of Reproduction (1997)2, 175-194

Blackwell S. B., C. S. Nations, T. L. McDonald, A. M. Thode, D. Mathias, K. H. Kim, C. R. Greene, Jr., and A. M. Macrander. 2015. Effects of airgun sounds on bowhead whale calling rates: evidence for two behavioral thresholds. PLOS ONE 10(6):e0125720. DOI: dx.doi.org/10.1371/journal.pone.0125720

Braham, H. W., Fraker, M. A., and Krogman, B.D. 1980. Spring migration of the western Arctic population of bowhead whales. Mar. Fish . Rev . 42(9- 10):36-46.

Brower, A.A., Clarke, J.T., and M.C. Ferguson. 2018. Increased sightings of subarctic cetaceans in the eastern Chukchi Sea, 2008-2016: population recovery, response to climate change, or increased survey effort. Polar Biology 41:1033-1039.

California Department of Transportations (CALTRANS). 2015. Technical Guidance for the Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish.

Clark, D., Dickerson, C., Reine, K. 2002. Characterization of Underwater Sounds Produced by Dredges. Dredging ‘02

Doney, S.C., Ruckelhaus, M., Duffy, J.E., Barry, J.P., Chan, F., English, C.A., Galindo, H.M., Grebmeier, J.M., Hollowed, A.B., Knowltton, N., Polovina, J., Rabalais, N.N., Sydeman, W.J., and Talley, L.D. 2012. Climate change impacts on marine ecosystems.

Annual Review of Marine Science. Vol. 4:11-37. https://doi.org/10.1146/annurev-marine-041911-111611

Frost, K.J., Lowry, L.F., and Burns, J.J. 1983. Distribution of marine mammals in the coastal zone of the eastern Chukchi Sea during summer and autumn. Final Report, Outer Continental Shelf Environmental Assessment Program.

George, J. C., C. Nicolson, S. Drobot, J. Maslanik, and R. Suydam. 2006. Sea ice density and bowhead whale body condition preliminary findings. Poster presented to the Society for Marine Mammalogy, San Diego, CA

George, J. C., M. L. Druckenmiller, K. L. Laidre, R. Suydam, and B. Person. 2015. Bowhead whale body condition and links to summer sea ice and upwelling in the Beaufort Sea. Prog. Oceanogr. 136:250-262.

George, J. C., G. Sheffield, D. J. Reed, B. Tudor, R. Stimmelmayr, B. T. Person, T. Sformo, and R. Suydam. 2017. Frequency of injuries from line entanglements, killer whales, and ship strikes on Bering-Chukchi-Beaufort Sea bowhead whales. Arctic 70(1):37-46. DOI: dx.doi.org/10.14430/arctic4631

Harvey, M., Gauthier, D., Munro, J., 1998. Temporal changes in the composition and abundance of the macro-benthic invertebrate communities at dredged material disposal sites in the Anse a Beaufils, Baie des Chaleurs, Eastern Canada. Elsevier Science, Ltd. Marine Pollution Bulletin, Vol. 36, No. 1, pp 41-55, 1998

Huntington, H.P., and The Communities of Buckland, Elim, Koyuk, Point Lay, and Shaktoolik. 1989. Traditional Knowledge of the Ecology of Beluga Whales (Delphinapterus leucas) in the Eastern Chukchi and Northern Bering Seas, Alaska. Arctic 52:49-61.

Huntington, H.P., Nelson, M., and L.T. Quakenbush. 2016. Traditional knowledge regarding ringed seals, bearded seals, and walrus near Kotzebue, Alaska. Final Report to the Eskimo Walrus Commission, the Ice Seal Committee, and the Bureau of Ocean Energy Management. Contract No. M13PC00015.

IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Jensen, A. S., and G. K. Silber. 2003. Large whale ship strike database. NOAA Technical Memorandum NMFS-OPR:39.

Kajimura, H. and T.R. Loughlin. 1988. “Marine mammals in the oceanic food web of the eastern subartic Pacific.” Bulletin of the Ocean Research Institute, University of Tokyo 26:187-223.

Kelly, B.P., J.L. Bengtson, P.L. Boveng, M.F. Cameron, S.P. Dahle, J.K. Jansen, E.A. Logerwell, J.E. Overland, C.L. Sabine, G.T. Waring, and J.M. Wilder. 2010. Status Review of the Ringed Seal (Phoca hispida) NOAA Technical Memorandum NMFSAFSC-212, 247+ pp. Available online at: https://alaskafisheries.noaa.gov/protectedresources/seals/ice/ringed/statusreview10.pdf

Kovacs, K. M., C. Lydersen, and I. Gjertz. (1996). Birth-site characteristics and prenatal molting in bearded seals (Erignathus barbatus). Journal of Mammalogy 77:1085-1091

Laist, D. W., A. R. Knowlton, J. G. Mead, A. S. Collet, and M. Podesta. 2001. Collisions between ships and whales. Marine Mammal Science 17:35-75.

Learmonth, J. A., C. D. Macleod, M. B. Santos, G. J. Pierce, H. Q. P. Crick, and R. A. Robinson.
2006. Potential effects of climate change on marine mammals. Oceanography and Marine
Biology: An Annual Review 44:431-464.

MacCracken, J.C., W.S. Beatty, J.L. Garlich-Miller, M.L. Kissling, and J.A. Snyder. 2017. Final Species Status Assessment for the Pacific Walrus (Odobenus rosmarus divergens), May.

Marquette, W.M., and H.W. Braham. 1982. Gray Whale Distribution and Catch by Alaskan Eskimos: A Replacement for the Bowhead Whale? Arctic 35(3):386-394.

NMFS 2013. Oil and Gas Leasing and Exploration Activities in the U.S. Beaufort and Chukchi
Seas, Alaska. NMFS Consultation Number: F/AKR/2011/0647 Available online at: https://alaskafisheries.noaa.gov/protectedresources/esa/section7/arcticbiop2013.pdf

National Oceanic and Atmospheric Administration (NOAA). 2015. RIBBON SEAL (Histriophoca fasciata): Alaska Stock. Revised 12/30/2015. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/ak-2017%20ribbon%20seal-alaska-508%20(1).pdf

National Oceanic and Atmospheric Administration (NOAA). 2015a. GRAY WHALE (Eschrichtius robustus): Eastern North Pacific Stock. Revised 7/31/2015. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/po2014_gray_whale_enp%20508.pdf

National Oceanic and Atmospheric Administration (NOAA). 2016. NARWHAL (Monodon monoceros): Unidentified Stock. Revised 12/30/2016. Electronic document: https://www.fisheries.noaa.gov/webdam/download/82960381

National Oceanic and Atmospheric Administration (NOAA). 2015b. MINKE WHALE (Balaenoptera acutorostrata): Alaska Stock. Revised 12/30/2015. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/ak-2017%20minke%20whale-alaska-508.pdf

National Marine Fisheries Service (NMFS). 2016. Occurrence of Endangered Species Act (ESA) Listed Humpback Whales off Alaska. Revised December 12th, 2016. Electronic document:
https://alaskafisheries.noaa.gov/sites/default/files/humpback_guidance.pdf

National Marine Fisheries Service (NMFS). 2018. Revision to Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) Office of Protected Resources, National Marine Fisheries Service, Silver Springs, MD 20910

National Oceanic and Atmospheric Administration (NOAA). 2017. BOWHEAD WHALE (Balaena mysticetus): Western Arctic Stock. Revised 12/30/2017. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/ak-2017%20bowhead%20whale-western%20arctic-508%20(1).pdf

National Oceanic and Atmospheric Administration (NOAA). 2017a. FIN WHALE (Balaenoptera physalus): Northeast Pacific Stock. Revised 12/30/2017. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/ak-2017%20fin%20whale-northeast%20pacific-508%20(1).pdf

National Oceanic and Atmospheric Administration (NOAA). 2017b. BELUGA WHALE (Delphinapterus leucas): Eastern Bering Sea Stock. Revised 12/30/2017. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/ak-2017%20beluga-eastern%20bering%20sea-508.pdf
National Oceanic and Atmospheric Administration (NOAA). 2017c. HARBOR PORPOISE (Phocoena phocoena): Bering Sea Stock. Revised 12/30/2017. Electronic document: file:///C:/Users/j4pmcmbr/Downloads/ak-2017%20harbor%20porpoise-bering%20sea-508%20(2).pdf

National Oceanic and Atmospheric Administration (NOAA). 2017d. BEARDED SEAL (Erignathus barbatus nauticus): Alaska Stock Revised 12/30/2016. https://www.fisheries.noaa.gov/webdam/download/82959978

Neilson, J.L., Gabriele, C.M., Jensen, A.S., Jackson, K., and Straley, J.M. 2012. Summary of reported vessel collisions in Alaskan waters. Journal of Marine Biology, Vol. 2012, No. 106282. http://dx.doi.org/10.1155/2012/106282

Nerini, M.K, and J.S. Oliver. 1983. Gray Whales and the Structure of the Bering Sea Benthos. Oecologia 59:224-225.

NPS (National Park Service) 2016. Conserving Pinnipeds in Pacific Ocean Parks in response to
climate change. https://www.nps.gov/articles/park-science-vol-28-no-2-summer-2011.htm

NRC (National Research Council) 2012. Climate Change: Evidence, Impacts, and Choices:
Anserrs to common questions about the science of climate change.
https://www.nap.edu/read/14673/chapter/1.
Raymond, J.A., Merritt, M., Skaugstad, C. 1984. Nearshore fishes of Kotzebue Sound in summer. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement, and Development (FRED) report #37. June, 1984

Rearic, D.M. and Ticken, E.J. 1988. Ice gouge processes in the Alaskan Beaufort Sea. Technical Council on Cold Regions Engineering Monograph. 85-107

Richardson, W.J., C.R. Greene, Jr., C.I. Malme and D.H. Thomson. 1995. Marine mammals and noise. Academic Press, San Diego. 576 p.

Smith, S. C., and H. Whitehead. 1993. Variation in the feeding success and behavior of Galapagos sperm whales (Physeter macrocephalus) as they relate to oceanographic conditions. Canadian Journal of Zoology 71: 1991-1996.

Southall, B., A.E. Bowles, W.T. Ellison, J.J. Finneran and nine others, 2007. Marine mammal noise exposure criteria: Initial scientific recommendations. Aquatic Mammals. 33(4), 411-521.

Suydam, R., George, J.C., Person, B., Hanns, C., and Sheffield, G. 2010. Subsistence harvest of bowhead whales (Balaena mysticetus) by Alaskan Eskimos during 2010. North Slope Borough Department of Wildlife Management, Alaska Department of Fish and Game, Northwest Campus-University of Alaska Fairbanks.

Tetra Tech and Wright Forssen Associates. 1983. Feasibility Analysis: Kotzebue Deepwater Port/Airport.

Whitehead, H. 1997. Sea surface temperature and the abundance of sperm whale calves off the Galápagos Islands: implications for the effects of global warming. Report of the International Whaling Commission 47, 941–944.

Wieting, D. 2016. Interim Guidance on the Endangered Species Act Term "Harass". National Marine Fisheries Service, Office of Protected Resources. Silver Spring, MD. October 21, 2016.

Williams, R., and P. O'Hara. 2010. Modelling ship strike risk to fin, humpback and killer whales in British Columbia, Canada. Journal of Cetacean Research and Management 11:1-8.

ST. GEORGE HARBOR IMPROVEMENT FEASIBILITY STUDY

APPENDIX J: FISH AND WILDLIFE COORDINATION ACT REPORT AND ENVIRONMENTAL CORRESPONDENCE

ST. GEORGE, ALASKA

U.S. Army Corps of Engineers
Alaska District

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JOINT BASE ELMENDORF-RICHARDSON, AK 99506-0898

Douglass Cooper
Conservation Planning Assistance
Anchorage Fish & Wildlife Field Office
4700 BLM Road
Anchorage, AK 99507

Dear Mr. Cooper,

The U.S. Army Corps of Engineers (USACE) respectfully requests your formal collaboration under the Fish and Wildlife Coordination Act in the identification, characterization, or development of either alternatives or mitigation strategies associated with a USACE feasibility assessment of potential navigation improvements at St, George Harbor, Alaska.

USACE's feasibility study is being conducted under authority granted by Section 4010 of the Water Resources Development Act of 2007 (P.L. 110-114):

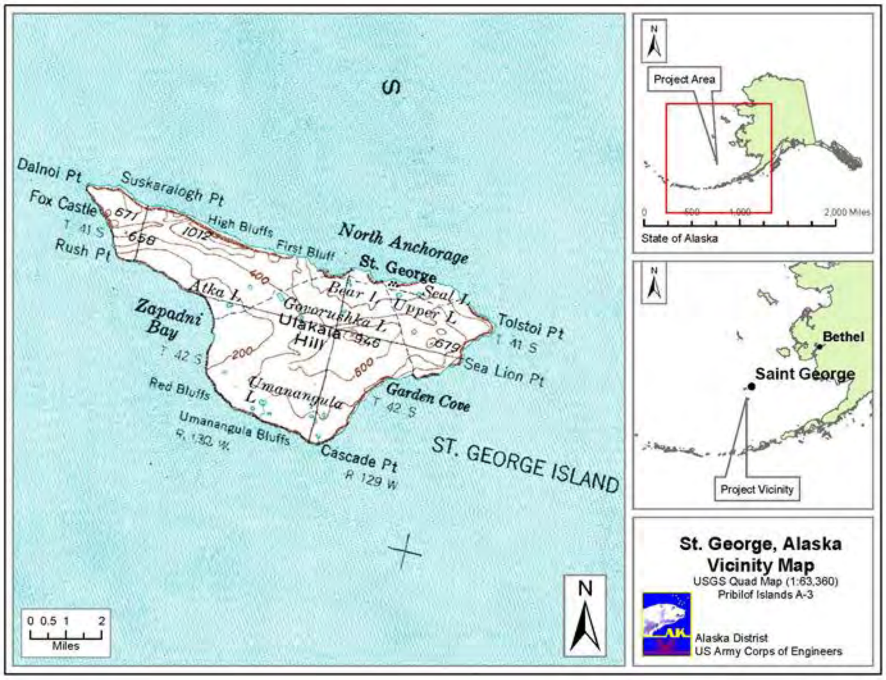
SEC. 4010. ST. GEORGE HARBOR, ALASKA.

The Secretary shall conduct a study to determine the feasibility of providing navigation improvements at St. George Harbor, Alaska.

St. George Harbor, located on the southeast side of Zapadni Bay, along the western-central edge of St. George Island, was constructed by the City of St. George in 1987. Since then, two separate USACE contracted dredging attempts occurring in 1989 and 1995, failed to reach proper project depths required for safe navigation within the harbor and its entrance channel. Because project depths at the entrance channel were never fully attained, an omnipresent wave break at the harbor entrance channel generates dangerous rafting conditions for vessels attempting to maneuver into the harbor basin. Once inside the breakwater entrance, a one-meter seiche (an oscillating, standing wave) commonly occurs within the inner mooring basin, rendering shoreside facilities and services difficult for vessels to utilize.

Compounding efforts to implement a safe navigational climate at St. George Harbor are the harbor's specific geometry and southwestern orientation that subjects its rubble mound breakwaters to the majority direction of the Bering Sea's wave climate. Shoreline erosion following a six-day major storm event in October of 2004 along the north margin of the harbor facility threatened Delta Western's fuel tank storage facility and simultaneously degraded the functionality of the harbor's south breakwater arm. The Federal Emergency Management Agency (FEMA) along with the Alaska Division of Homeland Security & Emergency Management funded and coordinated repairs to the damaged portions of the breakwaters. In 2015, the south breakwater suffered similar reductions in structural integrity when an unusually intense and long-lived winter storm pummeled it with overtopping waves estimated by eye witnesses at 35-40 feet. FEMA was again engaged for emergency repair funding and coordination. FEMA contractors concluded south breakwater repairs in July of 2017.

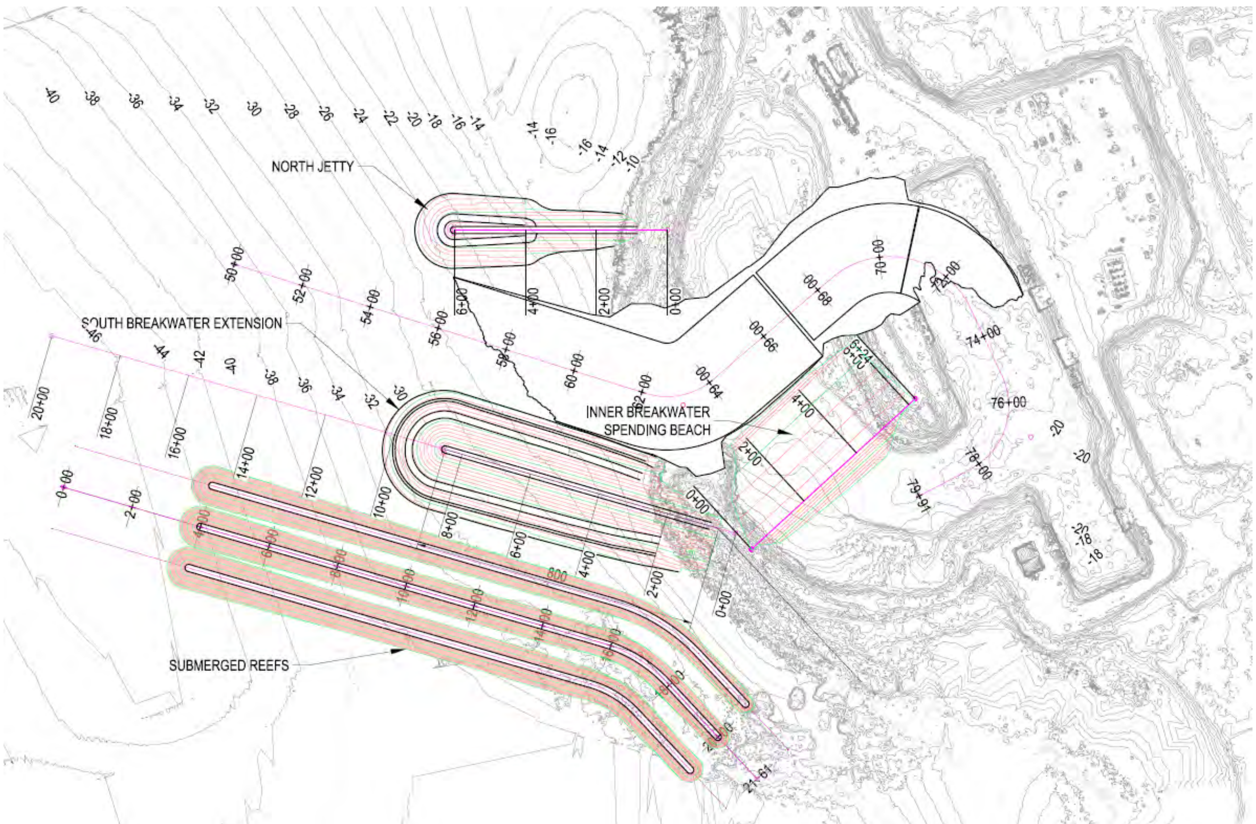
As a result of these aforementioned circumstances, opportunities to develop a sustainable marine resources-based economy for the population of St. George have not been realized. Currently, the economy on St. George Island languishes as it is beset by inefficiencies in its fuel and durable goods deliveries, reduced subsistence and commercial fisheries opportunities, and relative lack of immigration. It is critically important for the viability of the St. George community that improvements to navigation are implemented.



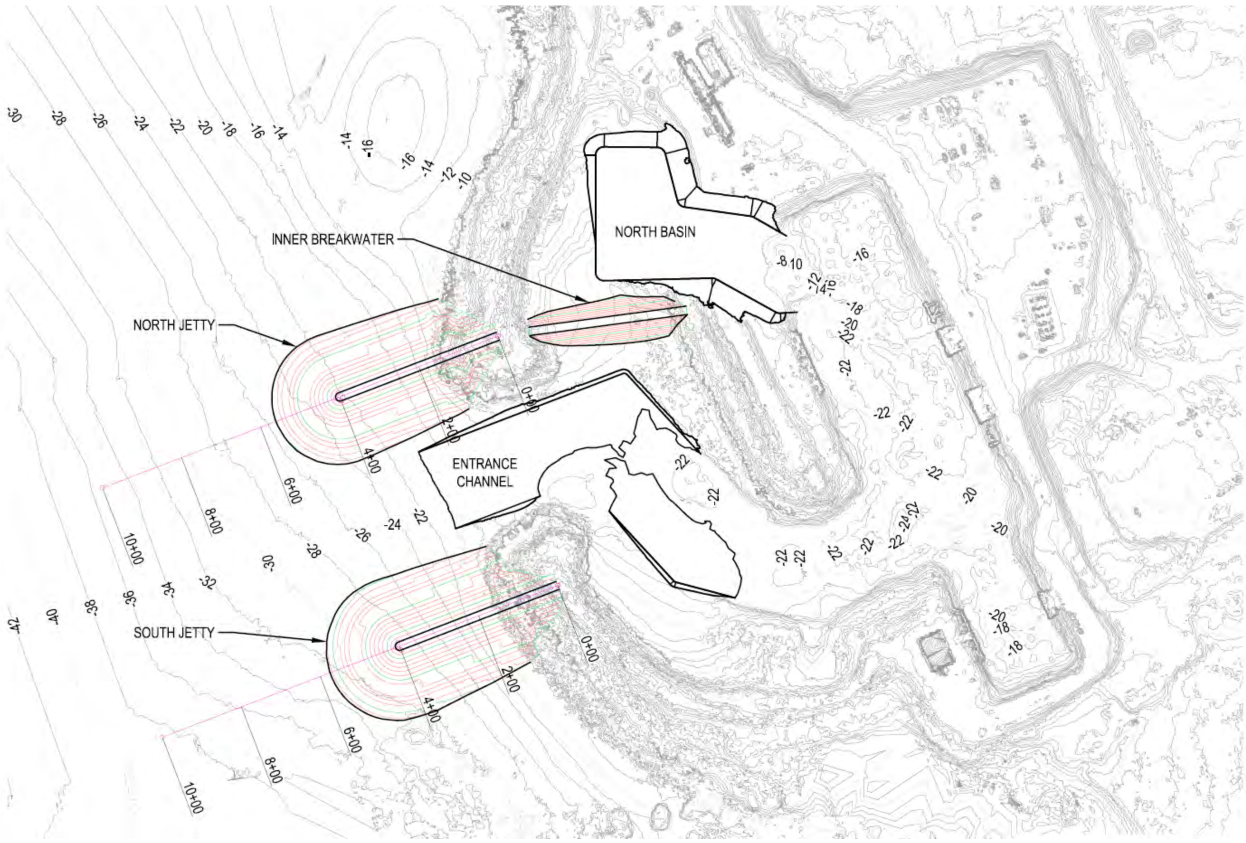
Over the course of a three-day planning charette held January of 2016, USACE, the City of St. George, St. George Traditional Council, St. George Tanaq Corporation, Aleutian Pribolof Island Community Development Association, and various federal and state regulatory agencies agreed that the focus of USACE's feasibility study should evaluate enhancements to the existing harbor and breakwater structures located at Zapadni Bay. More specifically, whether a different harbor geometry was capable of reducing the navigational hazards associated with its use.

St. George Harbor at Zapadni Ba

USACE economists and hydraulic engineers identified fuel barges and crabbing vessels as the project accommodation design vessels, drafting 10ft and 16ft, respectively. Months of wave and current profiling data collection from the nearshore and existing harbor basin ensued. These data were incorporated into a three stage nested model that predicted wave activity from the open ocean, the nearshore zone, and within the harbor basin itself. Once validated, USACE hydraulic engineers then utilized the predictive model to evaluate an array of different breakwater and harbor geometries. In all, eight different harbor geometries were evaluated by the model, including the existing harbor design.



Example of an alternate harbor geometry tested by USACE's nested model



Example of an alternate harbor geometry tested by USACE's nested model

Despite an inventive array of breakwater geometries and harbor configurations, many that were modeled after existing structures operating in similar wave environments, USACE's modeling efforts consistently identified St. George harbor's orientation to the majority wave climate of the south Bering Sea to be the primary culprit of model run failures. That being said, only practical alternatives were utilized in these model runs; some theoretical geometries that may have satisfied USACE's parameters for safe navigation would have been so expensive as to never have been seriously considered for implementation.

USACE's realization that revitalization or redesign of St. George's Zapadni Bay harbor was impractical led its engineers to reevaluate the St. George Village Cove site as a means of alleviating navigational inefficiencies for the community. Village Cove, located immediately west of St. George Village, served as a natural harbor during the height of the Island's fur sealing enterprise. Skin boats would lighter barrels of salted fur seal pelts from shore to waiting ships. There exists a small but dilapidated dock face at the end of the road that terminates at Village Cove that helped facilitate the transfer of furs and supplies to and from small vessels during calm conditions.

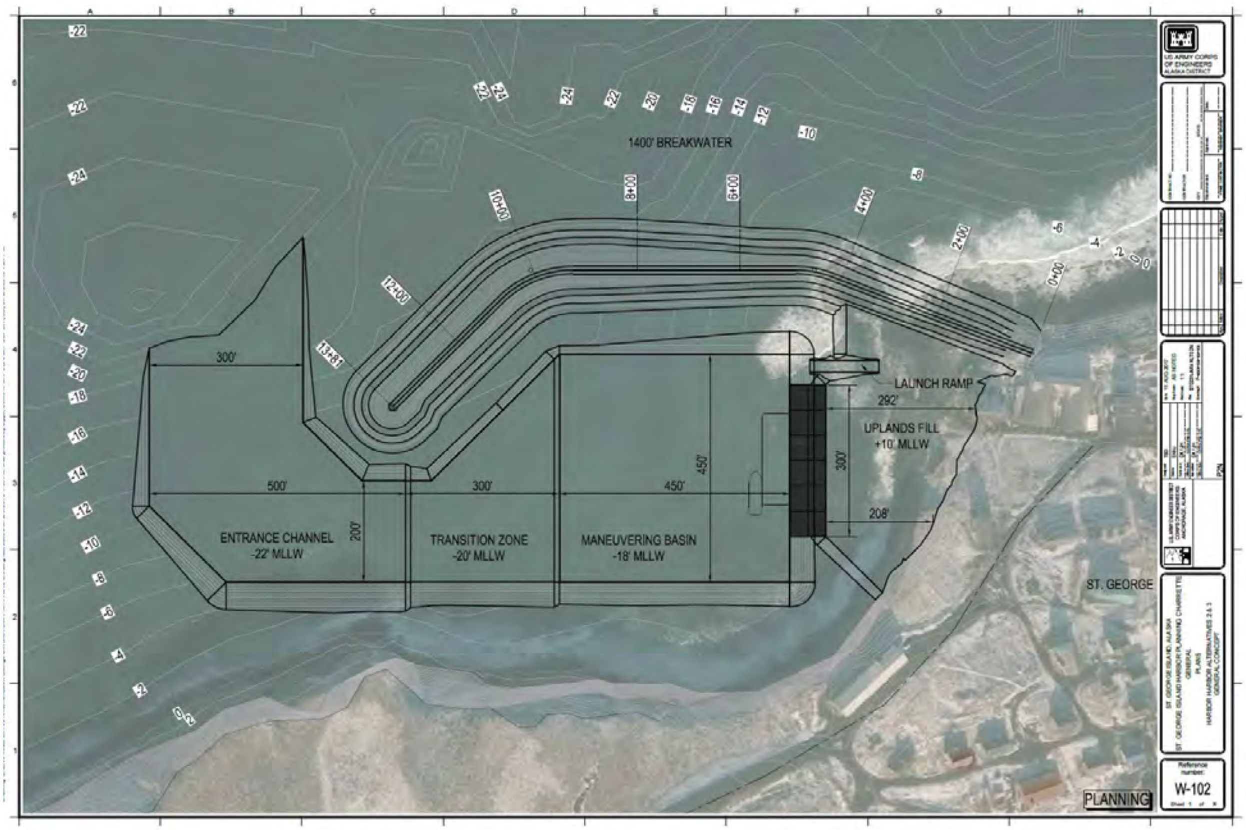
Village Cove site

During the January 2016 planning charette, Village Cove was eliminated from consideration as a viable project site, specifically because of the existing infrastructure at the Zapadni Bay harbor made it a much more probable project location. Building upon the existing breakwater and harbor structures was originally expected to recognize the greatest cost savings and represented the least environmentally damaging alternative. Upon receipt of USACE's harbor geometry modeling results, the St. George City Council held a vote and granted USACE authorization to investigate the previously discounted Village Cove site for its capacity to alleviate St. George's navigation problems. Conceivably, Village Cove is suitable for investigation, its immediately adjacent waters are deep, it is more proximally located to the village, and because it is located on the north side of St. George Island, Village Cove is not subject to the same wave climate that the Zapadni Bay harbor is.

Conversely, the cliffs that surround and naturally define Village Cove serve as nesting habitat for a great diversity of seabirds: thick-billed and common murres, red-faced cormorants, horned and tufted puffins, and black and red-legged kittiwakes are commonly observed at the Village Cove cliffs. From the dilapidated dock face, large groups of least and parakeet auklets can be observed flying overhead as they depart for and return from their foraging locations in the nearshore waters.

A northern fur seal rookery exists approximately 2.5 kilometers to the west of Village Cove where the coastal cliffs give way to rocky beaches. During the summer months, the waters of Village Cove are teeming with northern fur seals as they make their foraging rounds to and from the rookery grounds. Federally endangered western Distinct Population Segment (DPS) Steller sea lions are commonly observed in the waters of Village cove, although in greatly diminished numbers compared to their historical contingent. Northern sea otter are not frequently observed in Village Cove or its immediately adjoining waters. Transient killer whales are known to take northern fur seals and Steller sea lions in Village Cove's nearshore waters. Similarly, during summer months, a variety of other whales and porpoises are known to be present in, or transiting through St. George's nearshore waters.

The waters surrounding St. George Island, to include those of Village Cove, are designated as Essential Fish Habitat (EFH). Both the Fishery Management Plans for the Salmon Fisheries in the Exclusive Economic Zone off Alaska and the Groundfish of the Bering Sea Aleutian Island management area define the attributes of species specific critical habitat elements that are encapsulated in the overall designation of EFH for the nearshore waters of St. George Island. The substrate at Village Cove is primarily composed of biologically encrusted igneous cobbles and boulders with very few areas of fines and sand. Kelp stands are present at Village Cove's northern margin and to the east of the northern point that defines the cove itself.



Alternative developed for wave modeling at Village Cove site

Village Cove, as viewed from the east

Currently, USACE's hydraulic engineers are modeling potential Village Cove harbor geometries that would satisfy the navigational requirements of the aforementioned project design vessels. USACE biologists have been coordinating with National Marine Fisheries Service's office of protected resources and division of fish habitat, and also with USFWS' Alaska Maritime National Wildlife Refuge personnel concerning the potential impacts to the physical and biological resources at the Village Cove site. Under its NEPA and project planning guidance, USACE is preparing an Environmental Assessment for this feasibility assessment and seeks to include USFWS coordination in the identification, characterization, or development of either alternatives or mitigation strategies. Precision data and schematics of proposed alternatives do not exist at this stage of the project development process. However, USACE is resolved to share all existing and pertinent data related to its navigational improvement feasibility assessment at St. George with USFWS in the spirit of satisfying the precepts of the Fish and Wildlife Coordination Act.

Please direct any questions or considerations that you may have to Mr. Michael Rouse, Fisheries Biologist / NEPA Coordinator, U.S. Army Corps of Engineers, Alaska District, 907-753-2743, or at Michael.B.Rouse@usace.army.mil

MB Rouse

Michael Rouse
Fisheries Biologist / NEPA Coordinator
U.S. Army Corps of Engineers

From: Rouse, Michael B CIV USARMY CEPOA (USA)
To: Spegon, Jennifer
Subject: RE: [Non-DoD Source] Re: St. George Non-Corps Passengers
Date: Thursday, May 9, 2019 12:34:00 PM

Jennie,

I'm back from a couple days of training. I'll get the information you need and call you this afternoon.

Cheers,

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743

-----Original Message-----
From: Spegon, Jennifer [mailto:jennifer_j_spegon@fws.gov]
Sent: Wednesday, May 08, 2019 2:23 PM
To: Rouse, Michael B CIV USARMY CEPOA (USA) <Michael.B.Rouse@usace.army.mil>
Subject: [Non-DoD Source] Re: St. George Non-Corps Passengers

Hi Mike

I left you a phone message requesting you give me a call to discuss options for the St George trip.

In the meantime, could you provide the name of the commercial flight contractor you'd be using, I'll need to provide this to our folks.

Thank you,
Jennie

Jennifer Spegon
Ecological Services
Anchorage Fish and Wildlife Field Office
U.S. Fish and Wildlife Service
4700 BLM Road
Anchorage, AK 99507
Phone: (907) 271-2768
FAX: (907) 271-2786
jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov>

On Tue, May 7, 2019 at 3:22 PM Spegon, Jennifer <jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov> > wrote:

Hi Mike

So far, Marc Romano can only make it for the dates he is already scheduled to be on the island May 19 to 23rd. Catherine Yeargan cannot make it for the proposed dates June 2-5 or for those for which Marc is already out there. That leaves me, and potentially Leah Kenney who has Alaska bird ID experience. She returns from annual leave tomorrow.

I will check Leah's availability and get back to you tomorrow.

Jennie

Jennifer Spegon
Ecological Services
Anchorage Fish and Wildlife Field Office
U.S. Fish and Wildlife Service
4700 BLM Road
Anchorage, AK 99507
Phone: (907) 271-2768
FAX: (907) 271-2786
jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov>

To expedite requests for U.S. Fish and Wildlife Service consultations and project reviews, send new requests to our central mailbox at: ak_fisheries@fws.gov <mailto:ak_fisheries@fws.gov> and copy douglass_cooper@fws.gov <mailto:douglass_cooper@fws.gov>

On Mon, May 6, 2019 at 2:46 PM Spegon, Jennifer <jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov> > wrote:

Mike

I have an email out to Marc. I will forward the dates to you when I hear back.

Jennie

Jennifer Spegon
Ecological Services
Anchorage Fish and Wildlife Field Office
U.S. Fish and Wildlife Service
4700 BLM Road

Anchorage, AK 99507
Phone: (907) 271-2768
FAX: (907) 271-2786
jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov>

To expedite requests for U.S. Fish and Wildlife Service consultations and project reviews, send new requests to our central mailbox at: ak_fisheries@fws.gov <mailto:ak_fisheries@fws.gov> and copy douglass_cooper@fws.gov <mailto:douglass_cooper@fws.gov>

---------- Forwarded message ---------
From: Spegon, Jennifer <jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov> >
Date: Mon, May 6, 2019 at 2:01 PM
Subject: Fwd: [EXTERNAL] FW: St. George Non-Corps Passengers (UNCLASSIFIED)
To: Marc Romano <marc_romano@fws.gov <mailto:marc_romano@fws.gov> >

Hi Marc

Mike is checking into changing the dates. I have the dates that you'll already be out there on May 19-23rd.

What were the dates in June that you are available?

Thank you
Jennie
Jennifer Spegon
Ecological Services
Anchorage Fish and Wildlife Field Office
U.S. Fish and Wildlife Service
4700 BLM Road
Anchorage, AK 99507
Phone: (907) 271-2768
FAX: (907) 271-2786
jennifer_j_spegon@fws.gov <mailto:jennifer_j_spegon@fws.gov>

To expedite requests for U.S. Fish and Wildlife Service consultations and project reviews, send new requests to our central mailbox at: ak_fisheries@fws.gov <mailto:ak_fisheries@fws.gov> and copy douglass_cooper@fws.gov <mailto:douglass_cooper@fws.gov>

---------- Forwarded message ---------
From: Rouse, Michael B CIV USARMY CEPOA (USA) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> >
Date: Mon, May 6, 2019 at 1:27 PM

Subject: [EXTERNAL] FW: St. George Non-Corps Passengers (UNCLASSIFIED)
To: Lydia Ames - NOAA Federal <lydia.ames@noaa.gov
<mailto:lydia.ames@noaa.gov> >
Cc: Spegon, Jennifer <jennifer_j_spegon@fws.gov
<mailto:jennifer_j_spegon@fws.gov> >

Lydia,

Glad to hear you will be joining us, pending your big boss' authorization. Please schedule your own lodging using the below information, we will figure out how to reimburse you for it.

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743

-----Original Message-----
From: Phillips, Reese B (Brand) CIV (US)
Sent: Thursday, May 02, 2019 1:59 PM
To: Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil
<mailto:Michael.B.Rouse@usace.army.mil> >
Subject: RE: St. George Non-Corps Passengers (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Mike,

Would you please contact Jennie, Marc, and the NOAA person (if she is going) and have them contact Annette with the Tanaq Corporation (907-272-9886 in Anchorage) to make their St. George Hotel Reservations? We are making reservations for the nights of June 2, 3, 4, & 5. They will need to provide their govt. credit card information and will reimburse them later through a MIPR.

Thanks,

Brand

-----Original Message-----
From: Rouse, Michael B CIV USARMY CEPOA (US)
Sent: Wednesday, May 1, 2019 9:53 AM
To: Phillips, Reese B (Brand) CIV (US) <Reese.B.Phillips@usace.army.mil
<mailto:Reese.B.Phillips@usace.army.mil> >
Subject: RE: St. George Non-Corps Passengers (UNCLASSIFIED)

These are the for sure passengers right now:

Jennie Spegon
Marc Romano

They are both USFWS

Mike Rouse

Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743

-----Original Message-----
From: Phillips, Reese B (Brand) CIV (US)
Sent: Wednesday, May 01, 2019 9:50 AM
To: Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> >
Subject: St. George Non-Corps Passengers (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Mike,

Would you please provide me with a list of the passengers from USFWS and NOAA?

Thanks,

Brand

Reese Brand Phillips, PhD
Biologist / Project Manager
Civil Project Management Branch
USACE Alaska District
(907) 753-2539

CLASSIFICATION: UNCLASSIFIED
CLASSIFICATION: UNCLASSIFIED

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JOINT BASE ELMENDORF-RICHARDSON, AK 99506-0898

June 14, 2019

Mr. Greg Balogh
NOAA Fisheries
Protected Resources Division
222 West 7th Avenue, Box 43
Anchorage, AK 99513

RE: Request for Concurrence of NMFS Status Species List, Feasibility Assessment, St. George Navigational Improvements, St. George Island, Alaska.

Dear Mr. Balogh,

The U.S. Army Corps of Engineers (USACE), Alaska District is conducting a feasibility assessment of navigational improvements proposed for the Pribilof Island community of St. George. Under the provisions set forth for interagency consultation and coordination under Section 7 of the Endangered Species Act (ESA), and of the National Environmental Policy Act (NEPA), USACE has compiled a status species list derived from the Alaska Protected Resources Division's Species Distribution Mapper for your interpretation and approval moving forward.

ESA Status Species
Steller sea lion (*Eumetopias jubatus*) Western DPS
Fin whale (*Balaenoptera physalus*)
Humpback whale (*Megaptera novaeangliae*) Western North Pacific and Mexico DPS
North Pacific right whale (*Eubalaena japonica*)
Sperm whale (*Physeter macrocephalus*)
Western North Pacific gray whale (*Eschrichtius robustus*)

Marine Mammal Protection Act Status Species
Harbor seal (*Phoca vitulina*)
Ribbon seal (*Histriophoca fasciata*)
Spotted seal (*Phoca largha*)
Northern fur seal (*Callorhinus ursinus*)
Beluga whale (*Delphinapterus leucas*)
Dall's porpoise (*Phocoenoides dalli*)
Humpback whale (*Megaptera novaeangliae*) Hawaii DPS
Minke whale (*Balaenoptera acutorostrata*)
Stejneger's beaked whale (*Mesoplodon stejnegeri*)
Killer whale (*Orcinus orca*)
Gray whale (*Eschrichtius robustus*)

USACE currently envisions its navigational improvements manifest in the construction of a harbor on the north side of St. George Island, immediately adjacent to the village of St. George at Village Cove. USACE's preferred harbor design consists of a 450-foot wide by 550-foot-long mooring basin dredged to -20 feet MLLW protected by a 1,731-foot-long north breakwater and a 250-foot-long stub breakwater at the west edge of the basin. The basin connects to the Bering Sea with a 250-foot wide navigation channel dredged to -25 feet MLLW. Dredging the channel and basin for this particular design will require removal of approximately 430,000 cubic yards of material. Inner harbor facilities include 2.6 acres of uplands area filled to +10 feet MLLW with a 300-foot-long pile supported dock and a concrete boat launch ramp to -5 feet MLLW for full tide launching access. USACE expects the underlying sediments of the project area to be comprised almost entirely of bedrock, requiring preparatory fracturing prior to excavation through confined underwater blasting. The volume of dredged material is also expected to vastly exceed any capacity for upland placement or beneficial terrestrial utilization, and would therefore be placed in the nearshore waters of St. George, possibly as deep as the 30 fathom depth contour.

USACE appreciates NMFS' helpful coordination in determining an appropriate species list for consideration in forthcoming analyses.

Sincerely,

Mike Rouse
Fisheries Biologist
U.S. Army Corps of Engineers
Alaska District

REIMBURSABLE AGREEMENT DATA FORM

X	INITIAL SUBMISSION
	FOR MODIFICATION

Agreement Information

Project Title: St. George Island, AK Navigational Improvement — Sales Order #:

Cite the FWS Reimbursable Program Authority used: Economy Act of 1932 as amend. 31 U.S.C. 1535

Fund:	XXXF1611NR	WBS:	FRES48020770350	Cost Center:	FF07CAAN00

Start of Work Date: 7/17/2019 — Planned Completion Date: 9/30/2020

Customer Name: US ARMY CORPS OF ENGINEERS — TIN: 92-0016677

		Total Unauthorized Amount	Total Authorized Burden Amount
Customer Reference No./P.O.:	WC1JUW91985996		
Total Amount Authorized in this Agreement:	41,345.00	0.00	11,384.86

	Fiscal Year	Dollar Amount	O/H rate:	Target Amount / Less Burden
Amount Authorized / Fiscal Year:	2019	41,345.00	38 %	29,960.14
Amount Authorized / Fiscal Year:		0.00	0 %	0.00
Amount Authorized / Fiscal Year:		0.00	0 %	0.00
Amount Authorized / Fiscal Year:		0.00	0 %	0.00
Amount Authorized / Fiscal Year:		0.00	0 %	0.00

Modification

The Agreement is Modified Effective: — By Modification No:

To: Increase — Decrease — The Amount by:

Change the: — Start of Work Date to: — Planned Completion Date to:

Contact Information

USFWS Project Manager		Paying Office Billing Contact
Jennifer Spegon	Name:	Andria Lyn Werning
Anchorage Fish and Wildlife Conservation (	Address Line one:	USACE Finance Center
470 BLM Road	Address Line two:	5722 Integrity Drive
Anchorage, AK 99507	City, State, Zip:	Millington, TN 38054-5005
907-271-2768	Phone (w/area code):	907-753-2885

Billing Information

BILLING INFORMATION FOR DIVISION OF FINANCIAL MGT/DENVER OPERATIONS

Agency Location Code (ALC): 00008736 — DUNS #: 123144581

TAS: 096 3121 — BETC: DISB

APPLICABLE COSTINGSHEET SUPPORT CODE IS: FW7H1

IF APPLICABLE, THE APPROVED EXCEPTION TO

POLICY IS ATTACHED. OTHERWISE, THE STANDARD OVERHEAD RATE IS: 38 — IPA / SERF:

Rate Description: d-5a / Fish & Wildlife Coordination Act (FWCA) - Service Personnel

Notes to DFM/DO:

Approvals

Signature of USFWS Official:

Name and Title (typed/printed): GARY GOLDBERG Digitally signed by GARY GOLDBERG Date: 2019.08.06 14:05:16 -08'00'

To be completed by Regional Budget and Finance Office

Concur:

Signature:

Name and Title (typed/printed): Matthew Thies, Financial Analyst — Date: 8/9/2019

Name of USFWS Requesting Official: — Phone #:

Regional Table Review: Core Financials>Display>Custom Reports> ZREPORT 419 OR EMIS> Sales and Distribution> Reimbursable Agreements — Signature and Date:

Cost Acct

Customer #: — Functional Area: — Type:

ACCEPTANCE OF MIPR

1. TO *(Requiring Activity Address)(Include ZIP Code)*	2. MIPR NUMBER	3. AMENDMENT NO.
Civil Project Management Branch CEPOA-PM-C PO Box 6898 JBER, AK 99506-6898	WC1JUW91985996	000
	4. DATE *(MIPR Signature Date)* 20190717	5. AMOUNT *(As Listed on the MIPR)* $41,345.00

6. The MIPR identified above is accepted and the items requested will be provided as follows: *(Check as Applicable)*

a. [X] ALL ITEMS WILL BE PROVIDED THROUGH REIMBURSEMENT *(Category I)*

b. [ ] ALL ITEMS WILL BE PROCURED BY THE DIRECT CITATION OF FUNDS *(Category II)*

c. [ ] ITEMS WILL BE PROVIDED BY BOTH CATEGORY I AND CATEGORY II AS INDICATED BELOW

d. [ ] THIS ACCEPTANCE, FOR CATEGORY I ITEMS, IS QUALIFIED BECAUSE OF ANTICIPATED CONTINGENCIES AS TO FINAL PRICE. CHANGES IN THIS ACCEPTANCE FIGURE WILL BE FURNISHED PERIODICALLY UPON DETERMINATION OF DEFINITIZED PRICES, BUT PRIOR TO SUBMISSION OF BILLINGS.

7. [ ] MIPR ITEM NUMBER(S) IDENTIFIED IN BLOCK 13, "REMARKS" IS NOT ACCEPTED (IS REJECTED) FOR THE REASONS INDICATED.

8. TO BE PROVIDED THROUGH REIMBURSEMENT CATEGORY I			9. TO BE PROCURED BY DIRECT CITATION OF FUNDS CATEGORY II		
ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.	ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.
1	1	$41,345.00			
d. **TOTAL ESTIMATED PRICE**		$41,345.00	e. **TOTAL ESTIMATED PRICE**		$0.00

10. ANTICIPATED DATE OF OBLIGATION FOR CATEGORY II ITEMS	11. GRAND TOTAL ESTIMATED PRICE OF ALL ITEMS
	$41,345.00

12. FUNDS DATA *(Check if Applicable)*

a. [ ] ADDITIONAL FUNDS IN THE AMOUNT OF $ ______________ ARE REQUIRED *(See justification in Block 13)*

b. [ ] FUNDS IN THE AMOUNT OF $ ______________ ARE NOT REQUIRED AND MAY BE WITHDRAWN

13. REMARKS

The 38% indirect cost recovery rate is included in the budget, as required in 264 FW 1, Exhibit 4, published 03/25/19.

14. ACCEPTING ACTIVITY *(Complete Address)*	15. TYPED NAME AND TITLE OF AUTHORIZED OFFICIAL	
US Fish and Wildlife Service MS-361 1011 E. TUDOR RD Anchorage, AK 99503	Mary Colligan ARD-FES	
	16. SIGNATURE Mary Colligan	17. DATE 8/8/19

DD FORM 448-2, JUL 71 PREVIOUS EDITION WILL BE USED UNTIL EXHAUSTED. Adobe Designer 8.0

MILITARY INTERDEPARTMENTAL PURCHASE REQUEST

2. FSC	3. CONTROL SYMBOL NO.	4. DATE PREPARED	5. MIPR NUMBER	6. AMEND NO.
		17-JUL-2019	WC1JUW91985996	000

7. TO: US FISH AND WILDLIFE SERVICE

MS # 201
1011 E TUDOR RD

ANCHORAGE, AK 99503-6199

8. FROM: CIVIL PROJECT MGMT BRANCH
CEPOA-PM-C
P.O. BOX 6898

JBER, AK 99506-6898

9. ITEMS ☐ ARE ☐ ARE NOT INCLUDED IN THE INTERSERVICE SUPPLY SUPPORT PROGRAM AND REQUIRED INTERSERVICE SCREENING ☐ HAS ☐ HAS NOT BEEN ACCOMPLISHED

ITEM NO. a	DESCRIPTION (Federal stock number, nomenclature, specification and/or drawing No., etc.) b	QTY c	UNIT d	ESTIMATED UNIT PRICE e	ESTIMATED TOTAL PRICE f
1	FEA1750-FY16 ST GEORGE HRB FEAS FED$ [102847] --- Project No.: 102847 ACCTING CLASS: 096 NA X 2016 3121 000 0000 J4 2016 08 2431 013721 2530 68D199 112 96951 00008736 WORK CAT CODE: 22T0F WORK CAT ELEM CODE: 99999 CCS: 112 INITIAL ACCTING CLASS: NA 08 013721 SRC ACCTING CLASS: NA LINE ITEM CURRENT UNOBLIG BAL AMT: $41,345.00		LS		$41,345.00

10. SEE ATTACHED PAGES FOR DELIVERY SCHEDULES, PRESERVATION AND PACKAGING INSTRUCTIONS, SHIPPING INSTRUCTIONS AND INSTRUCTIONS FOR DISTRIBUTION OF CONTRACTS AND RELATED DOCUMENTS.

11. GRAND TOTAL: $41,345.00

REMARKS : THIS ORDER IS A DESIGNATED ECONOMY ACT ORDER

US FISH AND WILDLIFE SERVICE COORDINATION AND COORDINATION ACT REPORT FOR

SAINT GEORGE (P2# 102847) FOR FY19-20 IN THE AMOUNT OF $41,345

JENNIFER SPEGON (FWS TECHNICAL POINT OF CONTACT)(907) 271-2768

GARY GOLDBERG (FWS ADMINISTRATIVE POINT OF CONTACT) (907) 786-3813

Upon Acceptance of this Government Order the Performing Activity must include the full accounting classification data to include: Department Code: __________, Transfer Department Code: __________, Appropriation Fiscal Year: __________, Appropriation Symbol: __________, Appropriation Limitation: __________, Operating Agency: __________, Allotment Serial Number: __________ Fiscal Station Number: __________, and the account classification amount: __________.
Agency Location Code: __________

MILITARY INTERDEPARTMENTAL PURCHASE REQUEST

2. FSC	3. CONTROL SYMBOL NO.	4. DATE PREPARED	5. MIPR NUMBER	6. AMEND NO.
		17-JUL-2019	WC1JUW91985996	000

7. TO: US FISH AND WILDLIFE SERVICE
MS # 201
1011 E TUDOR RD
ANCHORAGE, AK 99503-6199

8. FROM: CIVIL PROJECT MGMT BRANCH
CEPOA-PM-C
P.O. BOX 6898
JBER, AK 99506-6898

9. ITEMS ☐ ARE ☐ ARE NOT INCLUDED IN THE INTERSERVICE SUPPLY SUPPORT PROGRAM AND REQUIRED INTERSERVICE SCREENING ☐ HAS ☐ HAS NOT BEEN ACCOMPLISHED

ITEM NO. a	DESCRIPTION (Federal stock number, nomenclature, specification and/or drawing No., etc.) b	QTY c	UNIT d	ESTIMATED UNIT PRICE e	ESTIMATED TOTAL PRICE f

ECONOMY ACT ORDER

Please have the accepting official sign below and return to the FINANCIAL POC address. EXPIRATION DATE: 30-SEP-2020

RA TECHNICAL POC: REESE B PHILLIPS CEPOA-PM-C reese.b.phillips@usace.army.mil
RA FINANCIAL POC: ANDRIA LYN WERNING CEPOA-PM-C 907-753-2885 ANDRIA.L.WERNING@usace.army.mil
RA TECHNICAL POC ADDRESS: CIVIL PROJECT MGMT BRANCH
P.O. BOX 6898
JBER, AK 99506-6898

PA TECHNICAL POC: JENNIFER SPEGON, (907) 271-2768
PA FINANCIAL POC: GARY GOLDBERG, (907) 786-3813

*****DEPT 096 FUNDS - CANNOT BE ACCEPTED AS DIRECT FUND CITE*****

ACCEPTED ___ REIMBURSABLE ______________________ DATE: ______________ TITLE: ______________

12. TRANSPORTATION ALLOTMENT (Used if FOB Contractor's plant)

13. MAIL INVOICES TO (Payment will be made by)
USACE FINANCE CENTER
FOR USAED, ALASKA (J4)
5722 INTEGRITY DRIVE
MILLINGTON, TN 38054-5005

14. FUNDS FOR PROCUREMENT ARE PROPERLY CHARGEABLE TO THE ALLOTMENTS SET FORTH ON THE LINE ITEM NOs ABOVE. THE AVAILABLE BALANCES OF WHICH ARE SUFFICIENT TO COVER THE ESTIMATED TOTAL PRICE.

MARK J VIOTTO
ACCOUNTANT (COST SHARE CONTROL)
ELECTRONICALLY SIGNED BY 18-JUL-2019

15. AUTHORIZING OFFICER (Type name and title)	16. SIGNATURE	17. DATE
ANDRIA LYN WERNING PROGRAM ANALYST	ANDRIA LYN WERNING ELECTRONICALLY SIGNED BY	17-JUL-2019

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JOINT BASE ELMENDORF-RICHARDSON, AK 99506-0898

MEMORANDUM OF AGREEMENT
BETWEEN
ALASKA DISTRICT, CIVIL WORKS BRANCH,
AND
U.S. FISH AND WILDLIFE SERVICE,
ANCHORAGE FISH AND WILDLIFE CONSERVATION FIELD OFFICE

SUBJECT: Agreement to the Scope of Work provided by the U.S Fish and Wildlife Service (USFWS), and the subsequent intent to provide funding by the Alaska District in compliance with the Fish and Wildlife Coordination Act.

1. The U.S. Army Corps of Engineers (USACE), Alaska District is conducting a feasibility assessment of navigational improvements proposed for the Pribilof Island community of St. George. Under the provisions set forth directing interagency coordination under the Fish and Wildlife Coordination Act, USACE requested that USFWS develop a Scope of Work (SOW) in which the final product would be a Coordination Act Report.

2. USACE Alaska District agrees with the proposed expenditures and schedule provided in USFWS' SOW dated July 8, 2019 and shall enact funds transfer through Military Interdepartmental Purchase Request (MIPR) in the amount of $41,345.

3. USFWS shall complete all necessary fieldwork, research, and external agency coordination that may be required to provide USACE with a completed Coordination Act Report by September 31, 2019.

Michael R. Salyer
Michael R. Salyer
POA-ER-C-ER, Chief

Mary Coll
Mary Colligan
Assistant Regional Director
Fisheries and Ecological Services
U.S. Fish and Wildlife Service
Alaska Region

Scope of Work
Fiscal Year 2019
U.S. Fish and Wildlife Service
Anchorage Fish and Wildlife
Conservation Field Office
July 8, 2019

1. **Name of Study:** St. George Island, Alaska Navigation Improvement Project

2. **Location:** St. George Island is one of five Pribilof Islands in the Bearing Sea, located approximately 250 miles northwest of Unalaska and 47 miles southeast of St. Paul Island. The City of St. George is located on the north side of the island.

3. **Project Purpose:** The U.S. Army Corps of Engineers (Corps) is evaluating environmental impacts and potential mitigation for navigation improvements on St. George Island, Alaska. The current harbor location at Zapadni Bay on the west side of the island has dangerous wave and seiche conditions (oscillating, standing waves), which limit the number of safe access and moorage days for the fleet. This limits subsistence opportunities, delivery of goods to the community, and jeopardizes the long-term viability of the small community on St. George Island.

4. **Authorities:** The U.S. Fish and Wildlife Service (USFWS) enters into this reimbursable agreement under the financial authority of the Economy Act of 1932 as amended (31 U.S.C. 1535) funds will be transferred from the Corps to the USFWS through the Intra-governmental Payment and Collection (IPAC) system. Assistance is provided by the USFWS under the following authorities: Fish and Wildlife Coordination Act (FWCA, 16 U.S.C. 661 et seq. 48 Stat. 401), Clean Water Act of 1977 (CWA, 933 U.S.C 1251 et seq. 62 Stat. 1155), Water Resources Development Act of 2007 (WRDA, Section 4010, Public Law 110-114), Endangered Species Act of 1973 (ESA, 16 U.S.C. Section 1531 et seq.), Marine Mammals Protection Act of 1972 (MMPA, 16 USC 1361-1407), Migratory Bird Treaty Act of 1918 (MBTA, 16 U.S.C. 703-712), National Invasive Species Act (NISA) as appended by the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), and the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C 4321 et seq. and clarifying regulations 40 CFR Parts 1500-1508).

5. **Status of the Corps Studies:** In October 2002, the Corps approved a reconnaissance study report for harbor improvements on St. George Island. The report recommended further research; however, the Corps did not initiate that research through to the feasibility phase of the study due to the lack of matching funds from a local sponsor at that time. In July 2004, the Corps determined removing pinnacles in the entrance of the existing channel would not be the optimal tactic without addressing other dangerous issues at the existing location. In October 2015, the Corps provided a synopsis report that outlined ongoing efforts that were underway including collecting baseline information and engineering designs to aid in the development of alternatives. In January 2016, the Corps held a planning charrette to provide updates and get input from stakeholders including the USFWS. While initial efforts focused on improving the existing harbor at Zapadni Bay, modeling results indicated minimal opportunities would be available to improve and provide safe access at this location. Based on this information, the Corps adjusted the scope of the study to consider other locations for a harbor alternative. In September 2018, the Corps' preliminary draft feasibility report outlined three locations: one at

the existing harbor location, another on the west side of the island, and a third on the north side in Village Cove adjacent to the City of St. George, known at the North Harbor site. The Corps' Tentatively Selected Plan (TSP) is to construct a new harbor at the North Harbor site. The Corps' revised Integrated Feasibility Report for is scheduled for public review in late 2019 and will include an environmental assessment and potential mitigation measures.

6. **Project Description:** The Corps' TSP at the North Harbor site (engineered alternative N-3), consists of dredging the high energy nearshore benthic environment for construction, operations and maintenance of a protective breakwater, mooring basin, entrance channel, a dock, and a boat launch, specifically:
   - Construction of the breakwater would include an upland area for staging breakwater materials, construction of the breakwater with land-based equipment, and a barge excavator to shape the toe and benches of the breakwater. Construction of the breakwater core would occur above the tide range to allow equipment to drive the breakwater core to place initial rock layers. Transportation for delivery of construction materials from an offsite established quarry location, such as from Cape Nome or Granite Cove on Kodiak Island.
   - Construction would occur over a 3 to 5-year period.
   - Dredging would occur concurrently with stone production and prior to breakwater construction to provide access to the construction barges.
   - Dredging for operations and maintenance would occur at 10-year intervals.
   - Replacement of about 2.5 percent of the armor stone would occur every 25 years.

7. **Agency Coordination:** As authorized by the FWCA, the USFWS is submitting this scope of work to the Corps to receive reimbursable funding to participate in project meetings, teleconferences, site visits, and to provide expertise to review and interpret potential biological impacts and mitigation measures for wildlife resources within the analysis area.

8. **Data Needs:** More site-specific data needs to be collected for the TSP for further environmental analysis in order to differentiate between alternatives, and the associated impacts and mitigation opportunities. A better understanding of seabird habitat and species composition is necessary to determine where unique habitat exists, identify potential disturbance to habitat and wildlife, and to develop the appropriate avoidance and minimization measures to reduce impacts to USFWS trust resources.

9. **The Corps of Engineers will provide the following:**
   - Continued coordination including project engineering maps and other information necessary to conduct analysis of studies, reviews, and evaluations to formulate USFWS recommendations
   - Coordination during alternatives formulation, and as necessary and requested by the USFWS
   - The Corps will promptly notify the USFWS of any project changes, such as project scheduling, alternative and design modifications, etc., so that appropriate adjustments may be made to USFWS activities and report schedules

10. **The USFWS will provide the following to the Corps:**
    - Review of the draft and final environmental reports
    - Participation in meetings with the Corps and other agencies
    - Participate in field visits
    - Review descriptions of flora, fauna, threatened and endangered species, and habitat in the

areas that could be affected by actions resulting from various alternatives under consideration

- Prepare a Coordination Act Report (CAR) to include wildlife agency coordination, resource concerns, a description of wildlife impacts with and without the project, mitigation measures, an evaluation of the project with mitigation, and a summary of the position of the USFWS

Information may be transferred by informal communication, where appropriate.

11. **Deliverable Schedule:** The USFWS recognizes the time constraints of the Corps' tentative schedule and as such must divert staff time from other worthwhile projects to assess impacts to the vast amount of natural resources within the project area. The USFWS has been working with the Corps on this project since January 2016. The following table details activities by the Corps and the USFWS from October 1, 2018 to September 31, 2019.

Date	**Agency**	**Task**
Oct. 2018 to Sept. 2019	USFWS	Ongoing, attend planning meetings and calls with Corps and other agency representatives, review all completed Corps studies, and provide technical assistance to Corps
Oct. 2018 to May 2019	USFWS	Ongoing, review of original project documents and create draft and final Statement of Work
Dec. 2018	Corps	Ongoing, provide detailed descriptions of alternatives
Nov. 2018 to Sept. 2019	Corps	Ongoing, work with resources agencies to determine potential effects and mitigation measures
Jan. 2019	USFWS	Provide relevant previous studies
May 2019 to June 2019	USFWS	Ongoing, meet the Corps and other USFWS Biologists onsite to evaluate the potential impacts on the biotic environment from the project and develop mitigation alternatives.
June 2019 to July 2019	USFWS	Ongoing, identify potential wildlife and habitat effects and mitigation measures
July 2019 to Aug. 2019	Corps & USFWS	Identify additional mitigation and restoration opportunities for project impacts
Aug. 2019 to Sept. 2019	Corps	Provide draft environmental assessment with mitigation measures and draft Biological Assessment (timeframes may vary for consultations under the ESA)
Sept. 2019	USFWS	Provide Corps with draft CAR for review and comment; complete coordination with NOAA/NMFS and ADF&G
Sept. 2019	USFWS	Provide Corps with final CAR

12. Cost Estimate for FY 2018 to 2019 Activities:

Item	Quantity	Totals
Person Days	30 days@ $846/day	$25,380
Hotel and Transportation for Onsite Visits	Hotel $220/pp/night	$ 3,080
Materials	Field equipment, food, and supplies	$ 1,500
Subtotal		**$29,960**
Overhead	38% overhead	$11,385
Total		**$41,345**

13. Contact Information:

U.S. Fish and Wildlife Service
Jennifer Spegon (Technical Point of Contact)
USFWS Anchorage Fish and Wildlife Conservation Office
4700 BLM Road
Anchorage, AK 99507-2456
Jennifer_J_Spegon@fws.gov
(907) 271-2768

U.S. Fish and Wildlife Service (Financial Information)
Gary Goldberg (Administrative Point of Contact)
U.S. Fish and Wildlife Service
1011 East Tudor Rd
Anchorage, AK 99503
(907) 786-3813
Gary_Goldberg@fws.gov

Business Event Type Code: COLL
BPN Number (DUNS #): 151157950
Agency Location Code: 14-16-0006

The Interior Business Center (Location issuing IPAC Billing)
IBC IPAC / GRANTS
7401 W. Mansfield Avenue, M/S D-2770
Lakewood, CO 80235

U.S. Army Corps of Engineers

Mike Rouse, Fisheries Biologist
Alaska District US Army Corps of Engineers
Joint Base Elmendorf-Richardson, Alaska 99506-0898
Michael.B.Rouse@usace.army.mil
(907) 753-2743

NOAA National Marine Fisheries Service

Seanbob Kelly, Alaska Region Habitat Division
222 West 7th Ave, Box 43, Room 552
Anchorage, Alaska 99513
Seanbob.Kelly@noaa.gov
(907) 271-5195

14. Modification, Dispute, and Termination Procedures (264 FW 2)

Alternate Dispute Resolution: If a disagreement arises on the interpretation of the provisions of this agreement, or amendments or revisions to the agreement that the parties cannot resolve at the operational level, each party must state in writing the area(s) of disagreement and give the statement to the other party for consideration. If the parties do not reach agreement on the interpretation within 30 days, they must send the written description of the disagreement to their respective higher officials for appropriate resolution.

Modification: Either party may propose modifications to this agreement. Requests for extension of the period of performance must be sent to the buying agency (Corps) 30 days before the last day of the period of performance. After the agreement expires, the buying agency may not grant requests for extension. This agreement is binding when the representatives for each agency sign the attached memorandum of agreement.

Termination: This agreement may be terminated by either party upon 30-days written notice. If the buyer cancels the agreement, the seller (Service) may collect costs incurred prior to the cancellation of the agreement plus any termination costs, costs claimed by the seller would be itemized and furnished to the buyer.

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Anchorage Fish and Wildlife Conservation Office
4700 BLM Road
Anchorage, Alaska 99507-2546

IN REPLY REFER TO:
FWS/R11/AFES/AFWCO

October 1, 2019

Mr. Michael R. Salyer
Chief of Environmental Resources
United States Army Corps of Engineers
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506

Subject: St. George Island Harbor Improvement Project Pribilof Islands, Alaska (07CAAN00-2018-CPA-0200)

Dear Mr. Salyer:

The U.S. Fish and Wildlife Service (Service) has prepared a Final Fish and Wildlife Coordination Act (FWCA) report on the St. George Island Harbor Improvement Project. This report is provided in accordance with the requirements of section 2(b) of the FWCA of 1934 [16 USC 661 et seq; 48 Stat. 401], as amended. The purpose of the report is to document the existing fish and wildlife resources at the proposed project site and to ensure that fish and wildlife conservation receives equal consideration with other proposed project objectives as required under the FWCA. The report includes an assessment of the significant fish and wildlife resources at the proposed project site, an evaluation of potential impacts associated with the proposed project design alternatives, and recommendations for fish and wildlife mitigation measures.

We appreciate the opportunity to coordinate with the U.S. Army Corps of Engineers on the proposed project. If you have any questions regarding this report, please contact Ms. Jennifer Spegon at 907-271-2768 or at jennifer_j_spegon@fws.gov and refer to project number 07CAAN00-2018-CPA-0200.

Sincerely,

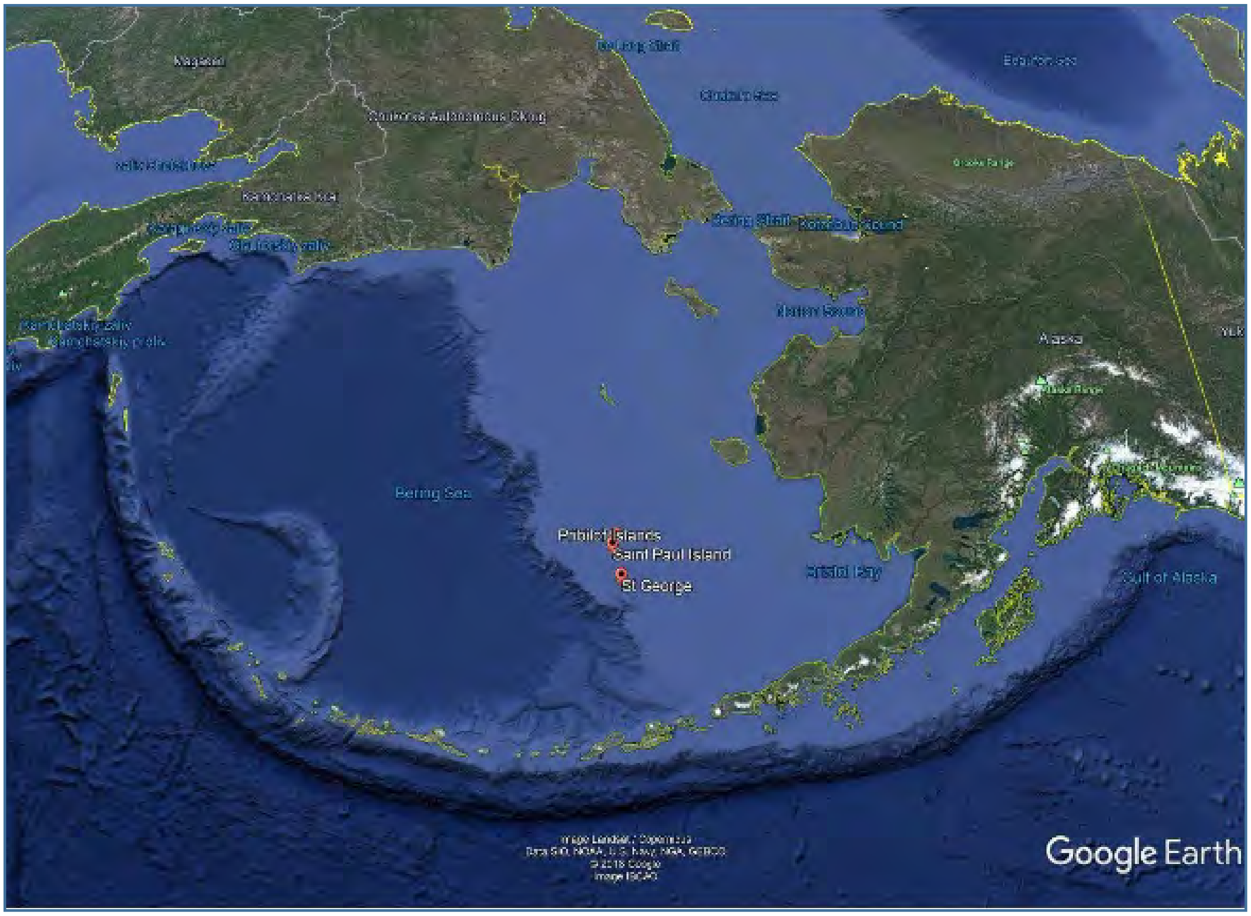
Stewart Cogswell
Field Supervisor

Department of Interior

FISH AND WILDLIFE COORDINATION ACT REPORT

Saint George Island Harbor Improvement Project
Pribilof Islands, Alaska

Spegon, Jennifer
9-30-2019



FISH AND WILDLIFE COORDINATION ACT REPORT

St. George Island Harbor Improvement Project
Pribilof Islands, Alaska

Prepared by:
Jennifer Spegon
U.S. Department of the Interior
Fish and Wildlife Service
Anchorage Fish and Wildlife Conservation Office
Anchorage, Alaska

Prepared for
U.S. Army Corps of Engineers
Alaska District
Joint Base Elmendorf-Richardson
Draft September 30, 2019

Table of Contents

List of Figures

PURPOSE, SCOPE, AND AUTHORITY

This is the U.S. Fish and Wildlife Service's (USFWS) draft report on plans by the U.S. Army Corps of Engineers (Corps) to implement a harbor improvement project on St. George Island, one of the Pribilof Islands of Alaska. This report has been prepared under the authority of the Fish and Wildlife Coordination Act of 1934 [16 U.S.C. 661 et seg.; 48 Stat. 401], as amended (FWCA), and other authorities mandating Department of the Interior concern for environmental values. This report is also consistent with the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seg.; 83 Stat. 852], as amended (NEPA).

The purpose of this report is to document the existing fish and wildlife resources at the proposed project site and to ensure that fish and wildlife conservation receives equal consideration with other proposed project objectives as required under the FWCA. The report includes an assessment of the significant fish and wildlife resources at the proposed project site, an evaluation of potential impacts associated with the proposed project design alternatives, and recommendations for fish and wildlife mitigation measures. The Corps' purpose for reviewing the project is to reduce navigational hazards to improve the viability of the community of St. George. Inefficiencies related to delivering necessary fuel and goods to the island have increased the cost of living on St. George Island.

Harbor improvements are necessary to improve deliveries, increase subsistence and commercial fishery opportunities, and reduce the trend of emigration as community members relocate from the island to places with greater economic opportunities and lower cost of living. The conditions in the current harbor on the south side of the island are such that navigation to, from, and within the harbor are unsafe due to wave conditions at the harbor entrance, seiche conditions within the inner basin, and degradation and overtopping of the existing breakwaters. Storms in the Bering Sea produce extreme wave action on the south side of the island; breakwaters are damaged frequently such that the Federal Emergency Management Agency has provided funds on multiple occasions for repairs.

Modeling by the Corps indicates minimal opportunities to improve upon the dangerous conditions at the current harbor location without incurring extremely high costs. The Corps' tentatively selected plan (TSP) is to develop a new harbor facility on the north side of St. George Island, adjacent to the Village, where the wave action is not as extreme. The Corps designed the TSP to support the subsistence vessel fleet, fuel barge fleet, cargo vessels, and approximately 85 percent of the existing crabber fleet of St. George.

The USFWS biologists have discussed the proposed project with the National Marine Fisheries Service (NMFS) and the Alaska Department of Fish and Game (ADF&G). Concerns relative to the protection and conservation of important fish and wildlife resources on St. George expressed by these entities were incorporated into this report and copies of the report will be provided to them.

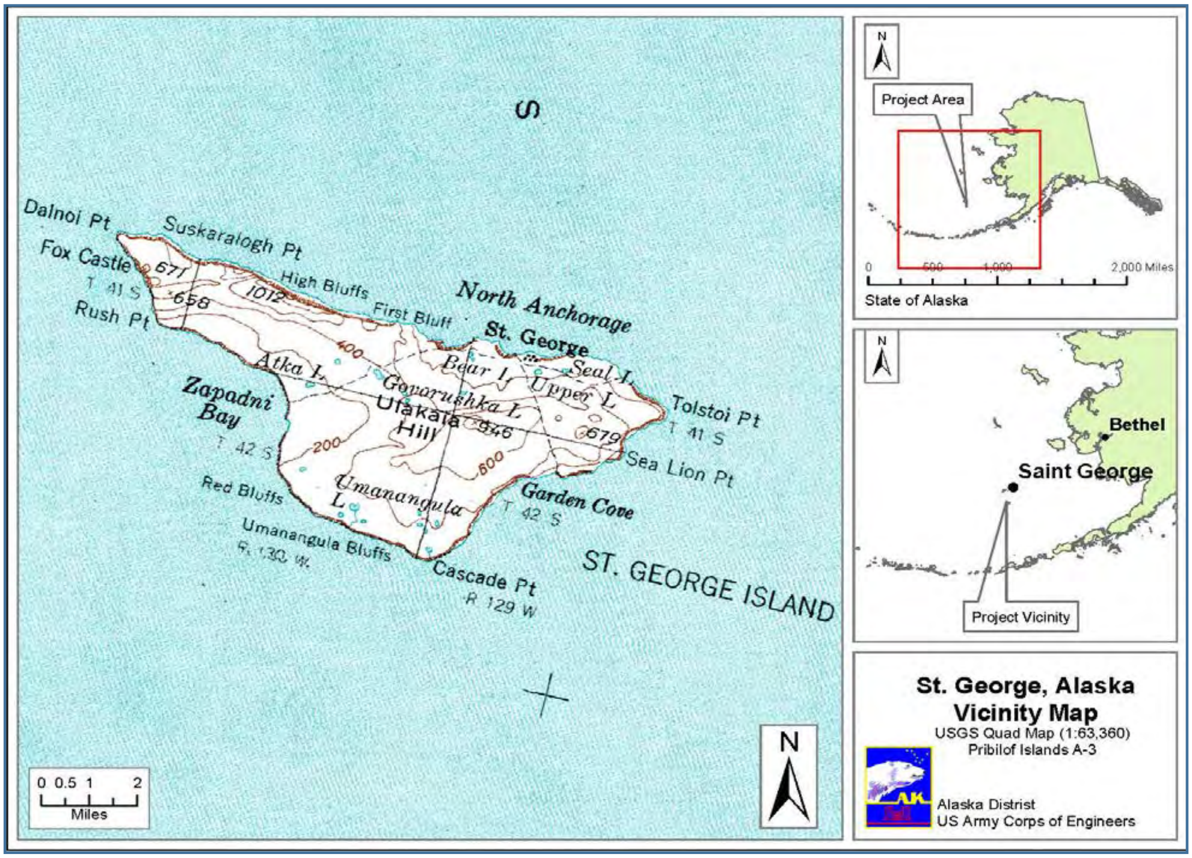


Figure 1. St. George Island (Corps 2018)

PREVIOUS REPORTS AND STUDIES

January 2016 – The USFWS staff participated in the Corps' Charette, planning meeting.

September 2018 – The USFWS staff reviewed the Corps' Preliminary Draft Feasibility Report.

November 2018 – The USFWS met with the Corps and NMFS staff to discuss known resource concerns, existing data, data gaps, and potential for additional studies, and the USFWS submitted the first draft of the Scope of Work (SOW) to the Corps to conduct studies for the proposed project.

April 2019 – The Corps invited the USFWS and NMFS staff to join them for a joint field visits during the 2019 field season to gather baseline data.

May 2019 – The USFWS revised the draft SOW to facilitate staff coordination on St. George in May. The costs of a longer-term field study were reduced and replaced with two shorter field sites and lower overall costs.

May and June 2019 – The USFWS staff conducted FWCA field investigations with the Corps and NMFS staff.

July 2019 – The USFWS provided a final SOW to the Corps, who provided a signed MOU.

August 2019 – The USFWS participated in meetings with NMFS and Corps staff concerning potential mitigation and actions that could serve as compensatory mitigation for unavoidable impacts to fish and wildlife resources as a result of the proposed project.

September 9 – The USFWS released the Draft FWCA 2(b) report for review and comment.

September 15 – The USFWS and Corps discussed the Draft FWCA 2(b) report and exchanged information.

September 30 – The USFWS and Corps agreed to finalize the FWCA 2(b) report for the proposed project

AREA SETTING/DESCRIPTION OF STUDY AREA

Project Location, Pribilof Islands

The Pribilof Islands are five small islands located between Russia and mainland Alaska, north of the Aleutian Islands (Figure 1). St. Paul Island is the largest island, St. George Island the second largest, Sea Lion Rock is more of a rocky outcrop, and Otter Island and Walrus Island are small rocky islets (NOAA 2017). Native Alaskan communities exist on St. George and St. Paul Islands, the others are uninhabited.

The Pribilof Islands are part of a larger ecosystem surrounding the Bearing Sea shelf slope that is highly productive. Shelf breaks and deep-sea canyons in proximity to the islands provide unique nutrient filled habitats including nearshore habitat, coastal wetlands, and sea cliff habitat for seabirds, fish, invertebrates, and marine mammals (NOAA 2017, Guitart et.al 2018). The ADF&G estimates the Pribilof Islands support habitat for approximately 3 million seabirds (ADF&G 2006). These islands also support terrestrial habitat for a significant portion of the northern fur seal (*Callorhinus ursinus*) through summer breeding into fall (NOAA 2017).

St. George is about 45 miles south of St. Paul Island and is just 60 miles north of the continental shelf, where constant wave action and churning provide abundant upwelling and nutrients, which attracts numerous seabirds. These seabirds nest on cliffs that surround the islands. The Alaska Maritime National Wildlife Refuge (NWR) purchased land with numerous seabird-nesting areas on St. George Island in the 1980s (Figure 2). Most of these areas include high cliffs that surround the island with the exception of one inland area, unique to nesting auklets.

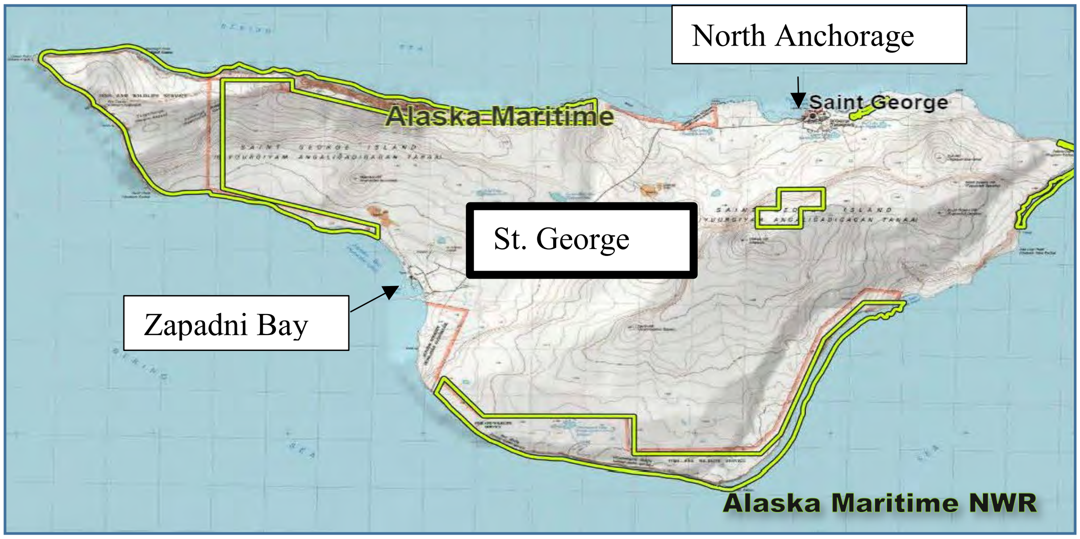


Figure 2. St. George Island map indicating current harbor location Zapadni Bay and TSP location at North Anchorage overlain by NWR managed land in green.

The Tanaq Corporation manages other portions of the island including the introduced caribou herd, which roams large portions of the island, and the St. George Hotel, which is located in the City of St. George on the north side of the island near the North Anchorage Alternative site. The community has approximately 50 to 100 year-round residents. The residents of the community live a mixed subsistence and cash economy. They fish, hunt, and share subsistence foods and use a cash economy to pay for utilities, power, heat, fuel, construction goods, and travel (Corps 2018).

After the fur seal trade economy ended in the mid-1900s, many residents moved from St. George Island to St. Paul Island, mainland Alaska, and other places. Some kept their ties with the community on the island and return on a seasonal basis. Travel and access, however, is unpredictable due to extreme weather conditions with the high winds, fog, and wave action associated with the central Bering Sea (Corps 2018).

Description of the Study Area, St. George Island

St. George Island covers an area of approximately 22,150 acres (ADF&G 2006). It is an ancient volcanic island comprised of volcanic rock, gravel, sand, and marine deposits. Weathering, wind, and waves have long eroded the volcanic slopes. Today they are steep cliffs that drop almost vertically to the coast in some places. The cliffs, up to 1,200-feet in elevation, border the majority of the island as they rise and fall from rare beaches and rocky areas (Figure 3). The interior of the island is mostly rocks covered by tundra, grasses, and small brush where rolling hills lead to the few small lakes and wetlands in lower elevations.

Figure 3. Steep cliffs surround most of the island (Photo: J. Spegon)

Due to its location in the middle of the Bering Sea, St. George Island provides unique terrestrial and marine habitat. It provides stopover and nesting habitat for seabirds and the surrounding marine environments provide productive feeding and staging areas. Marine mammals frequently occupy the surrounding marine habitat and use the lower laying grassy and rocky areas of the island as rookeries.

Long-term biological studies have occurred on St. George Island since 1975. The Minerals Management Service funded studies from 1975 and 1984 to monitor population trends and productivity of ledge-nesting seabirds in the Pribilof Islands. Studies began in response to concerns over potential offshore oil development along the continental shelf. Annual monitoring has continued since 1985, conducted by Alaska Maritime NWR. St. George Island is one of eight sites throughout southwest Alaska where the Alaska Maritime NWR conducts annual monitoring to collect baseline status and trend information for a suite of seabird species (Guitart et.al. 2018).

The NMFS conducts ongoing fur seal studies in the Pribilof Islands. Annually NMFS counts adult male fur seals in July as an index of abundance. Every 2 years, in August, NMFS estimates the number of pups born on the Pribilof Islands. The NMFS surveys the population on an annual basis by observing and photographing surviving fur seals that were tagged as pups, and tags pups in September and October to examine cohort survival in subsequent years. The NMFS uses satellite, GPS, and VHF to examine northern fur seal foraging and migratory behavior during the summer and fall.

FISH AND WILDLIFE RESOURCE CONCERNS AND PLANNING OBJECTIVES

The island provides productive areas occupied by a suite of avian and marine species. Although not an inclusive list of all potential species on St. George Island, a list of the more common species is provided in Appendix A. The remainder of this report focuses on **potential project-related** loss of habitat for which fish and wildlife resources would be of specific concern, habitat that provides unique value or is relatively scarce, and species for which habitat is relatively unique.

The USFWS' planning objectives are to maintain existing habitat values in the proposed project area. Habitat that could be impacted includes intact cliff nesting, nearshore, and marine habitat. Due to the wide variety of species that occupy these areas, the USFWS, NOAA, and the Corps identified five representative species that occupy this habitat for further evaluation: North Pacific fur seal (*Callorhinus ursinus*), red-faced cormorant (*Phalacrocorax urile*), thick-billed murre (*Uria lomvia*), red-legged kittiwakes (*Rissa brevirostris)*, and least auklet (*Ametria pusilla*), Figure 3. A broad description of the each of these species including range, food, prey, breeding, nesting, and potential threats is provided below. A more site-specific description is provided under the section titled, *Fish and Wildlife Resources With and Without the Project.*

Evaluation Species in the Project Area

Red-faced cormorants occur in the North Pacific, from Japan through the Aleutian Islands and coasts of southwest Alaska to Prince William Sound into the southeastern Gulf of Alaska. Cormorants range far out to sea near continental shelves and occur in coastal and nearshore marine habitat. They feed underwater on fish and crustaceans such as pollock, crab, shrimp, and amphipods (Causey 2002). They nest remotely, away from human activity. Nesting can begin as early as April and lasts into September (pers. com. Marc Romano). Nests are generally used in subsequent years. Incubation lasts from 30 to 35 days, young fledge at 50 to 60 days, for a total of about 3 months (Kaufmann 1996). They are particularly sensitive to human presence and nearshore activities. Mass departures of adults in nesting colonies, in response to predators or human disturbance, can displace eggs and chicks. Departures, such as this, may occur more readily at the beginning of nesting season (Siegel-Causey, D. and N. M. Litvinenko 1993). Red-faced cormorants are also vulnerable to petroleum spills, and chemical and plastic contamination (Causey 2002).

Thick-billed murres occur in arctic water from the North Pacific to northern areas of the Atlantic. They prefer very cold, deep water near pack ice. They dive underwater to feed, eat mostly fish and feed fish to young in summer, they also eat marine worms, squid, shrimp, amphipods, mysids, and copepods. They often forage miles from nests, which are built on steep ledges with other seabirds. Incubation lasts from 30 to 35 days, young fledge at 15 to 30 days, for a total of about 2 months (Kaufmann 1996). Threats include rats, oil spills, and changes in the prey availability due to increased sea temperature, fishing gear, human disturbance, and subsistence harvest of eggs (ADF&G 2006).

Red-legged kittiwakes occur in the Bering Sea and northern portions of the Gulf of Alaska (ADF&G 2006). They forage the sea surface in flocks often together with black-legged kittiwakes (*Rissa tridactyla*), mostly over deep water and near continental shelves. They feed on small fish and crustaceans such as amphipods and squid. They nest on narrow ledges on steep cliffs with other seabirds; nest can be reused in subsequent years. Incubation lasts about 30 days; young fledge from 30 to 40 days, for a total of a little over 2 months (Kaufmann 1996). Threats include rats, oil spills, prey abundance, contaminants, and changes in land use and management (ADF&G 2006).

Figure 4. Representative species in the project area.

Left to right and top to bottom: red-faced cormorant nesting (Photo: C. Hoffman), red-faced cormorant perching, red-legged kittiwakes, least auklets, thick-billed murres, and fur seals (Photos: M. Burns).

Least auklets fly in large flocks. They stage in bays and on beaches near nesting colonies. They forage under water both near and far from shore. They feed on very small fish and cold water marine invertebrates including amphipoda, copepods, decapoda, euphausiacea, and gastropoda (Guitart et.al. 2018). They nest in colonies located in rock piles with abundant small rock crevices for nest sites; nest sites can be reused in subsequent years. Incubation lasts from 25 to 40 days, young fledge at 25 to 35 days, for a total of about 2 to 2.5 months. Eggs are laid on bare rock, and nests are very susceptible to predation by foxes and rats (Kaufmann 1996).

Northern fur seals range from Japan north into the Bering Sea and California. They spend winter and spring at sea. The majority of the population spends summer and fall in the Pribilof Islands. They use grassy coastlines and rocky beaches for breeding and resting, and forage in the surrounding marine environments. Fur seals have high rates of site fidelity. The National Oceanic and Atmospheric Administration (NOAA 2017) estimates, “90 percent of breeding females return to the site where they were born to breed.” They eat mainly fish and squid. Threats include marine debris and interactions with fishing gear.

EVALUATION METHODOLOGY

The evaluation process includes obtaining basic biological data for the proposed project sites, analyzing the resources with and without the proposed alternatives, evaluating impacts on fish and wildlife species and their habitats, and identifying and recommending mitigation measures that reduce project related negative impacts to fish and wildlife resources. Mitigation measures include avoidance of unnecessary impacts, minimization of unavoidable impacts, and compensation for unavoidable negative impacts consistent with the FWCA and the USFWS's 1981 Mitigation Policy.

The USFWS's Mitigation Policy (USFWS 1981) outlines internal guidance for evaluating impacts that may affect fish and wildlife resources. The Mitigation Policy complements the USFWS's participation under NEPA and the FWCA. The USFWS's Mitigation Policy was formulated with the intent of protecting and conserving the most important fish and wildlife resources while facilitating balanced development of this nation's natural resource, and the degree of mitigation correspond to the value and scarcity of the habitat at risk. The policy focuses primarily on habitat values and identifies the following four resource categories and mitigation guidelines:

Resource Category 1: Habitat potentially impacted is of high value for the evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section. The mitigation goal is no loss of existing habitat value.

Resource Category 2: Habitat potentially impacted is of high value for the evaluation species and is relatively scarce or becoming scarce on a national basis on in the ecoregion section. The mitigation goal is no net loss of in-kind habitat value.

Resource Category 3: Habitat potentially impacted is of high to medium value for the evaluation species and is relatively abundant on a national basis. The mitigation goal is no net loss of habitat value while minimizing loss of in-kind habitat value.

Resource Category 4: Habitat potentially impacted is of medium to low value for the evaluation species. The mitigation goal is minimizing loss of habitat value.

The USFWS conducted field assessments with the Corps and NMFS during May and June of 2019. The following analysis incorporates information gathered during field visits, the long-term biological studies conducted by the Alaska Maritime NWR, literature reviews, and best professional judgment.

DESCRIPTION OF TENTATIVELY SELECTED PLAN AND OTHER ALTERNATIVES

Zapadni Bay

The current boat harbor at Zapadni Bay is a 30-acre boat basin, enclosed by two rubble mound breakwaters, an inner breakwater arm, and entrance channel with a depth from 26 to 18 feet below mean low lower water with shallow areas consisting of rock pinnacles (Corps 2015). The Corps considered options to remove the pinnacles in the entrance channel along with modifications and realignments of the breakwaters, entrance channel, and inner harbor basin to reduce shoaling, wave overtopping, damage to the breakwaters, and adverse wave and seiche conditions in the harbor.

Figure 5. Existing Harbor at Zapadni Bay

However, due to the wave action outside of the harbor they determined navigational improvements at Zapadni Bay would not significantly improve the ability for vessels to enter or exit the harbor. According to the Corps (2018), this alternative would not significantly increase safe access and moorage days and, therefore, would only provide negligible change in harbor access realized for large expenditures. The Corps does not consider the existing harbor at Zapadni Bay a viable aAlternative.

Tentatively Selected Plan (TSP) Alternative N-3, the North Anchorage Site

The Corps' TSP is to construct a new harbor on the north side of the island in Village Cove, away from the long periods of storm waves originating from the southwest (Corps 2018). The North Anchorage site is adjacent to the community of St. George. It would be accessible to the subsistence fleet, fuel barges, and approximately 85 percent of the commercial fishing fleet. The Corps predicts design Alternative N-3 would produce an additional 179 vessel opportunity days for safe access and moorage for the anticipated fleet. This would increase harvest of subsistence resources and increase use of the harbor by the crabbing fleet. The new harbor would be used for delivery of fuel and goods to the nearby community. The Corps and project sponsor expect reductions in costs of essential goods and expanded economic opportunities may contribute to the long-term viability local economy of St. George (Corps 2018).

The design would incorporate the existing structure of an existing pier that was used during the fur seal trade. The design, Alternative N-3, consists of a 450-foot wide by 550-foot long mooring basin, dredged to 20 feet below mean low water, a 1,731-foot long north breakwater, and a 250-foot long stub breakwater at the west edge of the basin. The basin would connect to the Bering Sea with a 250-foot wide navigation channel dredged to 25 feet below mean low water.

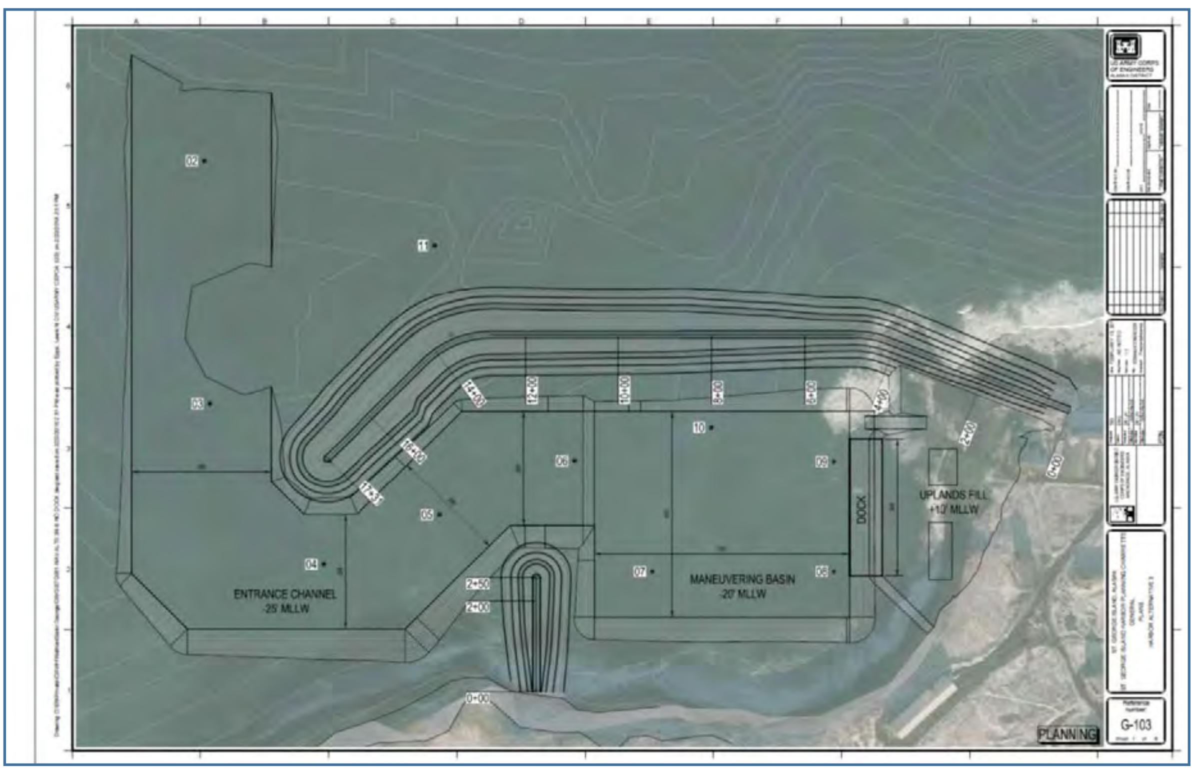


Figure 6. The Corps' tentatively selected plan, design Alternative N-3 (Corps 2018)

Dredging would remove approximately 430,000 cubic yards of material. The area between the maneuvering basin and the existing pier would utilize some of the dredged material. This area would convert approximately 3.9 acres to uplands to be filled to 10 feet above mean low water with a 300-foot long pile supported dock, and a concrete boat launch ramp built to 5 feet below mean low water. The remainder of the dredged material would be discharged into the marine area to the northeast of the breakwater.

Major construction features include building a rubble mound to the north and spur breakwaters, dredging, pile supported docks, and an upland fill area. The stub breakwater, which connects to the cliffs, would not be constructed from land. The north breakwater would be constructed with land-based equipment. The breakwater core would be constructed to above the tide range to allow the equipment to drive on the breakwater core subsequent rock layers. Core rock would be transported and staged on the breakwater with off-road dump trucks, then shaped by an excavator. A barge excavator would be used to shape the toe and benches of the breakwater on the west side where waters are deeper. Some dredging prior to constructing the breakwaters would be necessary to provide access for construction barges to the breakwater sites.

Upland staging areas for the breakwater material would be constructed concurrently with the breakwater. The breakwater building material would be shipped in from places other than St. George Island to the existing harbor at Zapadni Bay. Enough material would be delivered to the island for a full season of work. Two staging areas are proposed, one at the existing harbor at Zapadni Bay and the other near the North Anchorage site. The staging area at Zapadni Bay would be located in an existing disturbance area adjacent to the existing fuel storage area. The staging area at the North Anchorage site would be on the eastern most side of the village homes, north of the city buildings, and south of the cemetery. An existing trail and vegetation buffers the proposed staging area on the south from the cliffs on the north shore.

The harbor would require 3 to 5 years for construction. The Corps proposes to work throughout the majority of a calendar year, depending on the terms and conditions of the Incidental Harassment Authorizations, pursuant to the Marine Mammals Protection Act, with NMFS (Corps 2018).

FISH AND WILDLIFE RESOURCES WITH & WITHOUT THE PROJECT

St. George Island provides habitat to over 80 percent of the world population of red-legged kittiwakes. Red-legged kittiwakes are one of the most abundant breeding birds on island. They nest along the cliff faces on most of the perimeter of the island together with many other species of seabirds including black-legged kittiwakes and thick-billed murres. St. George Island has the largest population of thick-billed murres in Alaska. Least auklets nest throughout the island in rocky crevices. They forage in the surrounding marine environments and stage in the hundreds in the bays and harbors before coming inland from feeding. Red-faced cormorants nest on deeper ledges in more limited locations on St. George Island.

Several species of marine mammals inhabit the waters of the Bering Sea surrounding St. George Island. Most notable, are the northern fur seal. St. George Island provides habitat for six fur seal rookeries with a combined population of approximately 100,000 individuals that occupy the coastline of St. George Island seasonally for resting, reproduction, nursing, and molting. Fur seals also depend on the surrounding open ocean for feeding.

Zapadni Bay Existing Harbor

The existing harbor is located in Zapadni Bay. Even with an operational harbor, the marine and shoreline environments at Zapadni Bay provide marine, nearshore, and cliff habitat. A fur sea rookery borders the harbor footprint on the east within sight of the harbor.

This area hosts a full suite of seabirds. Least auklets frequently occur in large numbers at Zapadni Bay. If the existing harbor were left in its current condition, no change would be expected without the project. If the existing harbor were improved at the Zapadni Bay site, far fewer seabirds would be displaced than what may occur at the North Anchorage alternative. The topography surrounding existing harbor is at Zapadni Bay is much gentler; cliff-nesting habitat on each side of the harbor is much further away than the cliffs near North Anchorage site (Figure 7). There are fewer cliff-nesting birds in the disturbance area.

Effects on fur seals due to improvement of the existing harbor would be less than those for construction of a new harbor on the north side of the island, due to the limited nature or need for underwater blasting at the existing harbor. Approximately one-third of the St. George Island fur seal population resides on the south side of the island near the harbor, and their daily foraging movements from those breeding areas are generally south, and not in close proximity to the existing harbor. Whereas two-thirds of the St. George Island fur seal population resides on the north side of the island and their daily foraging movements are east and west along the north shore prior to heading to the south of the island. Thus, seals residing on the north side would generally pass construction activities at the TSP, North Anchorage Alternative.

Figure 7. Topography at the Existing Harbor Location at Zapadni Bay (Photo: J. Spegon)

Proposed New Harbor, North Anchorage Alternative

The cliffs at the North Anchorage site form the boarder of the coast where the proposed harbor is located (Figure 8). The cliffs are full of nesting seabirds during spring and summer. The cliffs habitat currently (without the project) provides important nesting habitat for red-faced cormorants and more common nesting habitat for thick-billed murres, and kittiwakes, as well as many other species of seabirds. Least auklets stage in large numbers in the marine area. This area on the north coast accounts for approximately two-thirds of northern fur seal population of St. George Island, with about 30 percent found at the North Rookery, closest to the new harbor, and the other 30 percent at the East Rookery, which a portion make daily movements past or through the new harbor area.

Figure 8. TSP Location North Anchorage Site (Photo: M. Burns)

POTENTIAL EFFECTS (ADVERSE AND BENEFICIAL)

Construction Related Effects – Construction related effects include modification of habitat, dredging, underwater blasting, lighting, increased human presence on and offshore, rats and other invasive species (zebra mussels, terrestrial plants, and animals), and increased sewage, all of which could impact birds, fur seals, and their habitat.

Operational Effects – Operational related effects include modification of the marine and nearshore habitat as well as loss of habitat due to 3.9 acres of fill in the nearshore habitat below the cliffs. Connected actions include staging areas, a potential new tank farm, spill risk, rats and other invasive species risk, increased human presence, and increased tourism, which could result in increased sewage and loss of habitat that could affect birds, fur seals, and their habitat.

Effects on Wildlife – Construction activities could deter seabirds from nesting in the cliff habitat and may affect fur seals. Blasting underwater could harm fur seals and diving birds. Modification of marine habitat by dredging and disposal of dredged material would modify habitat and reduce prey availability. Increasing the depth of the harbor may eliminate nearshore habitat for some species. Lighting could attract birds, which in bad weather could increase collision risk with vertical structures such as construction equipment. Increased marine transport, access to the island, and increased human presence could result in reduction of habitat value, harassment of wildlife, increased subsistence, unorganized trails and multiple footpaths, which use could impact wildlife.

Invasive Species – The wildlife on the island are extremely vulnerable to introduction of invasive species, especially predation and disease transferred by rats. Currently, the island has no rats. If rats were introduced to the island, they could threaten critically important seasonal areas for wildlife including fur seals and sea birds. Because St. George Island hosts 80 percent of the world's red-legged kittiwake nesting population, if a rat infestation occurred here it could decimate this species (Fritts 2007). Effective prevention of invasive species incorporates outreach and education with prevention, control, and monitoring (Gotthardt et. al. 2016)

EVALUATION SUMMARY

St. George Island is located in the southeastern Bering Sea near the continental shelf between Russia and Alaska in an area of rich in nutrients that create some of the highest areas of ocean productivity in the world, which in turn creates some of the highest densities of seabirds (Guitart 2018). The resources of concern near the North Anchorage Alternative include potential impacts to seabird colonies perhaps in globally significant numbers through the removal and degradation of cliff nesting, nearshore, and marine habitats that surround the project area from blasting, dredging, discharge, increased human activity, and increased risk of invasive species.

While tolerance to noise, human presence, and disturbance varies by species, individuals, and breeding pairs, most of the evaluation species have strong nest and breeding site fidelity. Some individuals or pairs are expected to have such a strong attachment to the site that they will continue nesting through construction and operations. The percent that would remain and breed successfully through blasting and construction equipment nearby is unknown. Individuals that will not tolerate these activities may initiate breeding and subsequently abandon the site, losing that season's opportunity. Finally, some individuals, pairs, and species, such as the red-faced cormorant, are more sensitive to human presence. For those more sensitive, this habitat may no longer be suitable even after construction for future nesting. Some may breed elsewhere on the island, if there is suitable habitat available. However, available habitat may be less desirable or more prone to predators such as foxes.

Seabirds and fur seals at the North and East Rookeries near the North Anchorage site would be impacted. Possible impacts include harassment, behavioral change, displacement, alteration of daily movement patterns, and alteration of terrestrial or marine habitat use. Harbor improvements and increased use of this area would introduce greater threats from oil and chemical spills, potential introduction of rats, and other invasive or predatory species. Risks from chemical and plastic contamination would increase. Oil and debris would increase with increased use and may accumulate from vessels in the harbor and during fuel transfers. These contaminants reduce habitat quality and can directly impact wildlife through ingestion and entanglement. Entanglement with fishing gear and risk of collision by fishing vessel would also increase. Both short term and long term modification of habitat is possible. Vegetation and prey could be removed through dredging and disposal of material.

Resource Category of Habitat Impacts

The potentially impacted habitat at the North Anchorage site is a Resource Category 2 of high value for fur seals and red-faced cormorants, and is a Resource Category 3 of medium to high value for red-legged kittiwakes, thick-billed murres, and least auklets. According the USFWS' mitigation policy, the goal for resource category 2 is no net loss of in-kind habitat value, and for resource category 3 it is no net loss of habitat value while minimizing loss of in-kind habitat value.

The USFWS and the NMFS identified modifications to avoid, minimize, and reduce adverse impacts, where it was possible. For those impacts that would be unavoidable, measures to compensate are provided. Compensatory mitigation for impacts is achieved through replacing or providing substitute resources or environments, such as increasing the habitat value of existing areas, or restoring or rehabilitating previously altered habitats. The cliff nesting and marine habitat surrounding the island is fully functioning; there are no options for in-kind compensation measures on St. George Island. Out-of-kind mitigation allows for habitats that may be physically and biologically different from the resources lost. Compensatory mitigation is accomplished through management of habitat where there is the potential for increasing its value.

RECOMMENDATIONS AND CONSERVATION MEASURES

The USFWS worked with the NMFS and the Corps to develop mitigation measures relevant to habitat for seabirds and marine resources to minimize short-term construction effects and identify temporal windows when species are not present, less abundant, or are less sensitive. These included identifying measures to reduce noise exposure from sources such as blasting and dredging. The mitigation included cooperation from all parties. For example, the USFWS proposed a construction buffer of 660 feet to protect cliff-nesting birds; this was reduced to 300 feet with a timing window to allow for a reduced proximity of the construction equipment in the bay during nesting. In addition, mitigation measures were developed to minimize long-term chronic effects related to handling, transferring, storing, and disposing of petroleum products, end-of-life fishing gear, vessel waste, and prevention of rats and other invasive species on St. George Island.

Avoidance, Reduction, and Minimization Measures

We recommend measures below to avoid and minimize impacts to fish and wildlife resources as identified in this report be incorporated into the project plans.

- Develop and require a bio-security and response plan to provide for ongoing prevention of invasive species including rats.
- Develop and require a harbor operations plan, which addresses management of trash, solid waste, bio-security, spills, spill response plans, and equipment.
- Develop and require a recreational use plan with the input from the Alaska Maritime NWR and NMFS to include reconstructing of the blind at the rookery, and management and improvement of walking trails such around the cliffs to accommodate increased use by recreationalists and birders.

- To ensure that harbor related impacts do not exceed the level of impacts anticipated during the planning phase of this project, monitor cliff-nesting and rookery habitat during construction
- To minimize exposure of pregnant or lactating adult female fur seals and their dependent pups, incorporate fur seal timing windows - complete blasting prior to July 1. Avoid all blasting activities near rookeries from mid-August through November.
- To protect nearby seabird nesting colonies, avoid all blasting activities near seabird nesting areas from early April to mid-September. Complete blasting from mid-September to April 1. If these activities must occur into the nesting season, begin as early as possible in late winter and spring to deter nest initiation and allow opportunities for breeding success in alternative locations. Given the site fidelity, it is better not to haze to allow for breeding-pair bonding and allow birds to attend and defend long-term nest sites for future nesting seasons.
- Avoid direct removal of cliff nesting habitat and rookery habitat.
- Use a 330-foot construction distance buffer to avoid disturbance of cliff nesting birds during nesting season. If construction must occur closer than 330 feet, such as during the construction of the stub breakwater, construct in last fall, over winter from late September to April.
- To reduce avian risk of collision with vertical equipment, lower vertical equipment for overnight storage or when not in use.
- To avoid impacts with birds drawn to lights and subsequent collision risk during bad weather, reduce unnecessary lighting during construction and operations. Direct lights down, hood lights, and consider using motion detectors for permanent lights at the harbor and associated facilities.

Compensatory Mitigation

We recommend development of a compensatory mitigation plan to offset anticipated unavoidable impacts to fish and wildlife resources by the proposed project. Due to the fully functioning cliff nesting and marine habitat surrounding the island, there are few to no options for in-kind compensation measures on St. George Island. Therefore, out-of-kind mitigation opportunities are provided below; these options require commitment by entities other than the Corps, including the Sponsor, which is the City of St. George, and possibly with the cooperation of the Tanaq Corporation, NMFS, and USFWS:

- To prevent rats from being introduced to the island and infesting seabird habitat, develop and implement a robust, long-term biosecurity plan, including a funding mechanism and maintenance and monitoring plans, to ensure ongoing rat prevention and control.
- To increase habitat value and minimize hazards and potential sources of contaminants, remove old structures, heavy equipment, and buildings from around the existing harbor and at the proposed new harbor site.
- To decrease risk of deterioration and possible contamination of habitat, repurpose vacant buildings such as the Tanaq construction housing, possibly for seasonal work, so that buildings are maintained and the risk of deterioration and potential pollution is reduced.
- To decrease risk of deterioration and possible contamination of habitat, explore uses for the currently closed buildings such as the school that belongs to the City, possibly as an extension location for marine studies in order to keep the building maintained.

We realize the Corps will work with the Sponsor and contactors to ensure all plans to avoid, minimize, or compensate for project-related impacts are finalized prior to implementation of project construction activities. Therefore, if any requested changes are proposed to the plan or to these recommendations, the USFWS requests coordination.

SUMMARY OF POSITION

The following is the position of the USFWS regarding what it would support, oppose, or not oppose under above specified conditions. The USFWS would support harbor improvements at the existing Zapadni Bay harbor location. Given this location already has the majority of the necessary infrastructure, such as a fuel tank farm and storage areas for fishing equipment. This location would have less impacts on species and habitats. However, this Alternative is no longer under consideration by the Corps.

The USFWS does not oppose the North Anchorage Alternative, provided cliff nesting and rookery habitat are left intact and the above mitigation measures are incorporated. However, it should be emphasized that a rat infestation on the island could decimate the sea bird colonies. Therefore, if the avoidance, reduction, and minimization recommendations listed above are not incorporated or if compensatory mitigation is not implemented to protect and maintain existing habitat, the Corps will work with the USFWS to reassess the project.

LITERATURE CITED

Alaska Department of Fish and Game. 2006. Our wealth maintained: a strategy for conserving Alaska's diverse wildlife and fish resources. Alaska Department of Fish and Game, Juneau, Alaska. 824 pp.

Causey, D. 2002. Birds of North America. Cornell Lab of Ornithology, Ithaca, NY, USA. Red-faced Cormorant (Phalacrocorax urile). Version 2.0. January 1, 2002. Available at: https://doi.org/10.2173/bna.617

Fritts, E.I. 2007. Wildlife and people at risk: a plan to keep rats out of Alaska. Alaska Department of Fish and Game. Juneau, Alaska. 190 pp.

Gotthardt, T., L. Kenny, C. Greenstein, J. Reimer. 2016. A Synthesis and vulnerability assessment of terrestrial invasive species in the Aleutian and Bering Sea Islands. Prepared for the Aleutian and Bering Sea Islands LCC. Alaska Center for Conservation Science, University of Alaska Anchorage. 54 pp.

Guitart, S.R., S.B. Carvey, L.M. White, and M.D. Romano. 2018. Biological monitoring at St. George Island, Alaska in 2018. U.S. Fish and Wildlife Service. Alaska Maritime National Wildlife Refuge. Homer, Alaska.

Kaufmann, K. 1996. Lives of North American birds. Audubon Guide to North American Birds. National Audubon Society. Available at: https://www.audubon.org/field-guide/bird/red-faced-cormorant

[NOAA] National Oceanic and Atmospheric Administration. 2017. Draft supplemental environmental impact statement: management of the subsistence harvest of norther fur seals on St. Paul Island, Alaska. January 2017. 285 pp.

[Corps] U.S. Army Corps of Engineers. 2015. Report synopsis outline report synopsis for St. George, Alaska. October 29, 2015. 10 pp.

[Corps] 2018. Preliminary draft feasibility report. St. George navigation improvements. St. George, Alaska. September 17, 2018. 88 pp.

Siegel-Causey, D. and N.M. Litvinenko. 1993. Status, ecology, and conservation of shags and cormorants of the temperate North Pacific. Ecology and Conservation of Seabirds of the Temperate North Pacific. Ottawa, Ontario: Special Publication of the Canadian Wildlife Service. Pages 122-130.

U.S. Department of Agriculture. 1923. Bureau of Biological Survey: a biological survey of the Pribilof Islands, Alaska. North American fauna. Number 46. June 20, 1923. Available at: https://www.biodiversitylibrary.org/title/87042#page/3/mode/1up.

[USFWS] U.S. Fish and Wildlife Service. 1981. U.S. Fish and Wildlife Service Mitigation Policy. Federal Register 46(15):7644-7663. January 23, 1981.

Appendix A**.** Common species observed at St. George Island, Alaska.

Emperor goose (*Anser canagicus*)	Rare migrant
Greater white-fronted goose (*Anser albifrons*)	Irregular vagrant
Cackling goose (*Branta hutchinsii*)	Rare vagrant
Aleutian cackling goose (*Branta hutchinsii leucopareia*)	Uncommon vagrant
Northern shoveler *(Spatula lypeata)*	Irregular vagrant
Eurasian wigeon (*Mareca penelope)*	Uncommon migrant
American wigeon (*Mareca americana*)	Irregular vagrant
Mallard *(Anas platyrhynchos)*	Uncommon vagrant
Northern pintail (*Anas acuta*)	Abundant migrant/breeder
Eurasian green-winged teal (*Anas crecca crecca*)	Abundant migrant/breeder
Tufted duck (*Aythya fuligula*)	Irregular vagrant
Greater scaup *(Aythya marila)*	Common migrant
King eider (*Somateria spectabilis*)	Uncommon migrant/ probable resident non-breeder
Common eider (*Somateria mollissima*)	Uncommon vagrant
Harlequin duck (*Histrionicus histrionicus*)	Abundant resident non-breeder
Surf scoter (*Melanitta perspicillata*)	Accidental vagrant
White-winged scoter (*Melanitta fusca)*	Uncommon vagrant
Long-tailed duck (*Clangula hyemalis*)	Rare breeder
Bufflehead (*Bucephala albeola*)	Rare migrant
Common goldeneye (*Bucephala clangula*)	Irregular migrant
Red-breasted merganser (*Mergus serrator*)	Irregular vagrant
Red-necked grebe (*Podiceps grisegena*)	Common migrant
Black oystercatcher (*Haematopus bachmani*)	Casual vagrant
American golden-plover (*Pluvialis dominica*)	Accidental vagrant
Pacific golden-plover (*Pluvialis fulva*)	Common migrant
Semipalmated plover (*Charadrius semipalmatus*)	Common breeder
Whimbrel (*Numenius phaeopus*)	Uncommon migrant
Far Eastern curlew (*Numenius madagascariensis*)	Accidental vagrant
Bar-tailed godwit (*Limosa lapponica*)	Common migrant
Ruddy turnstone (*Arenaria interpres*)	Abundant migrant
Ruff (*Calidris pugnax*)	Irregular vagrant
Sharp-tailed sandpiper (*Calidris acuminate*)	Common migrant
Red-necked stint (*Calidris ruficollis*)	Irregular vagrant
Sanderling (*Calidris alba*)	Irregular vagrant
Dunlin (*Calidris alpine*)	Irregular vagrant
Pribilof rock sandpiper (*Calidris ptilocnemis ptilocnemis*)	Abundant breeder
Baird’s sandpiper (*Calidris bairdii*)	Accidental vagrant
Little stint (*Calidris minuta*)	Accidental vagrant
Least sandpiper (*Calidris minutilla*)	Common breeder
Buff-breasted sandpiper (*Calidris subruficollis*)	Casual vagrant

Pectoral sandpiper *(Calidris melanotos)*	Rare migrant
Semipalmated sandpiper (*Calidris pusilla*)	Uncommon vagrant
Western sandpiper (*Calidris mauri*)	Common migrant
Short-billed dowitcher (*Limnodromus griseus*)	Accidental vagrant
Long-billed dowitcher *(Limnodromus scolopaceus)*	Rare migrant
Common snipe (*Gallinago gallinago*)	Accidental vagrant
Terek sandpiper (*Xenus cinereus*)	Casual vagrant
Gray-tailed tattler (*Heteroscelus brevipes*)	Uncommon vagrant
Wandering tattler (*Tringa incana*)	Common migrant
Common greenshank (*Tringa nebularia*)	Rare vagrant
Wood sandpiper (*Tringa glareola*)	Irregular migrant
Red-necked phalarope (*Phalaropus lobatus*)	Common breeder
Red phalarope (*Phalaropus fulicarius*)	Abundant migrant
Pomarine jaeger (*Stercorarius pomarinus*)	Rare migrant
Parasitic jaeger (*Stercorarius parasiticus*)	Uncommon migrant
Long-tailed jaeger (*Stercorarius longicaudus*)	Uncommon migrant
Common murre (*Uria aalge*)	Very abundant breeder
Thick-billed murre (*Uria lomvia*)	Very abundant breeder
Pigeon guillemot (*Cepphus columba*)	Casual vagrant
Marbled murrelet (*Brachyramphus marmoratus*)	Accidental vagrant
Ancient murrelet (*Synthliboramphus antiquus*)	Irregular migrant
Cassin's auklet (*Ptychoramphus aleuticus*)	Casual vagrant
Parakeet auklet (*Aethia psittacula*)	Abundant breeder
Least auklet (*Aethia pusilla*)	Abundant breeder
Crested auklet (*Aethia cristatella*)	Common breeder
Rhinoceros auklet (*Cerorhinca monocerata*)	Casual vagrant
Horned puffin (*Fratercula corniculata*)	Common breeder
Tufted puffin (*Fratercula cirrhata*)	Common breeder
Black-legged kittiwake (*Rissa tridactyla*)	Abundant breeder
Red-legged kittiwake (*Rissa brevirostris*)	Abundant breeder
Sabine's gull (*Xema sabini*)	Casual migrant
Black-headed gull (*Larus ridibundus*)	Rare vagrant
Herring gull (*Larus argentatus*)	Casual vagrant
Slaty-backed gull (*Larus schistisagus*)	Irregular migrant
Glaucous-winged gull (*Larus glaucescens*)	Common resident/ probable breeder
Glaucous gull (*Larus hyperboreus*)	Uncommon resident
Pacific loon *(Gavia pacifica)*	Casual vagrant
Common loon *(Gavia immer)*	Irregular vagrant
Yellow-billed loon *(Gavia adamsii)*	Casual vagrant
Laysan albatross *(Phoebastria immutabilis)*	Accidental migrant
Northern fulmar (*Fulmarus glacialis*)	Abundant breeder
Mottled petrel *(Pterodroma inexpectata)*	Accidental migrant
Short-tailed shearwater (*Puffinus tenuirostris*)	Uncommon migrant
Fork-tailed storm-petrel (*Oceanodroma furcata*)	Accidental migrant

Double-crested cormorant (*Phalacrocorax auritus)*	Irregular vagrant
Red-faced cormorant (*Phalacrocorax urile*)	Abundant breeder
Pelagic cormorant (*Phalacrocorax pelagicus*)	Common migrant/resident
Bald eagle *(Haliaeetus leucocephalus)*	Irregular vagrant
Short-eared owl *(Asio flammeus)*	Casual vagrant
Peregrine falcon *(Falco peregrinus)*	Uncommon migrant
Eastern kingbird *(Tyrannus tyrannus)*	Accidental vagrant
Common raven (*Corvus corax*)	Uncommon migrant
Bank swallow (*Riparia riparia*)	Rare vagrant
Barn swallow (*Hirundo rustica)*	Common vagrant
Common house-martin (*Delichon urbicum)*	Accidental vagrant
Pacific wren (*Troglodytes pacificus*)	Abundant breeder
Arctic warbler (*Phylloscopus borealis)*	Casual vagrant
Gray-streaked flycatcher (*Muscicapa griseisticta)*	Accidental vagrant
Northern wheatear (*Oenanthe oenanthe*)	Irregular migrant
Gray-cheeked thrush (*Catharus minimus*)	Irregular vagrant
Hermit thrush (*Catharus guttatus*)	Casual vagrant
Eyebrowed thrush (*Turdus obscurus*)	Casual vagrant
Eastern yellow wagtail (*Motacilla tschutschensis*)	Casual migrant
Gray wagtail (*Motacilla cinerea*)	Accidental vagrant
White wagtail (*Motacilla alba*)	Accidental vagrant
Olive-backed pipit (*Anthus hodgsoni*)	Casual vagrant
Red-thoated pipit (*Anthus cervinus*)	Accidental vagrant
American pipit (*Anthus rubescens*)	Common migrant
Brambling (*Fringilla montifringilla*)	Irregular vagrant
Hawfinch (*Coccothraustes coccothraustes*)	Casual vagrant
Gray-crowned rosy-finch (*Leucosticte tephrocotis*)	Abundant breeder
Common redpoll *(Acanthis flammea)*	Rare migrant
Hoary redpoll *(Acanthis hornemanni)*	Rare migrant
Lapland longspur (*Calcarius lapponicus*)	Abundant breeder
Snow bunting (*Plectrophenax nivalis*)	Abundant breeder
McKay's bunting (*Plectrophenax hyperboreus*)	Casual migrant
Savannah sparrow (*Passerculus sandwichensis*)	Irregular migrant
Fox sparrow (*Passerella iliaca*)	Irregular migrant
Lincoln's sparrow (*Melospiza lincolnii*)	Accidental vagrant
White-crowned sparrow (*Zonotrichia leucophrys*)	Irregular migrant
Golden-crowned sparrow (*Zonotrichia atricapilla*)	Irregular migrant
Brewer's blackbird (*Euphagus cyanocephalus*)	Accidental vagrant
Northern waterthrush (*Parkesia noveboracensis*)	Accidental vagrant
Orange-crowned warbler (*Oreothlypis celata*)	Casual vagrant
Yellow warbler (*Setophaga petechia*)	Casual vagrant
Wilson's warbler (*Cardellina pusilla*)	Casual migrant
Nearctic brown lemming *(Lemmus trimucronatus)*	Common breeder
Arctic fox (*Vulpes lagopus*)	Abundant breeder
Northern fur seal (*Callorhinus ursinus*)	Abundant breeder

Steller sea lion *(Eumetopias jubatus)*	Common non-breeder
Harbor seal (*Phoca vitulina*)	Common non-breeder
Reindeer (*Rangifer tarandus*)	Abundant breeder
Minke whale (*Balaenoptera acutorostrata*)	Casual migrant
Fin whale (*Balaenoptera physalus*)	Casual migrant
Orca *(Orcinus orca)*	Rare migrant

(Guitart et.al 2018)

From:	Rouse, Michael B CIV USARMY CEPOA (US)
To:	"douglass_cooper@fws.gov"
Subject:	FWCA Coordination Request Letter for St. George Navigation Improvements Feasibility Assessment
Date:	Wednesday, February 14, 2018 4:38:00 PM
Attachments:	Saint George FWCA Letter-signed.pdf

Good Afternoon, Doug,

As promised per our phone conversation earlier today, here is a FWCA coordination request letter for a USACE feasibility assessment at St. George Island. USACE is evaluating harbor placement, orientation, and various geometries in order to alleviate navigational inefficiencies for the St. George community, which is in dire need of some form of economic improvement, this may just be it.

Although USACE does not anticipate significant impacts to the human or natural environment, we do envision implementing this project under strict timing windows to avoid impacts to marine mammals and sea birds.

Please review the attached letter and provide thoughts and concerns for moving forward.

Sincerely,

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743

From:	Google Calendar on behalf of michael.williams@noaa.gov
To:	Rouse, Michael B CIV USARMY CEPOA (US)
Subject:	[Non-DoD Source] Accepted: St. George TSP Presentation to NMFS @ Mon May 14, 2018 1pm - 2:30pm (AKDT) (Rouse, Michael B CIV USARMY CEPOA (US))
Start:	Monday, May 14, 2018 1:00:00 PM
End:	Monday, May 14, 2018 2:30:00 PM
Location:	, Anchorage
Attachments:	invite.ics

michael.williams@noaa.gov has accepted this invitation.
St. George TSP Presentation to NMFS
When Mon May 14, 2018 1pm – 2:30pm Alaska Time
Where , Anchorage (map <Blockedhttps://maps.google.com/maps?q=,+Anchorage&hl=en>)
Calendar Rouse, Michael B CIV USARMY CEPOA (US)
Who • Rouse, Michael B CIV USARMY CEPOA (US) - organizer
• michael.williams@noaa.gov - creator
• Seanbob Kelly - NOAA Federal
• Hoffman, Christopher A CIV USARMY CEPOA (US)

From: Greg Balogh - NOAA Federal
To: Rouse, Michael B CIV USARMY CEPOA (USA)
Subject: [Non-DoD Source] Re: Species List Confirmation Request
Date: Friday, June 14, 2019 11:57:08 AM

Hi Mike,

If an informal response works for you, then here goes: Your list looks pretty good in terms of inclusion of species. You should add ringed seal and bearded seal to your list of T&E species. Also missing is inclusion of designated critical habitat, specifically, Steller sea lion critical habitat around St. George and St. Paul.
Call or write with questions.

On Fri, Jun 14, 2019 at 10:37 AM Rouse, Michael B CIV USARMY CEPOA (USA) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> > wrote:

> Greg,
>
> Please review and respond to the Corps' request for a protected species list confirmation for our feasibility assessment for navigational improvements at St. George.
>
> Thanks and have a great weekend,
>
> Mike Rouse
> Fisheries Biologist / NEPA Coordinator
> Alaska District US Army Corps of Engineers
> (907) 753-2743

--

Greg Balogh

AKR PRD ANC Field Office Supervisor
NOAA Fisheries
222 W 7th Ave Rm 552, Box 43
Anchorage, AK 99513
907-271-3023 (w)
907-306-1895 (c)

To report a stranded or entangled marine mammal, contact the Stranding Network at 1-877-925-7773 <tel:(877)%20925-7773>

From:	Rouse, Michael B CIV USARMY CEPOA (US)
To:	Romano, Marc
Subject:	RE: [Non-DoD Source] Re: [EXTERNAL] Re: Trip to Saint George
Date:	Tuesday, July 25, 2017 9:13:00 AM

Hey Marc,

I'm just back in the office after a week in Kotzebue. I'll have a look for that report today, I can't guarantee that it would be available electronically.

Mike

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743

-----Original Message-----
From: Romano, Marc [mailto:marc_romano@fws.gov]
Sent: Wednesday, July 19, 2017 2:18 PM
To: Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil>
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Re: Trip to Saint George

Hello Mike,

Would you happen to have a copy of the USACE Harbor Dredging Report for St. George from 1988 that you could share?

Cheers,
Marc

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Marc Romano - Wildlife Biologist
Alaska Maritime NWR
Bering Sea Unit
95 Sterling Hwy., Suite 1
Homer, AK 99603
(907) 226-4608 - phone; (907) 235-7783 - fax
Marc_Romano@fws.gov <mailto:Marc_Romano@fws.gov>
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

On Fri, Jun 16, 2017 at 11:41 AM, Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> > wrote:

> Thanks for the introduction, Marc.
>
> It is very much appreciated.
>
> Hello Emily,
>
> If everything goes according to plan, our Army Corps team will be on St George the afternoon of Wednesday,

the 21st. Our intent is to give a presentation to the community concerning the progress of our feasibility study to make navigational improvements to St. George's harbor and breakwater jetties. The presentation is scheduled for Thursday evening, and the rest of my time will be spent conducting site visits, taking photographs, and recording biological observations that will help me to characterize the ecological processes at work as we move forward with our project. I would be grateful if you could spare some of your valuable time and impart some of your first-hand knowledge on me.

I won't be in the office on Monday or Tuesday, so if you wouldn’t mind responding to my civilian email: Ragingbull261@yahoo.com <mailto:Ragingbull261@yahoo.com> or calling (if possible) my cell is 907-782-5088.

Thanks a bunch,

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743

-----Original Message-----
From: Romano, Marc [mailto:marc_romano@fws.gov <mailto:marc_romano@fws.gov>]
Sent: Friday, June 16, 2017 11:12 AM
To: Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> >; Emily Pollom <EMILY.POLLOM@gmail.com <mailto:EMILY.POLLOM@gmail.com> >
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Re: Trip to Saint George

Hello Mike and Emily,

Mike, I'll let you explain your work to Emily and arrange a time for her to show you around.

Emily, Mike is working on a potential project for the Army Corps of Engineers and he is going to be conducting a site visit to get acquainted with the biological resources on St. George. It would be great if you could spend some time with him while he is on-island.

Cheers,
Marc

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Marc Romano - Wildlife Biologist
Alaska Maritime NWR
Bering Sea Unit
95 Sterling Hwy., Suite 1
Homer, AK 99603
(907) 226-4608 - phone; (907) 235-7783 - fax
Marc_Romano@fws.gov <mailto:Marc_Romano@fws.gov> <mailto:Marc_Romano@fws.gov > >
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

On Mon, Jun 12, 2017 at 4:12 PM, Michael Williams - NOAA Federal <michael.williams@noaa.gov <mailto:michael.williams@noaa.gov> <mailto:michael.williams@noaa.gov > > > wrote:

dennis lekanof can be reached via email: dj_lekanof@hotmail.com <mailto:dj_lekanof@hotmail.com> <mailto:dj_lekanof@hotmail.com > >
His office number is 859-2447

The FWS will have their seasonal folks on island. I'm not sure how valuable they will be to your needs. Marc Romano is my counterpart over at the Maritime Refuge: marc_romano@fws.gov

<mailto:marc_romano@fws.gov> <Blockedhttp://fws.gov <Blockedhttp://fws.gov> > . He was on St. George recently, but I am not sure how long he will be there, or if he is still there.

m...

On Mon, Jun 12, 2017 at 4:02 PM, Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> <mailto:Michael.B.Rouse@usace.army.mil > > > wrote:

Absolutely, sir. When it is ready, I'll get it to you.

Do you by chance have some contact info for Dennis Lekanof?

Also, do you know if there will there be any USFWS bird folks out there that I could maybe meet up with?

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743 <tel:%28907%29%20753-2743>

-----Original Message-----
From: Michael Williams - NOAA Federal [mailto:michael.williams@noaa.gov <mailto:michael.williams@noaa.gov> <mailto:michael.williams@noaa.gov > >]
Sent: Monday, June 05, 2017 9:26 AM
To: Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> <mailto:Michael.B.Rouse@usace.army.mil > > >
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Re: Trip to Saint George

Mike,
If there is an opportunity, I would be very interested in seeing the presentation at some point.
Second I would make sure that you visit with Dennis Lekanof and that you walk towards Zapadni rookery from the harbor along the beach until you encounter seals, and also visit the end of the Zapadni rookery road. I would encourage you to hike up around the rookery to the hill that is between Zapadni and South rookeries. These two rookeries represent about 1/3 of all the fur seals breeding and resting on St. George.

Good luck on your trip. I will touch base with Dennis so that he knows.
m...

On Fri, Jun 2, 2017 at 8:43 AM, Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> <mailto:Michael.B.Rouse@usace.army.mil > > <mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > > > wrote:

Mike,

I've already locked in some travel plans that have me headed out to St George with a few more folks from our Project Development Team, we are planning on giving some presentations to the community on the progress of our project.

We've got some good modeling completed on some of the breakwater structure
alternatives. Our travel dates are 21-23 June, so I'll just miss you by a
bit.
If there's anything you think I ought to see please pass it along and I'll do
my best to check it out.

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743 <tel:%28907%29%20753-2743> <tel:%28907%29%20753-2743>

-----Original Message-----
From: Michael Williams - NOAA Federal [mailto:michael.williams@noaa.gov
<mailto:michael.williams@noaa.gov> <mailto:michael.williams@noaa.gov > >
<mailto:michael.williams@noaa.gov > <mailto:michael.williams@noaa.gov > > >]
Sent: Thursday, June 01, 2017 4:39 PM
To: Rouse, Michael B CIV USARMY CEPOA (US) <Michael.B.Rouse@usace.army.mil
<mailto:Michael.B.Rouse@usace.army.mil> <mailto:Michael.B.Rouse@usace.army.mil > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > > >
Subject: [Non-DoD Source] Re: [EXTERNAL] Re: Trip to Saint George

Hi Mike,
I'm currently planning to be on St. George starting on July 5 through 12, but
may delay until the 7th depending on a few things that I hope to hear about
by
next week.

lets chat next week about what is happening...if anything...I'm off tomorrow
M...

On Thu, Mar 30, 2017 at 3:26 PM, Rouse, Michael B CIV USARMY CEPOA (US)
<Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil>
<mailto:Michael.B.Rouse@usace.army.mil > > <mailto:Michael.B.Rouse@usace.army.mil >
<mailto:Michael.B.Rouse@usace.army.mil > > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > >
> >
wrote:

Mike,

If it's not too much trouble for you I'd like to coordinate my travel
plans
with your intended dates (perhaps only 4 days, and not all 10).
Please give
me
a ring when you get back from leave so we can discuss some of the
logistics.

Thanks,

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers

(907) 753-2743 <tel:%28907%29%20753-2743> <tel:%28907%29%20753-2743> <tel:%28907%29%20753-2743>

-----Original Message-----
From: Michael Williams - NOAA Federal
[mailto:michael.williams@noaa.gov <mailto:michael.williams@noaa.gov> <mailto:michael.williams@noaa.gov > > <mailto:michael.williams@noaa.gov > <mailto:michael.williams@noaa.gov > > >
<mailto:michael.williams@noaa.gov > <mailto:michael.williams@noaa.gov > > <mailto:michael.williams@noaa.gov > <mailto:michael.williams@noaa.gov > > > >]
Sent: Friday, March 17, 2017 9:07 AM
To: Rouse, Michael B CIV USARMY CEPOA (US)
<Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> <mailto:Michael.B.Rouse@usace.army.mil > > <mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > >

<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > > > >
Subject: [EXTERNAL] Re: Trip to Saint George

Hi Mike,
I am currently planning a July trip, right after the 4th for the start of the subsistence harvest for about 10 days. That time is optimal for animals, but is challenging with Fog. So be prepared to be stuck in Anchorage or on St. George for a week of canceled. If you want to go sooner, then we should discuss, because I don't likely have budget to go twice in the early summer.

I had our folks scan the doc so I could review it and get it back to you. I have not looked at it yet, but intend to. I am in Seattle at the moment, and will be back in Anchorage on Monday, then leave for vacation on Thursday, back April 1.

cheers,
m...

On Thu, Mar 16, 2017 at 4:05 PM, Rouse, Michael B CIV USARMY CEPOA (US)
<Michael.B.Rouse@usace.army.mil <mailto:Michael.B.Rouse@usace.army.mil> <mailto:Michael.B.Rouse@usace.army.mil > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > <mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > >
>
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > >

<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > >
<mailto:Michael.B.Rouse@usace.army.mil > <mailto:Michael.B.Rouse@usace.army.mil > > >
>
> >
wrote:

Mike,

Our project development team is looking at potential dates
for a trip
out to
St. George. I'd like to know when you are planning on being
out there
so
that you might be able to familiarize me with the marine and
avian
resources. I can't imagine that we'd be out there for more
than three
or
four days, maybe less.

Have those St. Paul harbor docs been of any use to you?

Thoughts?

Mike Rouse
Fisheries Biologist / NEPA Coordinator
Alaska District US Army Corps of Engineers
(907) 753-2743 <tel:%28907%29%20753-2743> <tel:%28907%29%20753-2743>

<tel:%28907%29%20753-2743> <tel:%28907%29%20753-2743>

ST. GEORGE HARBOR IMPROVEMENT FEASIBILITY STUDY

APPENDIX K: NHPA SECTION 106 DOCUMENTATION

ST. GEORGE, ALASKA

U.S. Army Corps of Engineers
Alaska District

Page intentionally left blank

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

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

JUL 0 2 2018

Dear Ms. Bittner,

The United States Army Corps of Engineers (USACE), under the Civil Works (CW) Program, is planning to develop a harbor on the north side of Saint George Island, Pribilof Islands (Figure 1; Section 28, T41S, R129W, USGS Pribilof Islands A-3, Seward Meridian). The project is being conducted in conjunction with the City of St. George under Section 107 of the 1960 River and Harbor Act, as amended, which "allows the USACE to study, plan, and construct small navigations projects such as boat harbors." In compliance with Section 106 of the National Historic Preservation Act of 1966 [36 CFR § 800.2(a)(4)], the purpose of this letter is to notify you of a Federal undertaking and to seek your concurrence on an assessment of effect.

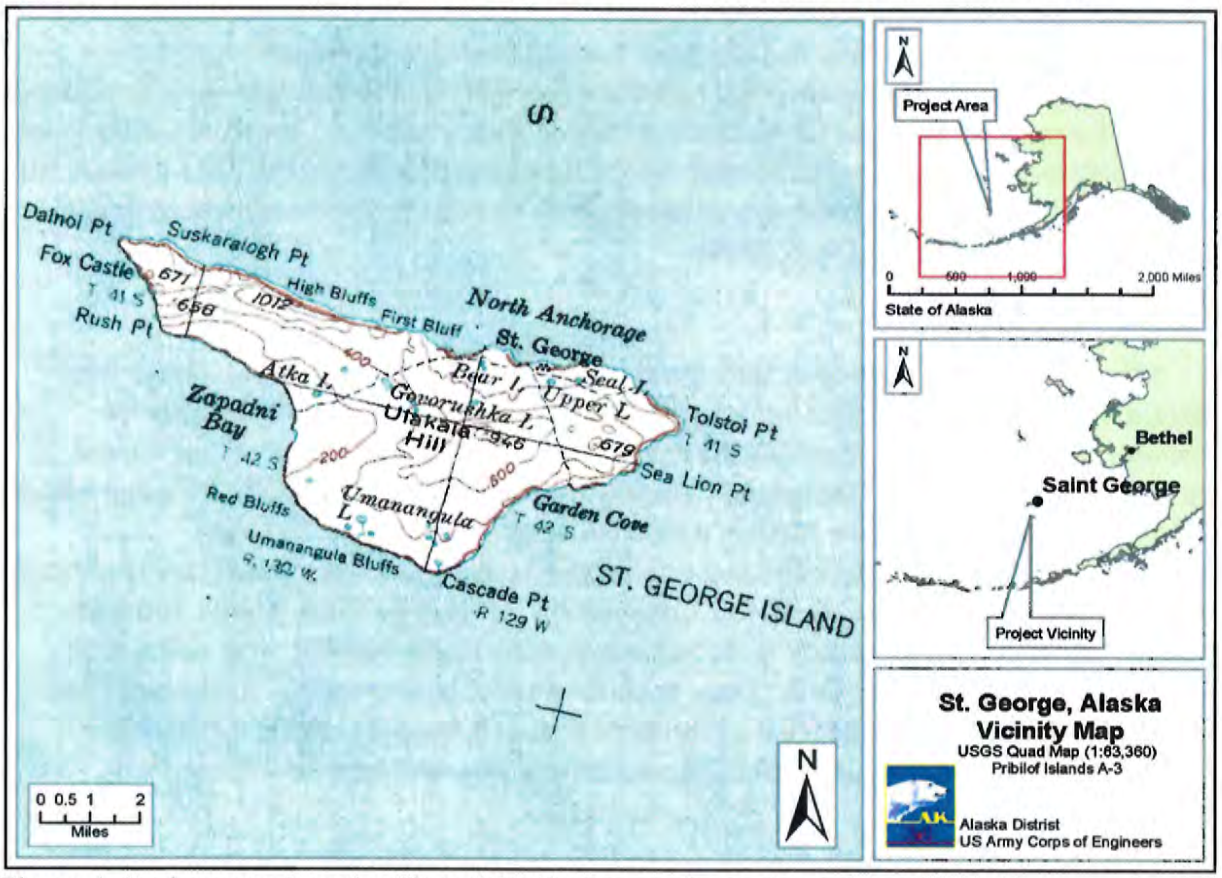


Figure 1: Project area is at the City of St. George on the northern side of the island.

Context

Russian Period

Saint George Island is part of the Pribilof Island group located in the Bering Sea, approximately 250 miles north of the Islands of Four Mountains in the Aleutian archipelago and 300 miles west of the mainland of Alaska. Russian fur-hunting crews had actively sought these island since at least 1768, as they knew that the northern fur seals (*Callorhinus ursinus*) they had observed and hunted in the passes of the eastern Aleutians must have breeding grounds somewhere to the north. On June 25, 1786, St. George Island was discovered by the crew of *Sv. Georgii Pobedonosets* (*St. George the Victorious*), commanded by Gavriil Loginovich Pribylov of the Lebedev-Lastochkin Company. Upon finding no safe harbor, Pribylov left a party of 40 men to winter there and returned to Unalaska Island for supplies. While the crew was on Saint George, they spotted another island to the northwest. Once Pribylov returned the following summer, they sailed to this new island and named it Saint Peter and Saint Paul Island for the Saints' day on which they landed. This island's name has since been shorted to Saint Paul Island (Eldridge 2016).

Although the Pribilof Islands were uninhabited when the *St. George the Victorious* arrived, Unangan oral history holds that they had known of these island for some time before their documentation by the Russians (Black 2004; Elliott 1882; Jochelson 2003; Osgood et al. 1915; Torrey 1980; Veniaminov 1984). In 1787, rival Russian fur-hunting companies quickly established seasonal sealing camps around the coasts of both Saint George and Saint Paul Islands to harvest the valuable northern fur seal pelts. Unangan from Unalaska, Umnak, and Atka Islands were brought to the islands to provide labor for the Russians (Eldridge 2016). They constructed traditional semi-subterranean barabaras on the southern shore and a permanent village on the north of Saint George Island (Etnier 2004).

Alaska Territory Period

After the Treaty of Cession in 1867 by which the United States purchased Alaska from Russia, administers and management from the Alaska Commercial Company became the governing authorities on the island (Faulkner *et al.* 1987).Under the authority of the United States Treasury, the Alaska Commercial Company took over operations on Saint George Island. The company razed many of the Russian period buildings, including the Unangan semisubterranean houses, and constructed wood-frame housing and a number of new commercial buildings on the north shore of the island. Construction included the Great Martyr Orthodox Church, completed in 1936, as well as the old administrative core building with staff housing overlooking the dock from the cliffs. There were six rows of houses that ran southeast of the church, with a community center. The commercial district is located near the old dock and consists of fourteen buildings. Portions of the waterfront was destroyed by a fire in 1950 (Faulkner *et al.* 1987).

Treatment of the local Unangan population also changed with the advent of the Alaska Commercial Company's control of St. George. From Cession to the U.S. involvement in World War II, the Company changed its treatment and attitudes toward the Unangan workforce from what could be considered a reasonably paid citizen of the United States to a form of servitude, where wages, lifestyle, and conditions were all controlled by the Company. These conditions persisted and then deteriorated even more during World War II when the Pribilof Islands were evacuated and the population was sent to Southeast Alaska for the duration of the war. On June 14, 1942, the residents of St. George were ordered to pack their belongings for evacuation of the island due to threat of Japanese attack. On June 16, 1942, 294 Unangan and 15 non-Unangan U.S. Fish & Wildlife Service employees were evacuated from St. George aboard the U.S. Army Transport *(U.S.A.T.) Delarof* (Commission 1983). As a result of a hasty evacuation, many personal belongings and government property was left on the island (Jones 1980; Torrey 1980).

Project Description

St. George's southern breakwater is eroding affecting the usability of the harbor, as a result storms have been causing damage to vessels in the harbor. The USACE is proposing to construct a new harbor that would replace the existing remains of the historic north harbor. Construction would involve deepening the existing bay and developing a breakwater to protect it from the weather. Plans also include a small boat pull-out protected from the breakwater, and a temporary footpad for the project along the northern shoreline directly to the east of the project area. As a cost-effective solution to the failing southern breakwater harbor, this project would significantly increase operational use of the harbor throughout the year. The benefits of this development also include increasing public health and safety, increasing access to subsistence resources, alleviating economic stresses on the community, and protecting social and cultural values in the community.

Initial review of the Alaska Heritage Resources Survey (AHRS) concluded that the construction would involve removing or covering two existing cultural resources, two "buildings" which are actually docks listed as XPI-194 and XPI-195. All current design proposals for the harbor would involve building a breakwater over site XPI-194, as well as the construction of a small boat pullout at the site XPI-195 (Figure 2).

Figure 2: Proposed APE for the northern harbor in the orange polygon, XPI-194 and XPI-195 circled in green.

Historic Properties

Saint George Island has a number of known cultural resources. These are associated with both the Russian and American fur trades; a large portion of the northern shore has been registered as a National Historic Landmark (NHL). The Seal Islands Historic District NHL (XPI-002) occupies both Saint Paul Island and Saint George Island (Figure 3). In total, there are 68 known sites and one NHL listed in the Alaska Heritage Resources Survey (AHRS) within the boundaries of the City of St. George; the vast majority of the resources being associated "buildings" to the Seal Island Historic District NHL (Tables 1 and 2).

Figure 3: Seal Islands Historic District NHL on Saint George Island (AHRS 2018).

In its entirety, the Seal Islands Historic District NHL includes 106 contributing buildings, two contributing structures, 12 historic sites (the northern fur seal rookeries) and nine archaeological sites. The NHL consists of a combination of Russian-era buildings and structures that were not destroyed by the Alaska Commercial Company, as well as American structures, of which many replaced Russian buildings to allow for continued seal harvesting into the 20th century. Of the 68 identified sites on the AHRS, only four sites in addition to the NHL have a specific site name and any DOEs conducted for them (Table 1). There are 65 contributing "buildings" within the NHL that are in the vicinity of the APE; however, they have not been adequately described or evaluated for their eligibility to the National Register of Historic Places (NRHP) (Table 2).

Table 1: Prominent known cultural resources in the general vicinity of the APE (AHRS 2018).

Site Number	Site Name	NRHP Status	In APE
XPI-002	Seal Islands Historic District	NHL	**Yes**
XPI-004	Great Martyr Orthodox Church	Listed on the Register	No
XPI-018	St. George Seal Skin Plant	Eligible	No
XPI-019	St. George Cottage	Unknown	No
XPI-116	St. George School	Not Eligible	No

Table 2: List of sites within the NHL in the general vicinity of the APE.

Site Number	Site Type	NRHP Status	In APE
XPI-089	Building	Unknown	No
XPI-090	Building	Unknown	No
XPI-091	Building	Unknown	No
XPI-092	Building	Unknown	No
XPI-093	Building	Unknown	No
XPI-094	Building	Unknown	No
XPI-095	Building	Unknown	No
XPI-096	Building	Unknown	No
XPI-097	Building	Unknown	No
XPI-098	Building	Unknown	No
XPI-099	Building	Unknown	No
XPI-100	Building	Unknown	No
XPI-101	Building	Unknown	No
XPI-102	Building	Unknown	No
XPI-103	Building	Unknown	No
XPI-104	Building	Unknown	No
XPI-105	Building	Unknown	No
XPI-106	Building	Unknown	No
XPI-107	Building	Unknown	No
XPI-108	Building	Unknown	No
XPI-109	Building	Unknown	No
XPI-110	Building	Unknown	No
XPI-111	Building	Unknown	No
XPI-112	Building	Unknown	No
XPI-113	Building	Unknown	No
XPI-114	Building	Unknown	No
XPI-115	Building	Unknown	No
XPI-117	Building	Unknown	No
XPI-118	Building	Unknown	No
XPI-119	Building	Unknown	No
XPI-120	Building	Unknown	No
XPI-121	Building	Unknown	No
XPI-122	Building	Unknown	No
XPI-123	Building	Unknown	No
XPI-124	Building	Unknown	No
XPI-125	Building	Unknown	No
XPI-126	Building	Unknown	No
XPI-127	Building	Unknown	No
XPI-128	Building	Unknown	No
XPI-129	Building	Unknown	No
XPI-130	Building	Unknown	No
XPI-131	Building	Unknown	No
XPI-133	Building	Unknown	No

XPI-134	Building	Unknown	No
XPI-135	Building	Unknown	No
XPI-136	Building	Unknown	No
XPI-144	Building	Unknown	No
XPI-145	Building	Unknown	No
XPI-146	Building	Unknown	No
XPI-147	Building	Unknown	No
XPI-193	Building	Unknown	No
XPI-194	Building (Large Dock)	Unknown	**Yes**
XPI-195	Building (Small Dock)	Unknown	**Yes**
XPI-196	Building	Unknown	No
XPI-197	Building	Unknown	No
XPI-198	Building	Unknown	No
XPI-199	Building	Unknown	No
XPI-200	Building	Unknown	No
XPI-202	Building	Unknown	No
XPI-203	Building	Unknown	No
XPI-204	Building	Unknown	No
XPI-205	Building	Unknown	No
XPI-206	Building	Unknown	No
XPI-207	Building	Unknown	No

Prior to the development of the harbor at Zapadni Bay on the southern shore in 1984, St. George relied on the old docks (XPI-194, XPI-195) located on the north shore at the bight on the west side of town. All commercial activities, subsistence activities, and transportation, including transferring seal and fox pelts, were conducted off of these docks (Isto 2012). While still in use until the Zapadni Bay harbor's construction, the old docks (XPI-195) remained significantly dangerous due to unsatisfactory environmental conditions (Figures 4 and 5). Eliot's (1881:16) description of the harbor at St. George paint a bleak and dangerous picture of the area:

> "Lack of Harbors: Anchorages. – The total absence of a harbor at the Pribylov islands is much to be regretted… At St. George matters are still worse, for the prevailing northerly, westerly, and easterly winds drive the boats away from the village roadstead, and weeks often pass at either island, but more frequently at the latter, ere a cargo is landed at its destination. Under the very best of circumstances, it is both hazardous and trying to load and unload ship at any of these places… At St. George, however, the bold, abrupt, bluffy coast everywhere all around, with its circling girdle of flying water-birds far out to sea, looms up quite prominently, even in the fog; or, in other words, the navigator can notice it before he is hard aground or struggling to haul to windward from the breakers under his lee. There are no reefs making out from St. George worthy of notice… At St. George the steamer comes, wind permitting, directly to the village on the north shore, close in, and finds her anchorage in ten fathoms of water, in poor holding-ground; but it is only when three or four days have passed free from northerly, westerly, or easterly winds, that she can make the first attempt to safely unload. The landing here is a very bad one, surf

breaking most violently upon the rocks from one end of the year to the other (Elliot 1881:16)."

Figure 4: View of the dock (XPI-194) at St. George looking northwest.

Figure 5: XPI-195 in view from the bluffs to the southwest. Rocky shoreline continues out with the structure.

There are a number of shipwrecks in the immediate vicinity of Saint George Island that correspond with Elliot's description of the navigation dangers. While the National Oceanic and Atmospheric Agency's (NOAA) shipwreck map is absent of nearby wrecks, the Bureau of Ocean Energy Management (BOEM) lists a number of shipwrecks associated with Saint George Island (BOEM 2011; NOAA 2018). These include the Russian ship the Sv. Ioann Pretecha, which is noted to have shipwrecked in 1792 "on the island." The Maweema sunk in 1915, five miles from St. George village, however no direction is given. The Amatuli sunk 45 miles off Saint George Island in 1987, and the Belair sunk in 1994 on the south side of the island. There is also the steamer known as the *Laurada*, which wrecked off "Zapadni Point" of St. George in 1899. However, there is no Zapadni Point on St. George; likely there is an error in the BOEM database and it is located at the Zapadni Point on St. Paul Island. If the shipwreck is in Zapadni Bay, that is located on the southern shore of St. George and outside the APE and NHL (BOEM 2011). In August 2018, the USACE is planning on having members from the Environmental Resource team to conduct an underwater survey of the north harbor area. While the primary purpose of this survey is for collecting underwater environmental data, the archaeologist will have access to the ROV, and will do a survey of the APE for any sunken cultural resources which have not been identified by BOEM or NOAA.

A second, smaller dock (XPI-195), was identified directly south of XPI-194. XPI-195 does not extend out into the bight, but instead sticks next to the shoreline. The historic purpose of this second dock is unknown; however, it would have required boats with small drafts (Figures 4 and 5). Assumptions can be made that it either was a secondary dock, or possibly part of the processing stations for seal and fish to allow disposal into the bay.

Figure 4: View of St. George Village from XPI-194. The smaller dock, XPI-195 is on the right in the orange outline.

Figure 7: A closer view of XPI-195. The base of a small crane is on the right side.

Figure 8: Historic photo of the small dock (XPI-195), date unknown, catalog number RG22-95-ADMC-2863 (NARA 2018).

Assessment of Effect

Two known cultural resources will be directly affected by the proposed undertaking (XPI-194 and XPI-195). These two docks are both listed in the AHRS as contributing features to the Seal Islands Historic District NHL (XPI-002), but remain unevaluated individually for listing on the National Register of Historic Places (NRHP). The proposed project will have an **Adverse Effect** on XPI-194 and XPI-195, as defined by 36 CFR § 800.5(a)(1) adverse effects occur:

> When an undertaking may alter, directly or indirectly, and of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be further removed in distance or be cumulative.

Conclusion

The proposed breakwater will be constructed on top of XPI-194, and it is likely that the city will construct a small boat ramp at XPI-195. A Memorandum of Agreement is anticipated; please expect an invitation to participate per 36 CFR § 800.6(a) in the near future. The lead time required for awarding contracts and coordinating planning documents in advance of the actual field work for this undertaking is significant. Importantly, the historic value within a NHL creates added challenges per 36 CFR § 65.2(c)(2), which require "the responsible Federal agency to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark." The USACE has determined the proposed undertaking will have an **Adverse Effect** on local cultural resources, per 36 CFR § 800.5(d)(2). If you have any questions about this project, please contact me by phone at 907.753.2640, or by email at joseph.e.sparaga@usace.army.mil.

Sincerely,

Joseph E. Sparaga
Archaeologist
Environmental Resources

Cc:
Thomas Mack, President & CEO of Aleut Corporation
Dimitri Philemonof, President & CEO of Aleutian Pribilof Islands Association, Incorporated
Christopher Merculief, President of Saint George Traditional Council
Nathan McCowan, President of St. George Tanaq Corporation
Patrick Pletnikoff, Mayor of City of St. George
Larry Cotter, CEO of Aleutian Pribilof Island Community Development Association

References

Alaska Heritage Resources Survey (AHRS)
2018 Alaska State Office of History and Archaeology (OHA) database.

Black, Lydia
2004. *Russians in Alaska: 1732-1867*. University of Alaska Press, Fairbanks.

Bureau of Ocean Energy Management
2011 Shipwrecks of Alaska's Coast. Electronic Document, https://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Ships/2011_Shipwreck.pdf, accessed 6/19/2018.

Commission on Wartime Relocation and Internment of Civilians (Commission)
1983 Personal Justice Denied. Part II: The Aleuts. Electronic document, https://www.archives.gov/research/japanese-americans/justice-denied, accessed March 01, 2018.

Eldridge, Kelly A.
2016. An Analysis of Archaeofauna Recovered from a Russian Period Camp on St. Paul Island, Pribilof Islands, Alaska. *Arctic Anthropology* Vol. 53(2):33-51.

Elliot, Henry Wood
1881 *The Seal-Islands of Alaska*. Government Printing Office, Washington D.C.
1882.

Etnier, Michael
2004. 2004. Evaluation of Staraya Artil Paleontological and Archaeological Resources: Progress Report and Recommendations for Further Study. St. George Traditional Council.

Faulkner, Sandra McDermott, William S. Hanable, and Robert L. S. Spude.
1987. *Russia America Theme: National Historic Landmarks*. U.S. Department of the Interior. Anchorage: National Park Service, Alaska Region.

Jochelson, Waldemar
2003 [1931]. *History, Ethnology and Anthropology of the Aleut*. University of Utah Press, Salt Lake City.

Jones, Dorothy Knee
1980 *A Century of Servitude: Pribilof Aleuts Under U.S. Rule*. University Press of America, Inc., Washington D.C.

Khlebnikov, Kiril Timofeevich
1994 *Notes on Russian America: Parts II-V: Kad'iak, Unalashka, Atkha, the Pribylovs*. Translated by Marina Ramsay. The Limestone Press, Fairbanks.

National Archives and Records Administration (NARA)
2018 No. 345 St. George Dock, ARC Identifier 1656105. *Photographs of Social and Economic Life, Environmental Conditions and Cleanup Operations on the Pribilof Islands, Alaska*. Electronic file, https://aad.archives.gov/aad/record-detail.jsp?dt=2312&mtch=582&tf=I&q=St.+George&bc=&rpp=10&pg=1&rid=1596&rlst=1055,1248,1249,1251,1259,1261,1518,1592,1595,1596, Accessed 6/20/2018.

National Oceanic and Atmospheric Administration (NOAA)
2018 Wrecks and Obstructions Database. Electronic Document, https://nauticalcharts.noaa.gov/data/wrecks-and-obstructions.html, accessed 6/19/2018.

Osgood, Wilfred Hudson, Edward Alsexander Preble, George Howard Parker, and Rose Mortimer Ellzey macDonald

1915. *The Fur Seals and Other Life of the Pribilof Islands, Alaska, in 1914*. Government Printing Office, Washington D.C.
Torrey, Barbara Boyle
1963 *Slaves of the Harvest*. Tanadgusix Corporation, Anchorage.
Veltre, Douglas W. and Mary J. Veltre
1987 The Northern Fur Seal: A Subsistence and Commerical Resource for Aleuts of the Aleutian and Pribilof Islands, Alaska. In *Études/Inuit/Studies* Vol. 11(2):51-72.
Veniaminov, I.
1984 [1840]. *Notes on the Islands of the Unalaska District*. Translated by L. Black and R. H. Geoghegan, edited by R.A. Pierce. Limestone Press, Kingston.

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Natural Resources

DIVISION OF PARKS & OUTDOOR RECREATION
Office of History & Archaeology

550 West 7th Ave., Suite 1310
Anchorage, Alaska 99501-3565
Main 907.269.8721
http://dnr.alaska.gov/parks/oha

August 1, 2018

File No.: 3130-1R COE / 2018-0831

Joseph E. Sparaga
U.S. Army Corps of Engineers
Alaska District CEPOA-PM-C-ER
P.O. Box 6898
JBER, AK 99506-0898

Subject: St. George Harbor Project

Dear Mr. Sparaga:

The Alaska State Historic Preservation Office (AK SHPO) received your correspondence concerning the subject project on July 5, 2018. Our office has reviewed the undertaking pursuant Section 106 of the National Historic Preservation Act and offer the following comments for your consideration.

A proposed area of potential effects (APE) was presented in Figure 2, but was not accompanied by a discussion of what components of the project are encompassed by the APE or what types of effects were taken into account with the proposed APE. Common project elements discussed in a project description and/or APE section include material sources, laydown areas, construction camps, and access routes. Our office is uncertain whether these aspects of the project are included in the APE as they were not discussed and welcome additional information in the future. We are also concerned about effects the project may have on the Seal Islands Historic District National Historic Landmark (NHL) and request USACE consider broadening the APE to include potential indirect and cumulative effects the project may have on the NHL.

USACE identified three known cultural resources within the APE: the NHL (XPI-00002), a Large Dock (XPI-00194), and a Small Dock (XPI-00195). The NHL is split between St. Paul and St. George Islands and it is our office's understanding that a project to re-examine the contributing features and integrity of the St. George portion of the NHL was initiated, but never completed. The information reported to the AHRS from this project, including XPI-00194 and XPI-00195, is minimal and only states that the resources are within the boundary of the NHL. Given what is known about the docks, they are associated with fur seal industry and could be contributing features to the NHL, but they were not mentioned in the nomination and our office does not have on file any record of a formal evaluation of their eligibility status, even as contributing elements to the NHL. Our office encourages USACE to formally evaluate XPI-00194 and XPI-00195 for National Register of Historic Places eligibility, as well as evaluating their ability to contribute to the NHL.

Our office concurs that an agreement document should developed to implement and/or resolve effects for the St. George Harbor project. As the project is in the early development stages and there are a number of unknowns, we recommend that USACE consider a programmatic agreement rather than a memorandum of agreement (MOA). For a MOA to move forward, we would either need to agree that the project will have an adverse effect on the NHL or agree to defer formal evaluations for XPI-00194 and XPI-00195 and treat them as eligible for the purposes of this project.

Thank you for the opportunity to comment and we look forward to continued consultation concerning the project. Please contact Sarah Meitl at 269-8720 or sarah.meitl@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

Judith E. Bittner
State Historic Preservation Officer

JEB:sjm

United States Department of the Interior

NATIONAL PARK SERVICE
Alaska Region
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501

IN REPLY REFER TO:
1.B. (AKRO-CR)
August 6, 2018

VIA ELECTRONIC MAIL – NO HARD COPY TO FOLLOW

Joseph E. Sparaga
Department of the Army
Alaska District, U.S. Army Corps of Engineers
P.O. Box 6898
JBER, AK 99506-0898

Subject: St. George Harbor Development

Dear Mr. Sparaga:

Thank you for providing us with a copy of your July 2, 2018 letter to the Alaska State Historic Preservation Officer, on July 30th, regarding the United States Army Corps of Engineers (USACE) plan to develop a harbor on the north side of Saint George Island, Pribilof Islands.

The National Park Service (NPS) administers the National Historic Landmarks (NHL) program for the Secretary of the Interior. Federal agencies undertaking a project within a NHL must be in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. The project is located within the boundaries of the Seal Islands NHL, with historic districts on both St. George and St. Paul islands. The NPS serves as an interested party throughout the Section 106 process to ensure the integrity of the NHL.

We look forward to continued consultation with USACE, including additional information about AHRS Site numbers XPI-00194 and XPI-00195, as well as consulting during the development of an agreement document to mitigate the adverse effects of the project. Janet Clemens, Historian, will continue to serve as NPS contact for this Section 106 review and is available at 907-644-3461 or janet_clemens@nps.gov.

Sincerely,

Jennifer Pederson Weinberger

Jennifer Pederson Weinberger
Cultural Resources Program Manager

cc: Sarah Meitl, Review & Compliance Coordinator, AK State Historic Preservation Office (sarah.meitl@alaska.gov)

Page intentionally left blank

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ALASKA DISTRICT
P.O. BOX 6898
JBER, AK 99506-0898

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

MAR 25 2019

Dear Ms. Bittner,

The U.S. Army Corps of Engineers (USACE), under the Civil Works (CW) Program, is in the planning phase of a Feasibility Study to construct a small boat harbor on St. George Island, Alaska. The project is being conducted in conjunction with the City of St. George under Section 107 of the 1960 Rivers and Harbor Act, as amended, which allows the USACE to study, plan, and construct small navigations projects such as boat harbors. The enclosed document is a report of an archaeological survey conducted by a USACE archaeologist, and which includes the evaluation of two cultural resources within the proposed Area of Potential Effect (APE) for their eligibility for the National Register of Historic Places. The report concludes that both St. George Outside Landing (XPI-194) and St. George Inside Landing (XPI 195) were found **eligible** for inclusion on the National Register under **Criterion A**.

The USACE submitted a finding of adverse effect in a previous assessment letter submitted on July 2 (USACE 2018). Your office responded on August 1, that the re-examination of the contributing features to the NHL was never completed, and that there is insufficient information regarding on XPI-194 and XPI-195 (SHPO 2018). Your office recommended considering a programmatic agreement, or that a memorandum of agreement (MOA) would either need our offices to agree on adverse effect or to defer formal evaluations for XPI-194 and XPI-195 and treat the sites as eligible (SHPO 2018). USACE determined to evaluate the two properties for the purposes of the project. The results of the survey, as stated previously, found both sites eligible under Criterion A; per the USACE's 2018 finding of effect (USACE 2018), and following 36 CFR § 800.5(d)(2), the USACE seeks your concurrence on the determination that the proposed undertaking will result in an **adverse effect** on historic properties, and with a more developed project footprint (Attached 1), believe that an MOA would be the appropriate path forward if your office concurs with our finding. If you have any questions about this project, please contact Joseph Sparaga by phone at 907-753-2640, or by email at joseph.e.sparaga@usace.army.mil.

Sincerely,

Joseph E. Sparaga
Archaeologist
Environmental Resources Section

References

State Historic Preservation Office (SHPO)
2018. Letter to USACE (Joseph Sparaga) from SHPO (Judith Bittner) re: CW St. George Harbor Project. August 1, 2018.

United States Army Corps of Engineers (USACE)
2018. Letter to SHPO (Judith Bittner) from USACE (Joseph Sparaga): re: St. George Harbor Project Letter of Assessment. July 2, 2018.

US Army Corps of Engineers ®
Alaska District

Civil Works Program
Site Investigation and
Survey Results

Cultural Resources Survey of the St. George Outside Landing (XPI-194) and the St. George Inside Landing (XPI-195) within the Seal Rookeries National Historic District, St. George, Alaska

February 2019

Statement of Confidentiality

To protect fragile, vulnerable, or threatened cultural sites from disturbance, access to site-specific information from the Alaska Heritage Resources Survey is restricted or confidential. Distribution of those portions of this report that identify the location of cultural resources is to be limited to those with a legitimate need to know, such as appropriate personnel from the U.S. Army Corps of Engineers, Alaska State Historic Preservation Office, tribal entities, and other authorized researchers. Restricted or confidential information is withheld from public records disclosure per Alaska state law (AS 40.25.110) and the Federal Freedom of Information Act (PL 89-554). Information about site inventory may be restricted pursuant to AS 40.25.120(a)(4), Alaska State Parks Policy and Procedure No. 50200, the National Historic Preservation Act (PL 89-665; 54 USC 300101), and the Archaeological Resources Protection Act (PL 96-95)."

Executive Summary

This report describes the results of a cultural resources survey associated with the St. George Navigation Improvements Feasibility Study for a small boat harbor on Saint George Island, Alaska. The proposed small boat harbor would directly impact two contributing features of the Seal Islands National Historic Landmark (NHL): the St. George Outside Landing (XPI-194) and the St. George Inside Landing (XPI-195). A U.S. Army Corps of Engineers (USACE), Alaska District archaeologist conducted a pedestrian survey of the two landings in August 2018. The sites are in close proximity to each other on the northwest shoreline of the city of St. George. The purpose of the survey was to document the current conditions of these two contributing features of the NHL and assess the potential effects of the proposed undertakings on historic properties.

The eligibility of the St. George Outside and Inside Landings for the National Register of Historic Places (NRHP) was evaluated as a result of the survey. While both sites have lost significant physical integrity due to time, use, and weathering, as integral structures of the fur seal industry operating out of Saint George Island they are both significant under National Register Criterion A and retain sufficient integrity to be eligible for listing on the NRHP. The USACE has determined that the St. George Outside Landing (XPI-194) **is eligible for the NRHP under Criterion A** and the St. George Inside Landing (XPI-194) **is eligible for the NRHP under Criterion A**. This report has been prepared to support project planning and provide relevant cultural resources documentation for future undertakings.

Table of Contents

Figures

Tables

1.0 Introduction

Saint George Island is part of the Pribilof Island group located within the Bering Sea, 45 miles southeast of Saint Paul Island, and 220 miles northwest of Unalaska Island (Figure 1). The community of St. George, located on the northern side of the island, has been occupied since the Russians relocated Unangax̂ hunters to the island in the late 18th century to hunt and process fur seals. By the 1820s, St. George was the only permanent settlement on the island. Historically, the primary economy on the island was based off of the fur seal industry; the community also subsisted off of seal meat as a primary food source. Due to the nature of the industry, all structures associated with maritime transport played a significant role. The community of St. George relied on the harbor for its economy, subsistence, and communication with the rest of the world.

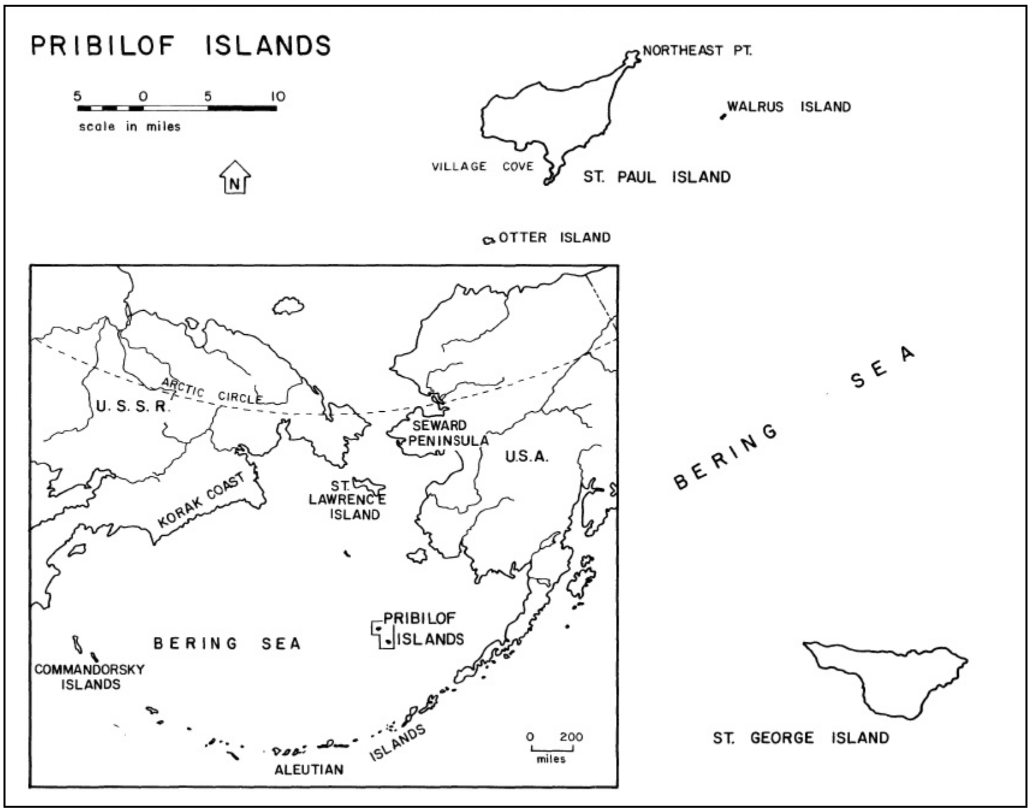


Figure 1. The Pribilof Islands in relation to the State of Alaska, the Aleutian Islands, and Russia (Faulkner 1986:40).

The City of St. George originally had two docks located along its northwestern shoreline (Figure 2). These docks were the primary artery for the community until a harbor was constructed at Zapadni Bay on the southern shore in 1984 (Figure 3). In 1988, large sections of the northern shore of Saint George was nominated for the National Register for Historic Places (NRHP) as the Seal Islands National Historic Landmark (NHL) for its period of significance from 1786-1959 (Faulkner 1986). The entire community of St. George was subsumed within this designated NHL and, as such, many of the buildings and structures are considered to be contributing features to the landmark.

Figure 2. The two historic docks at St. George. The St. George Outside Landing (XPI-195) is stretching out into the Bearing Sea, while the Inside Landing (XPI-194) is the square feature along the shore upon which USACE personnel is standing.

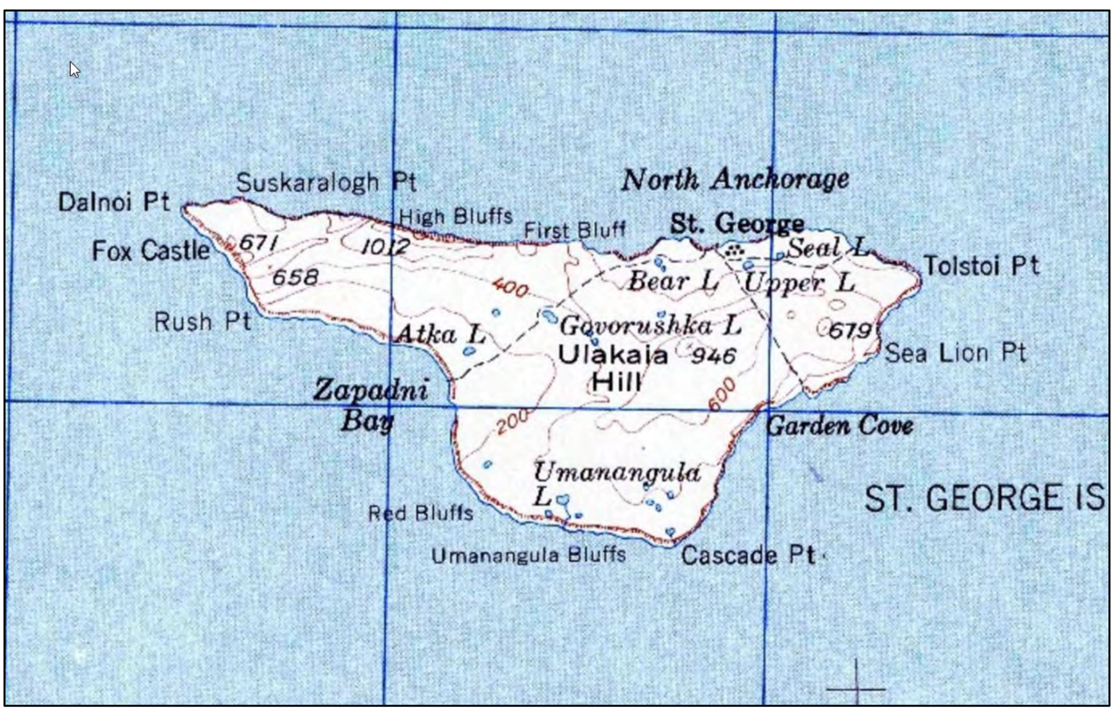


Figure 3. USGS map of Saint George Island. The city of St. George is in the northeast, while Zapadni Bay is to the southwest.

2.0 Historical Context

2.1 Russian Period

Saint George Island is part of the Pribilof Island group located in the Bering Sea, approximately 250 miles north of the Islands of Four Mountains in the Aleutian archipelago and 300 miles west of the mainland of Alaska. Russian fur-hunting crews, known as *promyshlenniki*, had actively sought these island since at least 1768, as they knew that the northern fur seals (*Callorhinus ursinus*) they had observed and hunted in the eastern Aleutians must have breeding grounds somewhere to the north. On June 25, 1786, St. George Island was discovered by the crew of *Sv. Georgii Pobedonosets* (*St. George the Victorious*), commanded by Gavriil Loginovich Pribylov of the Lebedev-Lastochkin Company. Upon finding no safe harbor, Pribylov left a party of 40 men to winter there and returned to Unalaska Island for supplies. While the crew was on Saint George, they spotted another island to the northwest. Once Pribylov returned the following summer, they sailed to this new island and named it Saint Peter and Saint Paul Island. This name has since been shorted to Saint Paul Island (Eldridge 2016).

Although the Pribilof Islands were uninhabited when the *St. George the Victorious* arrived, Unangan oral history holds that they had known of these island for some time before their documentation by the Russians (Black 2004; Elliott 1881; Jochelson 2003; Osgood et al. 1915; Torrey 1980; Veniaminov 1984). In 1787, rival Russian fur-hunting companies quickly established seasonal sealing camps around the coasts of both Saint George and Saint Paul Islands to harvest the valuable northern fur seal pelts. Unangax̂ from Unalaska, Umnak, and Atka Islands were brought to the islands to provide labor for the Russians (Eldridge 2016). They constructed traditional semi-subterranean barabaras near the shores of easily accessible areas along the southeastern shore near Garden cove, and southwestern shore of Zapadni Bay, but ended up developing a permanent village on the north of Saint George Island (Etnier 2004; NOAA 2010a).

2.2 American Period

After the Treaty of Cession in 1867 by which the United States purchased Alaska from Russia, administers and management from the Alaska Commercial Company became the governing authorities on the island. Under the authority of the United States Treasury, the Alaska Commercial Company took over the fur seal harvesting operations on Saint George Island (Figure 4). The company razed many of the Russian-period buildings, including the Unangax̂ barabaras, and constructed wood-frame housing and a number of new commercial buildings on the north shore of the island. Construction included the Great Martyr Orthodox Church, completed in 1936, as well as the administrative core building with staff housing overlooking the dock from the cliffs. There were six rows of houses that ran southeast of the church, with a community center. The commercial district is located near the old dock and consists of fourteen buildings. Portions of the waterfront were destroyed by a fire in 1950 (Faulkner *et al.* 1987).

Figure 4. Processed seal skins in barrels, waiting to be loaded onto the Navy transport USS *Thuban* in 1948 (Alaska Digital Archives UAF-1970-11-100).

Treatment of the local Unangax̂ population also changed when the Alaska Commercial Company (ACC) assumed control of St. George. From the Treaty of Cession to the U.S. involvement in World War II, the ACC changed its management and attitudes toward the Unangax̂ workforce from what could be considered a reasonably paid citizen of the United States to a form of servitude, where wages, lifestyle, and conditions were all controlled by ACC. These conditions persisted and then deteriorated even more during World War II when the Pribilof Islands were evacuated and the population was sent to Southeast Alaska for the duration of the war. On June 14, 1942, the residents of St. George were ordered to pack their belongings for evacuation of the island due to threat of Japanese attack. On June 16, 1942, 294 Unangax̂ and 15 non-Unangax̂ U.S. Fish & Wildlife Service employees were evacuated from St. George aboard the U.S. Army Transport (USAT) *Delarof* (Commission 1983). As a result of a hasty evacuation, many personal belongings and government property was left on the island (Jones 1980; Torrey 1980).

The Unangax̂ populations from the Pribilof Islands were not housed with other displaced Aleutian communities during the World War II Aleutian Campaign. Instead, the Unangax̂ from St. George and St. Paul were sent to an abandoned cannery and mine camp at Funter Bay. After they were allowed to return to St. George Island, the communities successfully pushed the U.S.

Congress to pass the Aleut Restitution Act of 1988, which recognized the government's fault in the treatment of the Unangax̂ in their internment camps. In 1973, the U.S. Congress passed the Fur Seal Act Amendments, which ended industrial seal harvesting in the Pribilof Islands. Since that time, residents have pursued commercial fishing and tourism, while relying on an allotted subsistence catch of fur seals (NOAA 2010b).

3.0 Historic Properties

Saint George Island has a number of known cultural resources. These are associated with both the Russian and American fur trades; a large portion of the northern shore of Saint George has been registered as a National Historic Landmark (NHL; Figure 5). The Seal Islands Historic District NHL (XPI-002) is located on both Saint Paul and Saint George Islands. In its entirety, the Seal Islands Historic District NHL includes 106 contributing buildings, two contributing structures, 12 historic sites, and nine archaeological sites. There are 68 known cultural resources and one NHL listed in the Alaska Heritage Resources Survey (AHRS) within the boundaries of the City of St. George; the vast majority of the resources are "buildings" associated with the Seal Island Historic District NHL; it is important to note that, although identified as such, many of the structures are not actually buildings (Tables 1 and 2).

Figure 5. Seal Islands Historic District NHL on Saint George Island (AHRS 2018).

Within the City of St. George, the NHL consists of a combination of Russian-period buildings and structures that were not destroyed by the ACC, as well as American structures, of which many replaced Russian buildings to allow for continued seal harvesting into the 20th century. Of the 68 identified sites on the AHRS, only four sites other than the NHL have had determinations of eligibility (DOE) conducted (Table 1). There are 65 contributing "buildings" within the NHL on the north shore of Saint George Island; however, they have not been adequately described or evaluated for their eligibility to the NRHP (Table 2).

Table 1: Sites that have DOE's completed (AHRS 2018).

AHRS No.	Site Name	NRHP Status
XPI-002	Seal Islands Historic District	NHL
XPI-004	Great Martyr Orthodox Church	Listed
XPI-018	St. George Seal Skin Plant	Eligible
XPI-116	St. George School	Non-Contributing, Not Eligible

Table 2: Known cultural resources within the NHL which have been unevaluated.

AHRS No.	Site Type	NRHP Status
XPI-019	St. George Employee Cottage C	Contributing to NHL, no DOE
XPI-089	Company House	No DOE
XPI-090	Employee Cottage A	Contributing to NHL, no DOE
XPI-091	Employee Cottage D	Contributing to NHL, no DOE
XPI-092	Firehouse	Contributing to NHL, no DOE
XPI-093	Abandoned Pump House	Contributing to NHL, no DOE
XPI-094	Winch House	Contributing to NHL, no DOE
XPI-095	Machine Shop	Contributing to NHL, no DOE
XPI-096	Coal Shed	Contributing to NHL, no DOE
XPI-097	Aleutian Bunkhouse	Contributing to NHL, no DOE
XPI-098	Priest's House	Contributing to NHL, no DOE
XPI-099	Aleut Labor Housing (ALH) 2	Contributing to NHL, no DOE
XPI-100	ALH 4	Contributing to NHL, no DOE
XPI-101	ALH 5	Contributing to NHL, no DOE
XPI-102	ALH 8	Contributing to NHL, no DOE
XPI-103	ALH 9	Contributing to NHL, no DOE
XPI-104	ALH 10	Contributing to NHL, no DOE
XPI-105	ALH 11	Contributing to NHL, no DOE
XPI-106	ALH 12	Contributing to NHL, no DOE
XPI-107	ALH 13	Contributing to NHL, no DOE
XPI-108	ALH 14	Contributing to NHL, no DOE
XPI-109	ALH 15	Contributing to NHL, no DOE
XPI-110	ALH 16	Contributing to NHL, no DOE
XPI-111	ALH 17	Contributing to NHL, no DOE
XPI-112	ALH (Unknown)	No DOE
XPI-113	ALH 19	Contributing to NHL, no DOE
XPI-114	ALH 20	Contributing to NHL, no DOE
XPI-115	ALH 21	Contributing to NHL, no DOE
XPI-117	ALH 23	Contributing to NHL, no DOE
XPI-118	ALH 24	Contributing to NHL, no DOE
XPI-119	ALH 6	Contributing to NHL, no DOE
XPI-120	ALH 22	Contributing to NHL, no DOE
XPI-121	ALH 31	Contributing to NHL, no DOE
XPI-122	ALH 32	Contributing to NHL, no DOE
XPI-123	ALH 34	Contributing to NHL, no DOE
XPI-124	ALH 35	Contributing to NHL, no DOE
XPI-125	ALH 36	Contributing to NHL, no DOE
XPI-126	Community Hall	Contributing to NHL, no DOE
XPI-127	Plumbing and Electrical Shop	Contributing to NHL, no DOE

XPI-128	Old Power Plant	Contributing to NHL, no DOE
XPI-129	Community Store	Contributing to NHL, no DOE
XPI-130	Hospital	Non-Contributing, no DOE
XPI-131	Carpenter Shop	Contributing to NHL, no DOE
XPI-132	ALH 37	Contributing to NHL, no DOE
XPI-133	ALH 38	Contributing to NHL, no DOE
XPI-134	ALH 39	Contributing to NHL, no DOE
XPI-135	ALH 43	Contributing to NHL, no DOE
XPI-136	ALH 42	Contributing to NHL, no DOE
XPI-144	ALH 40	Contributing to NHL, no DOE
XPI-145	ALH 41	Contributing to NHL, no DOE
XPI-146	City Office Building	Contributing to NHL, no DOE
XPI-147	Second Pump House	Contributing to NHL, no DOE
XPI-193	St. George Cemetery	Contributing to NHL, no DOE
XPI-194	St. George Outside Landing	Contributing to NHL, no DOE
XPI-195	St. George Inside Landing	Contributing to NHL, no DOE
XPI-196	Equipment Storage / Fish Plant	Non-Contributing, no DOE
XPI-197	New Power Plant	Non-Contributing, no DOE
XPI-198	ALH	Non-Contributing, no DOE
XPI-199	ALH	Non-Contributing, no DOE
XPI-200	ALH	Non-Contributing, no DOE
XPI-202	ALH	Non-Contributing, no DOE
XPI-203	ALH	Non-Contributing, no DOE
XPI-204	ALH	Non-Contributing, no DOE
XPI-205	ALH	Non-Contributing, no DOE
XPI-206	Employee Cottage E	Contributing to NHL, no DOE
XPI-207	Prib Kafe	Non-Contributing, no DOE

Prior to the development of the Zapadni Bay harbor on the southern shore in 1984 (Figure 5), St. George relied on their old docks (XPI-194, XPI-195) located on the northwestern shore of the bight which the town overlooks. The Inside Landing was constructed first, however the original date is unknown; however it was refurbished in 1822, while the Outside landing had been finished and was useable in 1957 (NOAA 2010a). Historically, all commercial activities, subsistence activities, and transportation, including the transferring seal and fox pelts, were conducted off of these docks (Isto 2012). While still in use until the Zapadni Bay harbor's construction, the old docks (XPI-195) remained dangerous due to environmental conditions (Figures 6 and 7). Elliot's (1881) description of the harbor at St. George paint a bleak and dangerous picture of the area:

> "Lack of Harbors: Anchorages. – The total absence of a harbor at the Pribylov islands is much to be regretted… At St. George matters are still worse, for the prevailing northerly, westerly, and easterly winds drive the boats away from the village roadstead, and weeks often pass at either island, but more frequently at the latter, ere a cargo is landed at its destination. Under the very best of circumstances, it is both hazardous and trying to load and unload ship at any of these places… At St. George, however, the bold, abrupt, bluffy coast everywhere all around, with its circling girdle of flying water-birds far out to

sea, looms up quite prominently, even in the fog; or, in other words, the navigator can notice it before he is hard aground or struggling to haul to windward from the breakers under his lee. There are no reefs making out from St. George worthy of notice… At St. George the steamer comes, wind permitting, directly to the village on the north shore, close in, and finds her anchorage in ten fathoms of water, in poor holding-ground; but it is only when three or four days have passed free from northerly, westerly, or easterly winds, that she can make the first attempt to safely unload. The landing here is a very bad one, surf breaking most violently upon the rocks from one end of the year to the other (Elliot 1881:16)."

Figure 6. View of the outside landing (XPI-194) at St. George from the bluffs to the southwest (Sparaga 2018).

Figure 7.View of the outside landing (XPI-194) at St. George, looking northwest (Sparaga 2018).

There are a number of shipwrecks in the vicinity of Saint George Island that corroborate Elliot's description of the navigation dangers. While the National Oceanic and Atmospheric Agency's (NOAA) shipwreck map is absent of nearby wrecks, the Bureau of Ocean Energy Management (BOEM) lists a number of shipwrecks associated with Saint George Island (BOEM 2011; NOAA 2018). These include the Russian ship the *Sv. Ioann Pretecha*, which is noted to have shipwrecked in 1792 "on the island." In 1915, the *Maweema* sunk 5 miles from the St. George village. The *Amatuli* sunk 45 miles off Saint George Island in 1987, and the *Belair* sunk on the south side of the island in 1994. The steamer *Laurada* is noted as having been wrecked off "Zapadni Point" of Saint George in 1899; however, there is no Zapadni Point on St. George. It is likely that the *Laurada* sunk off of Zapadni Point on Saint Paul Island (BOEM 2011).

The original dock for the community of St. George, the St. George Inside Landing (XPI-195), is directly south of the St. George Outside Landing (XPI-194). XPI-195 does not extend out into the bight, but instead was constructed along the shoreline. This dock was used primarily for offloading the seal carcasses from hunting around the rookeries and community goods, and for loading barrels of processed seal skins onto boats with shallow drafts (Figures 8 and 9). The original construction of this dock is unknown; historic documents note that it was damaged from weathering and from a fire, and then repaired (NOAA 2010a:16). Historic photographs also show rigging for lever booms to assist in moving goods from dock to boat and back (Figure 10).

Figure 8.View of St. George Village from XPI-194. The inside landing (XPI-195) is on the right in the orange outline. The Seal Skin Plant (XPI-018) is the large white building on the left, while the Great Martyr Orthodox Church (XPI-004) is uphill near the center (Sparaga 2018).

Figure 9.A closer view of XPI-195. The base of a small crane is on the right side. The old Community Store of the Swalling Construction Company (XPI-129) is in the top left, while the Second Pump House (XPI-147) is visible behind and upland of the two sites (Sparaga 2018).

Figure 10.Historic photo of the St. George Inside Landing (XPI-195), date unknown, catalog number RG22-95-ADMC-2863 (NARA 2018).

4.0 Archaeological Field Survey

On 27 August 2018, USACE Archaeologist Joseph Sparaga visited St. George with several USACE personnel for a public meeting to discuss options with the community for a prospective harbor. While a number of construction alternatives had been identified, preliminary studies recognized that the northern shore of the island has significant advantages as a location for a harbor; the island itself acts as a buffer from extreme weather conditions from the southern Bering Sea. The community agreed that the north harbor proposal was in their best interest, acknowledging a number of advantages the community would have with the docks being constructed on the same side of the island as the city. While on the island, Sparaga surveyed the two historic docks in the bight in front of the St. George community in order to identify current conditions and their association with the fur seal industry on the island.

4.1 St. George Inside Landing (XPI-195)

The St. George Inside Landing (XPI-195) is the older dock, which was built prior to 1922 (NOAA 2010a). There is no specific date known for the original installation of the dock. It was heavily refurbished in 1922 after a storm destroyed most of the dock. During this reconstruction, the bight was blasted with dynamite and dredged to remove 18 inches of rock from the sea floor, from the shoreline to 30 feet out from shore (NOAA 2010a). The St. George Inside Landing was also damaged during a fire in 1950; it was likely repaired afterward. Over the last 70 years, the inner dock has been worn away and damaged; today the exposed rebar from its reinforced concrete is exposed (Figures 11 and 12). The identifiable concrete dimensions of the St. George Inside Landing is approximately 30 feet (ft) by 50 ft. Historic photographs indicate that the dock may have originally been slightly wider; however the dock to the non-concrete sections of the dock are no longer present. Historic photographs show that there wooden boards covered the floor of the structure, and met up with wooden walkways heading into town (Figure 13 and 14). The 2018 survey found that both the Inside and Outside landings were made with a combination of local stone and concrete, in addition to reinforced concrete. The local cobble and concrete mixture appears to provide the base structure of the Outside Landings walkway and the fill for the Inside Landing, while the reinforced concrete consists of the walls and horizontal sections of the Landings. Reinforcing concrete with rebar was a common building method by the 20th century (Moussard et al. 2017).

Figure 11. The weathered reinforced concrete on the St. George Inside Landing (XPI-195). Interior sections of the dock are exposed and show substantial concrete degradation and loss of fill.

Figure 12. A 1948 photograph of the St. George Inside Landing (XPI-195) with a row boat lightering supplies to the dock (Alaska Digital Archives UAF-1970-11-96).

Figure 13. Community members docking a baidar at the St. George Inside Landing (XPI-195) in 1954 (Swalley 2018).

4.2 St. George Outside Landing (XPI-194)

The St. George Outside Landing (XPI-194) was constructed in 1957 to improve access to the community by increasing usable docking days. In 2018, the dock was approximately 260 ft by 20 ft for the length of the entire dock and the width of the ramp, with an octagonal dock at the end which was 30 ft across (Figure 16). This dock was constructed with a reinforced concrete surface and heavy concrete retaining walls, overlaid on a natural outcrop and local scoria fill. Metal structures indicate that this dock, similar to the St. George Inside Landing, had a wooden crane at the end to move cargo between the docks and the boats (Figures 17 and 18). The outer dock had two benefits over the first dock: it was usable at low tide, and it created a wave barrier for the inner harbor during rough weather. Presently, the St. George Outside Landing has suffered from considerable weathering; the concrete slabs which lined the walkway have been moved from their original location, with portions of the concrete walkway strewn across the beach, and the reinforced concrete has weathered to expose rebar and other set metal parts.

Figure 14. The St. George Outside Landing (XPI-194); view from the base of the dock on the shore (Sparaga 2018). The orange arrows are where Figure 10 (left) and Figure 11 (right) are located.

Figure 15. Concrete and metal object at the end of the St. George Outside Landing (XPI-194); this would likely have supported a boom lever attached to unload supplies from boats (Sparaga 2018).

Figure 16. An exposed metal base for a wooden lever joist is located just off the St. George Outside Landing (XPI-194) near where the dock connects to the shoreline (Sparaga 2018).

In 2018, there were remnants of large metal winch debris at the base of the St. George Outside Landing. These may have been part of a machine system used to assist the movement of goods between the shore and the end of the dock; however, there are no photos of the Outside Landing that show any use of this equipment. The shoreline between both docks contains intermittent rusted metal debris likely associated with the use of the docks and earlier sealing industry. Fragments of the reinforced concrete slabs that originally covered the outer dock can be identified along the beach as well. At this time, neither docks are usable. Additionally, they present a hazard for human and animal well-being due to exposed sharp metal debris such as weathered rebar. During the 2018 pedestrian survey, a resident was seen collecting sea urchins and other tidewater subsistence foods that are growing between the rocks in the area.

5.0 Determinations of Eligibility for the National Register of Historic Places

Cultural properties (districts, sites, buildings, structures, or objects) may be eligible for the National Register of Historic Places (NRHP) if they meet one or more of the National Register Criteria for Evaluation. The criteria listed in 36 CFR § 60.4 are:

A. *Events*. Association with events that have made a significant contribution to the broad patterns of history.
B. *Persons*. Association with the lives of persons significant in the past.
C. *Design or Construction*. Embodies the distinctive characteristic of a type, period, or method of construction, representing the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction.
D. *Information potential*. Yielded or is likely to yield information important in prehistory or history.

If a property is significant under Criterion A, it should retain the essential physical features “that made up its character or appearance during the period of its association with the important event” (NPS 1997:46). And while design and workmanship may not be as vital, the integrity of location, setting, materials, feeling, and association should ideally be retained (NPS 1997:48).

If a property is significant under Criterion B, the property should retain features “that made up its character or appearance during the period of its association with the important person(s)” (NPS 1997:46). Eligible sites under Criteria B must be in overall good condition with excellent preservation of features, artifact, and spatial relationships that the extent that these remain are able to convey important associations with persons (NPS 1997:46).

If a property is significant under Criterion C, the structure “must retain most of the physical features that constitute that style or technique” (NPS 1997:46). If it has lost the majority of the features that characterized its style, then the property is not eligible. Under Criterion C, the integrity of design, workmanship, and materials are usually more important than location, setting, feeling, and association (NPS 1997:48).

If a property is significant under Criterion D, the integrity of the structure "is based upon the property's potential to yield specific data that addresses important research questions" (NPS 1997:46). For "properties eligible under Criterion D, including archeological sites and standing structures studied for their information potential, less attention is given to their overall condition, than if they were being considered under Criteria A, B, or C" (NPS 1997:46). NPS (1997:46) recommends that the evaluation of integrity under Criterion D focus "primarily on the location, design, materials, and perhaps workmanship" of the site.

5.1 XPI-194 St. George Outside Landing.

Criterion A: Associated with Significant Events.

To be considered for listing under Criterion A, a property "must be associated with one or more events important in the defined historical contact" (NPS 1997:12). And while design and workmanship may not be as vital, the integrity of location, setting, materials, feeling, and association should ideally be retained (NPS 1997:48). The St. George Outside Landing is associated with the fur sealing industry for which the community of St. George was established until the commercial sealing ended in 1973. While it is not the first dock for the industry, between 1957 and 1984 it served the dual purpose of supplying the community with offloaded resources as well as loading the barreled seal skins when boats could not make it to the inner dock. The St. George Outside Landing also served as a wave break for the inner dock during rough seas. The St. George Outside Landing (XPI-194) **is eligible for listing on the NRHP under Criterion A**.

Criterion B: Association with Significant Persons.

Properties eligible for the NRHP under Criterion B are usually associated with a person's productive life, reflecting the time period when he or she achieved significance. A property is not eligible if its only justification for significance is that it was owned or used by a person who is a member of an identifiable profession, class, or social or ethnic group. It must be shown that the person gained importance within his or her profession or group at that location (NPS 1997:15). There are no persons of known significance related to the St. George Outside Landing. The St. George Outside Landing (XPI-194), **is <u>not</u> eligible for listing on the NRHP under Criterion B**.

Criterion C: Association with Significant Design/Construction.

If a property is eligible for the NRHP under Criterion C, the structure "must retain most of the physical features that constitute that style or technique" (NPS 1997:46). If it has lost the majority of the features that characterize its style, then the property is not eligible. Under Criterion C, the integrity of design, workmanship, and materials are usually more important than the location, setting, feeling, and association (NPS 1997:48). The St. George Outside Landing was constructed with reinforced concrete and some use of the local rock supply. The dock supported a number of built-in cranes which have been removed or lost to large storm events. There is no discernable significance in the St. George Outside Landings' construction, and the literature does not note any exceptional design modifications for the dock. The St. George Outside Landings (XPI-194) **is <u>not</u> eligible for listing on the NRHP under Criterion C**.

Criterion D: Association of Information Potential.

If a property is eligible for the NRHP under Criterion D, the significance of the structure "is based upon the property's potential to yield specific data that addresses important research questions" (NPS 1997:46). For "properties eligible under Criterion D, including archaeological sites and standing structures studied for their information potential, less attention is given to their overall condition, than if they were being considered under Criterion A, B, or C" (NPS 1997:46). The NPS (1997:49) recommends that evaluation of integrity under Criterion D focus "primarily on the location, design, materials, and perhaps workmanship" of the site. The St. George Outside Landing has sustained substantial weathering, however the structure is still located within its original location. The structure has been photographed, GPS-marked at all corners, and the outline of the structure has been tracked. The collection of this data concludes that XPI-194 no longer has potential to yield specific data other than what is already known. As such, the St. George Outside Landing (XPI-194) **is <u>not</u> eligible for the NRHP under Criterion D**.

5.2 St. George Inside Landing (XPI-195).

Criterion A: Association with Significant Events.

To be considered for listing under Criterion A, a property "must be associated with one or more events important in the defined historic context" (NPS 1997:12). And while design and workmanship may not be as vital, the integrity of location, setting, materials, feeling, and association should ideally be retained (NPS 1997:48). The St. George Inside Landing was the first dock known to be constructed for the community of St. George; it was used for offloading supplies to the community as well as loading on barrels of seal skins for shipment back to the continental U.S. until the commercial sealing ended in 1973. It was of primary importance to the economy of St. George, and integral to the processing and movement of seal products within the industry. Due to this, the St. George Inside Landing (XPI-195) structure **is eligible for listing on the NRHP under Criterion A**.

Criterion B: Association with significant persons.

Properties eligible for the NRHP under Criterion B are usually associated with a person's productive life, reflecting the time period when he or she achieved significance. A property is not eligible if its only justification for significance is that it was owned or used by a person who is a member of an identifiable profession, class, or social or ethnic group. It must be shown that the person gained importance within his or her profession or group at that location (NPS 1997:15). There are no persons of known historical significance related to the St. George Inside Landing; as such, the St. George Inside Landing (XPI-195), **is <u>not</u> eligible for listing on the NRHP under Criterion B**.

Criterion C: Association with Significant Design/Construction.

If a property is eligible for the NRHP under Criterion C, the structure "must retain most of the physical features that constitute that style or technique" (NPS 1997:46). If it has lost the majority of the features that characterize its style, then the property is not significant. Under Criterion C, the integrity of design, workmanship, and materials are usually more important than the location, setting, feeling, and association (NPS 1997:48). The St. George Inside Landing was not designed or constructed with any specialized or unique plan, but with a combination of reinforced concrete and concrete slabs which were placed over exposed local rock. There were no original blueprints or documents found to determine if the purpose of the dock was constructed for the community and used by the fur seal industry, or if the dock was built specifically for the fur seal industry. After reviewing historic photos and a field survey, it is apparent that the St. George Inside Landing was not constructed in any manner unique to the fur seal industry. While heavily weathered, the dock appears to be built using a portion of local resources with cement, as well as the reinforced concrete common with construction around the same period. As such, the St. George Inside Landing (XPI-195) **is <u>not</u> eligible for listing on the NRHP under Criterion C**.

Criterion D: Association of Information Potential.

If a property is eligible for the NRHP under Criterion D, the significance of the structure "is based upon the property's potential to yield specific data that addresses important research questions" (NPS 1997:46). For "properties eligible under Criterion D, including archaeological sites and standing structures studied for their information potential, less attention is given to their overall condition, than if they were being considered under Criterion A, B, or C" (NPS 1997:46). The NPS (1997:49) recommends that evaluation of integrity under Criterion D focus "primarily on the location, design, materials, and perhaps workmanship" of the site. While the St. George Inside Landing has sustained substantial storm damage, the majority of the structure is still located within its original location and setting. The structure has been photographed, GPS-marked at all corners, and GPS-tracked along its outer edges, as no original blueprints or plans could be identified. With the collection of this data, there is no longer a potential to yield additional specific information. As such, the St. George Inside Landing (XPI-195) **is <u>not</u> eligible for listing on the NRHP under Criterion D**.

6.0 Consideration of Integrity

In order to be considered eligible for the NRHP, a property must retain sufficient integrity to convey its significance in American history, architecture, archaeology, engineering, or culture (NPS 1997:44). There are seven aspects of integrity – location, design, setting, materials, workmanship, feeling, and association. The property must also convey its historic identity through retention of essential physical features (Table 3 and 4). Essential physical features enable the property to convey its historic identity; the features represent *why* and *when* a property was significant.

Table 3: Integrity criteria of the Outside Landing (XPI-194).

Criterion	Essential Physical Feature	Vital Aspects of Integrity
A	Must retain: Evidence of Seal Industry	Location, Setting, Association

Table 4: Integrity criteria of the Inside Landing (XPI-195).

Criterion	Essential Physical Feature	Vital Aspects of Integrity
A	Must retain: Evidence of Seal Industry	Location, Setting, Association

6.1 St. George Outside Landing (XPI-194)

To retain integrity of *location*, a property must be located where it was originally constructed or where the historic event occurred (NPS 1997:44). The St. George Outside Landing is a large stone and reinforced concrete structure that extends out from the shoreline into the ocean. While the large and powerful storms of the Bering Sea have damaged and removed portions of the site, the primary structure of the dock is still in its original place. Any machinery that assisted with the use of the dock has been either removed or has been destroyed by the weathering. As the primary physical features of the St. George Outside Landing, including the concrete foundations of the dock, are still present, the feature **retains integrity of location**.

To retain integrity of *design*, a property must have its original "form, plan, space, structure, and style" (NPS 1997:44). The St. George Outside Landing was built to facilitate better access between transport ships and St. George. It extends out to a slightly deeper water where larger boats can tie up, approximately 260 ft away from the shoreline; while the outside landing extended farther out from shore, the gain in draft depth was still limited and was a benefit during lower tides. The St. George Outside Landing had the additional benefit of creating a small breakwater for the St. George Inside Landing. The integrated hoist posts that were still present were designed to load and unload baidars and other cargo boats to transport between St. George and anchored vessels offshore. There is still a concrete outline of the structure, much of the non-concrete sections of the dock, including the beachfront facilities are now missing. There have been no plans or photographs of how the structure originally looked or what materials were in the final design, making the integrity of its original structure difficult to ascertain. As such, the St. George Outside Landing **retains integrity of design**.

To retain integrity of *setting*, the character of the physical environment and the surroundings "in which the property played its historic role" must be maintained (NPS 1997:45). The St. George Outside Landing was essential for supplying the community of St. George with goods from ships, as well as sending out fur seal products for transport. The dock was an important conduit between the St. George Seal Skin Plant and ship transportation, and also as a breakwater for the St. George Inside Landing. The Seal Skin Plant, and many of the fur seal industry buildings in St. George constructed by the ACC, are either still standing or have been renovated; as such, these structures that were historically associated with the dock are still present. Because of this, the St. George Outside Landing **retains integrity of setting**.

To retain integrity of *materials*, a property "must retain the key exterior materials dating from the period of its historic significance" (NPS 1997:45). The St. George Outside Landing was constructed out of a number of different materials. These include local scoria rock, cement, and -reinforced concrete. There are also a number of partial machinery components that likely were part of a system to help load and offload boats. The lack of historic photos of the outside landing make it difficult to determine all of the materials that were used for its construction; however photos of the inside landing have indicated that wooden planks were used to cover the dock, and the Outside Landing also had wooden and metal cranes that was used to move cargo to and from boats. The original locations of these cranes are still identifiable, as their bases were embedded into the concrete. The St. George Outside Landing has lost much of its original materials outside of its base structure, and so it **does <u>not</u> retain integrity of materials**.

To retain integrity of *workmanships*, a property "has the evidence of artisans' labor and skill in constructing or altering a building, structure, object or site" (NPS 1997:45). The St. George Outside Landing was constructed with a combination of concrete, reinforced concrete, and local cobbles; while no historical photos of the completed dock showed how it originally looked, it is likely to be similar to the hardwood top and railings from the photos of the other landing. Currently, the weathering and lack of use of resulted in damaging the overall structure and hiding any workmanship that may have made the docks unique. As such, the St. George Outside Landing **does <u>not</u> retain integrity of workmanship**.

To retain integrity of *feeling*, a property "must express an aesthetic or historic sense of a particular period of time" (NPS 1997:45). The St. George Outside Landing is associated with the fur seal harvesting industry at St. George, and the role it filled as a lifeline between the island community and ships bringing and taking cargo. The Outside Landing is next to both the Inside Landing and the Seal Skin Plant, where the final stages of fur processing took place. Portions of the structure have been lost, as well as the associated ramps and stairs to the landing from weathering. As the Outside Landing has not been the primary moorage since 1984, much of the features that support a feeling of a dock, or its use historically, are no longer present. The condition of the dock has not affected the historic sense of the feature, and as such the St. George Outside Landing **does <u>not</u> retain integrity of feeling**.

To retain integrity of *association*, a property must have a "direct link between an important historic event or person and a historic property" (NPS 1997:45). The St. George Outside Landing was an integral part of the community of St. George's supply and distribution link off-island. It provided better access to shore during low tides, served as a breakwater, and was an addition to the total infrastructure for the sealing industry on St. George, especially with such limited natural resources for construction. The St. George Outside Landing is still situated in relation to many of the original seal industry buildings; there has been no relocation of any of these structures. As such, the St. George Outside Landing **retains integrity of association**.

Table 5: The St. George Outside Landing's retention of integrity.

Fur Sealing Character	Location	Design	Setting	Materials	Workmanship	Feeling	Association
Yes	Yes	Yes	Yes	No	No	No	Yes

The St. George Outside Landing (XPI-194) is **eligible for listing on the NRHP under Evaluation Criterion A**. The St. George Outside Landing was constructed in 1957 in order to facilitate use by deeper draft vessels. It served a dual purpose as both a dock and a protective breakwater for the Inside Landing. Similar to the Inside Landing, the Outside Landing has suffered considerable degradation of its physical features. However, it is still physically in its original location and maintains its association with the fur sealing industry. It retains sufficient aspects of integrity (location, setting, association) to be considered eligible for the NRHP.

6.2 St. George Inside Landing (XPI-195)

To retain integrity of *location*, a property must be located where it was originally constructed or where the historic event occurred (NPS 1997:44). The St. George Inside Landing is within the bight alongside the community of St. George, where it was originally constructed. Although heavily weathered, it has not been demolished or removed. The remains of the dock, which consist of more than half of the original structure, are still standing. As such, the St. George Inside Landing (XPI-195) **retains integrity of location**.

To retain integrity of *design*, a property must have its original "form, plan, space, structure, and style" (NPS 1997:44). The St. George Inside Landing has lost much of its original design, and historic photos show that the dock was originally connected to the shoreline facilities via a wooden boardwalk. These photographs also show some dock features, such as the small cargo cranes and levers, are no longer present. Historic documents indicate that the dock was heavily impacted by a fire in 1950; some design modifications likely occurred in order to repair the dock. As such, the St. George Inside Landing (XPI-195) **does <u>not</u> retain integrity of design**.

To retain integrity of *setting*, the character of the physical environment and the surroundings "in which the property played its historic role" must be maintained (NPS 1997:45). The St. George Inside Landing was constructed within a natural bight along the northern shoreline of Saint George, next to the community of St. George. It is unknown when the original dock was constructed; however, historic documents suggest that it was built soon after the community was settled. The 2018 survey showed that while the primary material was reinforced concrete, local rock material, including scoria, was mixed in with cement to form the base structure. The physical location of the site has remained the same. During the 1950 repairs, the bight was dynamited in order to increase the basin depth by approximately 18 inches; however, this only had a limited visible impact on the overall environment. The St. George Inside Landing (XPI-195) **retains integrity of setting**.

To retain integrity of *materials*, a property "must retain the key exterior materials dating from the period of its historic significance" (NPS 1997:45). The St. George Inside Landing was constructed of reinforced concrete slabs and walls. Much of this concrete has degraded; rebar is now exposed. It appears that the interior of the dock may have been a combination of local scoria and other rock material intermixed with cement, but much of it has eroded away. Any wooden construction on the dock is no longer present, and exposed metal is rusted and degraded. The levers used to move goods between the dock and boats are also missing; only their metal bases located within the concrete remain. Compared with historical photographs, the dock itself has lost much of its associated materials. As such, the St. George Inside Landing (XPI-195) **does <u>not</u> retain integrity of materials**.

To retain integrity of *workmanships*, a property "has the evidence of artisans' labor and skill in constructing or altering a building, structure, object or site" (NPS 1997:45). The St. George Inside Landing was constructed with reinforced concrete and filled with a combination of local boulders and concrete; historical photos show some form of hardwood top with railings and a lever boom. The weathering and lack of use of resulted in damaging the overall structure and hiding any workmanship that may have made the docks unique. As such, the St. George Inside Landing **does <u>not</u> retain integrity of workmanship**.

To retain integrity of *feeling*, a property "must express an aesthetic or historic sense of a particular period of time (NPS 1997:45). The St. George Inside Landing is still located within the area of its original use, near the Seal Processing Plant, the St. George Outside Landing, and many of the other associated fur seal industry structures. The environment that existed at the time of the fur seal industry has changed only slightly. However, the industry that operated from the harbor at Saint George no longer operates, and the landings are no longer used for their purpose for mooring boats. Fishing and birding boats do not moor here, unless storms have forced them to the side of the island to wait it out. As such, the St. George Inside Landing (XPI-195) **does not retain integrity of feeling**.

To retain integrity of *association*, a property must have a "direct link between an important historic event or person and a historic property" (NPS 1997:45). The St. George Inside Landing still retains its physical link and association with structures and buildings that were constructed specifically for the fur seal industry. As such, the St. George Inside Landing (XPI-195) **retains integrity of association**.

Table 6: The St. George Inside Landing's retention of integrity.

Fur Sealing Character	Location	Design	Setting	Materials	Workmanship	Feeling	Association
Yes	Yes	No	Yes	No	No	No	Yes

The St. George Inside Landing (XPI-195) is **eligible for listing on the NRHP under Evaluation Criterion A**. The dock was pivotal for the survival of the early community of St. George, as well as part of the key infrastructure for the seal harvesting industry. While the structure has been heavily weathered and is no longer used in any capacity, the dock still exists within its original context of the fur seal industry on Saint George Island and retains sufficient aspects of integrity (location, setting, feeling, association) to be considered eligible for the NRHP.

7.0 Conclusion

This report describes the results of an archaeological survey of the APE associated with proposed navigation improvements at St. George on Saint George Island. The survey was conducted in August 2018 by a USACE Alaska District archaeologist who meets the Secretary of the Interior's Professional Qualification Standards. The USACE has evaluated the eligibility of two historic structures for listing on the NRHP. Both structures are identified as contributing properties to the Seal Islands Historic District NHL. The USACE has found that both the St. George Outside Landing (XPI-194) and the St. George Inside Landing (XPI-194) are eligible for the NRHP. Both structures meet National Register Criterion for Evaluation A, and retain the essential physical characteristics and sufficient integrity for listing. The USACE **requests concurrence** from the SHPO that the St. George Outside Landing (XPI-194) and the St. George Inside Landing (XPI-195) are eligible for listing on the NRHP.

8.0 References Cited

Alaska Digital Archives

2018. Search for St. George, electronic document. <https://vilda.alaska.edu/digital/search/searchterm/St.%20George>, accessed on 30 January, 2019.

Alaska Heritage Resources Survey (AHRS)

2018. Alaska State Office of History and Archaeology (OHA) database.

Black, Lydia

2004. *Russians in Alaska: 1732-1867*. University of Alaska Press, Fairbanks.

Bureau of Ocean Energy Management (BOEM)

2011. Shipwrecks of Alaska's Coast. Electronic Document, https://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Ships/2011_Shipwreck.pdf, accessed on June 19, 2018.

Commission on Wartime Relocation and Internment of Civilians (Commission)

1983. Personal Justice Denied. Part II: The Aleuts. Electronic document, https://www.archives.gov/research/japanese-americans/justice-denied, accessed March 01, 2018.

Eldridge, Kelly A.

2016. An Analysis of Archaeofauna Recovered from a Russian Period Camp on St. Paul Island, Pribilof Islands, Alaska. *Arctic Anthropology* Vol. 53(2):33-51.

Elliot, Henry Wood

1881. *The Seal-Islands of Alaska*. Government Printing Office, Washington D.C.

Etnier, Michael

2004. 2004. Evaluation of Staraya Artil Paleontological and Archaeological Resources: Progress Report and Recommendations for Further Study. St. George Traditional Council.

Faulkner, Sandra McDermott

1986. *National Rigster of Historic Places Inventory – Nomination Form: The Seal Islands (Fur Seal Rookeries NHL)*. National Park Service, Alaska Region.

Faulkner, Sandra McDermott, William S. Hanable, and Robert L. S. Spude.

1987. *Russia America Theme: National Historic Landmarks*. U.S. Department of the Interior. Anchorage: National Park Service, Alaska Region.

Jochelson, Waldemar

2003 [1931]. *History, Ethnology and Anthropology of the Aleut*. University of Utah Press, Salt Lake City.

Jones, Dorothy Knee

1980. *A Century of Servitude: Pribilof Aleuts Under U.S. Rule*. University Press of America, Inc., Washington D.C.

Moussard, Michel, Patricia Garibaldi, and Manfred Curbach

2017. The Invention of Reinforced Concrete (1848-1906). In *High Tech Concrete: Where Technology and Engineering Meet*, edited by Hordijk D., and Luković M. p.p. 2785-2794. Springer, Cham.

National Archives and Records Administration (NARA)
2018. No. 345 St. George Dock, ARC Identifier 1656105. *Photographs of Social and Economic Life, Environmental Conditions and Cleanup Operations on the Pribilof Islands, Alaska*. Electronic file, https://aad.archives.gov/aad/record-detail.jsp?dt=2312&mtch=582&tf=I&q=St.+George&bc=&rpp=10&pg=1&rid=1596&rlst=1055,1248,1249,1251,1259,1261,1518,1592,1595,1596, Accessed 6/20/2018.

National Oceanic and Atmospheric Administration (NOAA)
2018. Wrecks and Obstructions Database. Electronic Document, https://nauticalcharts.noaa.gov/data/wrecks-and-obstructions.html, accessed 6/19/2018.
2010a. *The Pribilof Islands, Alaska, Historic American Buildings Survey (HABS) Historical Report*. Office of Response and Restoration, Seattle.
2010b. Community Profiles for North Pacific Fisheries – Alaska: Saint George. Electronic document, https://www.afsc.noaa.gov/REFM/Socioeconomics/Projects/communityprofiles/St_George_Profile_2000_2010.pdf, Accessed 10 December 2018.

Osgood, Wilfred Hudson, Edward Alexander Preble, George Howard Parker, and Rose Mortimer Ellzey MacDonald
1915. *The Fur Seals and Other Life of the Pribilof Islands, Alaska, in 1914*. Government Printing Office, Washington D.C.

Swalley Construction Company Collection
2018. Baidar Docked at St. George Village, St. George Island Circa 1954. Electronic document, < ftp://ftp.library.noaa.gov/noaa_documents.lib/NOS/ORR/TM_NOS_ORR/TM_NOS-ORR_17/HTML/Pribilof_html/Images/Gallery/Gallery_Swalley_Construction_Co_1954/10.html>, accessed 27 December 2018.

Torrey, Barbara Boyle
1980. *Slaves of the Harvest*. Tanadgusix Corporation, Anchorage.

Veniaminov, I.
1984 [1840]. *Notes on the Islands of the Unalaska District*. Translated by L. Black and R. H. Geoghegan, edited by R.A. Pierce. Limestone Press, Kingston.

THE STATE
of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Natural Resources

DIVISION OF PARKS & OUTDOOR RECREATION
Office of History & Archaeology

550 West 7th Avenue, Suite 1310
Anchorage, AK 99501-3561
907.269-8700
http://dnr.alaska.gov/parks/oha

May 2, 2019

File No.: 3130-1R COE-E / 2018-0831

Joseph E. Sparaga
U.S. Army Corps of Engineers
Alaska District CEPOA-PM-C-ER
P.O. Box 6898
JBER, AK 99506-0898

Subject: St. George Harbor Project

Dear Mr. Sparaga:

The Alaska State Historic Preservation Office (AK SHPO) received your correspondence (dated March 25, 2019) concerning the subject project on April 4, 2019. Our office has reviewed the undertaking pursuant Section 106 of the National Historic Preservation Act and offer the following comments for your consideration.

It is our office's understanding that the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) were not inventoried as cultural resources until 2007 and neither structure had been evaluated for their potential to contribute to the Seal Islands Historic District (Fur Seal Rookeries) National Historic Landmark (NHL) (XPI-00002). Our office recommends revising your documentation to reflect the contributing features for the district as found in the AHRS or providing our office with source information to update the AHRS.

After review of the provided documentation, our office concurs that the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) contribute to the Seal Islands Historic District. As such, we concur that a finding of adverse effect is appropriate for the proposed undertaking.

We look forward to continuing consultation to develop a Memorandum of Agreement for the proposed project. Additionally, we recommend USACE considers potential indirect and cumulative effects the project may have on the NHL as your agency refines the area of potential effects based on the more developed project footprint provided with your documentation.

Thank you for the opportunity to review and comment. Please contact Sarah Meitl at 269-8720 or sarah.meitl@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

Sarah M. Antonson

Judith E. Bittner
Deputy State Historic Preservation Officer

JEB:sjm

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICE
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

1 WHEREAS, the U.S. Army Corps of Engineers (USACE) and City of St. George (CoSG) propose under the authority of Section 4010 of the Water Resources Development Act of 2007 (P.L. 110-114) to construct a small boat harbor along the North Anchorage site of St. George, Alaska as part of the St. George Navigation Improvements study (the Undertaking); and

2 WHEREAS, the preferred Undertaking design is identified as “the agency’s preferred alternative” within the integrated Feasibility Report/Environmental Assessment *St. George Navigational Improvements Feasibility Study*; and

3 WHEREAS, the USACE has identified the Undertaking’s area of potential effects (APE), as defined at 36 CFR 800.16(d), along the North Anchorage site of St. George and along the northwestern beach of the city (Appendix A), as well as Zapadni Bay harbor for staging materials, and the road connecting Zapadni Bay to the new harbor location; and

4 WHEREAS, the USACE has determined that the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), encompasses the entirety of the Area of Potential Effect (APE), and that the project directly affects two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195); and

5 WHEREAS, the USACE has found that the Undertaking will have an adverse effect on the physical aspects of XPI-00194 and XPI-00195, as well as the visual aspects of the NHL XPI-00002, and the Alaska State Historic Preservation Office (SHPO) concurred on 2 May 2019; and

6 WHEREAS, the USACE consulted with the SHPO in accordance with Section 106 of the National Historic Preservation Act [54 U.S.C. 306108] and its implementing regulations [36 CFR 800 et seq.] to resolve the adverse effect of the Undertaking on XPI-00002, XPI-00194, and XPI-00195; and

7 WHEREAS, XPI-00194 and XPI-00195 are structures on land owned by the CoSG; and

8 WHEREAS, the NHL XPI-00002 includes much of the shoreline and the associated structures of the entirety of the CoSG and the APE; and

9 WHEREAS, in accordance with 36 CFR § 800.6(a)(1), USACE has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specified documentation, and the ACHP has chosen *not to* participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

10 WHEREAS, the CoSG, the local governing body and non-Federal sponsor to the Feasibility study, has been invited to be an invited signatory to this MOA and has accepted; and

11 WHEREAS, the National Park Service (NPS), has participated as a consulting party in this Section 106 review in consideration of the adverse effects to the NHL, pursuant to 36 C.F.R. Section 800.10(c) and has been invited to be a concurring party to this MOA and has accepted; and

12 WHEREAS, USACE has consulted with the St. George Traditional Council (SGTC), for which has cultural significance to the NHL, and has been invited to be a concurring party to this MOA and has accepted; and

13 WHEREAS, USACE has consulted with the St. George Tanaq Corporation (Tanaq), regarding the effects of the undertaking on historic properties and has been invited to be a concurring party to this MOA and has accepted; and

14 WHEREAS, USACE has consulted with the Aleut Corporation (AC), regarding the effects of the undertaking on historic properties and has been invited to be a concurring party to this MOA and has accepted; and

15 WHEREAS, USACE has consulted with the Aleutian Pribilof Islands Association (APIA), regarding the effects of the undertaking on historic properties and has been invited to be a concurring party to this MOA and has accepted; and

16 WHEREAS, USACE has consulted with the Aleutian Pribilof Island Community Development Association (APICDA), regarding the effects of the undertaking on historic properties and has been invited to be a concurring party to this MOA and has accepted; and

17 NOW, THEREFORE, USACE and the SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to mitigate the effect of the Undertaking on historic properties.

STIPULATIONS

USACE shall ensure that the following stipulations are implemented:

I. ARTISTIC DEPICTION

A. The USACE shall ensure that the mitigation for the adverse effect to the viewshed of NHL (XPI-00002), and the removal of the St. George Inside Landing (XPI-00195) and St. George Outside Landing (XPI-00194), will include an artist's depiction showing three different time periods of the community's location on St. George Island placed within three displays installed at St. George.

1. During the Planning, Engineering, and Design (PED) phase of the St. George Navigational Improvements project the USACE shall consult with CoSG, to identify an art style, methods, and a local artist or Alaskan artist with experience producing landscape depictions that would be appropriate for the project, as well as a secondary artist if the first cannot or will not create the depictions.

a) The identified art styles, methods, and artist choices that are being considered will be sent to all parties in this MOA for the opportunity to comments or suggestions, and will have 30 days to respond to USACE.

b) When the USACE and the CoSG have come to an agreement, USACE shall notify all signatories and concurring parties on the selection and style.

2. After construction has been authorized and appropriated, the USACE shall contract the artist to develop three depictions of the community from the same vantage point (Appendix B), to include:

a) The location prior to the founding of St. George (pre-1786 C.E.),

b) The community during the Russian Period (1787-1866 C.E.),

c) The community during the U.S. Territorial Period to the end of commercial fur seal practices (1867 – 1973 C.E.).

3. If the depictions are done on canvas, or other surface medium, the depictions will be digitized in high-resolution by the artist as part of their agreement for use on the display. The physical versions shall be the property of the CoSG as will the rights to reproduce digital versions.

4. After the art has been installed onto the display and the construction phase has been completed, ownership of the digital copies of the art will be transferred to the CoSG.

a) The CoSG shall allow use of the digital copies by the other parties who have signed this agreement upon request.

B. The imagery created shall replicate, with a draft version of a historical narrative outlined in Stipulation II(B)(1)(b) and available photographs, the landscape and community of St. George under the specified time periods outlined in Stipulation I(A)(2).

C. The artist's depictions shall be created at identical sizes and scale.

D. The size of the artistic depictions shall match the display area outlined in Stipulation II(A).

II. DISPLAY

A. There will be three displays, each holding a separate artistic depiction, which will follow the style of displays known as the National Park Service "Reverse Angle Assembly" as described in the NPS UniGuide Program (Appendix C). This design is also known as a Low-Profile Wayside. The layout will be either:

1. 42 inches wide by 24 inches high variant, or

2. 36 inches wide by 24 inches high variant.

B. The USACE shall consult with the CoSG and the SHPO on the details of the display design during PED with the decision being made prior to the end of the PED phase by the CoSG.

1. This consultation will include:

a) The design and location for the placement of the depictions title, the time period it represents, and artist's name.

b) A brief historical narrative of each time period for each depiction.

2. The USACE shall notify the concurring parties on the layout for the title, time period, artist name as well as the historical narratives that will be used on each depiction.

C. The CoSG shall acquire, through right-of-way or easement, access to the hill directly west of the community overlooking the St. George landing area and community for the installation of the three displays.

1. The displays and artist depictions shall be installed at the same location, with all three depictions facing the community.

2. The location of the displays shall not affect the view of any statues or plaques present at the hillside.

D. The USACE shall construct and install the display as construction funding has been authorized and appropriated, and after the artist has completed the depictions as stated in Stipulation III(A)(3).

III. TIMING AND SUBMITTALS

A. As stated in Stipulation II(1)(A), the USACE and the CoSG shall identify a potential artist in the PED phase.

1. The USACE shall formally contact the artist after the Construction Phase is authorized and appropriated. The USACE shall inform the signatories and concurring parties on artists expected timeline, which will not exceed the life of the project.

2. Electronic copies of the three draft depictions shall be submitted to signatories and concurring parties by the USACE for a 30-day review. USACE shall take into consideration timely comments received and contact the artist and inform them of changes requested for historic accuracy. The USACE shall forward responses to the signatories and concurring parties.

a) The USACE shall notify the signatories and concurring parties on the artist's timeline for revisions, not to exceed the life of the project.

b) The USACE shall submit the revised depictions for a second 30-day review, after which any comments will be responded to. USACE shall then finalize the depictions with the artist.

3. Digital versions of the artist's depictions shall be distributed to signatories and concurring parties when the depictions are complete by the USACE.

a) When the USACE has completed the initial display design that will house copies of the art depictions, the design and placement will be sent to the signatories and concurring parties for a 30-day review and comment period. The USACE shall take into consideration timely comments received and direct appropriate revisions, as necessary.

b) If the display design is revised based on comments, the USACE shall allow a second 30-day review. If no comments are received USACE shall finalize the display design.

B. After the displays are installed on St. George, the USACE shall write a brief report describing the completed status of the installed displays, including the artist's depictions and photographs of the installed displays. USACE will send the report to signatories and concurring parties within 3 months after the display installation is complete to notify the conclusion of the mitigation responsibilities.

IV. Dispute Resolution

A. If any signatory to this agreement objects to any actions conducted during the term of this MOA or to the manner in which the terms of this MOA are implemented, the USACE shall consult with such party to resolve the objection. If the USACE determines that such objection(s) cannot be resolved, the USACE will:

1. Forward all documentation relevant to the dispute, including the USACE proposed resolution, to the ACHP. The ACHP shall provide the USACE with its advice on the resolution of the objection within 30

calendar days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the USACE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories, and concurring parties and provide them with a copy of this written response. The USACE will then proceed according to its final decision.

2. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, the USACE may make a final decision regarding the dispute and proceed accordingly. Prior to reaching a final decision, the USACE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

3. The USACE's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

V. PROFESSIONAL STANDARDS

A. All work pursuant to this MOA will be developed by or under the direct supervision of a person or persons meeting the minimal professional qualifications as appropriate, listed in the Secretary of the Interior's (SOI) Historic Preservation Professional Qualification Standards [62 FR 33708].

VI. AMENDMENT

A. The USACE, the SHPO, or CoSG may request that other signatories consider amending it, whereupon the parties will consult to consider such amendments. Amendments will be executed in the same manner as the original MOA. No amendment will be effective unless all signatories to the MOA have agreed to it in writing. The amendment will be effective on the date a copy signed by all the Signatories is filed with the ACHP.

VII. PUBLIC OBJECTION

A. If at any time during implementation of the measures stipulated in this MOA, should any objection to any such measure or its implementation be raised by a member of the public, the USACE will take the objection into account and consult as needed with the objecting party, the signatories, and concurring parties to resolve the objection. If the USACE, in consultation with the SHPO and

CoSG, agree that the objection should be resolved, then the USACE shall proceed according to Dispute Resolution, Stipulation IV to resolve the objection.

VIII. ANTI-DEFICIENCY ACT

A. All requirements set forth in this MOA requiring the expenditure of USACE funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act [31 U.S.C. 1341]. No obligation undertaken by the USACE under the terms of this MOA will required or be interpreted to require a commitment to expend funds not obligated for a particular purpose.

1. If the USACE cannot perform any obligations set forth in the MOA due to the unavailability of funds, the parties to this MOA intend the remainder of the agreement to be executed.

IX. MUTUAL AGREEMENTS AND UNDERSTANDINGS

A. Nothing contained in this MOA shall be construed or interpreted in any way so as to waive the sovereign immunity of any party.

B. Points of Contact for signatories and concurring parties are listed in Appendix D.

C. Electronic mail (email) will serve as the official correspondence method for all communications regarding this agreement and its provisions. Contact information in Appendix D may be updated as needed without an amendment to this agreement. It is the responsibility of each signatory and concurring party to immediately inform the USACE of any change in name, address, email address, or phone number of any point-of-contact. The USACE will forward this information to all signatories and concurring parties by email.

D. This MOA may be executed in counterparts, with a separate page for each signatory, invited signatory, and concurring party.

X. DURATION

A. This MOA will expire if its terms are not carried out within ten (10) years from the date of its execution or termination in accordance to Stipulation XI. Prior to such time, USACE may coordinate with the other signatories to reconsider the terms of the MOA and amend it in according with Stipulation VI.

XI. TERMINATION

A. If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation VI, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification of the other signatories.

B. Once the MOA is terminated, and prior to work continuing on the undertaking, USACE must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. USACE shall notify the signatories as to the course of action it will pursue.

C. Execution of this MOA by the USACE and SHPO and implementation of its terms evidence that USACE has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

SIGNATORY PARTY:

U.S. ARMY CORPS OF ENGINEERS

[signature] May 6, 2020

David R. Hibner — Date
Colonel, U.S. Army Corps of Engineers
District Commander, Alaska District

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE ALASKA STATE HISTORIC PRESERVATION OFFICER REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

SIGNATORY PARTY:

ALASKA STATE HISTORIC PRESERVATION OFFICER

Judith E Bittner — April 28, 2020

Judith Bittner
Alaska State Historic Preservation Officer
State of Alaska

Date

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

INVITED SIGNATORY PARTY:

CITY OF ST. GEORGE, ALASKA

[signature] 04/21/2020

Patrick Pletnikoff
City of St. George
Mayor

Date

SIGNATURE PAGE

**MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY**

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

CONCURRING PARTY:

NATIONAL PARK SERVICE, INTERIOR REGION 11 ALASKA

DONALD STRIKER Digitally signed by DONALD STRIKER
Date: 2020.04.21 13:39:45 -08'00'

Don Striker Date
Acting Regional Director
National Park Service, Interior Region 11 Alaska

SIGNATURE PAGE

**MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY**

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

CONCURRING PARTY:

ALEUT CORPORATION

Thomas Mack [signature] 4/18/2020

Thomas Mack
President & CEO
Aleut Corporation

Date

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

CONCURRING PARTY:

ALEUTIAN PRIBILOF ISLANDS ASSOCIATION, INCORPORATED

____

Dimitri Philemonof Date
President & CEO
Aleutian Pribilof Islands Association, Inc.

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

CONCURRING PARTY:

SAINT GEORGE TRADITIONAL COUNCIL

4/30/2020

Christopher Merculief
President
Saint George Traditional Council

Date

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

CONCURRING PARTY:

ST. GEORGE TANAQ CORPORATION

____

Nathan McCowan Date
President
St. George Tanaq Corporation

SIGNATURE PAGE

MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE
ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE ST. GEORGE NAVIGATION IMPROVEMENTS STUDY

SUBJECT: Resolution of Adverse Effects to the Seal Islands Historic District National Historic Landmark (NHL; XPI-00002), and two contributing structures to the NHL: the St. George Outside Landing (XPI-00194) and the St. George Inside Landing (XPI-00195) at St. George, Alaska.

CONCURRING PARTY:

ALEUTIAN PRIBILOF ISLAND COMMUNITY DEVELOPMENT ASSOCATION

____

Angel Drobnica   Date
Director of Fisheries and Government Affairs
Aleutian Pribilof Island Community Development Association

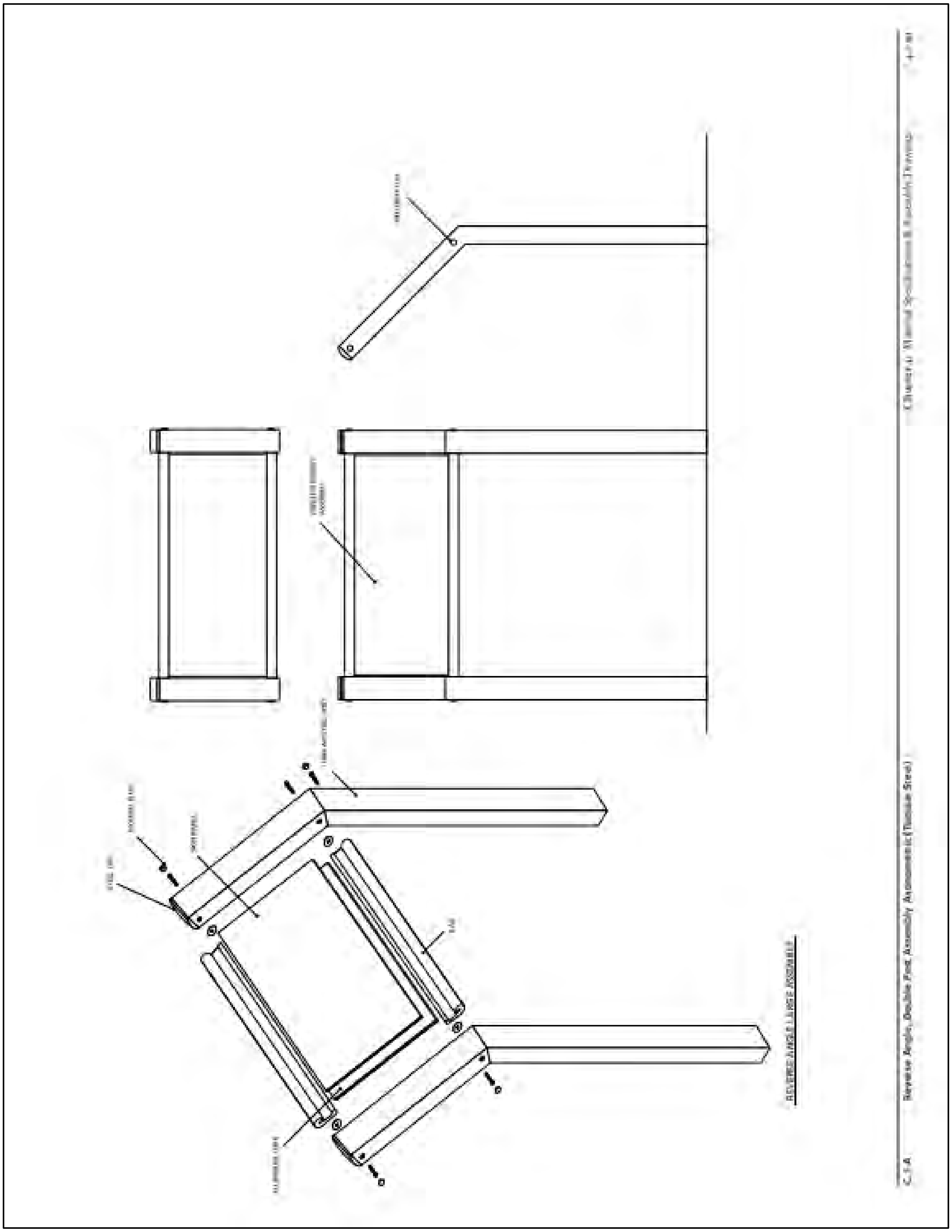
APPENDIX A – AREA OF POTENTIAL EFFECT

Area of Potential Effects for the proposed project. The road is outlined in orange for visual ease, and is not the actual use area.

APPENDIX B – PERSEPCTIVE FOR ART
Location and expected perspective of the community that the art depiction will show.

APPENDIX C – DISPLAY DESIGN

Pre-design of the displays that will be installed and have the artwork placed in.



APPENDIX D – CONTACT LIST

Joseph Sparaga
CEPOA-PM-C-ER
U.S. Army Corps of Engineers,
Alaska District
P.O. Box 6898
JBER, Alaska 99506-0898
(907) 753-2640
Joseph.e.sparaga@usace.army.mil

Ms. Judith Bittner
State Historic Preservation Officer
Office of History and Archaeology
550 West 7th Ave, Suite 1310
Anchorage, AK 99501
(907) 269-8700
oha.revcomp@alaska.gov

Patrick Pletnikoff
Mayor City of St. George
P.O. Box 929
St. George Island, AK 995910940
(907) 444-8862
Patplet714@gmail.com

Don Striker
Acting Regional Director
National Park Service
Interior Region 11 – Alaska
240 W. 5th Ave
Anchorage, AK 99501
Don_striker@nps.gov

Janet Clemens
Historian/Regional 106 Coordinator
National Park Service
240 W. 5th Ave
Anchorage, AK 99501
Janet_clemens@nps.gov

Christopher Merculief
President
Saint George Traditional Council
P.O. Box 940
St. George Island, AK 995910940
stgtribe@gci.net

Nathan McCowan
President
St. George Tanaq Corporation
701 Sesame St #200
Anchorage, AK 99503
nmccowan@tanaq.com
(907) 272-9886

Thomas Mack
President & CEO
Aleut Corporation
4000 Old Seward Hwy, Suite 300
Anchorage, AK 99503-6087
msmith@aleutrealestate.com

Dimitri Philemonof
President & CEO
Aleutian Pribilof Islands Association,
Incorporated
1131 E. International Airport Rd
Anchorage, AK 99518
dimitrip@apiai.org

Angel Drobnica
Director of Fisheries and
Government Affairs
Aleutian Pribilof Island Community
Development Association
302 Gold St, Suite 202
Juneau, Alaska 99801
(907) 586-0161 x318
adrobnica@apicda.com