Petersburg Navigation Improvements

Appendix C: Environmental and Correspondence

Petersburg, Alaska

US Army Corps of Engineers
Alaska District

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US Army Corps of Engineers
Alaska District

ESSENTIAL FISH HABITAT ASSESSMENT

Petersburg Navigation Improvements
Petersburg, Alaska

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November 2018

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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. As a result of recent work in the Sitka area by the Corps and the FAA, and due to the proximity of Petersburg to Sitka, some of the same EFH information was used and is reflected in this analysis. The Alaska District is conducting a site selection study in accordance with the Ocean Dumping regulations in 40 CFR 227; Criteria for the Evaluation of Permit Applications for Ocean Dumping of Materials. The data collected for that study has been incorporated into this document in order to populate data gaps in the District's understanding of the nature of the substrate in the placement area.

2.0 PROJECT PURPOSE

The Corps is proposing to dredge shoaled areas of the South Boat Harbor at Petersburg, Alaska. The purpose of the proposed dredging project is to restore design depths to allow for safe passage of vessels using the harbor. The harbor is shoaling in four areas with varying design depth requirements. A total of approximately 62,500-92,500 CYs of sediments are expected to be excavated with a mechanical dredge.

3.0 PROJECT AUTHORITY

Section 107 of the 1960 Rivers and Harbors Act (P.L. 86-645) and Section 915(d) of the 1986 Water Resources Development Act (P.L. 99-662) authorize the USACE to, without specific authorization, study, adopt, construct, and maintain navigation projects using the same procedures and policies that apply to Congressionally authorized projects. The Federal share of the initial implementation costs for any one project may not exceed $4 million and the program limit is $35 million per year. A Fact Sheet must be submitted to the Headquarter, U.S. Army Corps of Engineers (HQUSACE) for concurrence with the ASA (CW) before construction funds can be committed and prior to executing a Project Cooperation Agreement. Non-Federal sponsors must participate in project costs and Operation, Maintenance, Repair, Replacement and Rehabilitation in accordance with the established requirements herein set forth for navigation projects or measures (general harbor features, inland waterways, or recreational harbor features,

as the case may be). The non-Federal sponsor must also hold and save the U.S. free from damages due to the construction, maintenance, and operation of the project. The non-Federal sponsor is also responsible for all project and maintenance dredging costs in excess of the Federal cost limit.

4.0 PROJECT AREA

Petersburg is located on Mitkof Island in the Alexander Archipelago of Southeast Alaska; a chain of about 1,100 islands off the western coast of North America. These islands are the tops of submerged mountains rising from the seafloor, forming deep channels and fjords. The South Harbor is situated on Wrangell Narrows, a narrow body of water separating Mitkof Island and Kupreanof Island. (Figure 1) Wrangell Narrows is about 24 miles long and oriented on a general north-south alignment. It is about 750' wide at its narrowest point and about 1,500' wide in vicinity of Petersburg. Wrangell Narrows connect Frederick Sound in the north to Sumner Strait in the south, resulting in very strong tidal currents in the Narrows as the water levels between the two large bodies of water (Frederick Sound and Sumner Strait) attempt to equalize through the constrained Narrows. Tidal currents in the Narrows are reported to be as high as seven knots and have a significant impact on navigation. Vessels operating in the Narrows often must time their trips to avoid an opposing tide.

Frederick Sound is a large, semi-enclosed marine water body extending nearly 90 miles along the western coast of North America, around Mitkof, Kupreanof, and Kuiu Islands. Its southern lobe ends in a shoal between the southern end of Mitkof Island and Dry Island near the mouth of the Stikine River. The western lobe connects to Chatham Strait around the north end of Kupreanof Island (Figure 1).

The South Harbor is the southernmost of three harbors in Petersburg. It is also the newest of the three harbors, constructed by the State of Alaska in the 1980s. Construction of the South Harbor was completed by the City of Petersburg in the mid-1980s and initial depths are not readily available. The Harbor was expanded in 2002 and some of that material was used to construct the drive down dock. The remaining material was disposed in the Frederick Sound disposal area. The 2002 determination regarding the jurisdictional status of the Frederick Sound disposal site was based on an earlier baseline. Current knowledge places the Frederick Sound disposal area in ocean waters and its use would be regulated under Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA). Evaluation of the Frederick Sound disposal site in accordance with 40 CFR 227-228.

Figure 1: Petersburg Location Map

5.0 PROJECT DESCRIPTION

The Alaska District proposes to dredge the South Harbor in order to allow safe navigation, improve efficiency of harbor operation, and reduce fishing vessel downtime. The South Harbor was divided into four units based on the proposed project depths; the recreational boat slips landward of the spine float in Unit 1 and would be dredged to minus 10', the maneuvering basin between C and D floats would be dredged to minus 18' and is called Unit 2, the crane dock basin would be dredged to minus 9' and is called Unit 3, and the entrance channel between South and Middle Harbors would be dredge to minus 19.25' and is called Unit 4. (Figure 2) Preliminary estimates of dredged material are between 62,000 and 92,000 CYs of sand with silt over clay. (Table 1).

Table 1: Physical Properties of the Dredged Material in the South Harbor

Test Bore	Composition (percent)			Unified Soil Classification ASTM 02487
	Gravel	Sand	Silt/Clay	
TB-01	2	58	40	(SM) Silty sand
TB-02	6.6	89.8	3.6	(SP) Poorly-graded sand
TB-03	4.6	58.5	36.9	(SM) Silty sand
TB-04	0.2	82	17.8	(SM) Silty sand
TB-05	21.3	27.9	50.8	(Ml) Sandy silt w/ gravel
TB-05	8.2	25	66.8	(Cl-Ml) Sandy silty clay
TB-06	8.7	41	50.3	(ML) Sandy silt
TB-	10.9	28.3	60.8	(CL-Ml) Sandy silty clay
TB-07	20.8	68.4	10.8	(SP-SM) Poorly-graded sand w/ silt and
TB-08	13.4	82.8	3.8	(SP) Poorly-graded sand
TB-08	19.1	75	5.9	(SP-SM) Poorly-graded sand w/ silt and
TB-09	24.1	56.4	19.5	(SM) Silty sand w/ gravel
TB-10	7.8	86.6	5.6	(SP-SM) Poorly-graded sand w/ silt
TB-11	18.6	36.9	44.5	(SM) Silty sand w/ gravel
TB-12	13.6	36.7	49.7	(SM) Silty sand
TB-	12.6	31.1	56.3	(ML) Sandy silt
TB-	12.4	30.7	56.9	(Ml) Sandy silt
TB-13	11.2	34.8	54	(Ml) Sandy silt
TB-13	15.3	26.4	58.3	(Ml) Sandy silt w/ gravel
TB-14	16.2	37.5	46.3	(SM) Silty sand w/ gravel
TB-14	3.6	31.2	65.2	(Ml) Sandy silt
TB-15	23.7	30.2	46.1	(SM) Silty sand w/ gravel
TB-15	6.1	28.9	65	(CL-ML) Sandy silty clay
TB-16	28.9	41.2	29.9	(SM) Silty sand w/ gravel

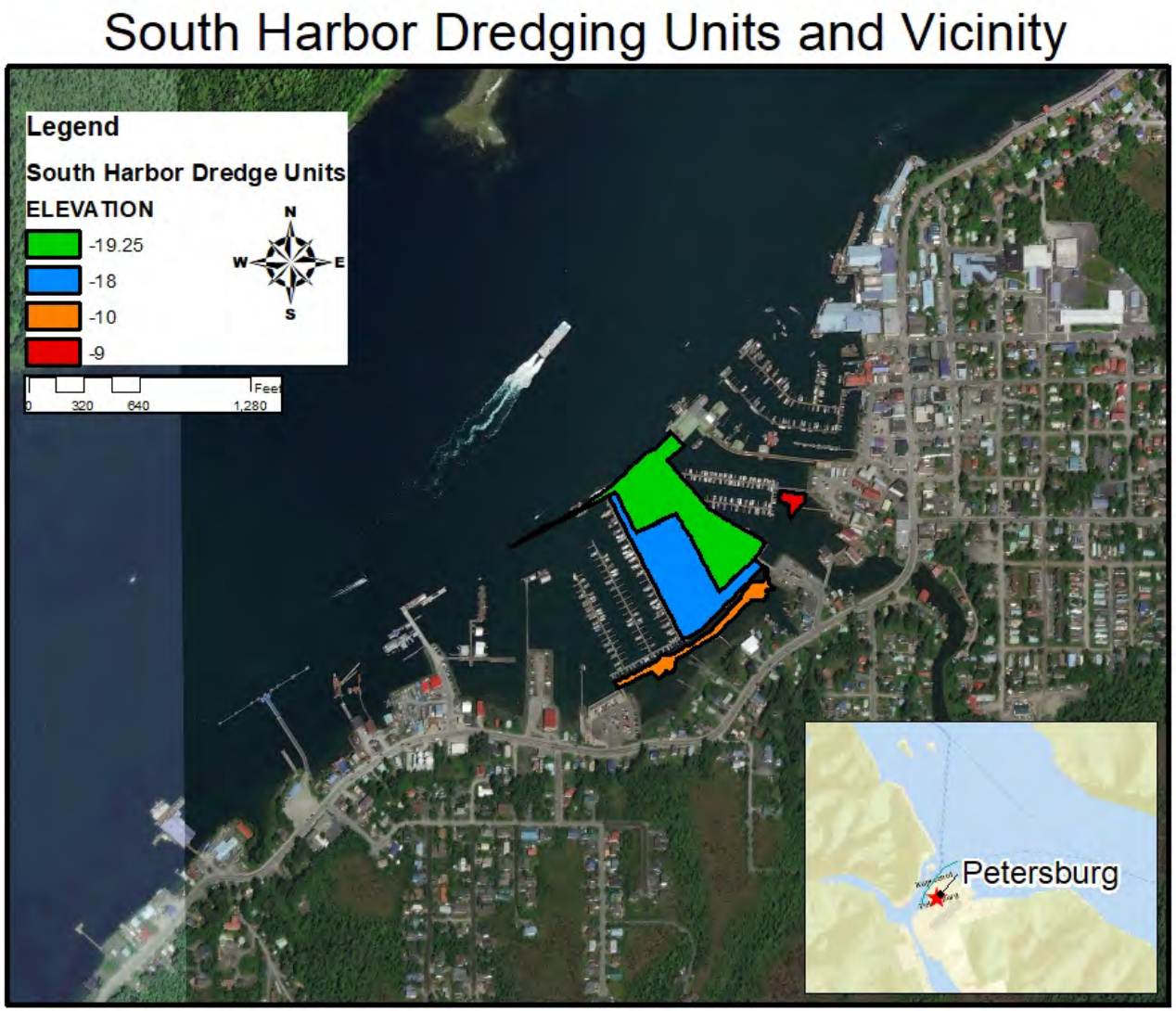

Figure 2: South Harbor Dredge Units with Respective Project Depths

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A mechanical dredge would be employed to dislodge the hard clay material underlying the sand and silt. The South Harbor would be dredged to four different project depths in the four South Harbor Dredge Units shown in Figure 2. The Alaska District has performed chemical analysis on the harbor sediments in accordance with the Seattle District's Dredged Material Management Plan (DMMP) and determined the material to be suitable for unconfined in-water placement. The Chemical Data Report has been appended to the feasibility report.

The dredging of the South Harbor would take place over three months between October 1st 2020 and March 15th 2021. The timing of the project has been orchestrated to minimize the potential impacts to spawning herring, marine mammals, out-migrating juvenile salmon, in-migrating adult salmon, and operation of the Harbor in support of the commercial fishing industry.

Timing of the dredging would be influenced by salmon migration, juvenile herring presence, marine mammal distribution, seasonal harbor activity, and constructability. The Petersburg fishing fleet is busiest during the summer, which would increase vessel traffic in the project area and potentially increase delays or the likelihood of accidents. Herring spawn in near-shore marine waters in the springtime, juvenile salmon also out-migrate from freshwater in the spring. Marine mammal abundance in Southeast Alaska, most notably humpback whales, increases in the summer. Adult salmon return to freshwater to spawn in the late summer and early fall.

Dredged material would be excavated using a barge mounted excavator and placed onto a scow for transport to the Frederick Sound Disposal Area. Assuming a barge capacity of 1,500 cubic yards and pay volume of 92,000 cubic yards, the dredging of the harbor would likely require about 62 transits from the project site to the disposal area. The Corps and other entities have used the Frederick Sound Disposal area for the placement of dredged material since at least 1952. The site is suitable for the placement of dredged material from the South Harbor dredging project because the ecological productivity of the area is poor relative to other locations in the project area, the water in the disposal area is greater than 480' deep, the bottom composition is similar to the sediments that would be excavated from the South Harbor in terms of grain size, and the habitat found in the disposal area is not rare or complex for the region.

The Alaska District is considering three potential disposal areas in Frederick Sound, all proximal to the charted disposal area about 2 miles north of the South Harbor. (Figure 3) The District will complete the site selection study and select the disposal area with the lowest level of impact. The potential disposal options were proposed based on the location of historical dredged material disposal, proximity to the South Harbor, interviews with local fisherman aimed at identifying areas known for poor fishing, avoidance of submarine cables, high vessel traffic, areas of deep water and low topographic relief, and other ecological and constructability considerations.

The primary source of sediments is Hammer Slough, which enters Wrangell Narrows between Middle Harbor and South Harbor. Hammer Slough is a short stream system that drains the hillside above Petersburg. The system is interrupted by the Petersburg Airport; the runway impedes hydrology and fish passage. Bidirectional flow dominates the lower reaches of Hammer Slough and the Slough becomes nearly dry at low tide. Bathymetric survey of the area indicates the Slough flow is channelized and directed towards Middle and North Harbor. The frequency of

infilling and need to dredge for the proposed South Harbor project is assumed to be similar to or less than the infilling in the North Harbor.

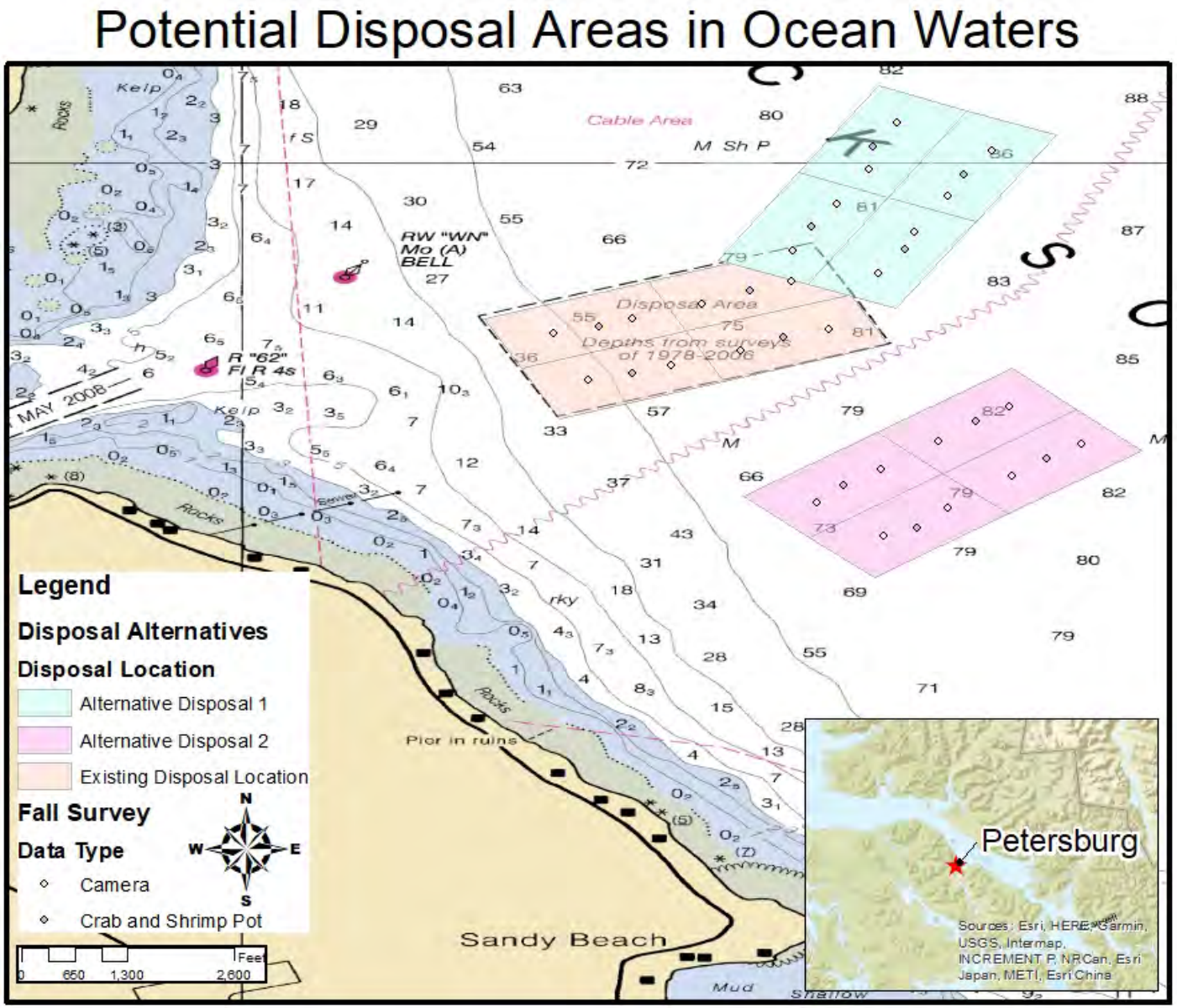

Figure 3: Potential Disposal Areas Undergoing Study by the Alaska District

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6.0 ESSENTIAL FISH HABITAT

NMFS authority to manage EFH is directly related to those species covered under Fishery Management Plans (FMPs) in the United States. The Corps' maintenance dredging action is within an area designated as EFH for two FMPs—Gulf of Alaska (GOA) Groundfish and Alaska Stocks of Pacific salmon. These two FMPs include species or species complexes of groundfish and invertebrate resources and all Pacific salmon species, including those listed in Table 2. See Attachment 1 for a description of GOA Groundfish resources. No EFH "habitat areas of particular concern" are in the Corps' project area.

Table 2 Species with Established Fisheries Management Plans in the Project Area

Gulf of Alaska Groundfish	Alaska Stocks of Pacific Salmon
Skates (Rajidae)	Chinook
Pacific cod	Coho
Walleye Pollock	Sockeye
Thornyheads	Chum
Pacific ocean perch	Pink
Rougheye rockfish	
Yelloweye rockfish	
Rex sole	
Dover sole	
Flathead sole	
Sablefish	
Atka mackerel	
Shortraker rockfish	
Northern rockfish	
Dusky rockfish	
Yellowfin sole	
Arrowtooth flounder	
Rock sole	
Alaska plaice	
Sculpins (Cottidae)	
Sharks	
Forage fish complex	
Squid	
Octopus	

Near-shore habitats in proximity to the harbor are expected to be used by juvenile salmonids during their early marine life history. According to the Alaska Department of Fish and Game, approximately six streams in the Petersburg area are used by Chinook, coho, pink, and sockeye salmon. Juvenile salmon from these streams may use the near-shore project area during their spring outmigration, feeding along marine shorelines, gaining size and swimming ability before moving into more offshore waters. Young-of-the-year (all fish less than 1 year old) coho and sockeye salmon may also be found along the shoreline.

Rocky and mixed-soft shorelines provide a prey base of gammarid amphipods and harpacticoid copepods. Near-shore waters also harbor a myriad of predators on juvenile salmonids, including larger fish (e.g., rockfish and other salmonids), piscivorous birds (e.g., grebes, cormorants, herons), and marine mammals (seals, sea lions, and humpback whales). To avoid these predators, juvenile salmonids benefit from the presence of shoreline complexity (e.g., large wood, rocks, and kelp beds) that provide escape and hiding spaces. Offshore kelp beds in proximity to the harbor may provide an abundance of larval fish that are favored prey of juvenile pink and coho salmon. Both juvenile and adult salmon have been known to use kelp beds, but the association has not been well documented.

Larval, juvenile, and adult life stages of several rockfish species could occur in and in proximity to the Corps' project area.

Larval, juvenile, and adult life stages of several flatfish species are expected to occur on soft and mixed bottom habitats. EFH species of flatfish may be present in the project area, particularly common species such as yellowfin sole and rock sole.

Several taxa of EFH sculpin are expected to occur in both rocky and mixed bottom habitats in their project area. It is conceivable that all life stages of sculpin are likely present. EFH forage species such as eulachon, capelin, and Pacific sand lance could also occur as they are also known to be abundant in the Sitka area.

Pacific herring are not included in the Gulf of Alaska Groundfish FMP and hence are not an EFH species; however, they serve an important ecological role within Frederick Sound. Pacific herring provide an abundant, high energy food source for a wide variety of fishes, mammals, and birds. Herring are also commercially important and support a roe fishery in Southeast Alaska that remains one of the largest and most valuable roe fisheries in Alaska.

All stages of herring are found in the project area and are central to the area's marine food web. The largest herring stock in Southeast Alaska migrates to Sitka Sound each spring for an annual spawning event, spanning several days to several weeks from mid-March to late-April. The known herring spawning location most proximal to the project area is Scow Bay; approximately 2.5 miles south of the project area along Wrangell Narrows. Herring spawn from the intertidal zone down to about −40 feet MLLW, targeting areas with substantial macroalgae concentrations. Egg deposition can occurs on all species of kelp as observed in the Sitka area, particularly *Macrocystis* and *Saccharina*, but herring also use eelgrass, *Fucus*, coralline algae, red algae, and hard rocky substrates.

The substrate that would be impacted by the removal of sediment in the South Harbor is characterized in table 1. The South Harbor is relatively exposed to tidal currents, with current velocities reportedly reaching peak speeds of 7 knots, so the sediment surface is washed relatively clean of fine grained material. (Figure 4) Some Metridium anemones were observed attached to marine debris in the Harbor (coils of line, outboard motor cowlings, pulleys, etc), but otherwise the substrate appeared to be uninhabited.

Figure 4: Still Image of Typical South Harbor Substrate

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The Frederick Sound Disposal Area is in much deeper water than the South Harbor, so water velocities near the bottom are less than those of the Harbor. The western end of the existing disposal area is closest to the mouth of Wrangell Narrows and Mitkof Island, so it is shallowest (36 fathoms) and most exposed to tidal current; resulting in a coarser substrate than the majority of the areas studied for disposal. The sediment surface is mostly gley colored silt-sized particles. (Figure 5) Most of the camera survey stations revealed abundant gammarid amphipods and juvenile fish, likely sand lance. Shrimp were present in all of the camera stations in varying densities. Some tanner crabs were caught in research pots and filmed in low densities. Some of the camera survey stations also captured video of krill amongst the amphipods swimming near the bottom. The video observations in the disposal area strongly suggest that shrimp abundance is seasonally variable, with lower shrimp densities occurring in November than August.

A single giant Pacific octopus (*Enteroctopus dofleini*) was captured in the research pots in November and two Pacific halibut (*Hippoglossus stenolepis*) were captured in August. A handful of pink (*Pandalus borealis*) and side-stripe shrimp (*Pandalopsis dispar*) were caught in the shrimp pots in August and November. Some marine snails were also incidentally captured on both the August and November surveys. The remaining catch was composed of target taxa; tanner crab (*Chionoecetes bairdi)* and spot shrimp (*Pandalus platyceros*).

Figure 5: Still Image of Typical Frederick Sound Substrate Collected During the November 2018 Site Selection Survey

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Sediment samples were collected in November 2018 to inform the physical characterization requirement of the site selection study. A drag sampler was deployed in each quadrant of the prospective disposal areas in Frederick Sound in order to form a complete picture of the physical nature of the sediment. (Figure 5) The dominant soil constituent was silt sized particles (0.002 mm and 0.063 mm) of gley hue. Some samples had up to 5% sand size particles and a trace of organic material (hollow stemmed cellulosic structures assumed to be of terrestrial origin). Of the 12 samples collected from the three Frederick Sound Disposal Alternatives, only three contained infauna. Two small bivalve mollusks, likely common nut clams (*Nuculana pernula*) were collected in 80 fathoms of water in the northeastern quadrant of the existing disposal area. A single polychaete annelid, likely a goddess worm (*Nephtys caeca*) was collected in 55 fathoms of water in the southwestern quadrant of the existing disposal area. An unknown 1.5 cm annelid was collected in 78 fathoms of water in the northwestern quadrant of alternate disposal area 2.

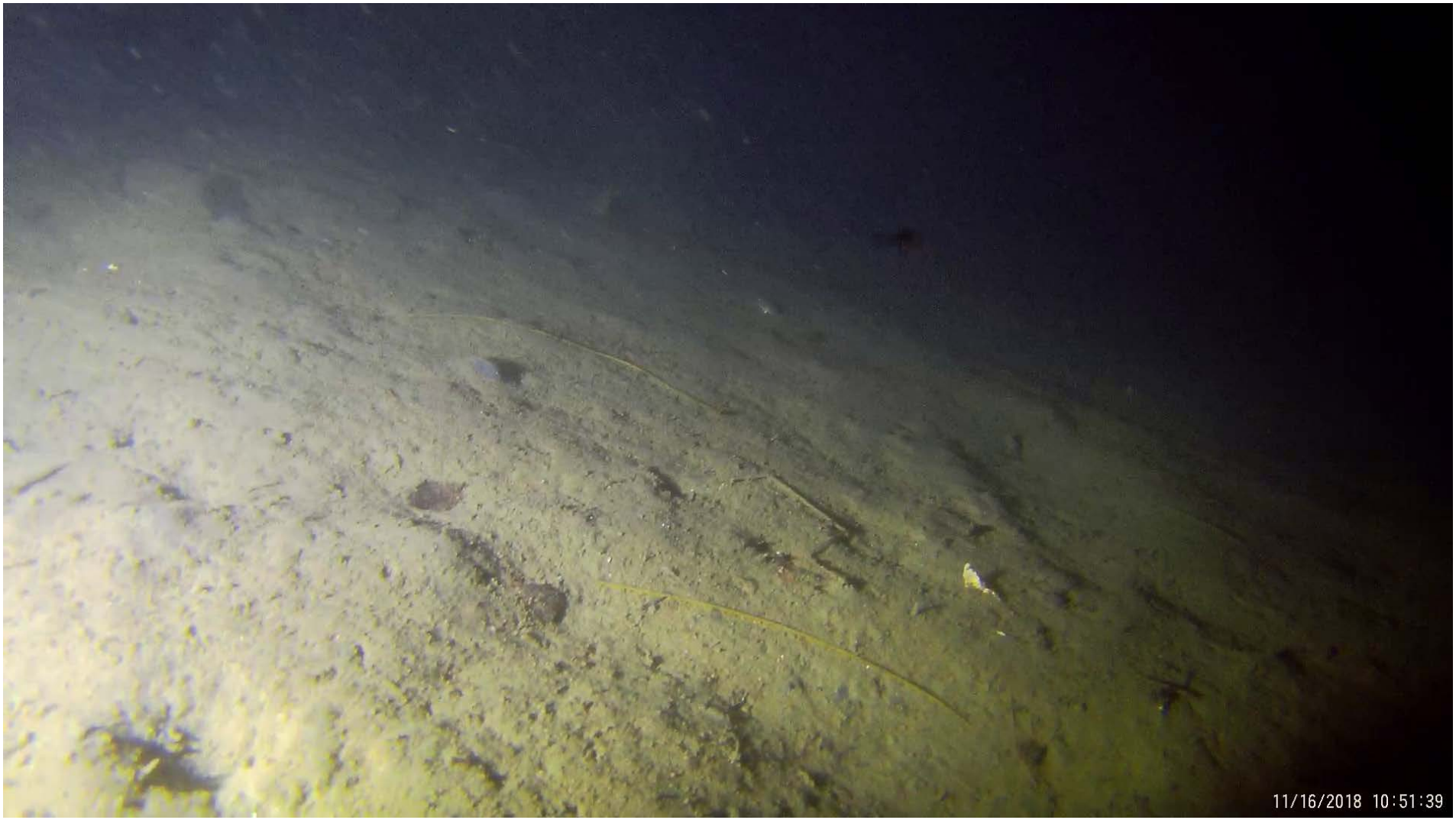

Figure 6: Still Image of Typical Frederick Sound Benthic Environment

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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 corrective 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. These alterations would include temporary increases in turbidity in the harbor during dredging and in the disposal area during disposal. The bottom composition in the disposal area would become more complex due to the placement of cohesive masses of clay and boulders, creating refuge and additional habitat for forage species such as Pandalid shrimp. Fine grain material released from the dredge scow would be dispersed and have no impact on the bottom habitat and the sediment plume disturbed by the impact of the cohesive material and boulders would be of the same nature as the surrounding area. There would also be short-term impacts on forage fish such as capelin and sand lance as well as for species such as Pacific herring that are important prey for species with designated EFH. USACE concludes that its' Federal action may affect, but is not likely to adversely affect, EFH and EFH-managed species/species complexes for Gulf of Alaska groundfish and Alaska stocks of Pacific salmon.

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

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.

Short-term impacts include: direct mortality to some sessile organisms, or those without the means to evade, directly impacted by the dredged material through smothering or crushing, resulting in immediate mortality; water quality impacts in the form of temporarily increased levels of turbidity resulting from dredging and dredged material disposal; noise disturbance from operation of heavy equipment, cranes, or barges; disturbance from increased construction-related work boat 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.

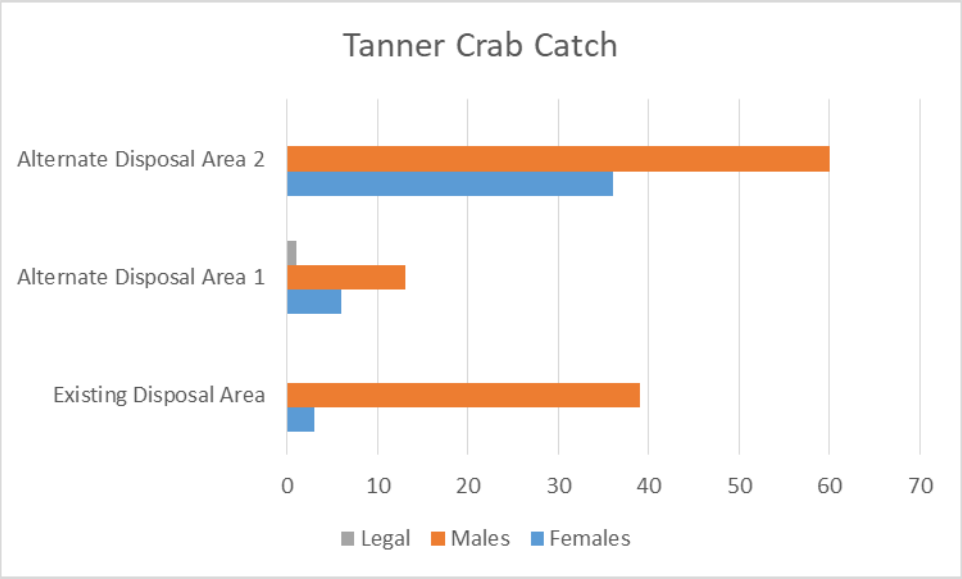
No significant long-term impacts are expected. The material that would be placed in the Fredrick Sound Disposal Area is substantially similar in terms of grain size as the native sediment in the Disposal Area; primarily particles in the range of silt and clay mixed with small amounts of sand. The depth of the water would allow some dispersion to occur as the material descends through the water column and ensure that no alteration of the photic regime would be manifested by raising the bottom elevation of the disposal area to the extent it would allow more light to reach areas impacted by the placement of dredged material that areas that were not impacted.

7.1 Short-Term Impacts

Direct Mortality. The dredging and disposal project components have 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 disposal 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 ratfish and cod.

The Harbor is 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 disposal area is considered to be very poor in terms of fish/shellfish productivity by the local populace and the results of the November 2018 research pot fishing event corroborate that characterization. Results from the Frederick Sound Disposal Area site selection study are displayed in table 3. A legal tanner crab is a male with a carapace width greater than 5.5 inches across at the widest point. The direct impact to FMP species from disposal and dredging is negligible, but there would likely be a short term impact to the forage taxa of FMP species. Given the project's winter timing when Pandalid shrimp abundance is relatively low, the short term impact from direct mortality is less than significant. Juvenile sand lance abundance does not appear to vary significantly seasonally and sand lance would likely be displaced rather than killed by the placement of dredged material.

Table 3: Tanner Crab Catch by Sex in Three Potential Frederick Sound Disposal Areas.



Water Quality. Any turbidity resulting from dredging would be temporary, occur only in the immediate vicinity of mechanical dredging, and dissipate rapidly by tidal mixing. Turbidity would temporarily increase in the vicinity of the disposal 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 disposal area substrate ensure the turbidity impacts to water quality would be temporary and insignificant. All dredged material that would

be placed in Frederick Sound has been tested for chemical constituents of concern and determined to be suitable for in-water placement in accordance with the Seattle District Dredged Material Management Plan. 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.

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 work windows that would avoid major periods of juvenile salmon outmigration.

Except for the short-term, localized turbidity associated with transition dredging and disposal, no adverse impacts to water or sediment quality is expected to occur as a result of the recommended dredging action.

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. These affects would be further minimized by restricting in-water work to periods when few juvenile salmonids are in the area. Groundfish species such as flatfish, rockfish, and sculpins can be present year-round, so they may move out of the area during the construction period as well.

Construction-related Work Boat Traffic. Constructing the Corps' proposed project would heavily involve mechanical dredging and the placement of materials into ocean waters for disposal. For EFH fish, interactions with tug and barge traffic would be relatively benign, consisting of the animals simply moving away from the vessels as they transit back and forth.

Vessels and barges would not be permitted to ground themselves on the bottom during low tide periods, thus no destruction or alteration of bottom habitats that constitute EFH for several pelagic and groundfish would occur.

7.2 Long-Term Impacts

Loss and Conversion of Marine Habitat. The removal of dredged material from the South Harbor would expose a new sediment surface, known as the "Z-layer". The physical characteristics of this newly exposed surface would be substantially similar to the existing surface. Some sediment from Hammer Slough and Wrangell Narrows would very gradually accrete in the Harbor similarly to the way sediment accreted after the initial construction of the South Harbor in the 1980s. This accretion occurs very slowly due to the low sediment load of the contributing water bodies, but is expected to deposit a fairly uniform surface of sand-sized particles throughout the Harbor. This mechanism would eventually return the sediment surface to pre-project conditions.

The placement of Harbor sediments in the Frederick Sound Disposal Area would create a mound on the seafloor. The District expects much of the material removed from the South Harbor to be cohesive masses of fine grained material (clay) and come to rest on the seafloor in pieces approximately the same size and shape as the excavator bucket that removed the material from the Harbor. If the material were deposited in a one foot thick layer, it could cover as much as 57 acres of the 75 acre disposal area.

Mitigation Measures. "Mitigation" is the process used to avoid, minimize, and compensate for 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 cease in-water construction between March 15 and September 30th during peak herring spawning activities, juvenile salmon outmigration and rearing activities, and when Steller sea lion and humpback whale feeding 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 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.

8.0 CONCLUSIONS AND DETERMINATION OF EFFECT

The project actions described above have the potential to affect the EFH for several GOA groundfish species (e.g., rockfish, sculpin, and flatfish) and for Alaska stocks of Pacific salmon, in the short term. Some forage base for EFH species would be temporarily lost through the direct mortality of prey species such as shrimp and juvenile sand lance, but these effects would be localized temporary as the disposal area is recolonized after the single dredging project is completed. Short-term effects in the form of avoidance because of noise disturbances, boat traffic, and turbidity would be intermittent and low level. No significant 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 Corps' dredging and disposal would likely occur over a period of three months and within an anticipated in-water work window. Seasonal work restrictions would minimize any impacts to out-migrating juvenile salmonids and to spawning herring by prohibiting work in open waters between approximately March 15 and June 15. Marine mammal and constructability considerations further restrict the work window to 1 October, 2020-March 15 2021.

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 Frederick Sound. The aforementioned mitigation measures will be implemented to offset the potential impacts of the Corps' maintenance dredging activity. 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 GOA groundfish and Alaska stocks of Pacific salmon.

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ATTACHMENT 1
Description of Essential Fish Habitat (EFH) for the Groundfish Resources of the Gulf of Alaska Region

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 meters), upper slope (200 to 500 meters), and intermediate slope (500 to 1,000 meters) throughout the Gulf of Alaska (GOA).

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

Early Juveniles. *No EFH Description Determined.* Limited information exists to describe walleye Pollock early juvenile larval general distribution.

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

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

Pacific Cod

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

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

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

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

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

Yellowfin Sole

Eggs. EFH for yellowfin sole eggs is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 meters) and upper (200 to 500 meters) slope throughout the GOA.

Larvae. EFH for larval yellowfin sole is the general distribution area for this life stage, located in pelagic waters along the shelf (0 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA.

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

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 near-shore bays and along the inner (0 to 50 meters), middle (50 to 100 meters), and outer (100 to 200 meters) shelf throughout the GOA 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 near-shore bays and along the inner (0 to 50 meters), middle (50 to 100 meters), and outer (100 to 200 meters) shelf throughout the GOA wherever there are soft substrates consisting mainly of sand.

Arrowtooth Flounder

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

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

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

Rock Sole

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

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

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

Larvae. EFH for larval Alaska plaice is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA.

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

Late Juveniles. EFH for late juvenile 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 meters), middle (50 to 100 meters), and outer (100 to 200 meters) shelf throughout the BSAI wherever there are softer substrates consisting of sand and mud.

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 meters), middle (50 to 100 meters), andouter (100 to 200 meters) 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 pelagic waters along the entire shelf (0 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA in the spring.

Larvae. EFH for larval rex sole is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA.

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

Late Juveniles. EFH for juvenile rex 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 meters), middle (50 to 100 meters), and outer (100 to 200 meters) shelf throughout the GOA wherever there are substrates consisting of gravel, sand, and mud.

Adults. EFH for adult rex 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 meters), middle (50 to 100 meters), and outer (100 to 200 meters) shelf throughout the GOA wherever there are substrates consisting of gravel, sand, and mud.

Dover Sole

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

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

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

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

Adults. EFH for adult Dover sole is the general distribution area for this life stage, located in the lower portion of the water column along the middle (50 to 100 meters), and outer (100 to 200 meters) shelf and upper slope (200 to 500 meters) throughout the GOA 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 meters) and slope (200 to 3,000 meters) throughout the GOA.

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

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

Late Juveniles. EFH for juvenile flathead sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 meters), middle (50 to

100 meters), and outer (100 to 200 meters) shelf throughout the GOA wherever there are softer substrates consisting of sand and mud.

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

Sablefish

Eggs. EFH for sablefish eggs is the general distribution area for this life stage, located in deeper waters along the slope (200 to 3,000 meters) throughout the GOA.

Larvae. EFH for larval sablefish is the general distribution area for this life stage, located in epipelagic waters along the middle shelf (50 to 100 meters), outer shelf (100 to 200 meters), and slope (200 to 3,000 meters) throughout the GOA.

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

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 meters) throughout the GOA.

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 meters) throughout the GOA.

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 the middle to lower portion of the water column along the inner shelf (0 to 50 meters), middle shelf (50 to 100 meters), outer shelf (100 to 200 meters), and upper slope (200 to 500 meters) throughout the GOA.

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

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

Adults. EFH for adult Pacific Ocean perch is the general distribution area for this life stage, located in the lower portion of the water column along the outer shelf (100 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA wherever there are substrates consisting of cobble, gravel, mud, sandy mud, or muddy sand.

Shortraker and Rougheye Rockfish

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. EFH for adult shortraker and rougheye rockfish is the general distribution area for this life stage, located in the lower portion of the water column along the outer shelf (100 to 200 meters) and upper slope (200 to 500 meters) regions throughout the GOA wherever there are substrates consisting of mud, sand, sandy mud, muddy sand, rock, cobble, and gravel.

Northern Rockfish

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. EFH for adult northern rockfish is the general distribution area for this life stage, located in the middle and lower portions of the water column along the outer slope (100 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA wherever there are substrates of cobble and rock.

Thornyhead Rockfish

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. EFH for late juvenile Thornyhead rockfish is the general distribution area for this life stage, located in the lower portion of the water column along the middle and outer shelf (50 to 200 meters) and upper to lower slope (200 to 1,000 meters) throughout the GOA wherever there are substrates of mud, sand, rock, sandy mud, muddy sand, cobble, and gravel.

Adults. EFH for adult Thornyhead rockfish is the general distribution area for this life stage, located in the lower portion of the water column along the middle and outer shelf (50 to 200 meters) and upper to lower slope (200 to 1,000 meters) throughout the GOA wherever there are substrates of mud, sand, rock, sandy mud, muddy sand, cobble, and gravel.

Yelloweye Rockfish

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. EFH for late juvenile Yelloweye rockfish is the general distribution area for this life stage, located in the lower portion of the water column within bays and island passages and along the inner (0 to 50 meters), middle (50 to 100 meters), and outer shelf (100 to 200 meters) throughout the GOA wherever there are substrates of rock and in areas of vertical relief, such as crevices, overhangs, vertical walls, coral, and larger sponges.

Adults. EFH for adult Yelloweye rockfish is the general distribution area for this life stage, located in the lower portion of the water column within bays and island passages and along the inner shelf (0 to 50 meters), middle shelf (50 to 100 meters), outer shelf (100 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA wherever there are substrates of rock and in areas of vertical relief, such as crevices, overhangs, vertical walls, coral, and larger sponges.

Dusky Rockfish

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. EFH for adult Dusky rockfish is the general distribution area for this life stage, located in the middle and lower portions of the water column along the outer shelf (100 to 200 meters) and upper slope (200 to 500 meters) throughout the GOA wherever there are substrates of cobble, rock, and gravel.

Atka Mackerel

Eggs. *No EFH Description Determined.* Insufficient information is available.

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 meters), upper slope (200 to 500 meters), and intermediate slope (500 to 1,000 meters) throughout the GOA.

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. EFH for adult 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 meters), middle (50 to 100 meters), and outer shelf (100 to 200 meters) throughout the GOA wherever there are substrates of gravel and rock and in vegetated areas of kelp

Sculpins

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

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

Skates

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

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

Sharks

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. *No EFH Description Determined.* Insufficient information is available.

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

Eggs. *No EFH Description Determined.* Insufficient information is available.

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

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

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. *No EFH Description Determined.* Insufficient information is available.

Squid

Eggs. *No EFH Description Determined.* Insufficient information is available.

Young Juveniles. *No EFH Description Determined.* Insufficient information is available.

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

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

Octopus

Eggs. *No EFH Description Determined.* Insufficient information is available.

Young Juveniles. *No EFH Description Determined.* Insufficient information is available.

Late Juveniles. *No EFH Description Determined.* Insufficient information is available.

Adults. *No EFH Description Determined.* Insufficient information is available.

US Army Corps of Engineers
Alaska District

Chemical Data Report

Petersburg South Boat Harbor Sediment Sampling (18-041)

Petersburg South Boat Harbor
Petersburg, Alaska

December 2018

Prepared By:
U.S. Army Corps of Engineers - Alaska District
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Executive Summary

Ten sediment samples taken from 16 test borings were collected for a chemical investigation of the characteristics of the harbor sediments at the Petersburg South Boat Harbor during the period of 7-10 April, 2018. Sample locations were chosen to characterize the dredged material based on Dredged Material Management Program (DMMP) criteria. All borings were completed using a vibratory coring device.

The Petersburg South Boat Harbor was divided into six Dredged Material Management Units (DMMUs) based on site history and volumes of materials to be dredged. Generally, sediments taken from the dredge prism (area of sediment removed during dredging operations) were collected from borings in each DMMU and were composited into a single sample to characterize sediments that will be disposed of during dredging. Sediments taken from the Z layer (the layer exposed at the surface after dredging) were also composited into a single sample from each DMMU. One DMMU consisted of a small amount of sediment to be removed from near the mouth of Hammer Slough. Due to its size, this DMMU was characterized by a single boring.

Chemical results were compared to both DMMP criteria and Alaska Department of Environmental Conservation (ADEC) criteria. Data compared to DMMP criteria was used to determine the suitability of the sediments for unrestricted open water disposal. Data compared to ADEC criteria was used to determine the suitability of the sediments for unrestricted upland disposal.

All results were below DMMP screening criteria. All tested sediment is suitable for unrestricted open water disposal. With the exception of arsenic (a naturally occurring metal), all results were below ADEC screening criteria. If upland disposal is the preferred option, arsenic testing of the surface soils in the disposal area is required, with results to be compared to the sediment values. If arsenic values are comparable in both the sediment and the disposal area soils, the sediment is suitable for upland disposal.

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1.0 INTRODUCTION

This report presents the analytical results for sediment samples collected during the April 2018 sampling effort for the maintenance dredging of the Petersburg South Small Boat Harbor (SBH) located in Petersburg, Alaska. The Alaska District U.S. Army Corps of Engineers, Engineering and Construction Division, Environmental Engineering Branch (CEPOA-EC-EE) prepared this report at the request of the Alaska District, Project Management Division, Civil Project Management Branch (CEPOA-PM-C).

The purpose of this sampling was to determine suitable sediment disposal options. Sample results were compared to DMMP marine guidelines (ref 7.7) to determine sediment suitability for unrestricted offshore disposal. Sample results were also compared to ADEC soil criteria (ref 7.1) to determine sediment suitability for upland disposal. Additional samples were collected for grain size analysis to assist with determining future dredging options.

2.0 SITE BACKGROUND INFORMATION

2.1 Location

The Petersburg South Small Boat Harbor (SBH) is located on the northwest side of Petersburg on Mitkof Island in Southeast Alaska. Petersburg is located at the northern terminus of the Wrangell Narrows Passage and is only accessible by boat or aircraft. Petersburg lies about 670 air miles southeast of Anchorage (see Figure 1).

2.2 Site History and Known Contamination

The Petersburg South SBH was constructed in the 1980s. Dredging of the harbor is being studied under Section 107 of the Rivers and Harbors Act. Maintenance dredging of portions of the South Harbor area is planned for the near future.

Sediment samples were collected from the Petersburg North SBH in May 2010. This harbor is separated from the Petersburg South SBH by a large concrete dock housing a fish processing plant. Those samples were analyzed for volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), RCRA metals (plus copper, nickel and zinc), pesticides, polychlorinated biphenyls (PCBs) and total organic carbon (TOC). Reported results for several polynuclear aromatic hydrocarbons (PAHs) analytes, pesticides and metals (arsenic, chromium and mercury) exceeded the Puget Sound Dredged Disposal Analysis (PSDDA) and/or Alaska's 'Over 40 inch Zone' screening criteria current at the time of sampling. The high levels of contamination found in the sediment suggested that open-water disposal of material dredged from the harbor would not be feasible and further sampling and analysis was performed in April 2011 (ref 7.6).

Bulk composite samples representing four different areas of Petersburg North Harbor were created from marine sediment collected in April 2011. These composite samples were allowed to drain (to approximate dewatering during proposed dredging operations) and subsamples from each of the drained sediment composites were submitted for the following laboratory analyses:

- Synthetic Precipitation Leaching Procedure (SPLP), followed by analysis of the leachate for selected metals, fuels and polynuclear aromatic hydrocarbons (PAHs);
- a "paint filter" test (EPA Method SW9095) for free liquids;
- a Standard Elutriate Test, using marine water collected at the harbor project site and followed by analysis of the elutriate for selected metals, fuels and PAHs.

The first two analyses were to assess whether the harbor sediment might be suitable for upland placement at the Petersburg landfill. The results of these analyses indicated that the drained sediment would not release unacceptable amounts of water if placed on the landfill. Run-off and leachate from the sediment would not contain levels of contaminants exceeding State of Alaska drinking water standards.

The Standard Elutriate Test was performed to assess how readily the contaminants known to be in the harbor sediment might become dissolved into the marine water column during dredging operations. The results of the elutriate tests were compared to marine water quality thresholds proposed by the National Oceanic and Atmospheric Administration (NOAA) and adopted by the State of Alaska as marine water quality criteria. The elutriates from all of the sediment samples contained copper at concentrations above the State chronic marine criterion, suggesting that dredging operations may create transient exceedances of this criterion at the project site (ref 7.6).

Very little information is available about the southern portion of Petersburg SBH. Limited chemical sampling was conducted by Easton Environmental in 2007 to potentially characterize 60,000 cubic yards of material to be removed for harbor improvements. The sediments tested were on the east side of the south harbor and do not overlap with the current dredge prism. That sampling event noted that fluoranthene (a fuel related PAH) and bis (2-ethylhexyl) phthalate (a common laboratory contaminant also present in the project method blank) were above the State of Washington sediment quality standards that were in place at the time of sampling. Very low levels of other PAH compounds, as well as dieldrin and the PCB Arochlor-1254 were also detected in the project sediments at levels far below regulatory criteria. Results of grain size analysis of the sediments showed them to be uniform sands with varying amounts of silt (ref 7.6).

2.3 Limitations

This project was not intended to be a comprehensive environmental investigation of the site, and changes in the condition of the site may occur with time due to natural processes or human activities. The findings presented in this report are based on site conditions existing at the time of the investigation.

3.0 FIELD ACTIVITIES AND OBSERVATIONS

3.1 Summary of Field Activities

The field crew over the course of the study consisted of USACE employees Jake Sweet (CEPOA-EC-EE) and Inocencio Roman (CEPOA-EC-G-GM). Most samples were collected using a hydraulically activated vibratory coring device with a 10 foot barrel. The vibratory

coring device was operated by USACE employees Tommy Kirklin and Mike Kirklin. All borings were advanced by lowering the vibratory coring device from a vessel to the sediment surface and activating the hydraulic motor to vibrate the coring device into harbor sediments. Sediment samples were collected from disposable plastic cores located inside the sampler barrel. Several boring locations were not accessible to the work boat and hydraulically activated coring device. Test boring locations TB-01, TB-02, TB-03 and TB-04 were collected using a hand driven sampling device. Sediments from the hand driven sampling device were extruded on to a plastic tarp after collection. A site location and vicinity map is provided in Figure 1. Sample locations and DMMU boundaries are shown in Figure 2.

3.2 Sampling Activities

Chemical sampling was performed in a manner consistent with the project Sampling and Analysis Plan (SAP, ref 7.6). A total of 10 sediment samples and one duplicate were collected for analysis.

The Petersburg South Boat Harbor was split into six Dredged Material Management Units (DMMUs) in the Sampling and Analysis Plan. Five of the DMMUs are connected and were split to meet volume requirements specified in the DMMP. One DMMU (with a single boring) was located in a separated area near the mouth of Hammer Slough to characterize a small amount of sediment to be dredged. With a few exceptions (see Section 3.3), borings were advanced through the entire vertical extent of the dredge prism using a vibratory coring device. Sample increments were collected from the respective prism material and Z-sample depths (the freshly exposed surface after dredging).

All samples were analyzed for the following: total volatile solids (TVS) by method 160.4; ammonia by method 350.1; RCRA metals by method 6020A/7471A; pesticides by method 8081B; polychlorinated biphenyls (PCBs) by method 8082A; DMMP list semivolatile organic compounds (SVOCs) by 8270D; volatile organic compounds (VOCs) by 8260C, total organic carbon (TOC) by method 9060; tributyltin by the Krone method, gasoline range organics (GRO) by method AK101; diesel range organics (DRO) by method AK102; and residual range organics (RRO) by method AK103.

3.3 Observations and Deviations

The following were deviations from the work plan:

- Nearly all locations were underlain at some depth by a solid layer of native material consisting of a dense hard clay with sands, gravels, and cobbles (diamicton). The vibratory coring device was unable to penetrate this material to a depth greater than 12 inches. As a result, several DMMUs do not have Z-layer samples if the Z-layer was located below the diamicton. This diamicton is present as a dense, impenetrable layer of native material deposited before any sources of potential contamination. As a result no contamination is expected to be associated with this material as it was deposited before industrial processes.
- Due to the presence of diamicton at shallow depths in all sampling locations, there was no Z-layer sample collected for DMMUs 4 and 6. The dense native material in these

DMMUs is not expected to be contaminated due to the time of its deposition (before industrial processes).

- The Z-layer sample for DMMU 1 was taken from a single boring (TB-04) within the DMMU. All other hand driven sample locations in this DMMU were unable to penetrate to the Z-layer depth. This sample was not composited with other increments from within the DMMU as no other Z-layer material was available.

Significant sheen was noted floating on the water on most of the still waters in Petersburg South Boat Harbor.

3.4 Scope of Analytical Methods

Table 3-1 summarizes the analytical methods that were performed on sediment samples submitted for chemical analysis.

Table 1 Scope of Sampling

Parameter	Analytical Method	Target Contaminant	Number of Samples Submitted[1]
Total Volatile Solids	EPA 160.4	DMMP criteria to determine disposal options.	11
Ammonia	EPA 350.1	DMMP criteria to determine disposal options.	11
Metals: RCRA (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver)	SW846 6020A & 7471A	Regulated metals from fuels, paints, batteries, etc.	11
Chlorinated Pesticides	SW846 8081B	Pesticides (e.g., DDT) residue from previous pest control activities.	11
Polychlorinated Byphenyls	SW846 8082A	PCB residue from electrical generation activities.	11
Total Organic Carbon	SW846 9060	Used in interpretation of organic chemical data.	11
Semivolatile Organic Compounds	SW846 8270D	Fuel constituents, wood preservatives, industrial activities, boat maintenance.	11
Volatile Organic Compounds	SW846 8260C	Solvent, fuels.	11
Tributyltin	Krone et. al.	Boat maintenance activities, anti-fouling paint.	11
Gasoline Range Organics	AK101	Fuel	11
Diesel Range Organics	AK102	Fuel	11
Residual Range Organics	AK103	Heavy fuel, lubricating oil.	11

[1] Numbers include ten primary and one duplicate sample.

3.5 Investigation Derived Waste

Investigation derived waste generated during this sampling event consisted entirely of disposable sampling equipment (sampling spoons, plastic bags, paper towels, etc.). These items were brushed

clean of sediment on site, bagged, and disposed of at the local landfill.

4.0 RESULTS OF CHEMICAL ANALYSES

4.1 Overview

The results of the chemical analyses were screened against the DMMP Marine Screening Level (SL) criteria located in Table 8-3 of the Dredged Material Evaluation and Disposal Procedures User Manual. If a screening level criteria was not available, then the lowest Marine screening criteria was used (for example the Bioaccumulation Trigger [BT] number for tributyltin). Additionally results were screened against the lowest value of the 18 AAC 75 Table B1 Method 2 Soil Cleanup Levels Table (ref 7.1).

4.2 Chemicals Detected

No chemicals were detected in any harbor sediment sample at a concentration greater than any DMMP screening criteria. 1,2,4-trichlorobenzene was detected in the project trip blank at a concentration above DMMP screening criteria, however, it was not detected in any sediment sample.

Arsenic was detected above ADEC screening criteria in all samples. However, concentrations of this metal are consistent across the site and appear to be background. There are no known anthropogenic sources of arsenic at this site. No other analytes were detected at a concentration exceeding ADEC screening criteria in project samples.

5.0 DATA QUALITY REVIEW AND USABILITY ASSESSMENT

After analysis at the project laboratory, the project data was reviewed for deviations to the requirements presented in the Sampling and Analysis Plan (ref 7.6**),** the ADEC Technical Memorandum, Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling (ref 7.3), and the Department of Defense (DoD) Quality Systems Manual (QSM, ref 7.4) in the following areas – precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). Elements reviewed include sample handling, holding times, method and trip blanks, laboratory control sample (LCS) recoveries and relative percent differences (RPDs), matrix spikes and matrix spike duplicates (MS/MSD) recoveries and RPDs, surrogate recovery, and field duplicate comparability. Calibration curves and continuing calibration standard recoveries were not reviewed. Quality control deviations which do not impact data quality (e.g. a high LCS recovery associated with a nondetect result) are not discussed.

The following qualifiers, listed below in order of increasing severity, are used in the data tables to indicate quality control deficiencies:

Table 2: Qualifier Definitions

Qualifier	Definition
J	Analyte result is considered an estimated value because the level is below the laboratory LOQ but above the DL.

Table 2: Qualifier Definitions

Qualifier	Definition
B	Analyte result is considered a high estimated value due to contamination present in the method blank.
QH, QL, QN	Analyte result is considered an estimated value biased (high, low, uncertain) due to a quality control failure.
R	Analyte result is rejected - result is not usable.

When the use of more than one qualifier is required, the more severe flag will be used.

All samples were shipped to Test America Laboratories in Tacoma, WA on April 4, 2018. The samples were received at Test America on April 12, 2018. All analyses were performed by Test America Tacoma with the exception of 160.4 (Total Volatile Solids) performed by Test America Denver; and 8270 (SVOCs) performed by Test America Sacramento. All laboratories are ADEC certified for applicable methods and analytes. All labs are ELAP certified for all chemical methods with the exception of Krone et al. (tributyltin); 160.4 (total volatile solids); and 350.1 (ammonia). Due to the limited number of labs ELAP certified for these methods, Test America network labs performed these analyses with USACE chemist approval. Details of the data review are presented below:

5.1 SDG 580-76580

5.1.1 Sample Handling

Eleven sediment samples (including one duplicate) were received in Tacoma, Washington and assigned to sample delivery group 580-76580 by the laboratory. This SDG consisted of samples shipped in two coolers. Cooler "Silver" had a temperature blank measured at 1.1 °C. Cooler "King" had a temperature blank measured at 1.1 °C. Samples were logged in per the Chain of Custody and all sample receiving criteria were met. In order to meet reporting requirements, three SDGs were created. SDG 580-76580-1 reported the majority of analyses. SDG 580-76580-2 reported the SVOC data. SDG 580-76580-3 reported the TVS data. Significant data qualifications are reported below.

During storage at the laboratory and prior to analysis, the freezer which held the project samples undergoing SVOC (8270) analysis exceeded temperature control limits at -8C (control limit of <-10) for up to 36 hours. The associated laboratory control sample (LCS) is in control, indicating that the samples were not affected by the temperature deficiency.

5.1.2 Holding Times

All samples were analyzed within the method specified holding times with the exception of the following:

- The hold time for method 160.4 (TVS) was exceeded by more than two times. As a result, all TVS results were rejected. This data is not usable. There was minimal impact to the project as TVS data would have been used to a DMMP tier III evaluation, which is not required.

5.1.3 Blanks

Method blanks were performed at the correct frequency for all methods requiring it. Trip blanks were submitted for all VOC and GRO analyses. All VOC sample containers were shipped in cooler "Silver". This cooler contained the trip blank 18PSBH-1001TB.Target analytes were not detected in any project blank except for the following:

- Ammonia was detected in the method blank. All ammonia results were within 10 times the blank contamination and are flagged “B”. There is no impact to data usability as there is no screening criteria for ammonia.
- Bis-(2,ethylhexyl)phthalate was detected in a project method blank at a concentration of 0.0332 mg/kg. Samples –D2PSE, -D2ZSE, -D3ZSE, -D5PSE, and -D5ZSE all had a similar concentration (within 10X) of this compounds. All impacted results are flagged “B”. Usability is not impacted as all results are far below any screening criteria.
- The following compounds were found in the project trip blank: 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 4-isopropyltoluene, n-butylbenzene, and sec-butylbenzene. The majority of these analytes were not detected in any project sample. The exception is 1,2,4-trichlorobenzene detected at a similar (within 10X) amount in sample –D3ZE. This result is flagged “B”. Data usability is not impacted as the affected result is biased high and is below the screening criteria.

5.1.4 Laboratory Control Samples

LCS/LCSDs were performed as required. Recoveries were within the QSM acceptance limits or any deviations do not impact data quality.

5.1.5 Laboratory Control Sample Precision

The LCS precision as measured by relative percent difference (RPD) was within QSM or method acceptance limits.

5.1.6 Surrogates

Surrogate recoveries for all samples were within the QSM acceptance limits or deviations do not impact data quality with the exception of the following:

- At least one 8270 surrogate was recovered below laboratory limits in the following samples: -D2ZSE, -D3ZSE, -D5PSE, -D5ZSE, -D6PSE and -D7PSE. All SVOC data from these samples are potentially biased low and are flagged “QL” (or “QN” if previously flagged). Data usability is not impacted for most results as they are ND with a LOD far below screening criteria. The exception is for hexachlorobutadiene results in -6PZE and –D7PSE. These results are ND with a LOD close to the screening criteria. These results should be used with caution.
- The GRO surrogate a,a,a-trifluorotoluene was above acceptance criteria in samples –D3PSE and –D4PSE. There was no impact to data quality as impacted results were not detected.

5.1.7 Matrix Spikes

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples were analyzed at the required frequency and recoveries were within QSM acceptance limits or deviations do not impact data with the exception of the following:

- GRO batch 580-271842 did not have an MS/MSD due to laboratory error. The LCS and LCSD were in control and provide precision information.
- The MS recovery for ammonia was slightly below acceptance criteria. All ammonia results are potentially biased low and are flagged "QL". There is no impact to data usability as there is no screening criteria for ammonia.
- The MS or MSD recovery was above control limits for the following compounds: chloromethane, dichlorodifluoromethane, and dichlorodifluoromethane. There is no impact to data as all sample results for these compounds were ND.

5.1.8 Matrix Spike Precision

The reported MS/MSD precision was within QSM acceptance limits for all analytes with the exception of the following:

- 1,2-Dibromo-3-chloropropane, delta-BHC and tributyltin had high MS/MSD RPDs. All 1,2-dibromo-3-chloropropane, delta-BHC and tributyltin results have a potential unknown bias and are flagged "QN". There is no impact to data usability as all impacted results either have no screening criteria, or are ND with a LOD far below screening criteria.

5.1.9 Field Duplicates

Due to the sample collection method, limited volume for some sample increments, and splitting of DMMUs; sample duplicates for different methods were split between two samples. All VOC and GRO duplicate information is from duplicate pair 18PSBH-D7PSE and 18PSBH-D3PSE. All other duplicate information is from duplicate pair 18PSBH-D7PSE and 18PSBH-D6PSE. There was one sample duplicate for each analysis for 10 primary samples, meeting the 10% duplicate frequency requirement. All results are compliant with the criteria specified in the ADEC Technical Memorandum (all RPDs less than 50%) with the exception of the following:

- The VOC Styrene had an RPD (53%) marginally above acceptance criteria. Impacted results in the sample pair is flagged "QN". Data usability is not impacted as all results were far below screening criteria.

5.1.10 Reporting Limit Assessment

The laboratory reporting limits are based on the QSM LOD. The LOD is defined as the smallest amount or concentration of an analyte that must be present in a sample in order to be detected at a high level of confidence (99%), and the false negative rate (Type II error) is 1%. This limit represents the very least that the laboratory can reliably detect. Consequently, any nondetect result with an LOD greater than the associated screening value cannot be used to prove the absence of that analyte.

The following analytes had LODs greater than the associated screening criteria in at least one sample: 1,4-dichlorobenzene, hexachlorobenzene, naphthalene, pentachlorophenol, alpha-BHC, dieldrin, heptachlor epoxide, 1,2,3-trichloropropane and 1,2,4-trichlorobenzene. See the data tables for all impacted results. Analyte results with LODs greater than screening criteria cannot be used to prove the absence of those analytes at the site.

5.2 Overall Assessment

With the exception of rejected TVS results, all data is usable as flagged. The ADEC check sheets can be found in Appendix C.

6.0 SUMMARY AND RECOMMENDATIONS

6.1 Summary

With the exception of background metals, no analytes exceeded DMMP or ADEC screening criteria in the project sediments.

6.2 Recommendations

All results were below DMMP screening criteria. All tested sediment is suitable for unrestricted open water disposal. With the exception of arsenic (a naturally occurring metal), all results were below ADEC screening criteria. If upland disposal is the preferred option, arsenic testing of the surface soils in the disposal area is required, with results to be compared to the sediment values. If arsenic values are comparable in both the sediment and the disposal area soils, the sediment is suitable for upland disposal.

7.0 REFERENCES

7.1 Alaska Department of Environmental Conservation, 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, March 2017.

7.2 Alaska Department of Environmental Conservation, Dredge Material Guidance, June 2013.

7.3 Alaska Department of Environmental Conservation, Technical Memorandum Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling, March 2017.

7.4 Department of Defense, Quality Systems Manual for Environmental Laboratories, Final Version 5.1, January 2017.

7.5 Test America Tacoma Inc., Analytical Report SDG # 580-76580, Petersburg Harbor, May 2018.

7.6 U.S. Army Corps of Engineers, Alaska District, Sampling and Analysis Plan, Petersburg South Small Boat Harbor Sediment Sampling, February 2018.

7.7 U.S. Army Corps of Engineers, Seattle District *et al*, Dredged Material Evaluation and Disposal Procedures, User's Manual, August 2016.

APPENDIX A
Figures and Site Photographs

Petersburg South Harbor
Project Location
CEPOA-EC-EE

US Army Corps of Engineers
Alaska District

Figure 1:
Site Location and Vicinity

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

SCALE:
DRAWN:
REVIEWED:
DATE:

TEST BORING LOCATION MAP
PETERSBURG SOUTH HARBOR NAV. IMP.

ALASKA DISTRICT
CORPS OF ENGINEERS
Geotechnical and Materials

REFERENCE NUMBER
Figure 2
SHEET ___ OF ___

Photo # 1: Project Vessel “RB”, (Sweet)

Photo # 2: Vessel Working Area with Coring Device, (Sweet)

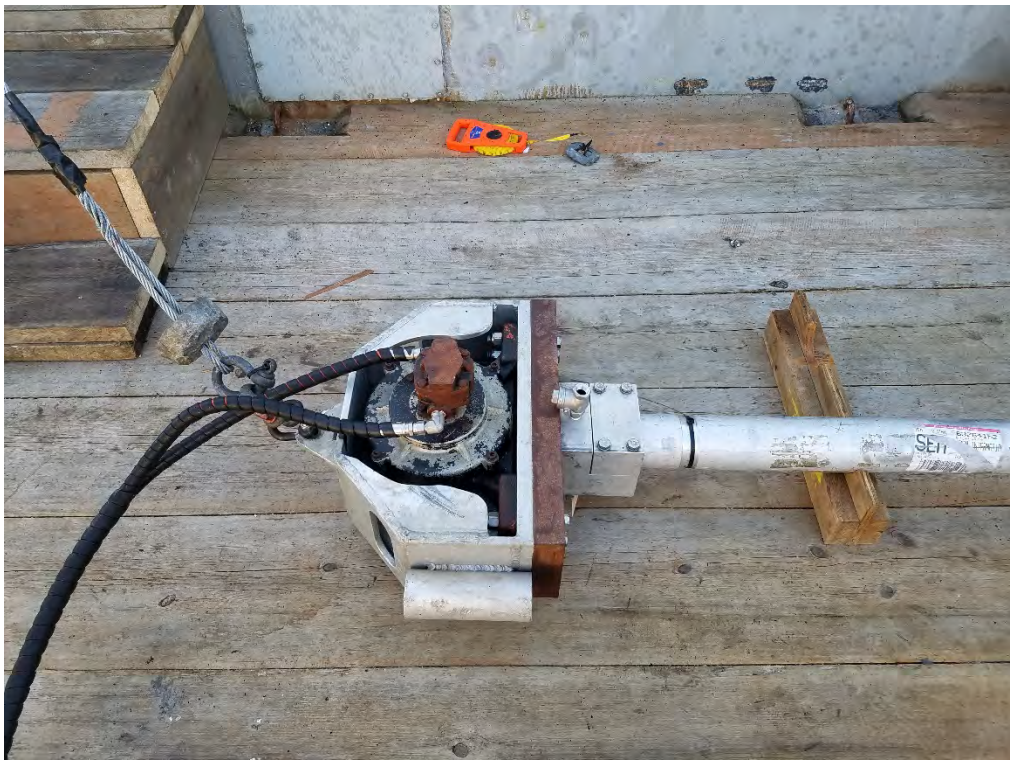

Photo # 3: Coring Device Power Head, View close (Sweet)

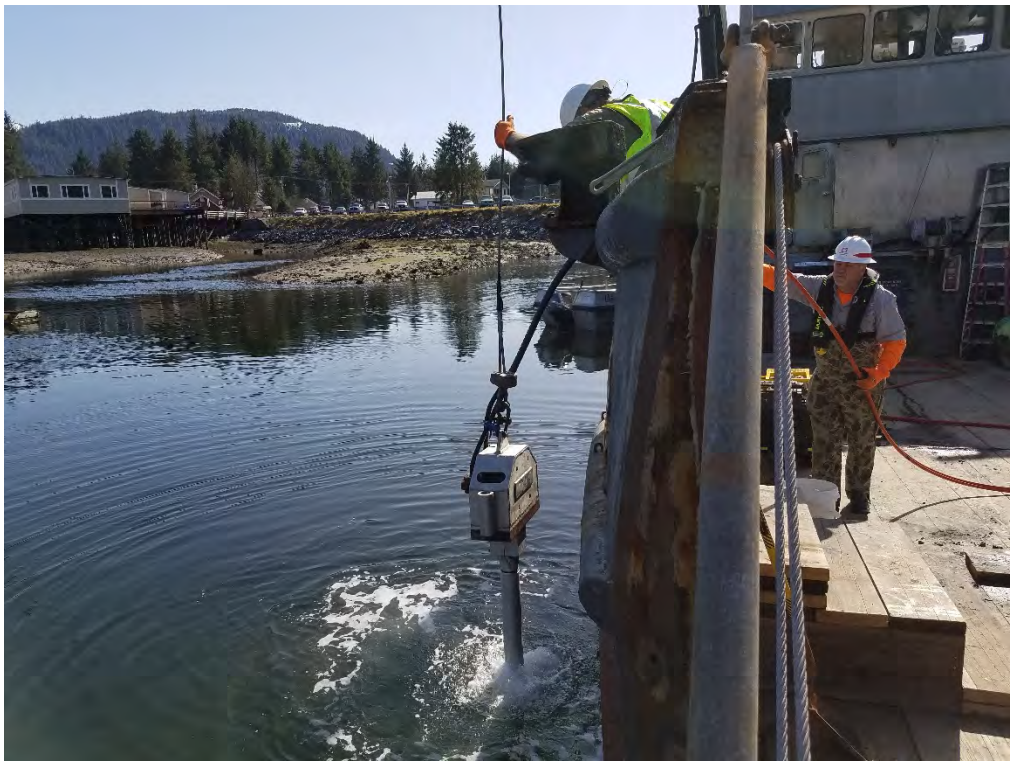

Photo # 4: Begin Boring at TB-15, View to SE (Sweet)

Photo # 5: Recovering Coring Device, View to West (Sweet)

Photo # 6: Opening Coring Tube, View Close (Sweet)

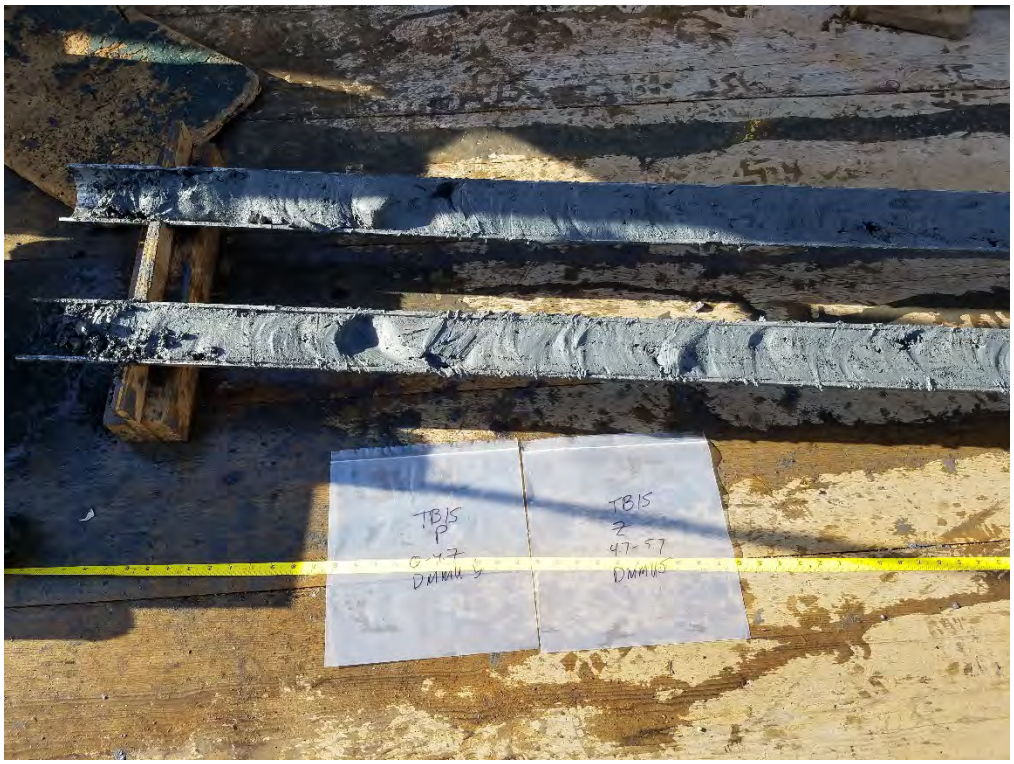

Photo # 7: Sample collected from TB-15 Prism Material, View Close (Sweet)

Photo # 8: Sample Collected from TB-06, Blue Clay (Diamicton) Material, View Close (Sweet)

Photo # 9: Assembling Coring Device Stabilization Frame, View to N (Sweet)

Photo # 10: Sample Collected from TB-06 with Stabilization Frame, View Close (Sweet)

Photo # 11: Collecting Hand Driven Coring Device at TB-04, View to SE (Roman)

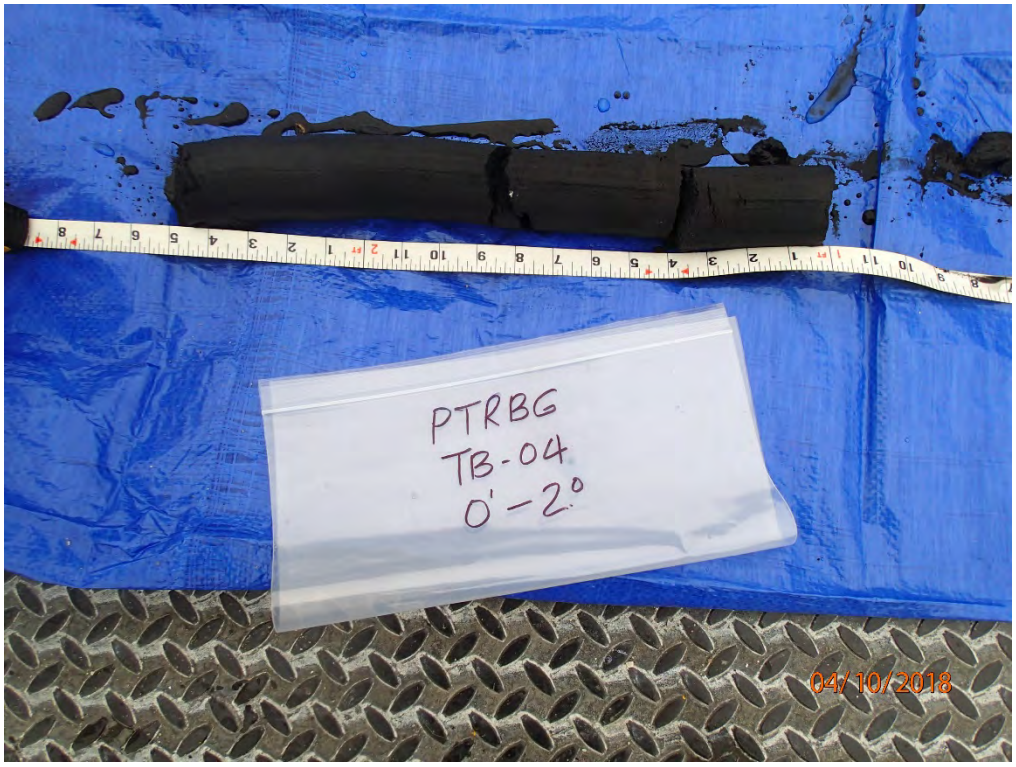

Photo # 12: Sample Material from TB-04, View Close (Roman)

APPENDIX B
Chemical Results Compared to DMMP and ADEC Criteria

Table 1: Petersburg South Harbor Sediment Sample Summary Table

Sample ID	Location ID	Sample Type	Containers	Sampler	Date/Time	SDG	Cooler	160.4 (TVS)	350.1 (Ammonia)	6020A/ 7471 (Metals)	8081B (Pesticides)	8082A (PCBs)	8260C (VOCs)	8270D (SVOCs)	9060 (TOC)	AK101 (GRO)	AK102/103 (DRO/RRO)	Krone et al. (Organic Tin)
18PSBH-D1PSE	DMMU 1 PRISM	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 16:31	580-76580	Silver, King	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D1ZSE	DMMU 1 Z	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 16:37	580-76580	Silver, King	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D2PSE	DMMU 2 PRISM	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 11:03	580-76580	Silver, King	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D2ZSE	DMMU 2 Z	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 11:10	580-76580	Silver, King	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D3PSE	DMMU 3 PRISM	Primary, MS/MSD	15X4 oz AG, 1X4 oz SG	JMS	4/10/2018 10:27	580-76580	Silver, King	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D3ZSE	DMMU 3 Z	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 10:44	580-76580	Silver, King	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D4PSE	DMMU 4 PRISM	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 9:58	580-76580	Silver	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D5PSE	DMMU 5 PRISM	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 9:06	580-76580	Silver	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D5ZSE	DMMU 5 Z	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 9:50	580-76580	Silver	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D6PSE	DMMU 6 PRISM	Primary	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 10:35	580-76580	Silver	X	X	X	X	X	X	X	X	X	X	X
18PSBH-D7PSE	DMMU 3	DUPLICATE OF -D3PSE (VOCs) AND -D3ZSE (OTHERS)	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 11:00	580-76580	Silver	X	X	X	X	X	X	X	X	X	X	X
18PSBH-1001TB	TRIP BLANK	QC	5X4 oz AG, 1X4 oz SG	JMS	4/10/2018 18:00	580-76580	Silver						X			X		
							Preservative	4°C	4°C	4°C	4°C	4°C	4°C, Methanol	4°C	4°C	4°C, Methanol	4°C	4°C

All samples were shipped to Test America, Tacoma with a 30-day turnaround time (TAT).

All samples were sediment samples and field preserved at 4 °C.

NPDL Number is 18-041.

AG - Amber Glass SG - Septa Top Glass

MS/MSD - Matrix Spike/Matrix Spike Duplicate

All VOC/GRO samples were shipped in cooler "Silver".

Most data reported in SDG 580-76580-1 performed at Test America Tacoma

SVOC data reported in SDG 580-76580-2 performed at Test America Sacramento

TVS data reported in SDG 580-76580-3 was performed at Test America Denver

Petersburg Harbor Data Compared to DMMP Criteria for Unrestricted In-Water Disposal

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE	18PSBH-D3ZSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P	DMMU3Z
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27	04/10/2018 10:44
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5	580-76580-6
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**				**MS/MSD**		
350.1	mg/kg	Ammonia (un-ionized)		54 [32] J,B.QL	90 [44] J,B.QL	64 [34] J,B.QL	63 [34] J,B.QL	78 [31] J,B.QL	51 [30] J,B.QL
6020A	mg/kg	Antimony	150	0.19 [0.16]	0.61 [0.20]	0.26 [0.17]	0.23 [0.18]	0.18 [0.14]	0.12 [0.18] J
6020A	mg/kg	Arsenic	57	3.4 [0.33]	3.6 [0.40]	5.5 [0.35]	6.5 [0.35]	3.7 [0.28]	1.9 [0.36]
6020A	mg/kg	Cadmium	5.1	0.41 [0.16]	0.39 [0.20] J	0.17 [0.17] J	0.15 [0.18] J	0.21 [0.14] J	0.13 [0.18] J
6020A	mg/kg	Chromium	260	25 [0.20]	28 [0.25]	45 [0.22]	44 [0.22]	21 [0.17]	22 [0.23]
6020A	mg/kg	Copper	390	34 [0.49]	41 [0.60]	41 [0.52]	39 [0.53]	18 [0.42]	9.1 [0.54]
6020A	mg/kg	Lead	450	8.6 [0.16]	20 [0.19]	4.7 [0.16]	4.9 [0.17]	3.7 [0.13]	1.7 [0.17]
6020A	mg/kg	Nickel	NA	17 [0.41]	21 [0.50]	42 [0.43]	39 [0.44]	18 [0.35]	14 [0.45]
6020A	mg/kg	Selenium	3	0.54 [0.82] J	0.61 [1.0] J	0.89 [0.87]	0.83 [0.88] J	0.45 [0.69] J	0.29 [0.91] J
6020A	mg/kg	Silver	6.1	0.075 [0.041] J	0.071 [0.050] J	0.12 [0.043] J	0.11 [0.044] J	0.053 [0.035] J	ND [0.045]
6020A	mg/kg	Zinc	410	57 [4.1]	58 [5.0]	73 [4.3]	69 [4.4]	35 [3.5]	29 [4.5]
7471A	mg/kg	Mercury	0.41	0.033 [0.020] J	0.046 [0.021]	0.016 [0.015] J	0.021 [0.016] J	0.013 [0.017] J	ND [0.017]
8081A	mg/kg	4,4'-DDD	0.016	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	4,4'-DDE	0.009	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	4,4'-DDT	0.012	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Aldrin	0.0095	ND [0.0029]	ND [0.0032]	ND [0.00044]	ND [0.00046]	ND [0.0014]	ND [0.00048]
8081A	mg/kg	alpha-BHC		ND [0.0029]	ND [0.0032]	ND [0.00044]	ND [0.00046]	ND [0.0014]	ND [0.00048]
8081A	mg/kg	alpha-Chlordane	0.0028	**ND [0.011]**	**ND [0.012]**	ND [0.0017]	ND [0.0017]	**ND [0.0051]**	ND [0.0018]
8081A	mg/kg	beta-BHC		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	delta-BHC		ND [0.0054] QN	ND [0.006] QN	ND [0.00083] QN	ND [0.00086] QN	ND [0.0026] QN	ND [0.00091] QN
8081A	mg/kg	Dieldrin	0.0019	**ND [0.0054]**	**ND [0.006]**	ND [0.00083]	ND [0.00086]	**ND [0.0026]**	ND [0.00091]
8081A	mg/kg	Endosulfan I		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Endosulfan II		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Endosulfan sulfate		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Endrin		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Endrin aldehyde		ND [0.11]	ND [0.12]	ND [0.017]	ND [0.017]	ND [0.051]	ND [0.018]
8081A	mg/kg	Endrin ketone		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	gamma-BHC (Lindane)	0.01	ND [0.0029]	ND [0.0032]	ND [0.00044]	ND [0.00046]	ND [0.0014]	ND [0.00048]
8081A	mg/kg	gamma-Chlordane	0.0028	**ND [0.0054]**	**ND [0.006]**	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Heptachlor	0.0015	**ND [0.0029]**	**ND [0.0032]**	ND [0.00044]	ND [0.00046]	ND [0.0014]	ND [0.00048]
8081A	mg/kg	Heptachlor Epoxide		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Methoxychlor		ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]	ND [0.00091]
8081A	mg/kg	Toxaphene		ND [0.57]	ND [0.64]	ND [0.088]	ND [0.091]	ND [0.27]	ND [0.097]
8082	mg/kg	PCB-1016 (Aroclor 1016)	0.13	ND [0.021]	ND [0.024]	ND [0.017]	ND [0.017]	ND [0.018]	ND [0.018]
8082	mg/kg	PCB-1221 (Aroclor 1221)	0.13	ND [0.014]	ND [0.016]	ND [0.011]	ND [0.011]	ND [0.012]	ND [0.012]
8082	mg/kg	PCB-1232 (Aroclor 1232)	0.13	ND [0.014]	ND [0.016]	ND [0.011]	ND [0.011]	ND [0.012]	ND [0.012]

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE	18PSBH-D3ZSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P	DMMU3Z
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27	04/10/2018 10:44
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5	580-76580-6
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**				**MS/MSD**		
8082	mg/kg	PCB-1242 (Aroclor 1242)	0.13	ND [0.0086]	ND [0.0096]	ND [0.0067]	ND [0.0068]	ND [0.0072]	ND [0.0071]
8082	mg/kg	PCB-1248 (Aroclor 1248)	0.13	ND [0.0086]	ND [0.0096]	ND [0.0067]	ND [0.0068]	ND [0.0072]	ND [0.0071]
8082	mg/kg	PCB-1254 (Aroclor 1254)	0.13	ND [0.014]	ND [0.016]	ND [0.011]	ND [0.011]	ND [0.012]	ND [0.012]
8082	mg/kg	PCB-1260 (Aroclor 1260)	0.13	ND [0.021]	ND [0.024]	ND [0.017]	ND [0.017]	ND [0.018]	ND [0.018]
8083	mg/kg	Total PCBs	0.13	ND [0.021]	ND [0.024]	ND [0.017]	ND [0.017]	ND [0.018]	ND [0.018]
8260B	mg/kg	1,1,1-Trichloroethane		ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]	ND [0.008]
8260B	mg/kg	1,1-Dichloroethane		ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]	ND [0.008]
8260B	mg/kg	1,1-Dichloropropene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	1,2,3-Trichlorobenzene		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	0.033 [0.024] B
8260B	mg/kg	1,2,3-Trichloropropane		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	1,2,4-Trichlorobenzene	0.031	**ND [0.063]**	**ND [0.083]**	**ND [0.038]**	**ND [0.038]**	**ND [0.037]**	**0.019 [0.04] J,B**
8260B	mg/kg	1,2,4-Trimethylbenzene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	1,2-Dibromo-3-chloropropane	NA	ND [0.25] QN	ND [0.33] QN	ND [0.15] QN	ND [0.15] QN	ND [0.15] QN	ND [0.16] QN
8260B	mg/kg	1,2-Dichlorobenzene	0.035	ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]	ND [0.008]
8260B	mg/kg	1,2-Dichloropropane	NA	ND [0.012]	ND [0.016]	ND [0.0073]	ND [0.0073]	ND [0.0071]	ND [0.0077]
8260B	mg/kg	1,3,5-Trimethylbenzene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	1,3-Dichlorobenzene	0.17	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	1,3-Dichloropropane	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	2,2-Dichloropropane	NA	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	2-Butanone		ND [0.63]	ND [0.83]	ND [0.38]	ND [0.38]	ND [0.37]	ND [0.4]
8260B	mg/kg	2-Chlorotoluene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	4-Chlorotoluene		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	4-Isopropyltoluene	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	4-Methyl-2-pentanone		ND [0.063]	ND [0.083]	ND [0.038]	ND [0.038]	ND [0.037]	ND [0.04]
8260B	mg/kg	Acetone		ND [0.63]	ND [0.83]	ND [0.38]	ND [0.38]	ND [0.37]	ND [0.4]
8260B	mg/kg	Bromobenzene		ND [0.063]	ND [0.083]	ND [0.038]	ND [0.038]	ND [0.037]	ND [0.04]
8260B	mg/kg	Bromochloromethane	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	Carbon disulfide		0.028 [0.038] J	0.037 [0.05] J	0.0099 [0.023] J	ND [0.023]	0.0082 [0.022] J	ND [0.024]
8260B	mg/kg	Carbon tetrachloride		ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]	ND [0.008]
8260B	mg/kg	Chlorobenzene		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	Chloroethane		ND [0.063]	ND [0.083]	ND [0.038]	ND [0.038]	ND [0.037]	ND [0.04]
8260B	mg/kg	Chloromethane		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	cis-1,2-Dichloroethene		ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]	ND [0.008]
8260B	mg/kg	Dichlorodifluoromethane		ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]	ND [0.08]
8260B	mg/kg	Ethylbenzene	NA	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	Isopropylbenzene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	Methylene chloride		ND [0.25]	ND [0.33]	ND [0.15]	ND [0.15]	ND [0.15]	ND [0.16]
8260B	mg/kg	Methyl-tert-butyl ether (MTBE)		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	n-Butylbenzene		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria

[ ] - Laboratory LOD

Solid shade indicates screening value exceedance

Data Flags are defined at the end of the table

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE	18PSBH-D3ZSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P	DMMU3Z
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27	04/10/2018 10:44
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5	580-76580-6
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**	**MS/MSD**					
8260B	mg/kg	n-Propylbenzene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	o-Xylene		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	sec-Butylbenzene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	Styrene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	0.019 [0.013] J,QN	ND [0.014]
8260B	mg/kg	tert-Butylbenzene		ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]	ND [0.014]
8260B	mg/kg	Toluene		ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]	ND [0.08]
8260B	mg/kg	trans-1,2-Dichloroethene		ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]	ND [0.024]
8260B	mg/kg	Trichlorofluoromethane		ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]	ND [0.08]
8260B	mg/kg	Xylene, Isomers m & p		ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]	ND [0.08]
8270D	mg/kg	1,2,4-Trichlorobenzene	0.031	**ND [0.037]**	**ND [0.042]**	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	1,2-Dichlorobenzene	0.035	**ND [0.037]**	**ND [0.042]**	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	1,4-Dichlorobenzene	0.11	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	2,4-Dimethylphenol	0.029	**ND [0.074]**	**ND [0.085]**	ND [0.0057]	ND [0.0058] QL	**ND [0.03]**	ND [0.0061] QL
8270D	mg/kg	2-Methylnaphthalene	0.67	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	2-Methylphenol (o-Cresol)	0.063	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Acenaphthene	0.5	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Acenaphthylene	0.56	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Anthracene	0.96	0.033 [0.037] J	0.032 [0.042] J	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Benzo(a)anthracene	1.3	0.11 [0.037] J	0.13 [0.042] J	ND [0.0028]	ND [0.0029] QL	0.011 [0.015] J	ND [0.003] QL
8270D	mg/kg	Benzo(a)pyrene	1.6	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]	ND [0.0061] QL
8270D	mg/kg	Benzo(b)fluoranthene	3.2	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Benzo(g,h,i)perylene	0.67	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	ND [0.15]	ND [0.03] QL
8270D	mg/kg	Benzo(k)fluoranthene	3.2	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]	ND [0.0061] QL
8270D	mg/kg	Benzyl alcohol	0.057	**ND [0.74]**	**ND [0.85]**	ND [0.057]	**ND [0.058] QL**	**ND [0.3]**	**ND [0.061] QL**
8270D	mg/kg	Benzyl butyl phthalate	0.97	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	ND [0.15]	ND [0.03] QL
8270D	mg/kg	bis-(2-Ethylhexyl)phthalate	8.3	ND [0.74]	ND [0.85]	0.051 [0.057] J,B	0.031 [0.058] J,QL,B	ND [0.3]	0.025 [0.061] J,QL,B
8270D	mg/kg	Chrysene	1.4	0.2 [0.037] J	0.16 [0.042] J	ND [0.0028]	ND [0.0029] QL	0.015 [0.015] J	ND [0.003] QL
8270D	mg/kg	Dibenzo(a,h)anthracene	0.23	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]	ND [0.0061] QL
8270D	mg/kg	Dibenzofuran	0.54	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Diethyl phthalate	1.2	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Dimethyl phthalate	1.4	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Di-n-butyl phthalate	5.1	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	ND [0.15]	ND [0.03] QL
8270D	mg/kg	Di-n-octyl phthalate	6.2	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]	ND [0.0061] QL
8270D	mg/kg	Fluoranthene	1.7	0.32 [0.037] J,QH	0.21 [0.042] J.QH	ND [0.0028]	ND [0.0029] QL	0.041 [0.015] J,QH	ND [0.003] QL
8270D	mg/kg	Fluorene	0.54	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL
8270D	mg/kg	Hexachlorobenzene	0.022	**ND [0.37]**	**ND [0.42]**	**ND [0.028]**	**ND [0.029] QL**	**ND [0.15]**	**ND [0.03] QL**
8270D	mg/kg	Hexachlorobutadiene	0.011	**ND [0.037]**	**ND [0.042]**	ND [0.0028]	ND [0.0029] QL	**ND [0.015]**	ND [0.003] QL
8270D	mg/kg	Indeno(1,2,3-cd)pyrene	0.6	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]	ND [0.0061] QL
8270D	mg/kg	Naphthalene	2.1	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]	ND [0.003] QL

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria

[ ] - Laboratory LOD

Solid shade indicates screening value exceedance

Data Flags are defined at the end of the table

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE	18PSBH-D3ZSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P	DMMU3Z
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27	04/10/2018 10:44
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5	580-76580-6
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**					**MS/MSD**	
8270D	mg/kg	n-Nitrosodiphenylamine	0.028	**ND [0.074]**	**ND [0.085]**	ND [0.0057]	ND [0.0058] QL	**ND [0.03]**	ND [0.0061] QL
8270D	mg/kg	Pentachlorophenol	0.4	**ND [0.74]**	**ND [0.85]**	ND [0.057]	ND [0.058] QL	ND [0.3]	ND [0.061] QL
8270D	mg/kg	Phenanthrene	1.5	0.12 [0.037] J	0.078 [0.042] J	ND [0.0028]	0.0024 [0.0029] J,QL	0.025 [0.015] J	ND [0.003] QL
8270D	mg/kg	Phenol	0.42	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	0.15 [0.15] J	ND [0.03] QL
8270D	mg/kg	Pyrene	2.6	0.35 [0.074] J,QH	0.29 [0.085] J,QH	ND [0.0057]	0.002 [0.0058] J,QN	0.044 [0.03] J,QH	ND [0.0061] QL
8270D	mg/kg	Benzoic acid	0.65	**ND [0.96]**	**ND [1.1]**	**ND [0.77]**	**ND [0.76]**	**ND [0.82]**	**ND [0.82]**
9060A	mg/kg	Total Organic Carbon (TOC)		13000 [100]	48000 [100]	3800 [100]	4200 [100]	7800 [100]	11000 [100]
AK101	mg/kg	Gasoline Range Organics (C6-C10)		ND [5.9]	ND [7.7]	ND [3.6]	ND [3.6]	ND [3.4]	ND [3.7]
AK102	mg/kg	Diesel Range Organics (C10-C25)		64 [20]	120 [25]	ND [16]	ND [17]	ND [17]	ND [17]
AK103	mg/kg	Residual Range Organics (C25-C36)		240 [40]	400 [50]	ND [33]	ND [34]	ND [34]	ND [34]
D2216	PERCENT	Percent Moisture	NA	31.4 [0.1]	40.6 [0.1]	12.3 [0.1]	14.9 [0.1]	16.9 [0.1]	17.7 [0.1]
D2216	PERCENT	Solids, Percent	NA	68.6 [0.1]	59.4 [0.1]	87.7 [0.1]	85.1 [0.1]	83.1 [0.1]	82.3 [0.1]
Organic_Tin	mg/kg	Butyltin		ND [0.025]	ND [0.03]	ND [0.02]	ND [0.019]	ND [0.021]	ND [0.021]
Organic_Tin	mg/kg	Dibutyltin		ND [0.011]	ND [0.013]	ND [0.0085]	ND [0.0081]	ND [0.0089]	ND [0.0089]
Organic_Tin	mg/kg	Monobutyltin		ND [0.016]	ND [0.019]	ND [0.012]	ND [0.012]	ND [0.013]	ND [0.013]
Organic_Tin	mg/kg	Tributyltin	0.073	ND [0.013] QN	ND [0.015] QN	ND [0.0099] QN	ND [0.0095] QN	ND [0.01] QN	ND [0.01] QN
160.4	PERCENT	Total Volatile Solids	NA	R	R	R	R	R	R

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

Petersburg Harbor Data Compared to DMMP Criteria for Unrestricted In-Water Disposal

			Sample ID	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**				
350.1	mg/kg	Ammonia (un-ionized)		43 [26] J,B.QL	54 [32] J,B.QL	51 [30] J,B.QL	49 [28] J,B.QL
6020A	mg/kg	Antimony	150	0.14 [0.13]	0.24 [0.14]	0.21 [0.14]	0.17 [0.13]
6020A	mg/kg	Arsenic	57	3.1 [0.27]	5.7 [0.28]	6.4 [0.28]	3.6 [0.25]
6020A	mg/kg	Cadmium	5.1	0.14 [0.13] J	0.16 [0.14] J	0.14 [0.14] J	0.10 [0.13] J
6020A	mg/kg	Chromium	260	25 [0.17]	39 [0.17]	42 [0.17]	27 [0.16]
6020A	mg/kg	Copper	390	19 [0.40]	39 [0.42]	44 [0.42]	21 [0.38]
6020A	mg/kg	Lead	450	2.9 [0.13]	4.4 [0.13]	5.2 [0.13]	3.6 [0.12]
6020A	mg/kg	Nickel	NA	20 [0.34]	37 [0.35]	39 [0.35]	19 [0.31]
6020A	mg/kg	Selenium	3	0.42 [0.67] J	0.72 [0.69]	0.81 [0.70]	0.49 [0.63] J
6020A	mg/kg	Silver	6.1	0.045 [0.034] J	0.11 [0.035] J	0.13 [0.035] J	0.063 [0.031] J
6020A	mg/kg	Zinc	410	34 [3.4]	63 [3.5]	75 [3.5]	39 [3.1]
7471A	mg/kg	Mercury	0.41	0.064 [0.013]	0.017 [0.015] J	0.025 [0.014]	ND [0.014]
8081A	mg/kg	4,4'-DDD	0.016	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	4,4'-DDE	0.009	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	4,4'-DDT	0.012	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Aldrin	0.0095	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	alpha-BHC		ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	alpha-Chlordane	0.0028	**ND [0.005]**	ND [0.0016]	ND [0.0017]	**ND [0.0048]**
8081A	mg/kg	beta-BHC		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	delta-BHC		ND [0.0025] QN	ND [0.00078] QN	ND [0.00083] QN	ND [0.0024] QN
8081A	mg/kg	Dieldrin	0.0019	**ND [0.0025]**	ND [0.00078]	ND [0.00083]	**ND [0.0024]**
8081A	mg/kg	Endosulfan I		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endosulfan II		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endosulfan sulfate		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endrin		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endrin aldehyde		ND [0.05]	ND [0.016]	ND [0.017]	ND [0.048]
8081A	mg/kg	Endrin ketone		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	gamma-BHC (Lindane)	0.01	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	gamma-Chlordane	0.0028	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Heptachlor	0.0015	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	Heptachlor Epoxide		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Methoxychlor		ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Toxaphene		ND [0.27]	ND [0.083]	ND [0.089]	ND [0.26]
8082	mg/kg	PCB-1016 (Aroclor 1016)	0.13	ND [0.017]	ND [0.017]	ND [0.017]	ND [0.016]
8082	mg/kg	PCB-1221 (Aroclor 1221)	0.13	ND [0.011]	ND [0.011]	ND [0.011]	ND [0.011]
8082	mg/kg	PCB-1232 (Aroclor 1232)	0.13	ND [0.011]	ND [0.011]	ND [0.011]	ND [0.011]

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**				
8082	mg/kg	PCB-1242 (Aroclor 1242)	0.13	ND [0.0067]	ND [0.0066]	ND [0.0067]	ND [0.0066]
8082	mg/kg	PCB-1248 (Aroclor 1248)	0.13	ND [0.0067]	ND [0.0066]	ND [0.0067]	ND [0.0066]
8082	mg/kg	PCB-1254 (Aroclor 1254)	0.13	ND [0.011]	ND [0.011]	ND [0.011]	ND [0.011]
8082	mg/kg	PCB-1260 (Aroclor 1260)	0.13	ND [0.017]	ND [0.017]	ND [0.017]	ND [0.016]
8083	mg/kg	Total PCBs	0.13	ND [0.017]	ND [0.017]	ND [0.017]	ND [0.016]
8260B	mg/kg	1,1,1-Trichloroethane		ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	1,1-Dichloroethane		ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	1,1-Dichloropropene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,2,3-Trichlorobenzene		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	1,2,3-Trichloropropane		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	1,2,4-Trichlorobenzene	0.031	**ND [0.037]**	**ND [0.035]**	**ND [0.039]**	ND [0.027]
8260B	mg/kg	1,2,4-Trimethylbenzene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,2-Dibromo-3-chloropropane	NA	ND [0.15] QN	ND [0.14] QN	ND [0.16] QN	ND [0.11] QN
8260B	mg/kg	1,2-Dichlorobenzene	0.035	ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	1,2-Dichloropropane	NA	ND [0.0071]	ND [0.0067]	ND [0.0076]	ND [0.0051]
8260B	mg/kg	1,3,5-Trimethylbenzene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,3-Dichlorobenzene	0.17	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,3-Dichloropropane	NA	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	2,2-Dichloropropane	NA	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	2-Butanone		ND [0.37]	ND [0.35]	ND [0.39]	ND [0.27]
8260B	mg/kg	2-Chlorotoluene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	4-Chlorotoluene		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	4-Isopropyltoluene	NA	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	4-Methyl-2-pentanone		ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	Acetone		ND [0.37]	ND [0.35]	ND [0.39]	ND [0.27]
8260B	mg/kg	Bromobenzene		ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	Bromochloromethane	NA	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Carbon disulfide		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Carbon tetrachloride		ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	Chlorobenzene		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Chloroethane		ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	Chloromethane		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	cis-1,2-Dichloroethene		ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	Dichlorodifluoromethane		ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8260B	mg/kg	Ethylbenzene	NA	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Isopropylbenzene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Methylene chloride		ND [0.15]	ND [0.14]	ND [0.16]	ND [0.11]
8260B	mg/kg	Methyl-tert-butyl ether (MTBE)		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	n-Butylbenzene		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**				
8260B	mg/kg	n-Propylbenzene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	o-Xylene		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	sec-Butylbenzene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Styrene		0.0056 [0.013] J	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	tert-Butylbenzene		ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Toluene		ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8260B	mg/kg	trans-1,2-Dichloroethene		ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Trichlorofluoromethane		ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8260B	mg/kg	Xylene, Isomers m & p		ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8270D	mg/kg	1,2,4-Trichlorobenzene	0.031	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	1,2-Dichlorobenzene	0.035	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	1,4-Dichlorobenzene	0.11	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	2,4-Dimethylphenol	0.029	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	2-Methylnaphthalene	0.67	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	2-Methylphenol (o-Cresol)	0.063	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Acenaphthene	0.5	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Acenaphthylene	0.56	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Anthracene	0.96	0.014 [0.015] J	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Benzo(a)anthracene	1.3	0.029 [0.015] J	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Benzo(a)pyrene	1.6	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Benzo(b)fluoranthene	3.2	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Benzo(g,h,i)perylene	0.67	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	Benzo(k)fluoranthene	3.2	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Benzyl alcohol	0.057	**ND [0.29]**	ND [0.055] QL	**ND [0.058] QL**	**ND [0.28] QL**
8270D	mg/kg	Benzyl butyl phthalate	0.97	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	bis-(2-Ethylhexyl)phthalate	8.3	ND [0.29]	0.031 [0.055] J,QL,B	0.034 [0.058] J,QL,B	ND [0.28] QL
8270D	mg/kg	Chrysene	1.4	0.041 [0.015] J	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Dibenzo(a,h)anthracene	0.23	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Dibenzofuran	0.54	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Diethyl phthalate	1.2	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Dimethyl phthalate	1.4	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Di-n-butyl phthalate	5.1	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	Di-n-octyl phthalate	6.2	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Fluoranthene	1.7	0.056 [0.015] J,QH	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Fluorene	0.54	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Hexachlorobenzene	0.022	**ND [0.15]**	**ND [0.028] QL**	**ND [0.029] QL**	**ND [0.14] QL**
8270D	mg/kg	Hexachlorobutadiene	0.011	**ND [0.015]**	ND [0.0028] QL	ND [0.0029] QL	**ND [0.014] QL**
8270D	mg/kg	Indeno(1,2,3-cd)pyrene	0.6	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Naphthalene	2.1	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

		Sample ID		18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
		Location ID		DMMU4P	DMMU5P	DMMU5Z	DMMU6P
		Collection Date		04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
		Lab Sample ID		580-76580-7	580-76580-8	580-76580-9	580-76580-10
		Matrix		Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**DMMP**				
8270D	mg/kg	n-Nitrosodiphenylamine	0.028	**ND [0.029]**	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Pentachlorophenol	0.4	ND [0.29]	ND [0.055] QL	ND [0.058] QL	ND [0.28] QL
8270D	mg/kg	Phenanthrene	1.5	0.025 [0.015] J	0.0019 [0.0028] J,QL	0.0021 [0.0029] J,QL	ND [0.014] QL
8270D	mg/kg	Phenol	0.42	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	Pyrene	2.6	0.02 [0.029] J,QH	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Benzoic acid	0.65	**ND [0.77]**	**ND [0.74]**	**ND [0.77]**	**ND [0.75]**
9060A	mg/kg	Total Organic Carbon (TOC)		4800 [100]	3900 [100]	4700 [100]	4300 [100]
AK101	mg/kg	Gasoline Range Organics (C6-C10)		ND [3.4]	ND [3.3]	ND [3.7]	ND [2.5]
AK102	mg/kg	Diesel Range Organics (C10-C25)		ND [18]	ND [16]	ND [16]	ND [15]
AK103	mg/kg	Residual Range Organics (C25-C36)		ND [35]	ND [32]	ND [32]	ND [30]
D2216	PERCENT	Percent Moisture	NA	15.9 [0.1]	9.8 [0.1]	15.0 [0.1]	9.2 [0.1]
D2216	PERCENT	Solids, Percent	NA	84.1 [0.1]	90.2 [0.1]	85.0 [0.1]	90.8 [0.1]
Organic_Tin	mg/kg	Butyltin		ND [0.019]	ND [0.019]	ND [0.02]	ND [0.019]
Organic_Tin	mg/kg	Dibutyltin		ND [0.0079]	ND [0.008]	ND [0.0084]	ND [0.0082]
Organic_Tin	mg/kg	Monobutyltin		ND [0.012]	ND [0.012]	ND [0.012]	ND [0.012]
Organic_Tin	mg/kg	Tributyltin	0.073	ND [0.0092] QN	ND [0.0093] QN	ND [0.0098] QN	ND [0.0095] QN
160.4	PERCENT	Total Volatile Solids	NA	R	R	R	R

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

Petersburg Harbor Data Compared to DMMP Criteria for Unrestricted In-Water Disposal

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**DMMP**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
350.1	mg/kg	Ammonia (un-ionized)		34 [22] J,B.QL	
6020A	mg/kg	Antimony	150	0.15 [0.12]	
6020A	mg/kg	Arsenic	57	3.7 [0.23]	
6020A	mg/kg	Cadmium	5.1	0.072 [0.12] J	
6020A	mg/kg	Chromium	260	28 [0.15]	
6020A	mg/kg	Copper	390	23 [0.35]	
6020A	mg/kg	Lead	450	3.0 [0.11]	
6020A	mg/kg	Nickel	NA	21 [0.29]	
6020A	mg/kg	Selenium	3	0.54 [0.59] J	
6020A	mg/kg	Silver	6.1	0.065 [0.029] J	
6020A	mg/kg	Zinc	410	40 [2.9]	
7471A	mg/kg	Mercury	0.41	0.012 [0.012] J	
8081A	mg/kg	4,4'-DDD	0.016	ND [0.0024]	
8081A	mg/kg	4,4'-DDE	0.009	ND [0.0024]	
8081A	mg/kg	4,4'-DDT	0.012	ND [0.0024]	
8081A	mg/kg	Aldrin	0.0095	ND [0.0013]	
8081A	mg/kg	alpha-BHC		ND [0.0013]	
8081A	mg/kg	alpha-Chlordane	0.0028	**ND [0.0048]**	
8081A	mg/kg	beta-BHC		ND [0.0024]	
8081A	mg/kg	delta-BHC		ND [0.0024] QN	
8081A	mg/kg	Dieldrin	0.0019	**ND [0.0024]**	
8081A	mg/kg	Endosulfan I		ND [0.0024]	
8081A	mg/kg	Endosulfan II		ND [0.0024]	
8081A	mg/kg	Endosulfan sulfate		ND [0.0024]	
8081A	mg/kg	Endrin		ND [0.0024]	
8081A	mg/kg	Endrin aldehyde		ND [0.048]	
8081A	mg/kg	Endrin ketone		ND [0.0024]	
8081A	mg/kg	gamma-BHC (Lindane)	0.01	ND [0.0013]	
8081A	mg/kg	gamma-Chlordane	0.0028	ND [0.0024]	
8081A	mg/kg	Heptachlor	0.0015	ND [0.0013]	
8081A	mg/kg	Heptachlor Epoxide		ND [0.0024]	
8081A	mg/kg	Methoxychlor		ND [0.0024]	
8081A	mg/kg	Toxaphene		ND [0.26]	
8082	mg/kg	PCB-1016 (Aroclor 1016)	0.13	ND [0.016]	
8082	mg/kg	PCB-1221 (Aroclor 1221)	0.13	ND [0.011]	
8082	mg/kg	PCB-1232 (Aroclor 1232)	0.13	ND [0.011]	

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**DMMP**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
8082	mg/kg	PCB-1242 (Aroclor 1242)	0.13	ND [0.0065]	
8082	mg/kg	PCB-1248 (Aroclor 1248)	0.13	ND [0.0065]	
8082	mg/kg	PCB-1254 (Aroclor 1254)	0.13	ND [0.011]	
8082	mg/kg	PCB-1260 (Aroclor 1260)	0.13	ND [0.016]	
8083	mg/kg	Total PCBs	0.13	ND [0.016]	
8260B	mg/kg	1,1,1-Trichloroethane		ND [0.0061]	ND [0.01]
8260B	mg/kg	1,1-Dichloroethane		ND [0.0061]	ND [0.01]
8260B	mg/kg	1,1-Dichloropropene		ND [0.011]	ND [0.018]
8260B	mg/kg	1,2,3-Trichlorobenzene		ND [0.018]	0.071 [0.03]
8260B	mg/kg	1,2,3-Trichloropropane		ND [0.018]	ND [0.03]
8260B	mg/kg	1,2,4-Trichlorobenzene	0.031	ND [0.03]	**0.043 [0.05] J**
8260B	mg/kg	1,2,4-Trimethylbenzene		ND [0.011]	ND [0.018]
8260B	mg/kg	1,2-Dibromo-3-chloropropane	NA	ND [0.12] QN	ND [0.2] QN
8260B	mg/kg	1,2-Dichlorobenzene	0.035	ND [0.0061]	0.0059 [0.01] J
8260B	mg/kg	1,2-Dichloropropane	NA	ND [0.0058]	ND [0.0096]
8260B	mg/kg	1,3,5-Trimethylbenzene		ND [0.011]	ND [0.018]
8260B	mg/kg	1,3-Dichlorobenzene	0.17	ND [0.011]	ND [0.018]
8260B	mg/kg	1,3-Dichloropropane	NA	ND [0.011]	ND [0.018]
8260B	mg/kg	2,2-Dichloropropane	NA	ND [0.018]	ND [0.03]
8260B	mg/kg	2-Butanone		ND [0.3]	ND [0.5]
8260B	mg/kg	2-Chlorotoluene		ND [0.011]	ND [0.018]
8260B	mg/kg	4-Chlorotoluene		ND [0.018]	ND [0.03]
8260B	mg/kg	4-Isopropyltoluene	NA	ND [0.011]	0.0084 [0.018] J
8260B	mg/kg	4-Methyl-2-pentanone		ND [0.03]	ND [0.05]
8260B	mg/kg	Acetone		ND [0.3]	ND [0.5]
8260B	mg/kg	Bromobenzene		ND [0.03]	ND [0.05]
8260B	mg/kg	Bromochloromethane	NA	ND [0.011]	ND [0.018]
8260B	mg/kg	Carbon disulfide		0.012 [0.018] J	ND [0.03]
8260B	mg/kg	Carbon tetrachloride		ND [0.0061]	ND [0.01]
8260B	mg/kg	Chlorobenzene		ND [0.018]	ND [0.03]
8260B	mg/kg	Chloroethane		ND [0.03]	ND [0.05]
8260B	mg/kg	Chloromethane		ND [0.018]	ND [0.03]
8260B	mg/kg	cis-1,2-Dichloroethene		ND [0.0061]	ND [0.01]
8260B	mg/kg	Dichlorodifluoromethane		ND [0.061]	ND [0.1]
8260B	mg/kg	Ethylbenzene	NA	ND [0.018]	ND [0.03]
8260B	mg/kg	Isopropylbenzene		ND [0.011]	ND [0.018]
8260B	mg/kg	Methylene chloride		ND [0.12]	ND [0.2]
8260B	mg/kg	Methyl-tert-butyl ether (MTBE)		ND [0.011]	ND [0.018]
8260B	mg/kg	n-Butylbenzene		ND [0.018]	0.014 [0.03] J

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**DMMP**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
8260B	mg/kg	n-Propylbenzene		ND [0.011]	ND [0.018]
8260B	mg/kg	o-Xylene		ND [0.018]	ND [0.03]
8260B	mg/kg	sec-Butylbenzene		ND [0.011]	0.0084 [0.018] J
8260B	mg/kg	Styrene		ND [0.011] QN	ND [0.018]
8260B	mg/kg	tert-Butylbenzene		ND [0.011]	ND [0.018]
8260B	mg/kg	Toluene		ND [0.061]	ND [0.1]
8260B	mg/kg	trans-1,2-Dichloroethene		ND [0.018]	ND [0.03]
8260B	mg/kg	Trichlorofluoromethane		ND [0.061]	ND [0.1]
8260B	mg/kg	Xylene, Isomers m & p		ND [0.061]	ND [0.1]
8270D	mg/kg	1,2,4-Trichlorobenzene	0.031	ND [0.014] QL	
8270D	mg/kg	1,2-Dichlorobenzene	0.035	ND [0.014] QL	
8270D	mg/kg	1,4-Dichlorobenzene	0.11	ND [0.014] QL	
8270D	mg/kg	2,4-Dimethylphenol	0.029	ND [0.028] QL	
8270D	mg/kg	2-Methylnaphthalene	0.67	ND [0.014] QL	
8270D	mg/kg	2-Methylphenol (o-Cresol)	0.063	ND [0.014] QL	
8270D	mg/kg	Acenaphthene	0.5	ND [0.014] QL	
8270D	mg/kg	Acenaphthylene	0.56	ND [0.014] QL	
8270D	mg/kg	Anthracene	0.96	ND [0.014] QL	
8270D	mg/kg	Benzo(a)anthracene	1.3	ND [0.014] QL	
8270D	mg/kg	Benzo(a)pyrene	1.6	ND [0.028] QL	
8270D	mg/kg	Benzo(b)fluoranthene	3.2	ND [0.014] QL	
8270D	mg/kg	Benzo(g,h,i)perylene	0.67	ND [0.14] QL	
8270D	mg/kg	Benzo(k)fluoranthene	3.2	ND [0.028] QL	
8270D	mg/kg	Benzyl alcohol	0.057	**ND [0.28] QL**	
8270D	mg/kg	Benzyl butyl phthalate	0.97	ND [0.14] QL	
8270D	mg/kg	bis-(2-Ethylhexyl)phthalate	8.3	ND [0.28] QL	
8270D	mg/kg	Chrysene	1.4	ND [0.014] QL	
8270D	mg/kg	Dibenzo(a,h)anthracene	0.23	ND [0.028] QL	
8270D	mg/kg	Dibenzofuran	0.54	ND [0.014] QL	
8270D	mg/kg	Diethyl phthalate	1.2	ND [0.014] QL	
8270D	mg/kg	Dimethyl phthalate	1.4	ND [0.014] QL	
8270D	mg/kg	Di-n-butyl phthalate	5.1	ND [0.14] QL	
8270D	mg/kg	Di-n-octyl phthalate	6.2	ND [0.028] QL	
8270D	mg/kg	Fluoranthene	1.7	ND [0.014] QL	
8270D	mg/kg	Fluorene	0.54	ND [0.014] QL	
8270D	mg/kg	Hexachlorobenzene	0.022	**ND [0.14] QL**	
8270D	mg/kg	Hexachlorobutadiene	0.011	**ND [0.014] QL**	
8270D	mg/kg	Indeno(1,2,3-cd)pyrene	0.6	ND [0.028] QL	
8270D	mg/kg	Naphthalene	2.1	ND [0.014] QL	

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**DMMP**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
8270D	mg/kg	n-Nitrosodiphenylamine	0.028	ND [0.028] QL	
8270D	mg/kg	Pentachlorophenol	0.4	ND [0.28] QL	
8270D	mg/kg	Phenanthrene	1.5	ND [0.014] QL	
8270D	mg/kg	Phenol	0.42	ND [0.14] QL	
8270D	mg/kg	Pyrene	2.6	ND [0.028] QL	
8270D	mg/kg	Benzoic acid	0.65	**ND [0.74]**	
9060A	mg/kg	Total Organic Carbon (TOC)		3100 [100]	
AK101	mg/kg	Gasoline Range Organics (C6-C10)		ND [2.8]	ND [4.6]
AK102	mg/kg	Diesel Range Organics (C10-C25)		ND [16]	
AK103	mg/kg	Residual Range Organics (C25-C36)		ND [32]	
D2216	PERCENT	Percent Moisture	NA	10.0 [0.1]	
D2216	PERCENT	Solids, Percent	NA	90.0 [0.1]	
Organic_Tin	mg/kg	Butyltin		ND [0.019]	
Organic_Tin	mg/kg	Dibutyltin		ND [0.0083]	
Organic_Tin	mg/kg	Monobutyltin		ND [0.012]	
Organic_Tin	mg/kg	Tributyltin	0.073	ND [0.0097] QN	
160.4	PERCENT	Total Volatile Solids	NA	R	

DMMP - Dredged Material Management Plan Table 8-2 SL Marine Value Screening Criteria
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

Data Flag Explanations

ND - Analyte is not detected; [ ] - Laboratory Limit of Detection (LOD)

	Analyte LOD is greater than the screening criteria
	Analyte was detected at a concentration greater than the screening criteria.
Qualifier	**Definition**
J	Analyte result is considered an estimated value because the level is below the laboratory LOQ but above the DL
B	Analyte result is considered a high estimated value due to contamination present in the method blank.
QH, QL, QN	Analyte result is considered an estimated value biased (high, low, uncertain) due to a quality control failure
R	Analyte result is rejected - result is not usable.

Flags may be combined when more than one quality deficiency exists

Petersburg Harbor Data Compared to ADEC Criteria for Unrestricted Upland Disposal

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					**MS/MSD**
350.1	mg/kg	Ammonia (un-ionized)		54 [32] J,B.QL	90 [44] J,B.QL	64 [34] J,B.QL	63 [34] J,B.QL	78 [31] J,B.QL
6020A	mg/kg	Antimony	4.6	0.19 [0.16]	0.61 [0.20]	0.26 [0.17]	0.23 [0.18]	0.18 [0.14]
6020A	mg/kg	Arsenic	0.2	**3.4 [0.33]**	**3.6 [0.40]**	**5.5 [0.35]**	**6.5 [0.35]**	**3.7 [0.28]**
6020A	mg/kg	Cadmium	9.1	0.41 [0.16]	0.39 [0.20] J	0.17 [0.17] J	0.15 [0.18] J	0.21 [0.14] J
6020A	mg/kg	Chromium	100000	25 [0.20]	28 [0.25]	45 [0.22]	44 [0.22]	21 [0.17]
6020A	mg/kg	Copper	370	34 [0.49]	41 [0.60]	41 [0.52]	39 [0.53]	18 [0.42]
6020A	mg/kg	Lead	400	8.6 [0.16]	20 [0.19]	4.7 [0.16]	4.9 [0.17]	3.7 [0.13]
6020A	mg/kg	Nickel	340	17 [0.41]	21 [0.50]	42 [0.43]	39 [0.44]	18 [0.35]
6020A	mg/kg	Selenium	6.9	0.54 [0.82] J	0.61 [1.0] J	0.89 [0.87]	0.83 [0.88] J	0.45 [0.69] J
6020A	mg/kg	Silver	11	0.075 [0.041] J	0.071 [0.050] J	0.12 [0.043] J	0.11 [0.044] J	0.053 [0.035] J
6020A	mg/kg	Zinc	4900	57 [4.1]	58 [5.0]	73 [4.3]	69 [4.4]	35 [3.5]
7471A	mg/kg	Mercury	0.36	0.033 [0.020] J	0.046 [0.021]	0.016 [0.015] J	0.021 [0.016] J	0.013 [0.017] J
8081A	mg/kg	4,4'-DDD	0.49	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	4,4'-DDE	0.72	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	4,4'-DDT	5.1	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Aldrin	0.0099	ND [0.0029]	ND [0.0032]	ND [0.00044]	ND [0.00046]	ND [0.0014]
8081A	mg/kg	alpha-BHC	0.0029	ND [0.0029]	**ND [0.0032]**	ND [0.00044]	ND [0.00046]	ND [0.0014]
8081A	mg/kg	alpha-Chlordane	0.18	ND [0.011]	ND [0.012]	ND [0.0017]	ND [0.0017]	ND [0.0051]
8081A	mg/kg	beta-BHC	0.01	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	delta-BHC	NA	ND [0.0054] QN	ND [0.006] QN	ND [0.00083] QN	ND [0.00086] QN	ND [0.0026] QN
8081A	mg/kg	Dieldrin	0.0047	**ND [0.0054]**	**ND [0.006]**	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Endosulfan I	9.3	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Endosulfan II	9.3	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Endosulfan sulfate	9.3	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Endrin	0.61	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Endrin aldehyde	NA	ND [0.11]	ND [0.12]	ND [0.017]	ND [0.017]	ND [0.051]
8081A	mg/kg	Endrin ketone	NA	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	gamma-BHC (Lindane)	0.016	ND [0.0029]	ND [0.0032]	ND [0.00044]	ND [0.00046]	ND [0.0014]
8081A	mg/kg	gamma-Chlordane	0.18	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Heptachlor	0.0076	ND [0.0029]	ND [0.0032]	ND [0.00044]	ND [0.00046]	ND [0.0014]
8081A	mg/kg	Heptachlor Epoxide	0.0019	**ND [0.0054]**	**ND [0.006]**	ND [0.00083]	ND [0.00086]	**ND [0.0026]**
8081A	mg/kg	Methoxychlor	13	ND [0.0054]	ND [0.006]	ND [0.00083]	ND [0.00086]	ND [0.0026]
8081A	mg/kg	Toxaphene	0.72	ND [0.57]	ND [0.64]	ND [0.088]	ND [0.091]	ND [0.27]
8082	mg/kg	PCB-1016 (Aroclor 1016)	1	ND [0.021]	ND [0.024]	ND [0.017]	ND [0.017]	ND [0.018]
8082	mg/kg	PCB-1221 (Aroclor 1221)	1	ND [0.014]	ND [0.016]	ND [0.011]	ND [0.011]	ND [0.012]
8082	mg/kg	PCB-1232 (Aroclor 1232)	1	ND [0.014]	ND [0.016]	ND [0.011]	ND [0.011]	ND [0.012]

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					**MS/MSD**
8082	mg/kg	PCB-1242 (Aroclor 1242)	1	ND [0.0086]	ND [0.0096]	ND [0.0067]	ND [0.0068]	ND [0.0072]
8082	mg/kg	PCB-1248 (Aroclor 1248)	1	ND [0.0086]	ND [0.0096]	ND [0.0067]	ND [0.0068]	ND [0.0072]
8082	mg/kg	PCB-1254 (Aroclor 1254)	1	ND [0.014]	ND [0.016]	ND [0.011]	ND [0.011]	ND [0.012]
8082	mg/kg	PCB-1260 (Aroclor 1260)	1	ND [0.021]	ND [0.024]	ND [0.017]	ND [0.017]	ND [0.018]
8260B	mg/kg	1,1,1-Trichloroethane	32	ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]
8260B	mg/kg	1,1-Dichloroethane	0.092	ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]
8260B	mg/kg	1,1-Dichloropropene	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	1,2,3-Trichlorobenzene	0.15	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	1,2,3-Trichloropropane	0.000031	**ND [0.038]**	**ND [0.05]**	**ND [0.023]**	**ND [0.023]**	**ND [0.022]**
8260B	mg/kg	1,2,4-Trichlorobenzene	0.082	ND [0.063]	**ND [0.083]**	ND [0.038]	ND [0.038]	ND [0.037]
8260B	mg/kg	1,2,4-Trimethylbenzene	0.16	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	1,2-Dibromo-3-chloropropane	NA	ND [0.25] QN	ND [0.33] QN	ND [0.15] QN	ND [0.15] QN	ND [0.15] QN
8260B	mg/kg	1,2-Dichlorobenzene	2.4	ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]
8260B	mg/kg	1,2-Dichloropropane	0.016	ND [0.012]	ND [0.016]	ND [0.0073]	ND [0.0073]	ND [0.0071]
8260B	mg/kg	1,3,5-Trimethylbenzene	1.3	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	1,3-Dichlorobenzene	2.3	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	1,3-Dichloropropane	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	2,2-Dichloropropane	NA	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	2-Butanone	15	ND [0.63]	ND [0.83]	ND [0.38]	ND [0.38]	ND [0.37]
8260B	mg/kg	2-Chlorotoluene	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	4-Chlorotoluene	NA	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	4-Isopropyltoluene	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	4-Methyl-2-pentanone	18	ND [0.063]	ND [0.083]	ND [0.038]	ND [0.038]	ND [0.037]
8260B	mg/kg	Acetone	38	ND [0.63]	ND [0.83]	ND [0.38]	ND [0.38]	ND [0.37]
8260B	mg/kg	Bromobenzene	0.36	ND [0.063]	ND [0.083]	ND [0.038]	ND [0.038]	ND [0.037]
8260B	mg/kg	Bromochloromethane	NA	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	Carbon disulfide	2.9	0.028 [0.038] J	0.037 [0.05] J	0.0099 [0.023] J	ND [0.023]	0.0082 [0.022] J
8260B	mg/kg	Carbon tetrachloride	0.021	ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]
8260B	mg/kg	Chlorobenzene	0.46	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	Chloroethane	72	ND [0.063]	ND [0.083]	ND [0.038]	ND [0.038]	ND [0.037]
8260B	mg/kg	Chloromethane	0.61	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	cis-1,2-Dichloroethene	0.12	ND [0.013]	ND [0.017]	ND [0.0076]	ND [0.0076]	ND [0.0074]
8260B	mg/kg	Dichlorodifluoromethane	3.9	ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]
8260B	mg/kg	Ethylbenzene	0.13	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	Isopropylbenzene	5.6	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	Methylene chloride	0.33	ND [0.25]	ND [0.33]	ND [0.15]	ND [0.15]	ND [0.15]
8260B	mg/kg	Methyl-tert-butyl ether (MTBE)	0.4	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	n-Butylbenzene	20	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	n-Propylbenzene	9.1	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)

[ ] - Laboratory LOD

Solid shade indicates screening value exceedance

Data Flags are defined at the end of the table

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					**MS/MSD**
8260B	mg/kg	o-Xylene	1.5	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	sec-Butylbenzene	28	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	Styrene	10	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	0.019 [0.013] J,QN
8260B	mg/kg	tert-Butylbenzene	11	ND [0.022]	ND [0.029]	ND [0.013]	ND [0.013]	ND [0.013]
8260B	mg/kg	Toluene	6.7	ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]
8260B	mg/kg	trans-1,2-Dichloroethene	1.3	ND [0.038]	ND [0.05]	ND [0.023]	ND [0.023]	ND [0.022]
8260B	mg/kg	Trichlorofluoromethane	41	ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]
8260B	mg/kg	Xylene, Isomers m & p	1.5	ND [0.13]	ND [0.17]	ND [0.076]	ND [0.076]	ND [0.074]
8270D	mg/kg	1,2,4-Trichlorobenzene	0.082	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	1,2-Dichlorobenzene	2.4	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	1,4-Dichlorobenzene	0.037	ND [0.037]	**ND [0.042]**	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	2,4-Dimethylphenol	3.2	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]
8270D	mg/kg	2-Methylnaphthalene	1.3	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	2-Methylphenol (o-Cresol)	6.2	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Acenaphthene	37	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Acenaphthylene	18	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Anthracene	390	0.033 [0.037] J	0.032 [0.042] J	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Benzo(a)anthracene	0.28	0.11 [0.037] J	0.13 [0.042] J	ND [0.0028]	ND [0.0029] QL	0.011 [0.015] J
8270D	mg/kg	Benzo(a)pyrene	0.17	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]
8270D	mg/kg	Benzo(b)fluoranthene	1.7	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Benzo(g,h,i)perylene	1900	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	ND [0.15]
8270D	mg/kg	Benzo(k)fluoranthene	17	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]
8270D	mg/kg	Benzyl alcohol	5.7	ND [0.74]	ND [0.85]	ND [0.057]	ND [0.058] QL	ND [0.3]
8270D	mg/kg	Benzyl butyl phthalate	16	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	ND [0.15]
8270D	mg/kg	bis-(2-Ethylhexyl)phthalate	88	ND [0.74]	ND [0.85]	0.051 [0.057] J,B	0.031 [0.058] J,QL,B	ND [0.3]
8270D	mg/kg	Chrysene	82	0.2 [0.037] J	0.16 [0.042] J	ND [0.0028]	ND [0.0029] QL	0.015 [0.015] J
8270D	mg/kg	Dibenzo(a,h)anthracene	0.17	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]
8270D	mg/kg	Dibenzofuran	0.97	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Diethyl phthalate	60	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Dimethyl phthalate	48	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Di-n-butyl phthalate	16	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	ND [0.15]
8270D	mg/kg	Di-n-octyl phthalate	370	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]
8270D	mg/kg	Fluoranthene	590	0.32 [0.037] J,QH	0.21 [0.042] J.QH	ND [0.0028]	ND [0.0029] QL	0.041 [0.015] J,QH
8270D	mg/kg	Fluorene	36	ND [0.037]	ND [0.042]	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Hexachlorobenzene	0.0082	**ND [0.37]**	**ND [0.42]**	**ND [0.028]**	**ND [0.029] QL**	**ND [0.15]**
8270D	mg/kg	Hexachlorobutadiene	0.02	**ND [0.037]**	**ND [0.042]**	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	Indeno(1,2,3-cd)pyrene	1.7	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]
8270D	mg/kg	Naphthalene	0.038	ND [0.037]	**ND [0.042]**	ND [0.0028]	ND [0.0029] QL	ND [0.015]
8270D	mg/kg	n-Nitrosodiphenylamine	4.6	ND [0.074]	ND [0.085]	ND [0.0057]	ND [0.0058] QL	ND [0.03]

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)

[ ] - Laboratory LOD

Solid shade indicates screening value exceedance

Data Flags are defined at the end of the table

Petersburg Harbor Data Compared to ADEC Criteria for Unrestricted Upland Disposal

			Sample ID	18PSBH-D1PSE	18PSBH-D1ZSE	18PSBH-D2PSE	18PSBH-D2ZSE	18PSBH-D3PSE
			Location ID	DMMU1P	DMMU1Z	DMMU2P	DMMU2Z	DMMU3P
			Collection Date	04/10/2018 16:31	04/10/2018 16:37	04/10/2018 11:03	04/10/2018 11:10	04/10/2018 10:27
			Lab Sample ID	580-76580-1	580-76580-2	580-76580-3	580-76580-4	580-76580-5
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					**MS/MSD**
8270D	mg/kg	Pentachlorophenol	0.0043	**ND [0.74]**	**ND [0.85]**	**ND [0.057]**	**ND [0.058] QL**	**ND [0.3]**
8270D	mg/kg	Phenanthrene	39	0.12 [0.037] J	0.078 [0.042] J	ND [0.0028]	0.0024 [0.0029] J,QL	0.025 [0.015] J
8270D	mg/kg	Phenol	29	ND [0.37]	ND [0.42]	ND [0.028]	ND [0.029] QL	0.15 [0.15] J
8270D	mg/kg	Pyrene	87	0.35 [0.074] J,QH	0.29 [0.085] J,QH	ND [0.0057]	0.002 [0.0058] J,QN	0.044 [0.03] J,QH
8270D	mg/kg	Benzoic acid	200	ND [0.96]	ND [1.1]	ND [0.77]	ND [0.76]	ND [0.82]
9060A	mg/kg	Total Organic Carbon (TOC)		13000 [100]	48000 [100]	3800 [100]	4200 [100]	7800 [100]
AK101	mg/kg	Gasoline Range Organics (C6-C10)	260	ND [5.9]	ND [7.7]	ND [3.6]	ND [3.6]	ND [3.4]
AK102	mg/kg	Diesel Range Organics (C10-C25)	230	64 [20]	120 [25]	ND [16]	ND [17]	ND [17]
AK103	mg/kg	Residual Range Organics (C25-C36)	8300	240 [40]	400 [50]	ND [33]	ND [34]	ND [34]
D2216	PERCENT	Percent Moisture		31.4 [0.1]	40.6 [0.1]	12.3 [0.1]	14.9 [0.1]	16.9 [0.1]
D2216	PERCENT	Solids, Percent		68.6 [0.1]	59.4 [0.1]	87.7 [0.1]	85.1 [0.1]	83.1 [0.1]
Organic_Tin	mg/kg	Butyltin		ND [0.025]	ND [0.03]	ND [0.02]	ND [0.019]	ND [0.021]
Organic_Tin	mg/kg	Dibutyltin		ND [0.011]	ND [0.013]	ND [0.0085]	ND [0.0081]	ND [0.0089]
Organic_Tin	mg/kg	Monobutyltin		ND [0.016]	ND [0.019]	ND [0.012]	ND [0.012]	ND [0.013]
Organic_Tin	mg/kg	Tributyltin	0.68	ND [0.013] QN	ND [0.015] QN	ND [0.0099] QN	ND [0.0095] QN	ND [0.01] QN
160.4	PERCENT	Total Volatile Solids		R	R	R	R	R

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

Petersburg Harbor Data Compared to ADEC Criteria for Unrestricted Upland Disposal

			Sample ID	18PSBH-D3ZSE	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU3Z	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 10:44	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-6	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					
350.1	mg/kg	Ammonia (un-ionized)		51 [30] J,B.QL	43 [26] J,B.QL	54 [32] J,B.QL	51 [30] J,B.QL	49 [28] J,B.QL
6020A	mg/kg	Antimony	4.6	0.12 [0.18] J	0.14 [0.13]	0.24 [0.14]	0.21 [0.14]	0.17 [0.13]
6020A	mg/kg	Arsenic	0.2	**1.9 [0.36]**	**3.1 [0.27]**	**5.7 [0.28]**	**6.4 [0.28]**	**3.6 [0.25]**
6020A	mg/kg	Cadmium	9.1	0.13 [0.18] J	0.14 [0.13] J	0.16 [0.14] J	0.14 [0.14] J	0.10 [0.13] J
6020A	mg/kg	Chromium	100000	22 [0.23]	25 [0.17]	39 [0.17]	42 [0.17]	27 [0.16]
6020A	mg/kg	Copper	370	9.1 [0.54]	19 [0.40]	39 [0.42]	44 [0.42]	21 [0.38]
6020A	mg/kg	Lead	400	1.7 [0.17]	2.9 [0.13]	4.4 [0.13]	5.2 [0.13]	3.6 [0.12]
6020A	mg/kg	Nickel	340	14 [0.45]	20 [0.34]	37 [0.35]	39 [0.35]	19 [0.31]
6020A	mg/kg	Selenium	6.9	0.29 [0.91] J	0.42 [0.67] J	0.72 [0.69]	0.81 [0.70]	0.49 [0.63] J
6020A	mg/kg	Silver	11	ND [0.045]	0.045 [0.034] J	0.11 [0.035] J	0.13 [0.035] J	0.063 [0.031] J
6020A	mg/kg	Zinc	4900	29 [4.5]	34 [3.4]	63 [3.5]	75 [3.5]	39 [3.1]
7471A	mg/kg	Mercury	0.36	ND [0.017]	0.064 [0.013]	0.017 [0.015] J	0.025 [0.014]	ND [0.014]
8081A	mg/kg	4,4'-DDD	0.49	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	4,4'-DDE	0.72	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	4,4'-DDT	5.1	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Aldrin	0.0099	ND [0.00048]	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	alpha-BHC	0.0029	ND [0.00048]	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	alpha-Chlordane	0.18	ND [0.0018]	ND [0.005]	ND [0.0016]	ND [0.0017]	ND [0.0048]
8081A	mg/kg	beta-BHC	0.01	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	delta-BHC	NA	ND [0.00091] QN	ND [0.0025] QN	ND [0.00078] QN	ND [0.00083] QN	ND [0.0024] QN
8081A	mg/kg	Dieldrin	0.0047	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endosulfan I	9.3	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endosulfan II	9.3	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endosulfan sulfate	9.3	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endrin	0.61	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Endrin aldehyde	NA	ND [0.018]	ND [0.05]	ND [0.016]	ND [0.017]	ND [0.048]
8081A	mg/kg	Endrin ketone	NA	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	gamma-BHC (Lindane)	0.016	ND [0.00048]	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	gamma-Chlordane	0.18	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Heptachlor	0.0076	ND [0.00048]	ND [0.0013]	ND [0.00041]	ND [0.00045]	ND [0.0013]
8081A	mg/kg	Heptachlor Epoxide	0.0019	ND [0.00091]	**ND [0.0025]**	ND [0.00078]	ND [0.00083]	**ND [0.0024]**
8081A	mg/kg	Methoxychlor	13	ND [0.00091]	ND [0.0025]	ND [0.00078]	ND [0.00083]	ND [0.0024]
8081A	mg/kg	Toxaphene	0.72	ND [0.097]	ND [0.27]	ND [0.083]	ND [0.089]	ND [0.26]
8082	mg/kg	PCB-1016 (Aroclor 1016)	1	ND [0.018]	ND [0.017]	ND [0.017]	ND [0.017]	ND [0.016]
8082	mg/kg	PCB-1221 (Aroclor 1221)	1	ND [0.012]	ND [0.011]	ND [0.011]	ND [0.011]	ND [0.011]
8082	mg/kg	PCB-1232 (Aroclor 1232)	1	ND [0.012]	ND [0.011]	ND [0.011]	ND [0.011]	ND [0.011]

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D3ZSE	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU3Z	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 10:44	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-6	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					
8082	mg/kg	PCB-1242 (Aroclor 1242)	1	ND [0.0071]	ND [0.0067]	ND [0.0066]	ND [0.0067]	ND [0.0066]
8082	mg/kg	PCB-1248 (Aroclor 1248)	1	ND [0.0071]	ND [0.0067]	ND [0.0066]	ND [0.0067]	ND [0.0066]
8082	mg/kg	PCB-1254 (Aroclor 1254)	1	ND [0.012]	ND [0.011]	ND [0.011]	ND [0.011]	ND [0.011]
8082	mg/kg	PCB-1260 (Aroclor 1260)	1	ND [0.018]	ND [0.017]	ND [0.017]	ND [0.017]	ND [0.016]
8260B	mg/kg	1,1,1-Trichloroethane	32	ND [0.008]	ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	1,1-Dichloroethane	0.092	ND [0.008]	ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	1,1-Dichloropropene	NA	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,2,3-Trichlorobenzene	0.15	0.033 [0.024] B	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	1,2,3-Trichloropropane	0.000031	**ND [0.024]**	**ND [0.022]**	**ND [0.021]**	**ND [0.024]**	**ND [0.016]**
8260B	mg/kg	1,2,4-Trichlorobenzene	0.082	0.019 [0.04] J,B	ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	1,2,4-Trimethylbenzene	0.16	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,2-Dibromo-3-chloropropane	NA	ND [0.16] QN	ND [0.15] QN	ND [0.14] QN	ND [0.16] QN	ND [0.11] QN
8260B	mg/kg	1,2-Dichlorobenzene	2.4	ND [0.008]	ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	1,2-Dichloropropane	0.016	ND [0.0077]	ND [0.0071]	ND [0.0067]	ND [0.0076]	ND [0.0051]
8260B	mg/kg	1,3,5-Trimethylbenzene	1.3	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,3-Dichlorobenzene	2.3	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	1,3-Dichloropropane	NA	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	2,2-Dichloropropane	NA	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	2-Butanone	15	ND [0.4]	ND [0.37]	ND [0.35]	ND [0.39]	ND [0.27]
8260B	mg/kg	2-Chlorotoluene	NA	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	4-Chlorotoluene	NA	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	4-Isopropyltoluene	NA	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	4-Methyl-2-pentanone	18	ND [0.04]	ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	Acetone	38	ND [0.4]	ND [0.37]	ND [0.35]	ND [0.39]	ND [0.27]
8260B	mg/kg	Bromobenzene	0.36	ND [0.04]	ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	Bromochloromethane	NA	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Carbon disulfide	2.9	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Carbon tetrachloride	0.021	ND [0.008]	ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	Chlorobenzene	0.46	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Chloroethane	72	ND [0.04]	ND [0.037]	ND [0.035]	ND [0.039]	ND [0.027]
8260B	mg/kg	Chloromethane	0.61	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	cis-1,2-Dichloroethene	0.12	ND [0.008]	ND [0.0074]	ND [0.0069]	ND [0.0079]	ND [0.0053]
8260B	mg/kg	Dichlorodifluoromethane	3.9	ND [0.08]	ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8260B	mg/kg	Ethylbenzene	0.13	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Isopropylbenzene	5.6	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Methylene chloride	0.33	ND [0.16]	ND [0.15]	ND [0.14]	ND [0.16]	ND [0.11]
8260B	mg/kg	Methyl-tert-butyl ether (MTBE)	0.4	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	n-Butylbenzene	20	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	n-Propylbenzene	9.1	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)

[ ] - Laboratory LOD

Solid shade indicates screening value exceedance

Data Flags are defined at the end of the table

			Sample ID	18PSBH-D3ZSE	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU3Z	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 10:44	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-6	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					
8260B	mg/kg	o-Xylene	1.5	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	sec-Butylbenzene	28	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Styrene	10	ND [0.014]	0.0056 [0.013] J	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	tert-Butylbenzene	11	ND [0.014]	ND [0.013]	ND [0.012]	ND [0.014]	ND [0.0093]
8260B	mg/kg	Toluene	6.7	ND [0.08]	ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8260B	mg/kg	trans-1,2-Dichloroethene	1.3	ND [0.024]	ND [0.022]	ND [0.021]	ND [0.024]	ND [0.016]
8260B	mg/kg	Trichlorofluoromethane	41	ND [0.08]	ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8260B	mg/kg	Xylene, Isomers m & p	1.5	ND [0.08]	ND [0.074]	ND [0.069]	ND [0.079]	ND [0.053]
8270D	mg/kg	1,2,4-Trichlorobenzene	0.082	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	1,2-Dichlorobenzene	2.4	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	1,4-Dichlorobenzene	0.037	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	2,4-Dimethylphenol	3.2	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	2-Methylnaphthalene	1.3	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	2-Methylphenol (o-Cresol)	6.2	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Acenaphthene	37	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Acenaphthylene	18	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Anthracene	390	ND [0.003] QL	0.014 [0.015] J	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Benzo(a)anthracene	0.28	ND [0.003] QL	0.029 [0.015] J	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Benzo(a)pyrene	0.17	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Benzo(b)fluoranthene	1.7	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Benzo(g,h,i)perylene	1900	ND [0.03] QL	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	Benzo(k)fluoranthene	17	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Benzyl alcohol	5.7	ND [0.061] QL	ND [0.29]	ND [0.055] QL	ND [0.058] QL	ND [0.28] QL
8270D	mg/kg	Benzyl butyl phthalate	16	ND [0.03] QL	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	bis-(2-Ethylhexyl)phthalate	88	0.025 [0.061] J,QL,B	ND [0.29]	0.031 [0.055] J,QL,B	0.034 [0.058] J,QL,B	ND [0.28] QL
8270D	mg/kg	Chrysene	82	ND [0.003] QL	0.041 [0.015] J	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Dibenzo(a,h)anthracene	0.17	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Dibenzofuran	0.97	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Diethyl phthalate	60	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Dimethyl phthalate	48	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Di-n-butyl phthalate	16	ND [0.03] QL	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	Di-n-octyl phthalate	370	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Fluoranthene	590	ND [0.003] QL	0.056 [0.015] J,QH	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Fluorene	36	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Hexachlorobenzene	0.0082	**ND [0.03] QL**	**ND [0.15]**	**ND [0.028] QL**	**ND [0.029] QL**	**ND [0.14] QL**
8270D	mg/kg	Hexachlorobutadiene	0.02	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	Indeno(1,2,3-cd)pyrene	1.7	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Naphthalene	0.038	ND [0.003] QL	ND [0.015]	ND [0.0028] QL	ND [0.0029] QL	ND [0.014] QL
8270D	mg/kg	n-Nitrosodiphenylamine	4.6	ND [0.0061] QL	ND [0.029]	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)

[ ] - Laboratory LOD

Solid shade indicates screening value exceedance

Data Flags are defined at the end of the table

Petersburg Harbor Data Compared to ADEC Criteria for Unrestricted Upland Disposal

			Sample ID	18PSBH-D3ZSE	18PSBH-D4PSE	18PSBH-D5PSE	18PSBH-D5ZSE	18PSBH-D6PSE
			Location ID	DMMU3Z	DMMU4P	DMMU5P	DMMU5Z	DMMU6P
			Collection Date	04/10/2018 10:44	04/10/2018 09:58	04/10/2018 09:00	04/10/2018 09:50	04/10/2018 10:35
			Lab Sample ID	580-76580-6	580-76580-7	580-76580-8	580-76580-9	580-76580-10
			Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Method	**Units**	**Analyte**	**ADEC**					
8270D	mg/kg	Pentachlorophenol	0.0043	**ND [0.061] QL**	**ND [0.29]**	**ND [0.055] QL**	**ND [0.058] QL**	**ND [0.28] QL**
8270D	mg/kg	Phenanthrene	39	ND [0.003] QL	0.025 [0.015] J	0.0019 [0.0028] J,QL	0.0021 [0.0029] J,QL	ND [0.014] QL
8270D	mg/kg	Phenol	29	ND [0.03] QL	ND [0.15]	ND [0.028] QL	ND [0.029] QL	ND [0.14] QL
8270D	mg/kg	Pyrene	87	ND [0.0061] QL	0.02 [0.029] J,QH	ND [0.0055] QL	ND [0.0058] QL	ND [0.028] QL
8270D	mg/kg	Benzoic acid	200	ND [0.82]	ND [0.77]	ND [0.74]	ND [0.77]	ND [0.75]
9060A	mg/kg	Total Organic Carbon (TOC)		11000 [100]	4800 [100]	3900 [100]	4700 [100]	4300 [100]
AK101	mg/kg	Gasoline Range Organics (C6-C10)	260	ND [3.7]	ND [3.4]	ND [3.3]	ND [3.7]	ND [2.5]
AK102	mg/kg	Diesel Range Organics (C10-C25)	230	ND [17]	ND [18]	ND [16]	ND [16]	ND [15]
AK103	mg/kg	Residual Range Organics (C25-C36)	8300	ND [34]	ND [35]	ND [32]	ND [32]	ND [30]
D2216	PERCENT	Percent Moisture		17.7 [0.1]	15.9 [0.1]	9.8 [0.1]	15.0 [0.1]	9.2 [0.1]
D2216	PERCENT	Solids, Percent		82.3 [0.1]	84.1 [0.1]	90.2 [0.1]	85.0 [0.1]	90.8 [0.1]
Organic_Tin	mg/kg	Butyltin		ND [0.021]	ND [0.019]	ND [0.019]	ND [0.02]	ND [0.019]
Organic_Tin	mg/kg	Dibutyltin		ND [0.0089]	ND [0.0079]	ND [0.008]	ND [0.0084]	ND [0.0082]
Organic_Tin	mg/kg	Monobutyltin		ND [0.013]	ND [0.012]	ND [0.012]	ND [0.012]	ND [0.012]
Organic_Tin	mg/kg	Tributyltin	0.68	ND [0.01] QN	ND [0.0092] QN	ND [0.0093] QN	ND [0.0098] QN	ND [0.0095] QN
160.4	PERCENT	Total Volatile Solids		R	R	R	R	R

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**ADEC**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
350.1	mg/kg	Ammonia (un-ionized)		34 [22] J,B.QL	
6020A	mg/kg	Antimony	4.6	0.15 [0.12]	
6020A	mg/kg	Arsenic	0.2	**3.7 [0.23]**	
6020A	mg/kg	Cadmium	9.1	0.072 [0.12] J	
6020A	mg/kg	Chromium	100000	28 [0.15]	
6020A	mg/kg	Copper	370	23 [0.35]	
6020A	mg/kg	Lead	400	3.0 [0.11]	
6020A	mg/kg	Nickel	340	21 [0.29]	
6020A	mg/kg	Selenium	6.9	0.54 [0.59] J	
6020A	mg/kg	Silver	11	0.065 [0.029] J	
6020A	mg/kg	Zinc	4900	40 [2.9]	
7471A	mg/kg	Mercury	0.36	0.012 [0.012] J	
8081A	mg/kg	4,4'-DDD	0.49	ND [0.0024]	
8081A	mg/kg	4,4'-DDE	0.72	ND [0.0024]	
8081A	mg/kg	4,4'-DDT	5.1	ND [0.0024]	
8081A	mg/kg	Aldrin	0.0099	ND [0.0013]	
8081A	mg/kg	alpha-BHC	0.0029	ND [0.0013]	
8081A	mg/kg	alpha-Chlordane	0.18	ND [0.0048]	
8081A	mg/kg	beta-BHC	0.01	ND [0.0024]	
8081A	mg/kg	delta-BHC	NA	ND [0.0024] QN	
8081A	mg/kg	Dieldrin	0.0047	ND [0.0024]	
8081A	mg/kg	Endosulfan I	9.3	ND [0.0024]	
8081A	mg/kg	Endosulfan II	9.3	ND [0.0024]	
8081A	mg/kg	Endosulfan sulfate	9.3	ND [0.0024]	
8081A	mg/kg	Endrin	0.61	ND [0.0024]	
8081A	mg/kg	Endrin aldehyde	NA	ND [0.048]	
8081A	mg/kg	Endrin ketone	NA	ND [0.0024]	
8081A	mg/kg	gamma-BHC (Lindane)	0.016	ND [0.0013]	
8081A	mg/kg	gamma-Chlordane	0.18	ND [0.0024]	
8081A	mg/kg	Heptachlor	0.0076	ND [0.0013]	
8081A	mg/kg	Heptachlor Epoxide	0.0019	**ND [0.0024]**	
8081A	mg/kg	Methoxychlor	13	ND [0.0024]	
8081A	mg/kg	Toxaphene	0.72	ND [0.26]	
8082	mg/kg	PCB-1016 (Aroclor 1016)	1	ND [0.016]	
8082	mg/kg	PCB-1221 (Aroclor 1221)	1	ND [0.011]	
8082	mg/kg	PCB-1232 (Aroclor 1232)	1	ND [0.011]	

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**ADEC**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
8082	mg/kg	PCB-1242 (Aroclor 1242)	1	ND [0.0065]	
8082	mg/kg	PCB-1248 (Aroclor 1248)	1	ND [0.0065]	
8082	mg/kg	PCB-1254 (Aroclor 1254)	1	ND [0.011]	
8082	mg/kg	PCB-1260 (Aroclor 1260)	1	ND [0.016]	
8260B	mg/kg	1,1,1-Trichloroethane	32	ND [0.0061]	ND [0.01]
8260B	mg/kg	1,1-Dichloroethane	0.092	ND [0.0061]	ND [0.01]
8260B	mg/kg	1,1-Dichloropropene	NA	ND [0.011]	ND [0.018]
8260B	mg/kg	1,2,3-Trichlorobenzene	0.15	ND [0.018]	0.071 [0.03]
8260B	mg/kg	1,2,3-Trichloropropane	0.000031	**ND [0.018]**	**ND [0.03]**
8260B	mg/kg	1,2,4-Trichlorobenzene	0.082	ND [0.03]	0.043 [0.05] J
8260B	mg/kg	1,2,4-Trimethylbenzene	0.16	ND [0.011]	ND [0.018]
8260B	mg/kg	1,2-Dibromo-3-chloropropane	NA	ND [0.12] QN	ND [0.2] QN
8260B	mg/kg	1,2-Dichlorobenzene	2.4	ND [0.0061]	0.0059 [0.01] J
8260B	mg/kg	1,2-Dichloropropane	0.016	ND [0.0058]	ND [0.0096]
8260B	mg/kg	1,3,5-Trimethylbenzene	1.3	ND [0.011]	ND [0.018]
8260B	mg/kg	1,3-Dichlorobenzene	2.3	ND [0.011]	ND [0.018]
8260B	mg/kg	1,3-Dichloropropane	NA	ND [0.011]	ND [0.018]
8260B	mg/kg	2,2-Dichloropropane	NA	ND [0.018]	ND [0.03]
8260B	mg/kg	2-Butanone	15	ND [0.3]	ND [0.5]
8260B	mg/kg	2-Chlorotoluene	NA	ND [0.011]	ND [0.018]
8260B	mg/kg	4-Chlorotoluene	NA	ND [0.018]	ND [0.03]
8260B	mg/kg	4-Isopropyltoluene	NA	ND [0.011]	0.0084 [0.018] J
8260B	mg/kg	4-Methyl-2-pentanone	18	ND [0.03]	ND [0.05]
8260B	mg/kg	Acetone	38	ND [0.3]	ND [0.5]
8260B	mg/kg	Bromobenzene	0.36	ND [0.03]	ND [0.05]
8260B	mg/kg	Bromochloromethane	NA	ND [0.011]	ND [0.018]
8260B	mg/kg	Carbon disulfide	2.9	0.012 [0.018] J	ND [0.03]
8260B	mg/kg	Carbon tetrachloride	0.021	ND [0.0061]	ND [0.01]
8260B	mg/kg	Chlorobenzene	0.46	ND [0.018]	ND [0.03]
8260B	mg/kg	Chloroethane	72	ND [0.03]	ND [0.05]
8260B	mg/kg	Chloromethane	0.61	ND [0.018]	ND [0.03]
8260B	mg/kg	cis-1,2-Dichloroethene	0.12	ND [0.0061]	ND [0.01]
8260B	mg/kg	Dichlorodifluoromethane	3.9	ND [0.061]	ND [0.1]
8260B	mg/kg	Ethylbenzene	0.13	ND [0.018]	ND [0.03]
8260B	mg/kg	Isopropylbenzene	5.6	ND [0.011]	ND [0.018]
8260B	mg/kg	Methylene chloride	0.33	ND [0.12]	ND [0.2]
8260B	mg/kg	Methyl-tert-butyl ether (MTBE)	0.4	ND [0.011]	ND [0.018]
8260B	mg/kg	n-Butylbenzene	20	ND [0.018]	0.014 [0.03] J
8260B	mg/kg	n-Propylbenzene	9.1	ND [0.011]	ND [0.018]

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**ADEC**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
8260B	mg/kg	o-Xylene	1.5	ND [0.018]	ND [0.03]
8260B	mg/kg	sec-Butylbenzene	28	ND [0.011]	0.0084 [0.018] J
8260B	mg/kg	Styrene	10	ND [0.011] QN	ND [0.018]
8260B	mg/kg	tert-Butylbenzene	11	ND [0.011]	ND [0.018]
8260B	mg/kg	Toluene	6.7	ND [0.061]	ND [0.1]
8260B	mg/kg	trans-1,2-Dichloroethene	1.3	ND [0.018]	ND [0.03]
8260B	mg/kg	Trichlorofluoromethane	41	ND [0.061]	ND [0.1]
8260B	mg/kg	Xylene, Isomers m & p	1.5	ND [0.061]	ND [0.1]
8270D	mg/kg	1,2,4-Trichlorobenzene	0.082	ND [0.014] QL	
8270D	mg/kg	1,2-Dichlorobenzene	2.4	ND [0.014] QL	
8270D	mg/kg	1,4-Dichlorobenzene	0.037	ND [0.014] QL	
8270D	mg/kg	2,4-Dimethylphenol	3.2	ND [0.028] QL	
8270D	mg/kg	2-Methylnaphthalene	1.3	ND [0.014] QL	
8270D	mg/kg	2-Methylphenol (o-Cresol)	6.2	ND [0.014] QL	
8270D	mg/kg	Acenaphthene	37	ND [0.014] QL	
8270D	mg/kg	Acenaphthylene	18	ND [0.014] QL	
8270D	mg/kg	Anthracene	390	ND [0.014] QL	
8270D	mg/kg	Benzo(a)anthracene	0.28	ND [0.014] QL	
8270D	mg/kg	Benzo(a)pyrene	0.17	ND [0.028] QL	
8270D	mg/kg	Benzo(b)fluoranthene	1.7	ND [0.014] QL	
8270D	mg/kg	Benzo(g,h,i)perylene	1900	ND [0.14] QL	
8270D	mg/kg	Benzo(k)fluoranthene	17	ND [0.028] QL	
8270D	mg/kg	Benzyl alcohol	5.7	ND [0.28] QL	
8270D	mg/kg	Benzyl butyl phthalate	16	ND [0.14] QL	
8270D	mg/kg	bis-(2-Ethylhexyl)phthalate	88	ND [0.28] QL	
8270D	mg/kg	Chrysene	82	ND [0.014] QL	
8270D	mg/kg	Dibenzo(a,h)anthracene	0.17	ND [0.028] QL	
8270D	mg/kg	Dibenzofuran	0.97	ND [0.014] QL	
8270D	mg/kg	Diethyl phthalate	60	ND [0.014] QL	
8270D	mg/kg	Dimethyl phthalate	48	ND [0.014] QL	
8270D	mg/kg	Di-n-butyl phthalate	16	ND [0.14] QL	
8270D	mg/kg	Di-n-octyl phthalate	370	ND [0.028] QL	
8270D	mg/kg	Fluoranthene	590	ND [0.014] QL	
8270D	mg/kg	Fluorene	36	ND [0.014] QL	
8270D	mg/kg	Hexachlorobenzene	0.0082	**ND [0.14] QL**	
8270D	mg/kg	Hexachlorobutadiene	0.02	ND [0.014] QL	
8270D	mg/kg	Indeno(1,2,3-cd)pyrene	1.7	ND [0.028] QL	
8270D	mg/kg	Naphthalene	0.038	ND [0.014] QL	
8270D	mg/kg	n-Nitrosodiphenylamine	4.6	ND [0.028] QL	

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

			Sample ID	18PSBH-D7PSE	18PSBH-1001SE
			Location ID	DMMU7P	TRIP
			Collection Date	04/10/2018 11:00	04/10/2018 18:00
			Lab Sample ID	580-76580-11	580-76580-12
			Matrix	Sediment	Trip Blank
Method	**Units**	**Analyte**	**ADEC**	**Dupe of -D3PSE (VOCs) and -D6PSE**	**Trip Blank**
8270D	mg/kg	Pentachlorophenol	0.0043	**ND [0.28] QL**	
8270D	mg/kg	Phenanthrene	39	ND [0.014] QL	
8270D	mg/kg	Phenol	29	ND [0.14] QL	
8270D	mg/kg	Pyrene	87	ND [0.028] QL	
8270D	mg/kg	Benzoic acid	200	ND [0.74]	
9060A	mg/kg	Total Organic Carbon (TOC)		3100 [100]	
AK101	mg/kg	Gasoline Range Organics (C6-C10)	260	ND [2.8]	ND [4.6]
AK102	mg/kg	Diesel Range Organics (C10-C25)	230	ND [16]	
AK103	mg/kg	Residual Range Organics (C25-C36)	8300	ND [32]	
D2216	PERCENT	Percent Moisture		10.0 [0.1]	
D2216	PERCENT	Solids, Percent		90.0 [0.1]	
Organic_Tin	mg/kg	Butyltin		ND [0.019]	
Organic_Tin	mg/kg	Dibutyltin		ND [0.0083]	
Organic_Tin	mg/kg	Monobutyltin		ND [0.012]	
Organic_Tin	mg/kg	Tributyltin	0.68	ND [0.0097] QN	

160.4	PERCENT	Total Volatile Solids		R

ADEC - 18 AAC 75 Method 2 Table B1/B2 Cleanup Levels for soil (Lowest Value)
[ ] - Laboratory LOD
Solid shade indicates screening value exceedance
Data Flags are defined at the end of the table

Data Flag Explanations

ND - Analyte is not detected; [ ] - Laboratory Limit of Detection (LOD)

	Analyte LOD is greater than the screening criteria
	Analyte was detected at a concentration greater than the screening criteria.
Qualifier	**Definition**
J	Analyte result is considered an estimated value because the level is below the laboratory LOQ but above the DL
B	Analyte result is considered a high estimated value due to contamination present in the method blank.
QH, QL, QN	Analyte result is considered an estimated value biased (high, low, uncertain) due to a quality control failure
R	Analyte result is rejected - result is not usable.

Flags may be combined when more than one quality deficiency exists

APPENDIX C
ADEC Data Quality Checklists

Laboratory Data Review Checklist

Completed By:

Jake Sweet

Title:

USACE Chemist

Date:

6/2/18

CS Report Name:

Petersburg South Boat Harbor Chemical Data Report

Report Date:

6/2/18

Consultant Firm:

USACE

Laboratory Name:

Test America Tacoma

Laboratory Report Number:

580-76580-1

ADEC File Number:

Hazard Identification Number:

580-76580-1

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ◉ Yes ○ No Comments:

   All project samples were shipped to Test America in Tacoma Washington, where all analysis in this SDG was performed. 8270 analysis was shipped to Test America in Sacramento and is reported under SDG 580-76580-2. TVS analysis was shipped to Test America Denver and is reported under SDG 580-76520-3.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ◉ Yes ○ No Comments:

   All labs are ELAP certified for the methods employed.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   Cooler "Silver" was received in Tacoma with a temperature of 1.1 °C. Cooler "King" was received in Tacoma with a temperature of 1.4 °C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   All containers were received in good condition, properly preserved and on ice. There were no discrepancies noted.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

◉ Yes ○ No Comments:

Not applicable. There were no discrepancies noted.

e. Data quality or usability affected?

Comments:

None.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

◉ Yes ○ No Comments:

During storage at the laboratory and prior to analysis, the freezer which held the all project samples undergoing SVOC (8270) analysis exceeded temperature control limits at -8C (control limit of <-10) for up to 36 hours. The associated laboratory control sample (LCS) is in control, indicating that the samples were not affected by the temperature deficiency.

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not discuss data usability. See this checklist and the project CDQR for data usability discussion.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

c. All soils reported on a dry weight basis?

◉ Yes ○ No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

The following analytes had LODs greater than the associated screening criteria in at least one sample: Arsenic, alpha-BHC, Dieldrin, Heptachlor Epoxide, 1,2,3-Trichloropropane and 1,2,4-Trichlorobenzene.

e. Data quality or usability affected?

◉ Yes ○ No Comments:

This data cannot be used to disprove the presence of these analytes at a concentration below screening criteria. See the data tables for all affected results. All arsenic results were above the LOQ and are not impacted.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

○ Yes ◉ No Comments:

Ammonia was detected in a project method blank at a concentration of 46.9 mg/kg.

iii. If above LOQ, what samples are affected?

Comments:

All samples had ammonia results with a similar concentration (within 10X) of this compounds.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

All impacted results are flagged “B”.

v. Data quality or usability affected?

Comments:

Usability is not impacted as there is no screening criteria for ammonia.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No Comments:

All LCS/LCSD were analyzed at the proper frequency.

GRO batch 580-271842 did not have an MS/MSD due to laboratory error.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

○ Yes ◉ No Comments:

All LCS and LSCD recoveries were within method limits.

The MS or MSD recovery for several analyses were outside control limits due to sample dilution and are not further discussed.

The MS recovery for ammonia was slightly below acceptance criteria. All ammonia results are potentially biased low and are flagged "QL". There is no impact to data usability as there is no screening criteria for ammonia.

The MS or MSD recovery was above control limits for the following compounds: Chloromethane, Dichlorodifluoromethane, and Dichlorodifluoromethane. There is no impact to data as all sample results for these compounds were ND.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

All LCS and LSCD RPDs were within method limits.

1,2-Dibromo-3-chloropropane, delta-BHC and Tributyltin had high MS/MSD RPDs.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

All 1,2-Dibromo-3-chloropropane, delta-BHC and Tributyltin results have a potential unknown bias and are flagged "QN".

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

Impacted results are potentially biased high and are flagged "QN".

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

There is no impact to data usability as all impacted results either have no screening criteria, or are ND with a LOD far below screening criteria.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

◉ Yes ○ No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ◉ No Comments:

Several surrogates were recovered outside of criteria due to sample dilution and are not further discussed. The GRO surrogate a,a,a-trifluorotoluene was above acceptance criteria in samples –D3PSE and –D4PSE.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

No flagging required. Impacted results are biased high and ND.

iv. Data quality or usability affected?

Comments:

None.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

◉ Yes ○ No Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☒ Yes ☐ No Comments:

All volatile samples were transported in cooler "Silver", which also held the project trip blank.

iii. All results less than LOQ?

☐ Yes ☒ No Comments:

The following compounds were found in the project trip blank: 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 4-Isopropyltoluene, n-Butylbenzene, and sec-Butylbenzene.

iv. If above LOQ, what samples are affected?

Comments:

The majority of these analytes were not detected in any project sample. The exception is 1,2,4-trichlorobenzene detected at a similar (within 10X) amount in sample –D3ZE. This result is flagged "B".

v. Data quality or usability affected?

Comments:

Data usability is not impacted as the affected result is biased high and is below the screening criteria.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No Comments:

Due to project sediment recoveries, the VOC duplicate information came from a different sample than the duplicate information from the rest of the analyses. VOC duplicate information is from duplicate pair –D7PSE and –D3PSE. All other duplicate information is from sample pair –D7PSE and –D6PSE. There was one duplicate for 10 project samples, meeting criteria.

ii. Submitted blind to lab?

☒ Yes ☐ No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

○ Yes ◉ No Comments:

The VOC Styrene had an RPD (53%) marginally above acceptance criteria.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Impacted results in the sample pairs are flagged "QN". Data usability is not impacted as all results were far below screening criteria.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

○ Yes ○ No ◉ Not Applicable

Not applicable, single use equipment used.

i. All results less than LOQ?

◉ Yes ○ No Comments:

Not applicable.

ii. If above LOQ, what samples are affected?

Comments:

Not applicable.

iii. Data quality or usability affected?

Comments:

Not applicable.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

See flag definitions in the data tables.

Laboratory Data Review Checklist

Completed By:

Jake Sweet

Title:

USACE Chemist

Date:

6/2/2018

CS Report Name:

Petersburg South Boat Harbor Chemical Data Report

Report Date:

6/2/18

Consultant Firm:

USACE

Laboratory Name:

Test America Tacoma

Laboratory Report Number:

580-76580-2

ADEC File Number:

Hazard Identification Number:

580-76580-2

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ◉ Yes ○ No Comments:

   All project samples were shipped to Test America in Tacoma Washington, where all analysis was performed.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ◉ Yes ○ No Comments:

   This laboratory is ELAP certified for the method employed.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   Cooler "Silver" was received in Tacoma with a temperature of 1.1 °C. Cooler "King" was received in Tacoma with a temperature of 1.4 °C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   All containers were received in good condition, properly preserved and on ice. There were no discrepancies noted.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

◉ Yes ○ No Comments:

Not applicable. There were no discrepancies noted.

e. Data quality or usability affected?

Comments:

None.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

◉ Yes ○ No Comments:

During storage at the laboratory and prior to analysis, the freezer which held the all project samples exceeded temperature control limits at -8C (control limit of <-10) for up to 36 hours. The associated laboratory control sample (LCS) is in control, indicating that the samples were not affected by the temperature deficiency.

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not discuss data usability. See this checklist and the project CDQR for data usability discussion.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

c. All soils reported on a dry weight basis?

☒ Yes ☐ No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes ☐ No Comments:

The following analytes had LODs greater than the associated screening criteria in at least one sample: 1,4-Dichlorobenzene, Hexachlorobenzene, Naphthalene and Pentachlorophenol.

e. Data quality or usability affected?

☒ Yes ☐ No Comments:

This data cannot be used to disprove the presence of these analytes at a concentration below screening criteria. See the data tables for all affected results.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes ☐ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

☐ Yes ☒ No Comments:

Bis-(2,ethylhexyl)phthalate was detected in a project method blank at a concentration of 0.0332 mg/kg.

iii. If above LOQ, what samples are affected?

Comments:

Samples –D2PSE, -D2ZSE, -D3ZSE, -D5PSE, and -D5ZSE all had a similar concentration (within 10X) of this compounds.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No Comments:

All impacted results are flagged “B”.

v. Data quality or usability affected?

Comments:

Usability is not impacted as all results are far below any screening criteria.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No Comments:

All LCS/LCSD and MS/MSDs were analyzed at the proper frequency.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

Not applicable, only 8270 analysis reported in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

○ Yes ◉ No Comments:

All LCS and LSCD recoveries were within method limits.

The recovery in the MS for Bis-(2,ethylhexyl)phthalate was high. Due to sample dilution, no data are qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

All LCS and LSCD RPDs were within method limits.

Both fluoranthene and pyrene had high MS/MSD RPDs.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Detected fluoranthene and pyrene results in samples –D1PSE, -D1ZSE, -D3PSE, -D4PSE, as well as pyrene result in –D2ZSE are impacted.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

Impacted results are potentially biased high and are flagged “QH.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

There is no impact to data usability as all impacted results are biased high and are far below screening criteria.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

◉ Yes ○ No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ◉ No Comments:

At least one surrogate was recovered below laboratory limits in the following samples: -D2ZSE, -D3ZSE, -D5PSE, -D5ZSE, -D6PSE and -D7PSE.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

All SVOC data from these samples are potentially biased low and are flagged "QL" (or "QN" if previously flagged).

iv. Data quality or usability affected?

Comments:

Data usability is not impacted for most results as they are ND with a LOD far below screening criteria. The exception is for hexachlorobutadiene results in -6PZE and –D7PSE. These results are ND with a LOD close to the screening criteria. These results should be used with caution.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

◉ Yes ○ No Comments:

Not applicable to this SDG. There were no volatiles analysis performed.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

◉ Yes ○ No Comments:

All volatile samples were transported in cooler "Silver", which also held the project trip blank.

iii. All results less than LOQ?

○ Yes ◉ No Comments:

No volatiles analysis in this SDG.

iv. If above LOQ, what samples are affected?

Comments:

Not applicable.

v. Data quality or usability affected?

Comments:

Not applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No Comments:

Due to project sediment recoveries, the VOC duplicate information came from a different sample than the duplicate information from the rest of the analyses. VOC duplicate information is from duplicate pair –D7PSE and –D3PSE. All other duplicate information is from sample pair –D7PSE and –D6PSE. There was one duplicate for 10 project samples, meeting criteria.

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

◉ Yes ○ No Comments:

All RPDs are 0% as all results are ND with LOD that are identical.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

None, all RPDs are within criteria.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

○ Yes ○ No ◉ Not Applicable

All sampling equipment was single use.

i. All results less than LOQ?

◉ Yes ○ No Comments:

Not applicable.

ii. If above LOQ, what samples are affected?

Comments:

Not applicable.

iii. Data quality or usability affected?

Comments:

Not applicable.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

See flag definitions in the data tables.

Laboratory Data Review Checklist

Completed By:

Jake Sweet

Title:

USACE Chemist

Date:

6/2/2018

CS Report Name:

Petersburg South Boat Harbor Chemical Data Report

Report Date:

6/2/18

Consultant Firm:

USACE

Laboratory Name:

Test America Tacoma

Laboratory Report Number:

580-76580-3

ADEC File Number:

Hazard Identification Number:

580-76580-3

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ◉ Yes ○ No Comments:

   All project samples were shipped to Test America in Tacoma Washington, samples in this SDG were transferred to Test America in Denver where TVS analysis was performed. ADEC CS do not approve laboratories for this method.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ◉ Yes ○ No Comments:

   This laboratory is ELAP certified for the TVS method employed.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   Cooler "Silver" was received in Tacoma with a temperature of 1.1 °C. Cooler "King" was received in Tacoma with a temperature of 1.4 °C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   All containers were received in good condition, properly preserved and on ice. There were no discrepancies noted.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

◉ Yes ○ No Comments:

Not applicable. There were no discrepancies noted.

e. Data quality or usability affected?

Comments:

None.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

◉ Yes ○ No Comments:

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not discuss data usability. See this checklist and the project CDQR for data usability discussion.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

○ Yes ◉ No Comments:

Due to laboratory failures, TVS analysis was not performed until 41 days after sample collection, meeting the required holding time of 7 days. As a result all TVS data is rejected and no further data review will be performed on this SDG.

c. All soils reported on a dry weight basis?

◉ Yes ○ No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

e. Data quality or usability affected?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

ii. All method blank results less than limit of quantitation (LOQ)?

○ Yes ◉ No Comments:

Not applicable, data is rejected for hold time issues.

iii. If above LOQ, what samples are affected?

Comments:

Not applicable, data is rejected for hold time issues.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

v. Data quality or usability affected?

Comments:

Not applicable, data is rejected for hold time issues.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, data is rejected for hold time issues.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, data is rejected for hold time issues.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ◉ No Comments:

Not applicable, data is rejected for hold time issues.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iv. Data quality or usability affected?

Comments:

Not applicable, data is rejected for hold time issues.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iii. All results less than LOQ?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iv. If above LOQ, what samples are affected?

Comments:

Not applicable, data is rejected for hold time issues.

v. Data quality or usability affected?

Comments:

Not applicable, data is rejected for hold time issues.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable, data is rejected for hold time issues.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

○ Yes ○ No ◉ Not Applicable

Not applicable, data is rejected for hold time issues.

i. All results less than LOQ?

◉ Yes ○ No Comments:

Not applicable, data is rejected for hold time issues.

ii. If above LOQ, what samples are affected?

Comments:

Not applicable.

iii. Data quality or usability affected?

Comments:

Not applicable.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

See flag definitions in the data tables.

APPENDIX D
Field Notebook

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CONTENTS

PAGE	REFERENCE	DATE

Harbor POC:
Edward Tagaban
907-772-4688

ROMAN
907-717-8089

Tommy ~~Kirkland~~ Kirklin

1 x 4oz 8270 LL
1 x 4oz 160.4
3 x 4oz 8081, 8082, AK102/103, metals, 9060, 350.1, TBT
1 x 4oz 6260/VOC

4/6/18

Travel to Petersburg. Arrive @ 1500.
Get vehicle check into hotel.

Pickup @ air cargo 1600 Buy
Supplies / sort glassware done @ 1900

4/7/18

0700 - Meet up at vessel "RB"
Captain Glenn Reed.
Deck hands { George Rice, Jordan Reed, Tori Diangelo }

Skiff - Ben

Drillers - Tommy Kirklin
Mike Kirklin

Geotech - Roman

Chemist - Sweet

0720 - Safety Meeting

4/7/18 - 45°F clear, calm, sunny.

Start on DMMU5

0810 - Setup on TB-014 (DMMU5)
0820 - Finished drive on TB-14

Sampler driven to 6' below mudline.

DMMU 5 VOC/GRO samples taken from TB-14

Z - 49.7g
P - 49.5g

0838 - Bagged TB-14 P (0-5') & Z (5-6') sampler depth measurements to be combined w/ TB-13 + TB-15 for DMMU5 clay w/ gravel

0840 - Setup on TB-15 ~10' of recovery
0910 - Bagged TB-15 P (0-4.7') + Z. (4.7-5.7') clay w gravel

Combine w TB-13 + TB-14

4/7/18 45°F clear, calm.

0940 - Setup on TB-13

0951 - Retrive @ TB-13
Sampler penetrated ~ 9'

1002 - Bagged TB-13 P (0-3')
TB-13 Z (3-4')
DMMU5 - clay/silt w. gravel

Start on DMMU 4

1036 setup on TB-12

Drive x2 only ~ 18" recovery. Very hard, collected Prism sample material (percentages)
1130 - Third recovery effort ~ 18" recovery.
will keep top 18" for P sample of TB-12 (NO Z COLLECTED)

VOC for DMMU4 collected for prism (55.0g soil)

NO Z Sample for this TB-12

4/7/18 50°F clear, breeze.

1242 - setup on TB-11
expect bottom to be hard will drive to refusal.
1st attempt ~6" penetration. Boat moving. try again.
Refusal @ 18". Bottom very hard. lots of clam shells, cobbles in sampler.

Collect prism sample from TB-4
NO Z sample

Sampler is gravel w/ cobbles.

1321 - Setup on TB-10 (Furthest into channel)

push & 2 - soft for 12" then refusal

recovery 12" of gravel/sand

retry 12" of gravel/sand before refusal

Collect PRISM from TB-10
NO Z Sample

DONE w DMMU 4

4/7/18 50°F clear, calm.

Start on DMMU 6 (Single boring)

1412 - Setup on TB-16. Single boring near creek mouth.

Drive @ 1426 - sampler driven 2' Below mud line before refusal.

recovered 20" of material. Bent spoon on coring device - Refusal.

Material is coarse sand w gravel.

VOC sample collected for DMMU 6
45.5g soil (P sample)
NO Z sample

4/8/18 32°F clear, calm

0715 - Same crew as 4/7/18

DMMU 2

0700 - Meet @ vessel "RB"

0725 - Setup on TB-05 (DMMU2)

0755 - Sample retrieved. Driven 0-3' below mud line.

Z sample collected 1.4-2.4' VOC 52.0g.

P sample collected 0-1.4' VOC 48.5g

may not be submitted based on TB-06 recovery.

Rest to be composited w TB-06.

0825 - Setup on TB-06 (DMMU2)

0840 - lost coring tube attached w/ chain to retrieve ∅ recovery. Try again.

0950 recover 2nd core @ 12" of penetration. Gravel w hard clay.

P sample interval collected 0-12"

No Z sample collected

DMMU 3

0940 - Setup on TB-07

1000 - 1st attempt. @ 8" very hard clay/gravel. Will try w 5' coring tube.

1028 - 2nd attempt - 8" sand/gravel.

collect VOC + PURE VOC *

57.7 + 57.8g

Label TB-07 + TB-20 P

4/8/18 40°F clear calm

1044 - Setup on TB-09
attempt to set up stand to guide coring rig. Can not assemble.
attempt boring w/ 5' core

1143 - Sample from TB-09 retrieved, ~6" of recovery. Sand/gravel.
cutting shoe is banged up.
collected material for P sample.

1353 - Drillers try to clean out guides on drill stand. They have to use brake cleaner to get guides to move freely. Work is being performed off of the RB on the harbor skiff, but there is a potential for VOC contamination

Gumout carb/choke cleaner.

wash everything thoroughly / Decon Equipment

4/8/18 45°F overcast, breeze

1445 - retrieve core after several tries
very hard bottom, likely native material
vibracore will not penetrate the bottom.

collected additional P sample material from TB-09
0-6" recovery on last push,

very hard/dense clay in bottom of sampler that coring device was unable to penetrate.

1507 - Setup on TB-08

1518 - retrieve TB-08 sample.

~3.5' of sample. will collect Z VOC + Z from bottom 6"

P sample 0-3.5'
Z sample 3.5-4'

VOC (DMMU 3 Z) 53.1g.

Sample is shells/gravel.

4/9/18 45°F Rain, fog, calm.

Onsite: Same as 4/7/18

0800 - arrive @ boat. Stand still not working. Head to check out hand boring spots while drill crew. works on stand

0930 - Stand fixed w/ new riser pipes. Head to TB-12 to attempt deeper boring

1010 - Setup on TB 12 for 2nd attempt. Try to get to 6' w/ stabilizer bars.

1020 - Bolts broke on stabilizer. recovered ~ 2.5' of material.

Very stiff clay w/ gravel.

not enough recovery. Outer borings are 4-6" gravel overlaying very hard clay w/ gravel.

will stop trying outer borings

4/9/18 45°F clearing. Calm

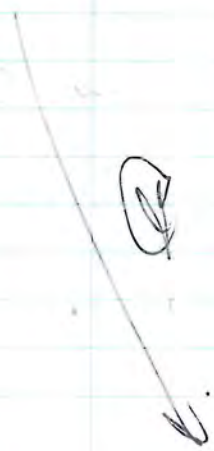
Move to TB-06 for retry

1120 - Setup on TB-06 (retry) using support w 5' tube,

1145 - recovered TB-06 increment ~ 2.5' of recovery

Collect Z increment 2-2.5'
Collect P increment 0-2'

1201 - done w/ coring. Head to dock to unload.



4/10/18 40°F Rain, calm

onsite: Sweet, Roman, Tommy + Mike Kirklin

0700 - meet @ Harbor for hand push sampling.

0730 - start push @ TB-01. very soft sediment. Easy to push. sample tube broke.

0735 - Retry. ~8" recovery. Sample tube broke. Material is fine grained black silt. Sulfur odor

0800 - repair sample tubes. Have to use PVC glue.
OATEY Clear Cleaner
OATEY Rain-R-Shine Medium bite PVC cement.
OATEY PVC Primer.

4/10/18 40°F overcast, calm.

0835 - Retry TB-01 w longer PVC tube.

0900 - Begin processing samples.

0900 ~~0944~~ sample # ~~D3PSE~~ D5PSE collected
prism sample DMMdB5

1 x 4oz GRO/VOC
5 x 4oz. DRO/RRO, Pest, PCB, TBT, metals, N, TVS, SVOC, TOC

0950 - Sample # D5ZSE collected
Z sample DMMdZ5
1 x 4oz GRO/VOC
5 x 4oz DRO/RRO, Pest, PCB, TBT, metals, N., TVS, SVOC, TOC

0958 - Sample # D4PSE collected
P sample DMMd4 (NO Z sample)

1 x 4oz GRO/VOC
5 x 4oz DRO/RRO, Pest, PCB, TBT, metals, N., TVS, SVOC, TOC

4/10/18 45°F clearing, calm.

1024 collect sample # D3PSE
DMMU3 Prism sample

1 x 4oz GRO/VOC
15 x 4oz DRO/RRO, ~~PAH~~, Pest, PCB, metals, N.
TVS, TOC, SVOC

* MS/MSD

VOC Duplicate only (Dupe of D3PSE)
D7PSE

False Time 1030

1 x 4oz GRO/VOC
only VOC dupe all others will come from TB-16 (DMMU6)

4/10/18 48°F overcast, calm

1035 Sample # D6PSE collected

DMMU 6 Prism

1 x 4oz GRO/VOC
5 x 4oz DRO/RRO, Pest, PCB, metals, N.
SVOC, TBT, TOC

False time 1100 # D7PSE Dupe (except VOC) of D6PSE

5 x 4oz DRO/RRO, Pest, PCB, TBT, metals, N., TOC, SVOC

1044 Sample # D3ZSE collected

DMMU 3 Z sample

1 x 4oz GRO/VOC
5 x 4oz DRO/RRO, Pest, PCB, metals, N.
TBT, TOC, SVOC

4/10/18 45°F overcast, calm,

1103 - Sampler # D2PSE collected

DMMU 2 Prism sample

1 x 4 oz. GRO/VOC
5 x 4 oz DRO/RRO, Pest, PCB, metals, N, TOC, TBT, SVOC

1110 Sample # D2ZSE collected

DMMU 2 Z sample

1 x 4 oz GRO/VOC
5 x 4 oz DRO/RRO, PCB, Pest, metals, N., TBT, TOC, SVOC

1400 - return to collect samples @ DMMU 2

1420 - retrieve sample @ TB-01
~ 8" of recovery. Collect for Prism Sample.
redrive. Sampler penetrated 20"
Collect core for P sample

4/10/18 50°F overcast calm,

Note: POL sheen everywhere in harbor.

1440 - Remove material from TB-02
~ 12" of recovery. Sand/gravel
Collect increment for P sample
not deep enough for Z.

1503 - collect TB-03

0-1' push. 1' of recovery
hard @ bottom (clay?)
Collect increment for P.
no Z layer
Vol from this boring
47.3g

DURA Rite

4/10/18 50°F cloudy/ overcast.

1510 - Drive @ TB-04
drive sampler to 3' BGS.

collect P sample (0-2') increment
collect Z sample (2-3') increment

collect VOC for Z sample 44.5g

Push x2 more times to get
volume for Z samples.

1631 - Sample # D1PSE collected
DMMU1 P

1 x 4oz GRO/VOC
5 x 4oz DRO/RRO, PCB, Pest, metals, N.
TVS, SVOC, TOC, TBT

1637 - Sample # D1ZPE collected
DMMU.1 Z

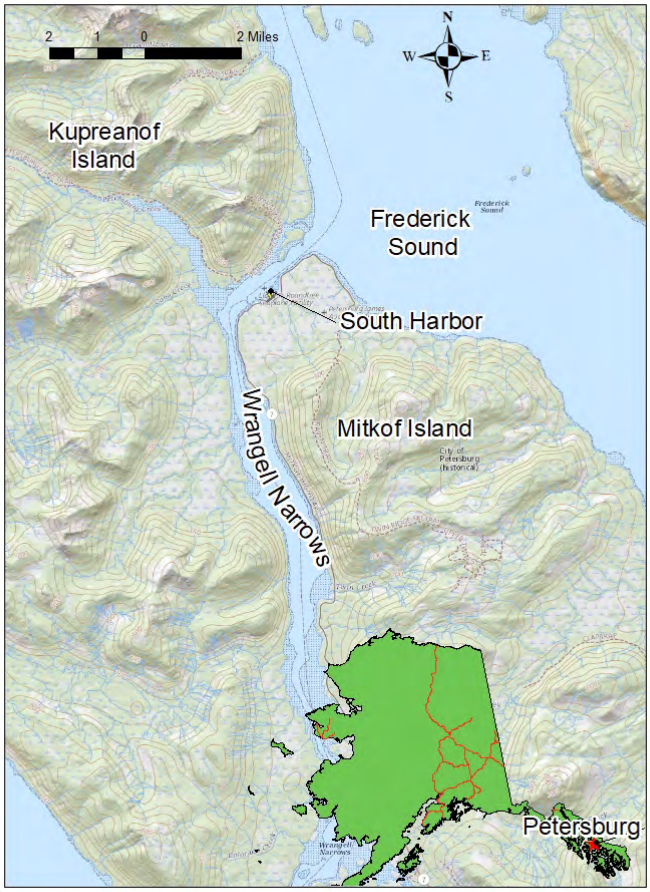
1 x 4oz GRO/VOC
5 x 4oz DRO/RRO, PCB, Pest, metals, N,
TOC, TVS, TBT, SVOC

US Army Corps of Engineers
Alaska District

Ocean Dumping Act Criteria Analysis

Frederick Sound Disposal Site near Petersburg, Alaska

Project Location



February 2019

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List of Abbreviations

CFR……..Code of Federal Regulation

CWA……..Clean Water Act

EFH……Essential Fish Habitat

FSDS……Frederick Sound Disposal Site

IFR……..Integrated Feasibility Report

MPRSA……Marine Protection, Research and Sanctuaries Act

ODMDS…….Ocean Dredged Material Disposal Site

USACE……United States Army Corps of Engineers

USC……United States Code

USEPA……..United States Environmental Protection Agency

USFS……United States Forest Service

ZSF…….Zone of Siting Feasibility

1.0 Authorities

This analysis is made under authority of Section 103(e) of the Marine Protection, Research and Sanctuaries Act (MPRSA, also known as the Ocean Dumping Act), 33 United States Code (USC) 1413(e). Section 103(e) allows the Secretary of the Army to issue regulations pertaining to federal projects involving dredged material, requiring the application to such federal projects of the same criteria as that described for permits in Section 103(a), and established by United States Environmental Protection Agency (USEPA) for site selection under Section 102(a). Corps of Engineers factors to be considered in the evaluation of Corps dredging projects involving the discharge of dredged material into ocean waters are established in 33 CFR 336, *et seq*. These procedures allow the District Engineer to select a site not previously designated by USEPA upon an evaluation of the USEPA site selection factors, and others, in an appropriate National Environmental Policy Act (NEPA) document that evaluates a proposed disposal site and all other available alternatives, including a no dredging option. 33 CFR 336.2(d)(4). The USEPA site selection criteria are set forth at Title 40 of the Code of Federal Regulations (CFR) Sections 228.5 and 228.6.

2.0 Need for Dredging

Petersburg South Harbor was dredged and developed in 1983. (Figure 1) The harbor's original depths ranged from -15 feet to -18 feet Mean Lower Low Water (MLLW) in the entrance channel and commercial slips and was developed to -15 feet MLLW in front of the fish processing center, Ocean Beauty and the turning basin and entrance to the crane dock. There is no information on whether a design vessel was established for this initial development, but the current project's design vessel specifications can be found in section 7.2 of the September 2018 Petersburg South Harbor Navigation Improvement Integrated Feasibility Report (IFR). Additional history of South Harbor and the rest of the Petersburg Harbor System can be found in section 3.3.3 of the IFR.

Insufficient depths in Petersburg South Harbor are caused by a combination of factors including isostatic rebound, sedimentation, and the increase in vessel size as the fleet grows. The harbor has become inaccessible during low tides and fisherman are unable to bring their catch through the entrance channel to the fish processing plant nor offload equipment at the public use crane dock. General navigation features to be dredged under this project are the entrance channel, maneuvering basin and two turning basins.

Figure 1 Petersburg South Harbor Navigation Improvement Project Location

The South Harbor was divided into four units based on the proposed project depths: the recreational boat slips landward of the spine float (Unit 1) would be dredged to minus 10 feet; the maneuvering basin between C and D floats (Unit 2) would be dredged to minus 18 feet; the crane dock basin (Unit 3) would be dredged to minus 9 feet; and the entrance channel between South and Middle Harbors (Unit 4) would be dredged to minus 19.25 feet. (Figure 2) The project depths are needed to reduce delays and dead-loss associated with inadequate available draft.

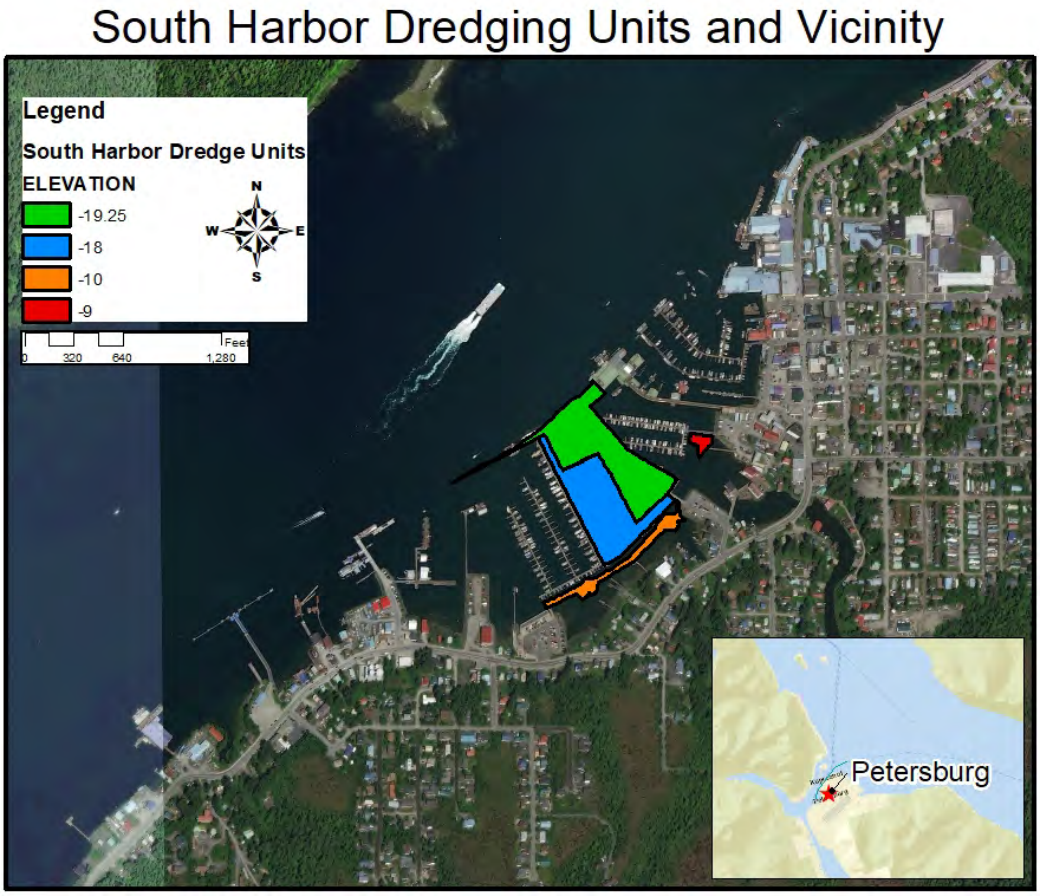

Figure 2 South Harbor Dredge Units and Elevation

Water dependent activities in the Petersburg south harbor are primarily commercial fishing, which accounts for 93% of the harbor's usage. (USACE 2018) Insufficient depths and existing marine infrastructure within the Petersburg harbor system cause transportation inefficiencies and limit access for commercial fishing and subsistence activities, creating economic inefficiencies for the region and Nation. Currently, ocean going commercial fishing vessels are forced to wait for sufficient tides to operate in and around the harbor system.

3.0 Alternatives to Disposal at Frederick Sound Disposal Site (FSDS)

The beneficial use of the dredged material for marine infrastructure at Scow Bay, three miles south of the Petersburg south harbor, was considered in preliminary planning as a potential placement option. (Figure 3) Geotechnical investigation conducted in April 2018 in concert with the chemical analysis indicated the physical properties of the dredged material were not conducive for construction base. The high silt composition of the dredged material would not be capable of creating a stable construction base, would present constructability challenges due to the hydrophilic properties of silt, and cost more to confine than the material was worth.

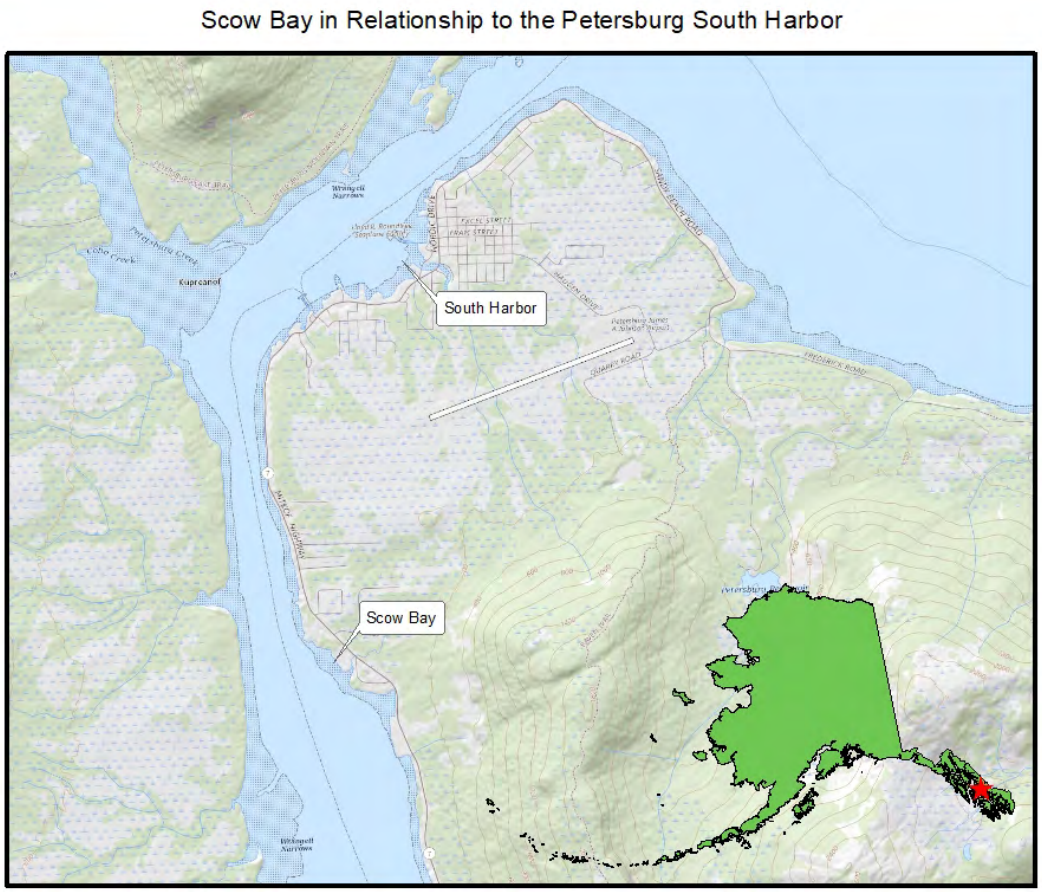

Figure 3 Scow Bay in Relationship to the Petersburg South Harbor

Beach nourishment or nearshore disposal are not suitable options for disposal of the dredged material because grain size analysis indicates the material is comprised primarily of fine-grained materials; 10 of the 16 cores were over 50% silt/clay. (Table 1) The fine-grained material would not be compatible with the sandy and rocky shorelines, created by exposure to hydraulic energy from currents and waves, found in the local area. The placement of fine grained material in the nearshore environment would provide only short term stabilization until the material was eroded and contribute to elevated turbidity in the water column as the fine-grained material was suspended. This would have a deleterious impact on nearshore ecology due to reduced light transmissivity and direct fouling as the material precipitates

from the water column. The fine-grained material placed landward of the depth of closure would persist in the littoral cell rather than being dispersed as it would in deeper water and concentrate the turbidity impacts in the more sensitive and confined nearshore ecosystem.

Table 1 Physical Properties of the Dredged Material in the Petersburg South Harbor

Test Bore	Composition (percent)			Unified Soil Classification ASTM 02487
	Gravel	Sand	Silt/Clay	
TB-01	2	58	40	(SM) Silty sand
TB-02	6.6	89.8	3.6	(SP) Poorly-graded sand
TB-03	4.6	58.5	36.9	(SM) Silty sand
TB-04	0.2	82	17.8	(SM) Silty sand
TB-05	21.3	27.9	50.8	(Ml) Sandy silt w/ gravel
TB-05	8.2	25	66.8	(Cl-Ml) Sandy silty clay
TB-06	8.7	41	50.3	(ML) Sandy silt
TB-06A	10.9	28.3	60.8	(CL-Ml) Sandy silty clay
TB-07	20.8	68.4	10.8	(SP-SM) Poorly-graded sand w/ silt and gravel
TB-08	13.4	82.8	3.8	(SP) Poorly-graded sand
TB-08	19.1	75	5.9	(SP-SM) Poorly-graded sand w/ silt and gravel
TB-09	24.1	56.4	19.5	(SM) Silty sand w/ gravel
TB-10	7.8	86.6	5.6	(SP-SM) Poorly-graded sand w/ silt
TB-11	18.6	36.9	44.5	(SM) Silty sand w/ gravel
TB-12	13.6	36.7	49.7	(SM) Silty sand
TB-12A	12.6	31.1	56.3	(ML) Sandy silt
TB-12A	12.4	30.7	56.9	(Ml) Sandy silt
TB-13	11.2	34.8	54	(Ml) Sandy silt
TB-13	15.3	26.4	58.3	(Ml) Sandy silt w/ gravel
TB-14	16.2	37.5	46.3	(SM) Silty sand w/ gravel
TB-14	3.6	31.2	65.2	(Ml) Sandy silt
TB-15	23.7	30.2	46.1	(SM) Silty sand w/ gravel
TB-15	6.1	28.9	65	(CL-ML) Sandy silty clay
TB-16	28.9	41.2	29.9	(SM) Silty sand w/ gravel

Upland disposal is not a suitable option for the dredged material due to economic limitations, lack of available disposal locations for the specified volume, resistance from the local community associated with the elevated dump truck traffic, impacts to public roads, and general level of effort that would be required for upland placement. Previous dredging in the Petersburg north harbor required upland placement of dredged sediments due to the chemical composition of the materials; the Corps collected sediments for chemical analysis in 2010 that were extensively contaminated with fuels, fuel constituents, and metals in exceedance of the allowable concentrations for ocean disposal. Approximately 26,400 cubic yards of dredged material from the North Harbor was placed in the uplands of the City of Petersburg landfill, consuming much of the available capacity in that facility. Consultation with the US Forest Service (USFS), the primary Federal land manager on Mitkof Island, indicated that the

transportation of dredged material across USFS maintained roads for the purpose of disposal would be characterized as a commercial or industrial activity and invoke road usage fees and rock replacement fees. A single site on USFS land large enough to accommodate the entire volume of dredged material does not exist on Mitkof Island, so multiple sites would have to be secured for the disposal; adding complexity and cost to the coordination and distributing the ecological impacts. The City of Petersburg owns a quarry on Mitkof Island that was evaluated as a potential placement location, but insufficient capacity exists for the volume of material that will be generated from the South Harbor dredging project.

The USEPA maintains one Ocean Dredged Material Disposal Site (ODMDS) in the State of Alaska at the Port of Nome, over 2,000 miles away from Petersburg. The transportation of dredged material to Nome for disposal is not feasible.

The inland waters of Thomas Bay are approximately 16 miles north of Petersburg, across Frederick Sound. (Figure 4) The Corps has jurisdictional authority over the placement of dredged material in inland waters under Section 404 of the Clean Water Act (CWA). The upper reaches of Thomas Bay are turbid due to the proximity of Baird Glacier, over 700' deep, with fine-grained sediment; which preliminarily suggested the area as a potential disposal location. The Corps has evaluated the inland waters of Thomas Bay as a potential disposal location and determined it is not the Federal Standard (in other words, it is not the least costly alternative, consistent with sound engineering practices and selected through application of the 404(b)(1) guidelines or ocean disposal criteria). Furthermore, Thomas Bay is the site of Tanner and Dungeness crab fisheries, a chum salmon fishery, and several recreational resources. It has been called "Petersburg's playground" due to its popularity with the residents of Petersburg. The Corps' biological sampling in August 2018 indicated that adult Tanner crab and Red King Crab, both important economic resources, are more abundant in Thomas Bay than in the FSDS. The Alaska Department of Fish and Game submitted a letter in January 2019 to the Corps favoring the selection of the FSDS over Thomas Bay.

Figure 4 Petersburg South Harbor in Relationship to the FSDS and Thomas Bay

4.0 Site Selection Criteria

Title 40 CFR Parts 220-238 (Ocean Dumping) contains the USEPA promulgated criteria that defines administration of permit applications and the designation and management of ODMDS. These regulations identify five general and 11 specific criteria that are used during the evaluation of an ODMDS designation. The five general criteria are (40 CFR 228.5, quoted in whole):

(a) The dumping of materials into the ocean will be permitted only at sites or in areas selected to minimize the interference of disposal activities with other activities in the marine environment, particularly avoiding areas of existing fisheries or shellfisheries, and regions of heavy commercial or recreational navigation.
(b) Locations and boundaries of disposal sites will be so chosen that temporary perturbations in water quality or other environmental conditions during initial mixing caused by disposal operations anywhere within the site can be expected to be reduced to normal ambient seawater levels or to undetectable contaminant concentrations or effects before reaching any beach, shoreline, marine sanctuary, or known geographically limited fishery or shellfishery.
(c) If at any time during or after disposal site evaluation studies, it is determined that existing disposal sites presently approved on an interim basis for ocean dumping do not meet the criteria for site selection set forth in §§ 228.5 through 228.6, the use of such sites will be terminated as soon as suitable alternate disposal sites can be designated.
(d) The sizes of ocean disposal sites will be limited in order to localize for identification and control any immediate adverse impacts and permit the implementation of effective monitoring and surveillance programs to prevent adverse long-range impacts. The size, configuration, and location of any disposal site will be determined as a part of the disposal site evaluation or designation study.
(e) EPA will, wherever feasible, designate ocean dumping sites beyond the edge of the continental shelf and other such sites that have been historically used.

The following 11 specific criteria shall also be considered (40 CFR 228.6, quoted in whole):

(a) Geographical position, depth of water, bottom topography and distance from coast;
(b) Location in relation to breeding, spawning, nursery, feeding, or passage areas of living resources in adult or juvenile phases;
(c) Location in relation to beaches and other amenity areas;
(d) Types and quantities of wastes proposed to be disposed of, and proposed methods of release, including methods of packing the waste, if any;
(e) Feasibility of surveillance and monitoring;
(f) Dispersal, horizontal transport and vertical mixing characteristics of the area, including prevailing current direction and velocity, if any;
(g) Existence and effects of current and previous discharges and dumping in the area (including cumulative effects);
(h) Interference with shipping, fishing, recreation, mineral extraction, desalination, fish and shellfish culture, areas of special scientific importance and other legitimate uses of the ocean;
(i) The existing water quality and ecology of the site as determined by available data or by trend assessment or baseline surveys;
(j) Potentiality for the development or recruitment of nuisance species in the disposal site;

(k) Existence at or in close proximity to the site of any significant natural or cultural features of historical importance.

5.0 Site Selection Criteria Consistency Analysis

In order for the placement of dredged material in ocean waters to be authorized, both the dredged material and the disposal location must be characterized. The Alaska District performed chemical and geotechnical analysis of the dredged material in April of 2018 and determined that the sediments did not pose a hazard to the marine environment pursuant to the chemical concentration screening criteria contained in thePacific Northwest Regional Sediment Framework (SEF). The Alaska District has not promulgated specific regional chemical screening criteria for marine sediment and has previously used the Lower Columbia River Dredged Material Evaluation Framework and Puget Sound Dredged Disposal Analysis. Agency stakeholders in Alaska including the State Water Quality Certification Division at ADEC and the USEPA Aquatic Resources Unit (ARU) are aware of the differences between the marine environment in Alaska and the contiguous United States with respect to the naturally occurring metals and water temperatures and have taken those differences into consideration when applying screening criteria developed elsewhere. Alaskan marine sediments often contain metals concentrations, particularly arsenic and chromium, exceeding Tier II screening levels due to local mineralogy. Alaskan marine organisms are either tolerant of these naturally high concentrations or do not have the propensity to take up certain constituents in hazardous levels, otherwise they would not survive even absent of anthropogenic activities. The naturally cold water surrounding Alaska reduces the bioavailability of many constituents and also confounds the direct application of testing methods developed for the Lower 48 Stares; e.g., Alaskan marine organisms may experience elevated mortality due to environmental stress from water temperatures dictated in testing protocols, which would result in a false positive for sediment toxicity under a Tier III analysis.

The Alaska District conducted ecological sampling at the FSDS and in Thomas Bay over the course of a year in order to describe the benthos, understand seasonal variability in epibenthic population distribution, determine physical consistency between dredged material and the native substrate in the FSDS, estimate the impacts of dredged material disposal, and determine consistency with the five general of 40 CFR 228.5 and 11 specific criteria of 40 CFR 228.6.

5.1 General criteria

> *The dumping of materials into the ocean will be permitted only at sites or in areas selected to minimize the interference of disposal activities with other activities in the marine environment, particularly avoiding areas of existing fisheries or shellfisheries, and regions of heavy commercial or recreational navigation.*

The FSDS is not extensively fished by commercial recreational fishermen due to its low relative productivity, extreme depth, and exposure to strong tidal currents resultant from the Site's proximity to the Wrangell Narrows. Correspondence with the Petersburg Vessel Owner's Association in July 2018 disclose that "the area is black mud already with no crab or fish there" and "this is not a place any of our

fleet go to fish and won't disrupt any of our fisheries". The ADFG submitted a letter to the Corps in January 2019 stating that "The marine disposal area and adjacent sites in Frederick Sound near Petersburg lie within statistical area 108-60, which historically has exhibited much lower commercial Tanner crab effort and harvest". (PVOA 2018)

The proposed disposal area is south the confluence of Wrangell Narrows and Frederick Sound, outside of the Alaska Marine Highway route and the majority of vessel traffic, as indicated by Automated Information System (AIS) data. Commercial fishing is the predominant source of marine traffic in the area and fishing traffic ebbs in the winter, when the FSDS would be used for disposal. Minimum depth in the FSDS exceeds 450', providing more than adequate depth for even the deepest drafting vessels in the world.

> *Locations and boundaries of disposal sites will be so chosen that temporary perturbations in water quality or other environmental conditions during initial mixing caused by disposal operations anywhere within the site can be expected to be reduced to normal ambient seawater levels or to undetectable contaminant concentrations or effects before reaching any beach, shoreline, marine sanctuary, or known geographically limited fishery or shellfishery.*

Any turbidity resulting from dredging would be temporary, occur only in the immediate vicinity of mechanical dredging, and dissipate rapidly by tidal mixing. Turbidity would temporarily increase in the vicinity of the disposal 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 disposal area substrate ensure the turbidity impacts to water quality would be temporary and insignificant. All dredged material that would be placed in Frederick Sound has been tested for chemical constituents of concern and determined to be suitable for in-water placement in accordance with the Seattle District Dredged Material Management Plan. 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.

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 Essential Fish Habitat (EFH) for juvenile or adult salmonids and EFH for 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 environmental work windows that would avoid major periods of juvenile salmon outmigration.

Except for the short-term, localized turbidity associated with transition dredging and disposal, no adverse impacts to water or sediment quality is expected to occur as a result of the recommended dredging action.

> *If at any time during or after disposal site evaluation studies, it is determined that existing disposal sites presently approved on an interim basis for ocean dumping do not meet the criteria for site selection set forth in 40 CFR 228.5 through 228.6, the use of such sites will be terminated as soon as suitable alternate disposal sites can be designated.*

USACE's Alaska District Environmental Resources Section has evaluated the impacts of disposal at FSDS by applying the criteria of Section 102(a) of the MPRSA for evaluation of material. This site selection document has evaluated information relative to FSDS which addresses the General and Specific criteria for site selection set forth in 40 CFR Sections 228.5 and 228.6 for the disposal of dredged material that meets criteria set by Section 102(a) of the MPRSA. This study does not reveal any conflicts concerning the selection of FSDS with respect to the site selection criteria.

The FSDS's location two miles from the Petersburg Harbor will allow the Alaska District to continue monitoring the FSDS during and after dredged material disposal. Petersburg is reliably accessible through the year, with adequate availability of support vessels and infrastructure. The FSDS's location in the Inside Passage limits the potential for weather interference with the port construction monitoring. The Alaska District will conduct monitoring events immediately post construction, at one year post construction, and at five years post construction in order to document continued compliance with the general and specific criteria of 40 CFR 228.5 through 228.6.

> *The sizes of ocean disposal sites will be limited in order to localize for identification and control any immediate adverse impacts and permit the implementation of effective monitoring and surveillance programs to prevent adverse long-range impacts. The size, configuration, and location of any disposal site will be determined as a part of the disposal site evaluation or designation study.*

The FSDS is defined as a 75-acre rectangle on the seafloor, ½ mile by ¼ mile, centered at 56.832202 latitude and -132.911592 longitude. The size and shape of the site was determined by considering the previously used disposal site immediately west of the FSDS and translocating it to an area that would be more representative of the terminal disposition of the dredged material; accounting for the likelihood the dredged material placed in the previously used disposal area would come to rest at or beyond the toe of the slope.

Analysis of the May 2018 bathymetric survey of the previously used disposal area revealed a subsea slope failure. The failure could have been caused by previous dredged material disposal, seismic activity, or other factors. The Alaska District elected to avoid the potential to be responsible for another slope failure, translocating the previous disposal area from the high gradient slope to the subsea plains that form the majority of the seabed in Frederick Sound. The low-relief topography of the FSDS was hypothesized to provide poorer quality habitat than the high gradient slope of the previous disposal area as well.

The translocation of the FSDS was further supported by the biological sampling conducted by the Alaska District over the course of the one-year study. The District conducted video surveys, pot fishing, and sediment sampling at three locations in Frederick Sound and four locations in Thomas Bay. The FSDS was the least productive sampling area of the seven areas surveyed. Sediment samples from the FSDS consisted of homogenous fine-grained inorganic material with no entrained biota. The sediment from the previous disposal area varied in grain size and hue due to the wide range in energy level and depth which the samples were collected; the previous disposal area ranged from approximately 210 to 450 feet. The FSDS, covering the same acreage, has a much more consistent bottom elevation of between about 474 and 510 feet.

> *EPA will, wherever feasible, designate ocean dumping sites beyond the edge of the continental shelf and other such sites that have been historically used.*

Transporting the dredged material to the outer continental shelf would raise the costs of the dredging project prohibitively as the distance to the outer shelf is approximately 30 nautical miles. The nearest location on the OCS is a "donut hole" within the upper part of Frederick Sound. Donut holes are the colloquial term for OCS formations resultant of inside water with greater than six miles of fetch between the mainland and the islands of Alexander Archipelago; i.e., the three nautical mile boundary of the Submerged Lands Act boundary starting from the mainland and the islands do not connect in the reaches of water bodies greater than six miles across. FSDS is located only 2 nautical miles from the dredging site, making it a much more cost effective option.

A historically used disposal site, the previous Frederick Sound disposal area, was examined. The Corps had jurisdiction over the previous site until the closing line demarcating inland waters from ocean waters was moved from the outside of Alexander Archipelago east to enclose the mouth of many smaller embayments, but exclude the majority of the Inside Passage. The NOAA baseline commission in 2005 moved the baseline inland to reduce the extent of State submerged lands without any consideration to the impacts the redrawing would have of jurisdictional authority with respect to the disposal of dredged material. Review of the Alaska District's DA (Department of Army) Permit administrative records indicated the previous disposal area had been determined to be inland waters by the USEPA as recently as 2002, but previous determinations do not override implications of the current closing line. This site selection study evaluated the potential to re-select the previous site due to its history of use. However, it was determined that the previous site contained a much higher degree of depth and gradient diversity, a mosaic of substrate classes, more complex habitat types, and the potential to allow sediment to mobilize from the face of the slope beyond the disposal area boundary. Given the potential for negative impacts that would be caused by the placement of dredged material in the previous site, it was deemed unacceptable.

The FSDS overlaps about five acres of the northeastern portion the previous disposal site. The Alaska District considers the location of the FSDS to be representative of the terminal disposition of disposal actions carried out in the previous disposal area due to the overlap between the two areas and the bottom topography of the previous site.

The previous disposal area has been used by the USACE, the Alaska Department of Transportation and Public Facilities, and the City of Petersburg for disposal of dredged material. Lack of complete records impair the Alaska District's ability to determine the exact timing and quantity of dredged material placed in the Frederick Sound Disposal Area, but historical documents help to inform some assumptions.

Review of historical nautical charts include the disposal area in 1952 and later charts, but is not present in 1947 and earlier charts. This chart update coincides with the 1951 USACE project to increase the channel to 300 feet wide by 24 feet deep.

The USACE Projects and Inventory (P&I) Book identifies “Deep water disposal, outside the confines of the Narrows” as the option of choice for dredge spoils. A May 1966 Detailed Project Report on Petersburg Harbor states that “Excess material will be wasted in Frederick Sound in water deeper than 40 feet below mean lower low water.” The 1974 Combined Review of Reports on Dry Strait, Wrangell Narrows, & Turn Point Navigation, Alaska states that “Material dredged from the north end of Dry Straits would be disposed of in deep water in Frederick Sound at the end of the dredged channel”, without identifying a specific location.

The City of Petersburg was authorized in 1998 by the USACE AK District Regulatory Division under DA Permit POA-1975-180-M2 to dispose of up to 80,000 cubic yards of clean dredged material from the South Harbor Expansion project.

The Frederick Sound deep-water disposal site is part of the Wrangell Narrows navigation channel project, which was initially constructed in 1934. It has been widened and maintenance dredged several times since then, including but not limited to:

- 1951: Work to increase the channel to 300 feet wide by 24 feet deep is completed in June.
- 1971: Maintenance dredging is conducted throughout the channel in September and October with 56,890 cubic yards removed by contract. Records from the disposal are unavailable, but it is assumed the dredged material from the northern portion of Wrangell Narrows was placed in Frederick Sound and the material from the southern portion was placed in Sumner Strait.
- 1979: The Turn Point vicinity near Petersburg is dredged in May and June with 36,900 cubic yards reportedly removed. A portion of the dredged material was used to construct uplands near the state ferry terminal at Turn Point and the rest was placed in the Frederick Sound Disposal Area, identifying the following corners (Table 2):

Table 2 1979 Dredge Material Disposal Area Corners

COORDINATES OF "ALTERNATE" DISPOSAL SITE

CORNER NO.	AK. STATE PLANE (ZONE 1)		GEOGRAPHIC	
	N	E	LONG. (W)	LAT. (N)
1	1,825,293.74	2,834,465.28	132° 55' 25"	56° 49' 42"
2	1,826,231.31	2,836,680.53	132° 54' 45"	56° 49' 51"
3	1,825,025.97	2,837,806.62	132° 54' 25"	56° 49' 39"
4	1,824,082.15	2,835,034.87	132° 55' 15"	56° 49' 30"

- 1989: The Corps' owned dredge YAQUINA conducts dredging operations throughout the narrows' shoals.
- 1995: Wrangell Narrows maintenance dredging of the Federal channel is conducted under contract for two areas from Frederick Sound through Turn Point with a payable quantity of 41,000 cubic yards removed from the project. Dredged material was disposed in Frederick Sound Disposal Area; reference 1995 P&I book and reconnaissance study.

- 2000: Maintenance dredging begins at selected locations from Mile 12.2 to 18.4 and at the Battery Islets near Mile 20.
- 2001: Maintenance dredging is completed in March. The total payable quantity removed is 33,939 cubic yards. The dredged material was disposed in the Frederick Sound Disposal Area in accordance with 1999 Wrangell Narrows O&M EA/FONSI. The detail and site plan identifies the disposal site corners (Table 3):

Table 3 2001 Dredge Material Disposal Area Corners

DISPOSAL SITE COORDINATES				
CORNER	NORTHING	EASTING	LATITUDE NAD83	LONGITUDE NAD83
1	1,825,345	2,834,472	56°49'41.26"	132°55'31.06"
2	1,826,283	2,836,679	56°49'50.27"	132°54'51.21"
3	1,825,051	2,837,203	56°49'38.07"	132°54'42.03"
4	1,824,112	2,834,996	56°49'29.05"	132°55'21.89"

5.2 Specific criteria

Geographical position, depth of water, bottom topography and distance from coast.

The disposal area is in the shape of a rectangle, generally oriented in the cardinal directions. (Table 4) The X-axis is approximately ½ mile long and follows a 66° heading and the Y-axis extends for about 1/4 mile along a 155° heading. The western end of the disposal area is the shallowest, but still quite deep at 79 fathoms. Depth increases gradually to 86 fathoms at the eastern edge of the area. In relation to the northeastern coast of Mitkof Island, the most proximal location of the disposal area is about 1 mile away and the most distal point is approximately 1 ½ mile away. (Figure 5) The FSDS is a flat area of the seafloor with fine-grained (silts and clays) surficial sediments.

Table 4 Frederick Sound Disposal Site Corners

Frederick Sound Disposal Site Coordinates				
Corner	**AK State Plane (Zone 1)**		**Geographic**	
	Northing	**Easting**	**Latitude NAD83**	**Longitude NAD83**
Northwest	**1,827,689.51**	**2,837,094.28**	**56°50'9.095"**	**132°54'42.763"**
Southwest	**1,825,584.91**	**2,836,019.11**	**56°49'48.655"**	**132°55'2.214"**
Northeast	**1,827,106.17**	**2,838,272.40**	**56°50'3.401**	**132°54'21.408**
Southeast	**1,824,990.13**	**2,837,220.10**	**56°49'42.664"**	**132°54'40.744"**

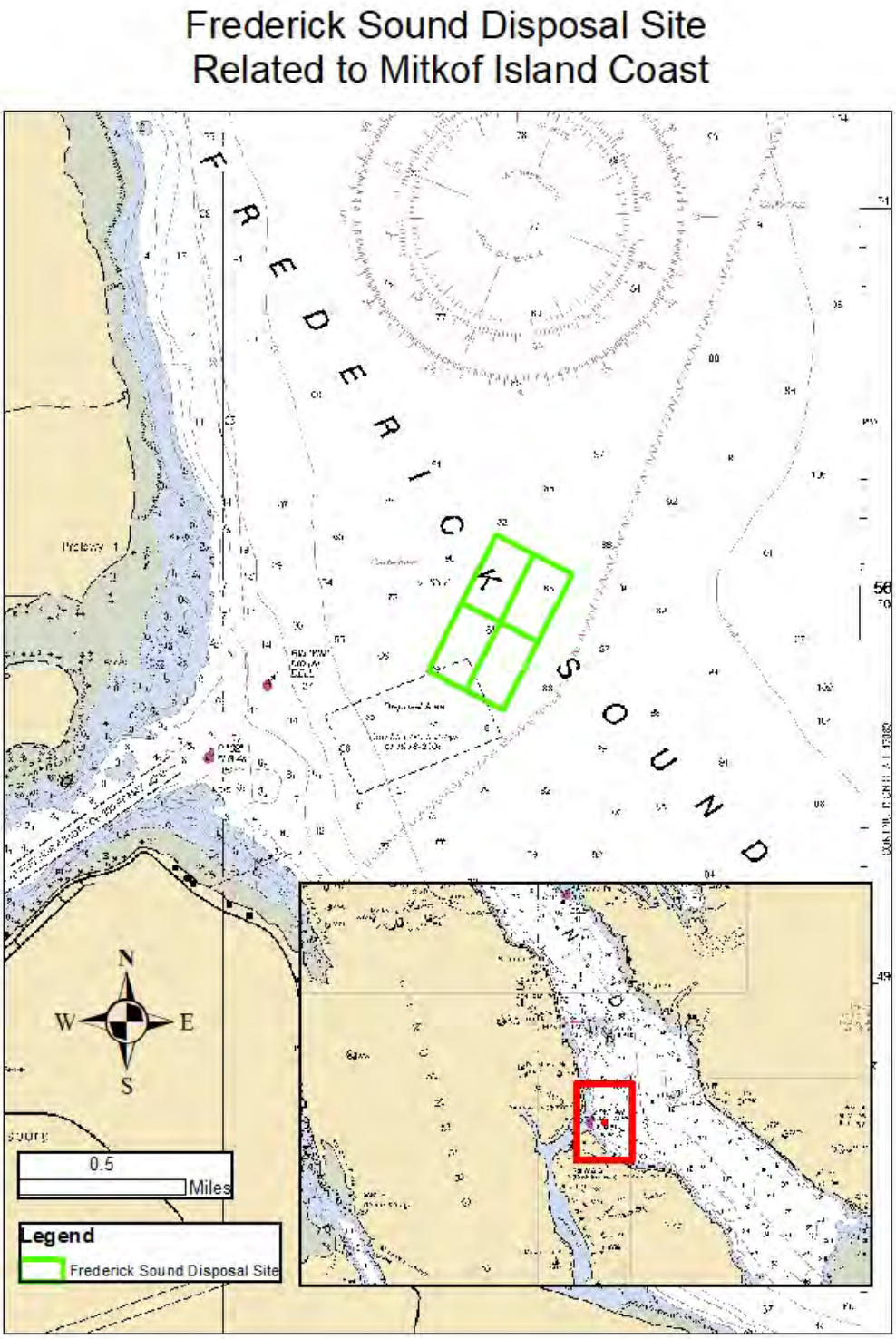

Figure 5 Frederick Sound Disposal Site Related to the Coast of Mitkof Island

Location in relation to breeding, spawning, nursery, feeding, or passage areas of living resources in adult or juvenile phases.

The FSDS is about one mile offshore of Mitkof Island in Frederick Sound, part of Alaska's Inside Passage. Species characteristic of the Gulf of Alaska make up the marine community. Marine pelagic communities of zooplankton (e.g., copepods, euphausiids, ctenophors, and chaetognaths), meroplankton (fish and invertebrate larvae), forage species, and pelagic predators have coast-wide distribution and generally display seasonal changes in abundance. Benthic epifaunal communities present in the FSDS are dominated by pandalid shrimp and Tanner crab.

The USACE AK District Environmental Resources Section evaluated the proposed dredged material disposal project's impacts on Essential Fish Habitat (EFH) and determined the project was not likely to adversely affect EFH. (USACE 2018) The potential impacts to EFH and Federally managed fish species/species complexes are likely to be highly localized, temporary, and minor, and not reduce the overall value of EFH in Frederick Sound. The NMFS Habitat Conservation Division concurred with the USACE EFH determination on 7 February, 2019 via official correspondence. (NMFS 2019)

Pandalid shrimp, specifically spot shrimp (*Pandalus platyceros*) were a commonly observed animal in the Alaska District's biological surveys; they were captured consistently on film and very commonly in pot surveys. Spot shrimp are protandric hermaphrodites; meaning they begin their lives as males and change sex to female as they grow, usually around 2-3 years old. Spot shrimp in Alaska can live as long as 11 years, spawn once as males around 2-3 years old, before changing sex and spawning multiple times as females for the remainder of their life. The preliminary camera survey indicates spot shrimp have a patchy distribution on the local scale, with relative densities ranging wildly for no discernible reason. (Figure 6) There is some beam trawling activity in the shallow waters on the north end of Mitkof Island, but these fishermen target pink shrimp rather than spot shrimp.

The Tanner crab fishery is an important economic resource in Southeastern Alaska and is managed by the ADFG. Tanner crabs are much less abundant than spot shrimp in all of the areas surveyed by the Alaska District; but were assigned a higher conservation priority due to the greater economic significance, lower relative abundance, longer life span, and later relative age of sexual maturity. The ADFG administers a Tanner crab fishery every February, as long as census data indicates sustainable populations. Female Tanner crabs reach sexual maturity in about five years and males in about six years, living a maximum of about 14 years.

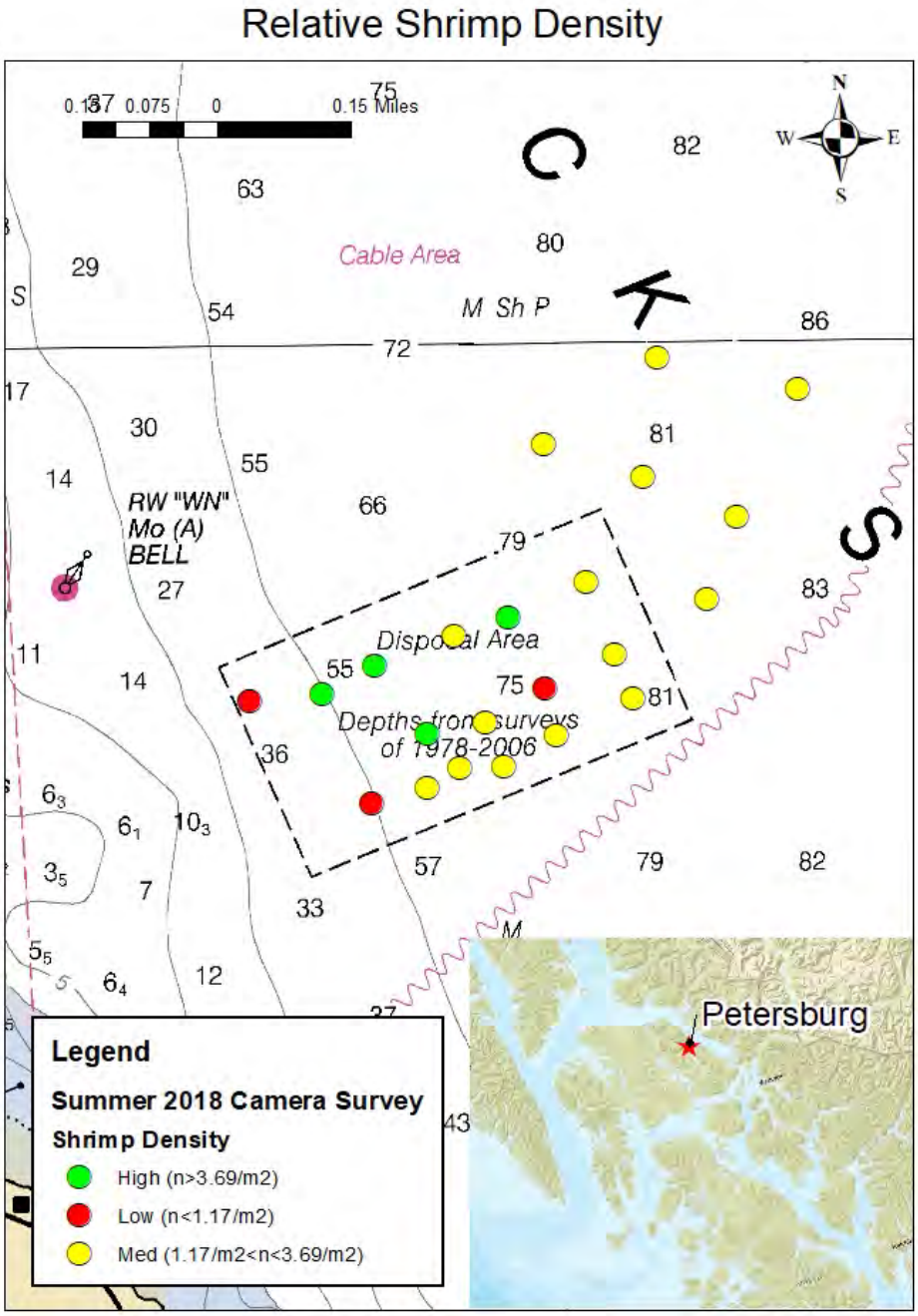

Figure 6 Summer 2018 Relative Shrimp Density

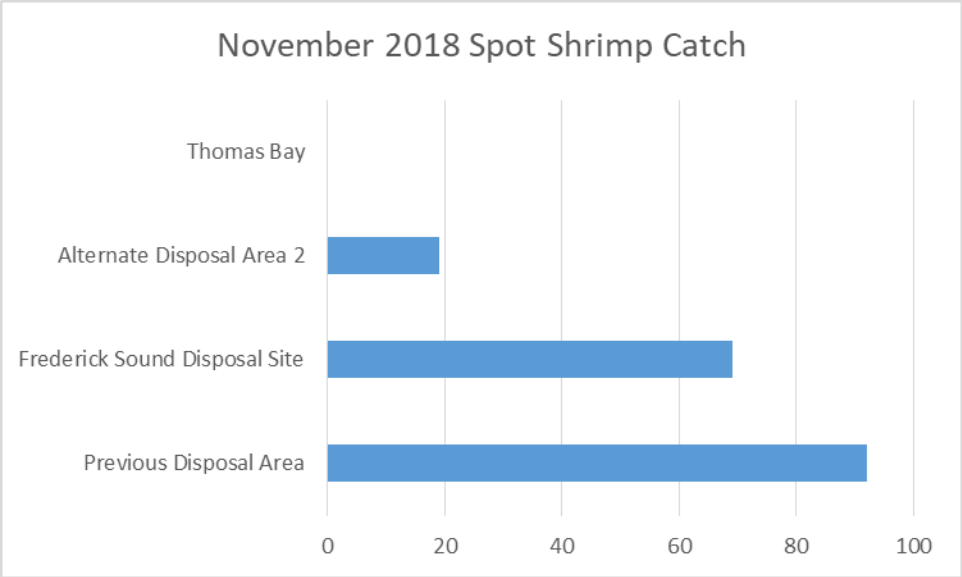

Figure 7 November 2018 Spot Shrimp Catch

Spawning. The proposed site supports a variety of pelagic and demersal fish species and epibenthic invertebrates including crabs and shrimp. Many of these species have a reproductive strategy that includes releasing a large quantity of eggs so that some individuals will survive the substantial mortality common to the species during the larval and juvenile stages. The alteration of the seafloor at the proposed site from the placement of dredged material may temporarily impact resource spawning, however effects would be short-term and localized. Additionally, resource spawning is not exclusive to the proposed site and occur within the entire Zone of Siting Feasibility (ZSF) as well as outside the ZSF. The ZSF is the geographical are that was considered for the selection of an Ocean Disposal site considering the criteria of the Federal Standard. The portion of Frederick Sound between Petersburg and Thomas Bay is considered the ZSF. The FSDS has the lowest productivity of the three Frederick Sound survey areas evaluated in this study. The region of Frederick Sound that was identified in the ZSF is lower relative productivity than many nearby areas, as indicated in the January 2019 letter from the ADFG stating, "sites in Frederick Sound near Petersburg lie within statistical area 108-60, which historically has exhibited much lower commercial Tanner crab effort and harvest" (ADFG 2019) The letter from ADFG is attached to this study and includes Tanner crab harvest, number of permits, and number of landings data.

Passage Areas. Various anadromous resources (e.g., Pacific salmon) that utilize the rivers and watersheds of Mitkof Island and land surrounding the Inside Passage may pass over the proposed disposal site area. Placement of dredged material at the site is not anticipated to interfere with fish passage or adversely affect habitat used by transiting resources.

Nursery Areas. The proposed FSDS is a flat expanse of fine-grained sediments in 474-510 feet of water. This type of habitat is not generally noted as preferred nursery habitat for Gulf of Alaska species. The placement of dredged material has the potential to increase the complexity of the relatively featureless expanse of the Frederick Sound seabed and improving the quality of the nursery habitat through additional refugia. Therefore, no significant negative effects to nursery areas are expected from the selection of FSDS as an ODMDS.

Feeding. The proposed disposal site is not known to congregate organisms because of food resources. The sediment samples collected in November 2018 contained no biological resources and the samples from alternative disposal locations in the general vicinity contained only two nut clams and a mud star. However, the epibenthic and demersal region does provide prey items (ctenophors, amphipods, chaetognaths, copepods, shrimp, etc.) that are consumed by bottom-feeding fish, shrimp, crab, and other epibenthic and demersal organisms.

In summary, the proposed FSDS contains these resources, however the site does not provide unique breeding, spawning, nursery, feeding, or passage habitat. The results of the Alaska District's biological survey confirm the FSDS is less biologically productive, when using the abundance of shrimp and crabs as the primary quantifying metric, than nearby areas. Additionally, the habitat for the species that inhabit the FSDS is not geographically limited to the ZSF and the disposal of dredged material occurs for discrete periods of time over a discrete spatial area. Thus, the temporary effects to the habitat at the site is not likely to translate into significant effects at a population or species level.

Location in relation to beaches and other amenity areas.

Beaches in Alaska are not subject to the same usage type and intensities as beaches in many other regions due to the consistently low water temperature, but they can still serve as recreational areas for picnics, surfing, beachcombing, etc. FSDS is located approximately 2 miles off the nearest beaches in Petersburg, which is sufficiently offshore that there should be no effects at any of the beaches. In addition, the topography of the disposal site, a deep flat depositional area of the seafloor, ensures that most of the material placed at the site will remain at the site and that any effects are limited to the immediate area of the FSDS.

Types and quantities of wastes proposed to be disposed of, and proposed methods of release, including methods of packing the waste, if any.

The material to be disposed of with this project consists of approximately 82,000 cubic yards of sandy silty clay, sandy silt, silty sand, poorly graded sand with silt, and poorly graded sand with gravel from the Petersburg South Harbor. The material has been chemically tested and geotechnically assessed and found to be suitable for unconfined open water disposal in accordance with the SEF. The harbor would be excavated to project depth in each of the four dredge units using a barge mounted excavator. The use of a mechanical dredge is required due to the consolidated nature of the sediment in the South Harbor. The excavator would place the sediment directly onto a waiting scow for disposal. When the scow reaches nominal capacity, it would be towed to the FSDS for unconfined ocean placement, likely through the use of a bottom dump.

Feasibility of surveillance and monitoring.

Surveillance and monitoring has already been demonstrated to be feasible by the efficient execution of the biological sampling to support this site selection study. The Alaska District will conduct a monitoring event immediately post construction, one year after construction, and five years after construction. The monitoring would consist of bathymetric surveys, pot fishing, and camera surveys to document the alterations and recolonization of the affected area.

Dispersal, horizontal transport and vertical mixing characteristics of the area, including prevailing current direction and velocity, if any.

Water circulation in the vicinity of FSDS is strongly influenced by the ebb and flood currents from the Wrangell Narrows. The FSDS is located approximately one mile off the northeastern coast of Mitkof Island in an area subject to powerful semi-diurnal tidal currents. The most proximal tidal data station is a subordinate station at Prolewy Rocks in the mouth of Wrangell Narrows, about 1.5 miles away from the FSDS. Prolewy Rocks currents regularly exceed five knots on both flood and ebb tides. (Figure 8) Tidal currents progressively weaken as the distance from the constriction in Wrangell Narrows increases, but anecdotal observations from the biological sampling events in support of this site selection confirm the presence of very strong currents over the FSDS. Positioning the survey vessel over the pot fishing, camera survey, and sediment collection coordinates during flood and ebb tides was very challenging due to tidal velocity.

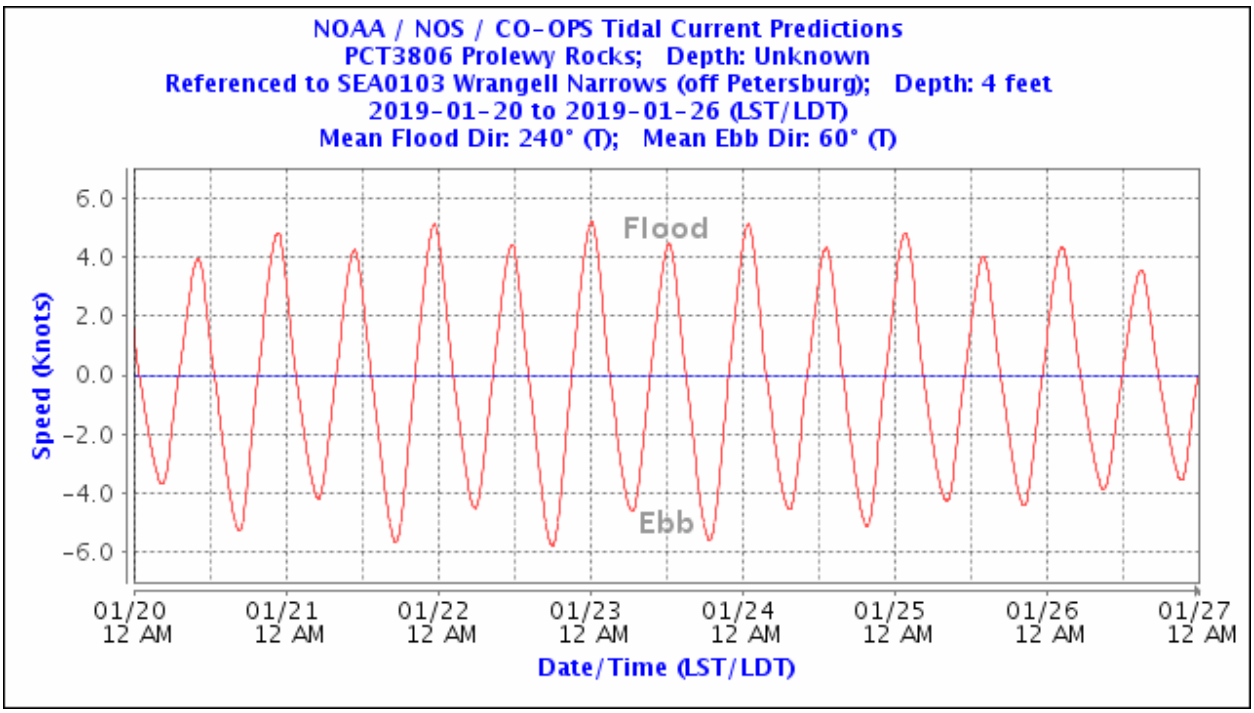

Figure 8 Prolewy Rocks Subordinate Tidal Current Predictions for the week of 20-27 January, 2019

The Alaska District collected salinity and temperature data in the upper 100 meters of the water column during the biological sampling events. In general, salinity near the surface was lower than salinity of deeper water. Salinity in November 2018 increased from 29.5 practical salinity units at the surface to 31.7 PSU at 83 meters below the surface. The majority of the salinity increase was realized in the upper 10% of the water column sampled, going from 29.5 PSU at the surface to over 31 PSU at 7.6 meters. The portion of the water column between 7.6 meters and 83.3 meters only increased by 0.7 PSU. The temperature profile of the FSDS was also very homogeneous, featuring a standard deviation of 0.056°C in the 83.3 meters of water column sampled. The mean temperature was 6.98°C and the range of temperature values was only 0.25°C. These data indicate a well-mixed water column as a result of current effects. (Figure 9)

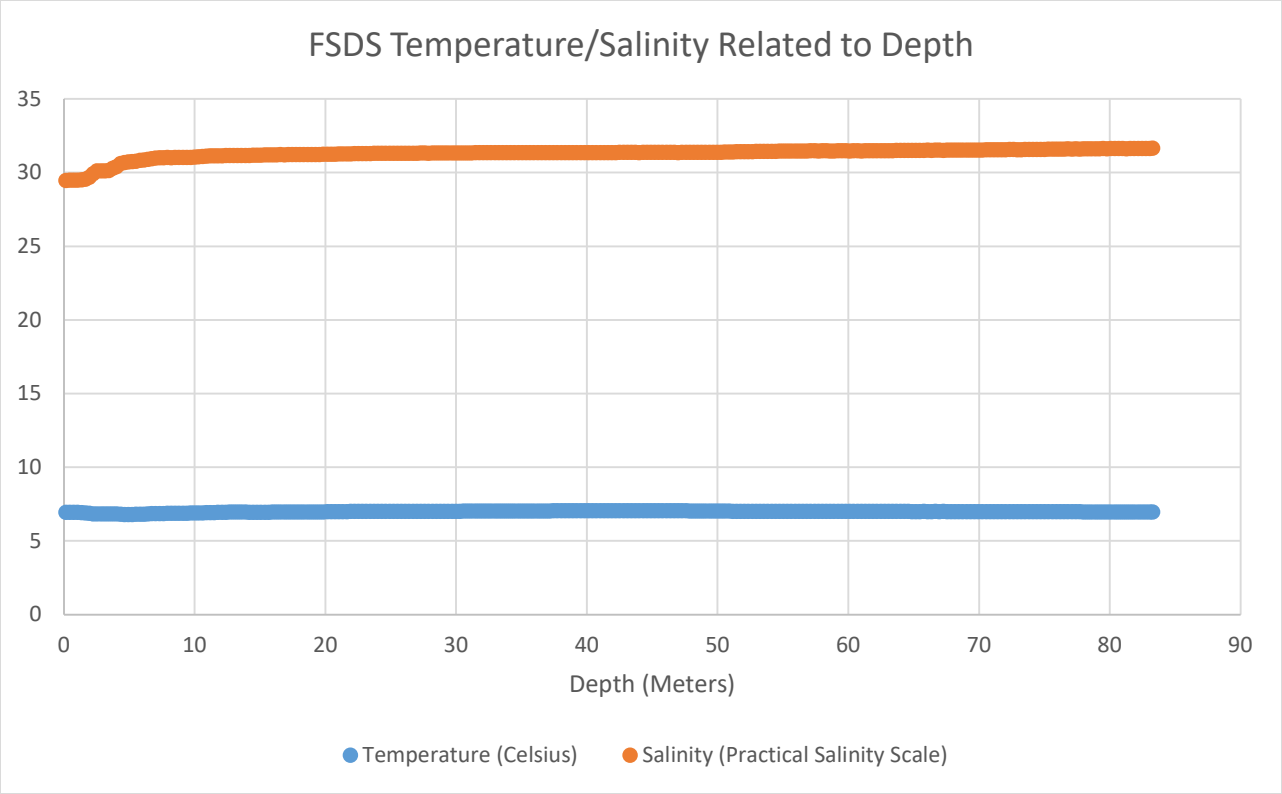

Figure 9 FSDS Temperature/Salinity Related to Depth

Given the demonstrated mixing of the water column in the FSDS and the distance from the shoreline of Mitkof Island, any temporary perturbations in water quality as a result of the disposal will have dissipated long before reaching any beach or shoreline. There are no marine sanctuaries or geographically limited fisheries or shellfisheries near the FSDS. Comments received during scoping indicate the area is not fished commercially or recreationally. The FSDS's proximity to Petersburg, coupled with the 100+ year history as a commercial fishing hub, suggest that if significant fishery resources were present in the FSDS, they would have been discovered long ago and a fishery would be established.

Existence and effects of current and previous discharges and dumping in the area (including cumulative effects).

USACE dredging and disposal records show that the previous disposal area proximal to the FSDS was used multiple times for the placement of dredged material from Petersburg harbor dredging projects ad Wrangell Narrows dredging project. Anecdotal accounts from Petersburg residents also describe the disposal of materials other than dredged sediments; including derelict vessels. The Corps encountered two such derelict vessels on the seabed during the August 2018 camera surveys, nearly losing the camera in the process.

Analysis of the bathymetric surveys of the previous disposal site revealed a subsea slope failure within the bounds of the previous disposal site. (Figure 10) This may have been a result of previous disposal operations, seismic activity, or other phenomena. Camera surveys in support of the site selection study recorded sporadic occurrences of clay masses protruding from the generally featureless seabed; these may be relicts of previous disposal activities. The clay masses provide more structure than the surrounding areas, attracting shrimp and other animals.

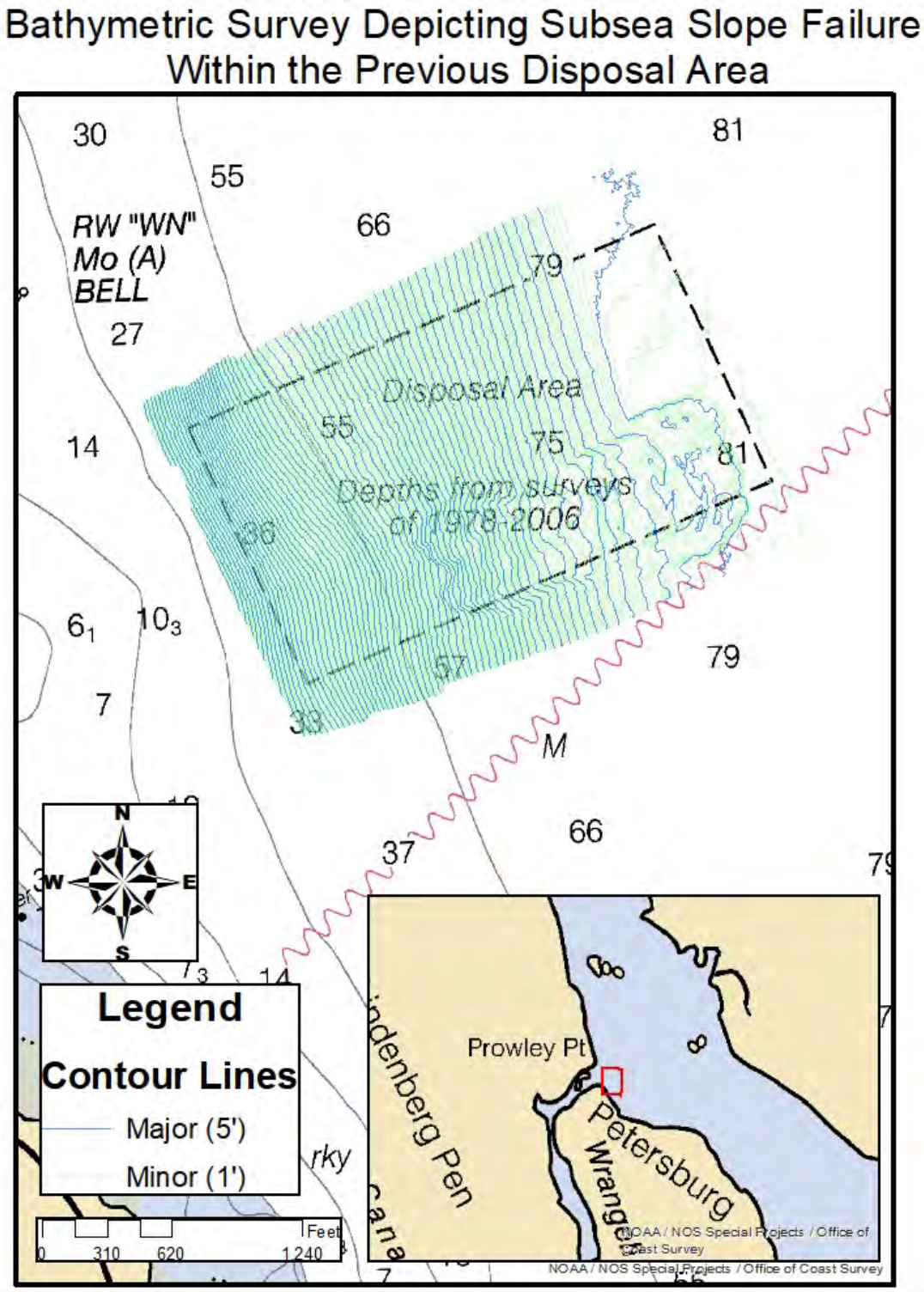

Figure 10 Bathymetric Survey Depicting the Subsea Slope Failure within the Previous Disposal Area

Interference with shipping, fishing, recreation, mineral extraction, desalination, fish and shellfish culture, areas of special scientific importance and other legitimate uses of the ocean.

Shipping. The USACE does not anticipate conflicts with commercial navigation at the FSDS. In a personal communication on 19 November 2016 between Mr. Matt Ferguson of the USACE-POA and Lt. Bart Buesseler of the National Marine Fisheries Service (NMFS), Navigation Management Branch, USACE-POA discussed the proposed FSDS disposal site location and its anticipated use with respect to navigation transit impacts. The USACE stated that for the Petersburg South Harbor dredging project about three disposal trips per day were anticipated during the winter construction window. Lt. Buesseler indicated that vessels transiting the Wrangell Narrows and Inside Passage follow a route west of the Sukoi Islets. Vessels approaching or departing Wrangell Narrows do cross the general area of the FSDS disposal site, but the majority of vessel traffic, as recorded by AIS, avoid the FSDS.

Conflicts between dredge disposal operations and shipping can be avoided by adequate notice to mariners of disposal activities and frequent marine communication between the disposal tugs and the Petersburg Harbormaster.

Commercial and Recreational Fishing. Commercial fishing in the vicinity of the proposed FSDS includes beam trawling, pot fishing, gill netting, and long lining. These activities are not exclusive to the site and occur within the entire Gulf of Alaska. Fishing efforts in the FSDS are so low they can be assumed nonexistent; the Petersburg Vessel Owner's Association reported that none of their members fished the area and the consensus gathered during site selection scoping was that the FSDS would be a good area for an unsuccessful fishing effort. The Alaska Department of Fish and Game (ADFG) responded to queries regarding commercial fishing over the FSDS by stating that "marine disposal area and adjacent sites in Frederick Sound near Petersburg lie within statistical area 108-60, which historically has exhibited much lower commercial Tanner crab effort and harvest."

Only two years out of the 10 year period analysis reported over three permits fished in the entire statistical area 108-60, a section of Frederick Sound about 15 miles long extending from the mouth of Thomas Bay to Frederick Point and enclosing about 43,000 acres. Effort and harvest data is considered to be confidential if fewer than three permits were fished; the fact that only one of the 10 years in the period of analysis exceeded three permits is corroboration of a very low level of effort. One of the years (2013/2014) received no effort, eight of the years were fished by one or two permit holders, and one year was fished by three permit holders. The total reportable harvest during the 10 year period of analysis was 7,456 pounds. This is compared to the same dataset from statistical area 110-12; which is the statistical area enclosing Thomas Bay and consisting of about 17,000 acres about 16 miles north of Petersburg. (Table 2) Statistical area 110-12 was fished by at least three permit holders 9 of the 10 years during the period of analysis with an average harvest of 40,798 pounds and a cumulative harvest of 367,185 pounds. That is approximately 50 times more crab harvest by mass from an area less than half the size of statistical area 110-12. Cumulative total harvest for statistical area 108-60, including confidential data, for the period between the 2008-2009 season and the 2017-2018 season was 46,476 pounds. The cumulative total for statistical area 110-12 during the same period was 379,913 pounds. (Stratman 2019)

Table 5 Commercial Tanner Crab Harvest, Number of Permits, and Number of Landings in the Frederick Sound District 8 Closest to the Community of Petersburg (Statistical Area 108-60), 2008/2009 through 2017/2018 seasons.

Season	Harvest (lb)	Number of permits	Landings
2008/2009	*	*	*
2009/2010	*	*	*
2010/2011	*	*	*
2011/2012	*	*	*
2012/2013	*	*	*
2013/2014	0	0	0
2014/2015	7,456	3	3
2015/2016	*	*	*
2016/2017	*	*	*
2017/2018	*	*	*
Average	4,648	1	2

* Confidential data (fewer than three permits fished).

Table 6 Commercial Tanner crab harvest, number of permits, and number of landings in Thomas Bay (Statistical Area 110-12), 2008/2009 through 2017/2018 seasons.

Season	Harvest (lb)	Number of permits	Landings
2008/2009	49,319	3	5
2009/2010	31,998	7	10
2010/2011	36,224	5	7
2011/2012	58,819	5	8
2012/2013	59,873	4	7
2013/2014	29,671	3	3
2014/2015	*	*	*
2015/2016	59,357	8	12
2016/2017	19,656	4	6
2017/2018	22,268	3	7
Average**	40,798	5	7

* Confidential data (fewer than three permits fished).
** Average doesn't include the 2014/2015 season.

Recreational pot fishing for spot shrimp is concentrated along the Horn Cliffs, across Frederick Sound from Mitkof Island. The mouth of Thomas Bay to the north of the FSDS is a popular area from recreational and commercial Chinook salmon trolling and the areas surrounding Sukoi Islets receive significant halibut effort from recreational fisherman. None of the Petersburg residents interviewed during the site selection study indicated interest in recreational fishing over the FSDS.

Recreation. The waters in the vicinity of the FSDS offer very little marine related recreation opportunities such as recreational boating, whale watching, and fishing. Empirical and anecdotal data demonstrates a very low level of fishing effort is directed towards the FSDS. The turbulent hydrodynamic environment above the FSDS is not conducive to drifting; vessels in the vicinity are generally underway from one point to another. Given the discrete spatial and temporal components of dredge material placement, it is unlikely that any interference would occur with these activities.

Mineral Extraction. There are no known mineral extraction operations or proposed operations in the vicinity of the proposed disposal site. The disposal site is not expected to interfere with any future offshore mining or oil/gas exploration or extraction.

Desalination. There are no desalination plants in the area of the FSDS.

Fish and Shellfish Culture. There are no commercial fish aquaculture or shellfish aquaculture operations that would be impacted by use of the proposed FSDS. The Crystal Lake Hatchery operated by the Southern Southeast Regional Aquaculture Association (SSRAA) releases 600,000 chinook salmon smolt annually in Blind Slough, approximately 18 miles south of Petersburg and 20 miles south of the FSDS. The chinook return as adults between four and seven years later and can produce a sport fish harvest of more than 4,000 fish. Some of these fish undoubtedly pass through the FSDS on their way to or from the Gulf of Alaska, North Pacific, or Bering Sea for growth to maturity and return for spawning. Some fish also may establish a resident population in Frederick Sound. The placement of dredged material may temporarily impact chinook salmon forage base in a limited spatial distribution.

A chum salmon remote release site in Thomas Bay was established by the Northern Southeast Regional Aquaculture Association (NSRAA) in 2017 and has released smolt each year since 2017. The mouth of Thomas Bay is about 16 miles north of the FSDS and the remote release site is about six miles into the bay, in the southern lobe. The 2019 return is expected to net 10,000 adult chum salmon for the commercial fishery. These fish are less likely to transit the FSDS due to its location with respect to the release site, but still may utilize some forage base in Frederick Sound on their way to the open ocean.

The selection of the Frederick Sound Disposal Site is not expected to have a measureable impact on fin-fish or shellfish aquaculture.

Areas of Special Scientific Importance. There are no known oceanographic research efforts directly within the area of the FSDS.

> *The existing water quality and ecology of the site as determined by available data or by trend assessment or baseline surveys.*

Water and sediment quality analyses conducted in conjunction with past disposal actions in the Frederick Sound region have not identified any adverse water quality impacts from ocean disposal of dredged material. The ecology of the proposed FSDS is a fine-grained bottom community. This determination is based mainly on fisheries and benthic data. Neither the pelagic or benthic communities should sustain long-term adverse effects because of their resilience to episodic disturbance and the substantially similar nature of the seabed and dredged material.

Potentiality for the development or recruitment of nuisance species in the disposal site.

There is no evidence that the disposal of dredged material at FSDS would lead to the development or recruitment of nuisance species. The USFWS was consulted in November 2018 regarding the potentiality to unintentionally introduce or allow the establishment of invasive species. The USFWS responded:

> "The U.S. Fish and Wildlife Service has management authority for the conservation of a variety of trust resources and their habitats including migratory birds, inter-jurisdictional fish, and threatened and endangered species. Invasive species have the potential to negatively affect our ability to conserve these resources. There are no invasive species of concern that come to mind with a dredging project that occurs entirely within the marine environment near Petersburg, Alaska. Particularly one that does not include an upland component or that does not have transport or use of earth moving equipment. Although several terrestrial invasive species of concern occur in the Petersburg area (as identified through Alaska Exotic Plant Information Clearinghouse), the project description does not include movements of equipment or machinery from one terrestrial environment to another over water to suggest actions associated with the project may affect terrestrial invasive species spread. Given the lack of identified invasive species of concern occurring within the marine environment of the project area, the Service has no concern on the spread of invasive species within the marine environment."

Given the extreme variance in the water depth in the Petersburg South Harbor and the FSDS, it is unlikely that organisms incidentally entrained during dredging operations would be adapted for life in the disposal area due to the differences in pressure, temperature, and light regime.

Existence at or in close proximity to the site of any significant natural or cultural features of historical importance.

The FSDS has been screened for cultural resources using the Alaska Heritage Resources Survey (AHRS), Bureau of Ocean Energy Management (BOEM) shipwreck database, and NOAA shipwreck database. Cultural resources reported within the general vicinity of the potential Frederick Sound in-water disposal APE include both precontact and historic resources located along the shores of Frederick Sound on Mitkof Island (Table 1). None of the identified resources fall within the disposal APE. No cultural or historic resources are expected to be impacted by the placement of dredged material in the FSDS. Reasonably foreseeable future actions within and adjacent to the developed project area are subject to review and approval by the State Historic Preservation Officer (SHPO), and would be anticipated to have minor impacts, if any, on cultural resources.

Table 7 Known Cultural Resources within the General Vicinity of the Frederick Sound Disposal Site

AHRS No.	Site Name	NRHP Status	In APE
PET-027	Sandy Beach Petroglyph Site	Eligible	No
PET-386	Handtroller Camp	Unevaluated	No
PET-387	Tate Cabin and Midden	Unevaluated	No
PET-388	Petersburg Boy Scout Camp	Unevaluated	No
PET-519	Sandy Beach Midden	Eligible	No
PET-520	Sandy Beach CCC Shelters	Not Eligible	No

PET-027 is a petroglyph site on Sandy Beach. The site was first reported by Keithahn in 1966. In addition to multiple petroglphys, six fish traps have been identified in the intertidal zone. Three of the fish traps have been radiocarbon dated, producing dates ranging from 2090±60 BP to 1860±90 BP. The site has been determined to be eligible for the NRHP (AHRS 2018). PET-027 is located outside the in-water disposal area and would not be affected by the proposed action.

PET-386, the Handtroller Camp, was identified in 1994 by Charles Mobley. The only recorded structure at this site is a rock-lined hearth that protrudes from the ground not far from a few other rocks likely brought up from shore to weigh down a tent. The site's eligibility for the NRHP has not been evaluated (AHRS 2018). It is not located within the limits of the proposed in-water disposal area and therefore would not be affected by the proposed action.

PET-387 is the Tate Cabin and Midden. The site consists of the remains of a wood-frame hunting cabin and a nearby precontact midden. The cabin was used by Ida Sather from 1925-1933, Flora Tate from 1933-1941, and the Nickerson family from 1941-1945. A radiocarbon date of 1210±60 BP was obtained from the midden. Although Mobley suggested that both the cabin and midden were eligible, the site's eligibility for the NRHP has not been formally evaluated (AHRS 2018). It is not located within the limits of the proposed in-water disposal area and would not be affected by the proposed action.

PET-388 is the Petersburg Boy Scout Camp. This camp site was used by local boy scouts in the 1920s; however, no structures were built at the site and no cultural remains were identified by Charles Mobley in 1994. The camp's eligibility for the NRHP has not been evaluated (AHRS 2018). It is not located within the limits of the proposed in-water disposal area and would not be affected by the proposed action.

PET-519 is the Sandy Beach Midden. This site was first identified by the U.S. Forest Service in 2003, and consists of a buried shell midden scattered along a 60 m by 5 m area of the beach. This site has been determined to be eligible for the NRHP (AHRS 2018). The Sandy Beach Midden is located outside the in-water disposal area and would not be affected by the proposed action.

PET-520 consists of the remains of the Civilian Conservation Corps (CCC) Shelters at Sandy Beach. This site was identified by the U.S. Forest Service in 2003. The CCC program in Petersburg constructed two shelters between 1939 and 1940 near the beachfront; however, all that remains of the original shelter components are two cobble and cement cooking hearths and chimneys. The site was determined to be not eligible for the NRHP due to lack of integrity (AHRS 2018).

A search of the NOAA wrecks and obstructions database revealed two obstructions and no submerged wrecks in the general vicinity of the in-water disposal area. One of the obstructions is identified as a

submerged shoal, and the other is identified as the previous USACE disposal area itself (NOAA 2018). A search of the BOEM 2011 shipwreck database reports two wrecks in the general vicinity of Petersburg. The Roald, a gas screw, foundered on January 18, 1946 near the Horn Cliffs, east of Petersburg, and sank. The 31-B-360 sank at the dock in Petersburg on February 20, 1950 (BOEM 2011). No wrecks were reported within the proposed in-water disposal area.

6.0 Site Management Plan

MPRSA Section 103(b) requires that the criteria and factors identified above are used in a manner consistent with their application pursuant to Section 102(c). Section 103(c)(3) requires the Administrator of USEPA to develop a site management plan for each site designated pursuant to Section 102. Although selection of FSDS as an alternate site in this action does not require development of such a plan, the FSDS will be monitored in order to document the impacts of dredged material disposal in ocean waters. The data collected during the monitoring period will be used to confirm the Corps' determination that the dredging and disposal have less than significant impacts on the human environment and document the post-project site conditions in order to inform future site selection studies in the Alaska District's geographic area of responsibility.

The specification of disposal coordinates are the means of directing disposal at FSDS. The disposal will be specified to occur at the center of the FSDS; latitude 56.832216 and longitude –132.911594. The disposal coordinates restricts the spatial extent of disposal impacts and affords a limited burial impact within the bounds of the FSDS where active disposal is occurring. A single disposal point allows for the best control of disposal release. The disposal point can be moved as capacity in a particular region of the disposal site is approached.

Quality control for disposal of dredged material at FSDS is ensured though Corps of Engineers regulations regarding disposal of dredged materials for federal projects. The approval of transportation of dredged material for disposal at FSDS by the Corps of Engineers is conducted under the authorities of Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972. Only that material shown through appropriate sediment, chemical, and biological testing, as needed, to be suitable for unconfined disposal at FSDS is allowed to be disposed of at FSDS. The Alaska Department of Environmental Conservation (ADEC) Water and Wastewater Division has been engaged in the coordination of the Petersburg South Harbor dredging and disposal since April 2018 and has no concerns regarding impacts to water quality and will issue a certificate of reasonable assurance under Section 401 of the Clean Water Act prior to the disposal of any dredged material at the FSDS.

The quality of the material to be disposed of at FSDS with this project, and the presence, nature and bioavailability of contaminants in the material has been considered. Evaluation of these factors is documented in the dredged material suitability determination prepared by the US Army Corps of Engineers, Alaska District. The entire volume of dredged material from this project that is proposed to be disposed of at FSDS in conjunction with the Petersburg project (Petersburg South Harbor Navigation Improvement Integrated Feasibility Report, September 2018) has been determined to be suitable for

disposal at FSDS, consistent with the requirements of the Marine Protection, Research and Sanctuaries Act.

The anticipated use of FSDS over the long term, the closure date for the site, and any need for management of the site after closure do not need to be considered at this time. This is because this action selects FSDS only for disposal of material from the subject dredging of the Petersburg South Harbor Navigation Improvement Project.

The FSDS will be subject to preconstruction surveys of the bathymetry, sediment chemistry, and epibenthic community composition in order to establish an environmental baseline. The same surveys will be performed one year after construction and five years after construction in order to document the effects of dredged material placement. A schedule for review and revision of a site management plan is not necessary in this case. This is because no site management plan is required in a Section 103(b) alternate site selection. Furthermore, this selection is limited in time to the duration of the Petersburg South Harbor Navigation Improvement dredging project, and because the future use of FSDS will be evaluated on a case-by-case basis.

7.0 References

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

March 15, 2018

Mr. Stephen Giesbrecht, Manager
Petersburg Borough
P.O. Box 329
Petersburg, Alaska 99833

Dear Mr. Giesbrecht:

Thank you for your letter to the U.S. Environmental Protection Agency, dated February 13, 2018, regarding the authorities and acceptable specifications for the use and disposal of dredged material from South Harbor in Petersburg, Alaska. As you may know, the U.S. Army Corps of Engineers, Alaska District is the federal lead agency for the South Harbor dredging project. As such, the Alaska District is responsible for managing the project and coordinating with other federal agencies, including the EPA. The Alaska District has a wealth of experience and expertise in harbor construction and navigational dredging and is well versed in the requirements for the evaluation and testing of dredged material, as well as the specifications for dredged material disposal sites in Alaska. I encourage you to communicate directly with the USACE on this matter. For more information about the Alaska District dredging program, the authorities granted to the USACE by federal law, and the South Harbor project specifically, please contact the USACE Petersburg South Harbor project manager.

The answers to your specific questions are included below:

1. **Who has authority over the specifications of the dredge spoils and how are these specifications developed?**

The discharge of dredged material in Alaska is regulated by several government agencies, including but not limited to the USACE, the EPA, the Alaska Department of Environmental Conservation and the Alaska Department of Natural Resources. If you have questions about the specific state requirements, please contact the appropriate state agency for more information.

The USACE has authorities related to dredging and dredged material under several laws, including but not limited to the Rivers and Harbors Act; the Water Resources Development Act; the Clean Water Act; and the Marine Protection, Research, and Sanctuaries Act.

The EPA has its own authorities for managing dredged material pursuant to the CWA and the MPRSA. This letter addresses some of the EPA's authority under the CWA because the proposed South Harbor improvement project, as described in your letter, appears to be subject to regulation under the CWA and not the MPRSA. The Administrator of the EPA is authorized to prescribe regulations to carry out functions under Section 501(a) the CWA [33 USC § 1361(a)]. In conjunction with the Secretary of the Army, the Administrator is also required to develop guidelines for disposal sites of dredged or fill material, pursuant to Section 404(b)(1) of the CWA [33 USC § 1344(b)(1)].

The "Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material" (Guidelines) are set forth at 40 CFR Part 230. Although the Guidelines are promulgated by the EPA, the USACE, as the permitting agency, is responsible for determining compliance with the Guidelines. The applicable requirements for the evaluation and testing of dredged or fill material are found at 40 CFR Part 230, Subpart G. The first section of Subpart G describes the general evaluation procedures for dredged or fill material, and the second section describes specific procedures for chemical, biological, and physical evaluation and testing (40 CFR §§ 230.60 & 230.61).

The EPA and the USACE have also published joint national and regional manuals on how to evaluate and test dredged material. The Inland Testing Manual provides comprehensive evaluation and testing guidance from a national perspective and is available at: https://www.epa.gov/cwa-404/inland-testing-manual. The Sediment Evaluation Framework is a regional manual for projects in the Pacific Northwest and is available at: https://www.epa.gov/ocean-dumping/sediment-evaluation-framework-pacific-northwest. The User Manual is a regional manual for projects in the State of Washington and is available at: http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/User-Manual. Although there is no Alaska-specific regional manual at this time, the EPA Region 10 allows for any of these three manuals to be used for implementing dredged material testing and disposal for projects in Alaska.

2. **Is there a methodology in place to help a community like Petersburg request for a more specific set of standards to be used for our community?**

Yes, there is a methodology in place for a request of this type. The Guidelines state that "Guidance on interpreting and implementing these Guidelines may be prepared jointly by EPA and the Corps at the national or regional level from time to time." [40 CFR § 230.2(c)]. Additionally, the national ITM states:

> This manual, which is designed to allow for *regional flexibility* in implementation and application including development of *regional manuals* and documentation, will be periodically revised and updated as warranted by advances in regulatory practice and technical understanding. See ITM, Preface, pg. viii (emphasis added).

The Borough may request the Alaska District and EPA Region 10 develop an Alaska-specific regional manual. This approach could be useful across the State of Alaska; however, the development of an Alaska-specific manual may not align with the specific South Harbor project schedule, as developing a regional testing manual for Alaska will take some time. The South Harbor dredged material assessments that would be required prior to material disposal under the new manual would also take additional time. It typically takes several weeks for a general evaluation of dredged material and several months for specific rounds of physical, chemical and biological testing.

The Petersburg Borough may also request regional flexibility in applying and implementing specific provisions in one of the existing approved manuals (i.e., the ITM, the SEF or the UM). Although the ITM allows for regional flexibility, any proposed changes in implementation from an existing manual must be consistent with the CWA and the Guidelines, approved by the USACE and the EPA, based on the best available science and documented in the administrative record.

If you would be interested in participating in a teleconference including the Petersburg Borough, the USACE, and the EPA, to help clarify your specific concerns and to answer any additional questions you may have, please let us know and we can ask the Alaska District, as the federal lead agency for the South Harbor project, to schedule a conference call in the coming weeks. If you need any more information from the EPA, or would like assistance in locating the relevant EPA guidance documents, please contact Chris Meade in our Juneau office at 907-586-7622 or at meade.chris@epa.gov.

Sincerely,

Jill A. Nogi

Jill A. Nogi, Manager
Environmental Review and Sediment Management Unit

Cc: Chris Hladick, Regional Administrator, EPA Region 10
Michael Montone, Acting Chief, Regulatory Division, Alaska District Corps of Engineers
Mark Jensen, Mayor, Petersburg Borough
Glorianne Wollen, Harbormaster, Petersburg Borough
Brad Gilman, Robertson, Monagle & Eastaugh

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

May 14, 2018

SUBJECT: Invitation to Participate in the Scoping Process for the *South Harbor Dredging* Environmental Assessment, Petersburg, Alaska

Ladies and Gentlemen,

The U.S. Army Corps of Engineers, Alaska District, in partnership with the City of Petersburg, proposes to deepen the South Harbor in Petersburg, Alaska in order to improve navigability. (Figure 1) A combination of localized areas of sedimentation adjacent to water inflows along with isostatic rebound have resulted in shallow depths impacting efficient use of portions of the harbor. Vessels often run aground and portions of the harbor are inaccessible at lower tidal stages. These delays lead to loss of catch, additional labor costs for both vessel crew and fish processing plant employees and a limited window where vessels can fish ensuring that they leave and return to the harbor at high tide. Reduction in efficiency leads to loss of revenue to captain and crew meaning less money brought into the community ultimately effecting the economy of Petersburg.

The proposed dredging would increase the depth of the Harbor to minus 19.25' below mean lower low water (MLLW). Preliminary estimates of the volume of dredged material range between 62,000 and 92,000 cubic yards. (Figure 2) The physical characteristics of the sediments will influence the selection of dredge equipment and it is likely that an excavator would be required in order to remove the consolidated clay material underlying the sand with silt epipedon.

Sediment samples were collected from 12 dredged material management units (DMMUs) in April of 2018. Preliminary results indicate that most of the sediment is below screening levels established in the Dredged Material Management Plan (DMMP) and are suitable for unconfined in-water disposal. Polyaromatic hydrocarbon (PAH) testing has not been completed as of the issuance of this scoping letter; results are expected by the 21st of May.

If the final analysis indicates the sediments are suitable for in-water placement, the Alaska District has tentatively identified the estuarine waters of Thomas Bay as the least cost disposal option. In the event the material is unsuitable for in-water placement, it would be disposed in a rock quarry, landfill, or similar location on Mitkof Island.

Resources that have been identified as potentially affected by the construction of the harbor deepening project are migratory birds, fish, marine mammals, recreation, socioeconomics, land use, and water quality. Humpback whales and Steller sea lions are marine mammals protected by the Endangered Species Act (ESA) known to occur in the vicinity of the proposed project. Hammer Slough is an anadromous stream as described by the Anadromous Waters Catalog (AWC) and may contain Coho and pink salmon, as well as Dolly Varden. Additionally, herring are known to spawn in nearby Scow Bay and may be present in the Harbor at various times throughout the year. The proposed action is expected to have a less than significant impact on

these resources and will be addressed in an EA in compliance with the National Environmental Policy Act. The draft EA is scheduled to be completed by July 15, 2018.

As part of the process for determining the scope of issues to be addressed in the EA and for identifying the important issues related to the proposed action, we request your comments on the above issues and any other issues that you can identify as important. We intend to use your comments to:

- Identify the range of alternatives and impacts and the important issues to be addressed in the EA.
- Identify and eliminate from detailed study the issues that are not important or that have been covered by prior environmental review.
- Identify other environmental review and consultation requirements.
- Identify potential project modifications to further reduce the level of impact.

We request your comments by June 15, 2018. If you do not reply by that date, we will assume that you have no comments at this stage of project development. If you have any questions regarding the above, please contact me at 907-753-2711 or by email at matthew.w.ferguson@usace.army.mil.

Sincerely,

Matt Ferguson, Biologist
Environmental Resources Section

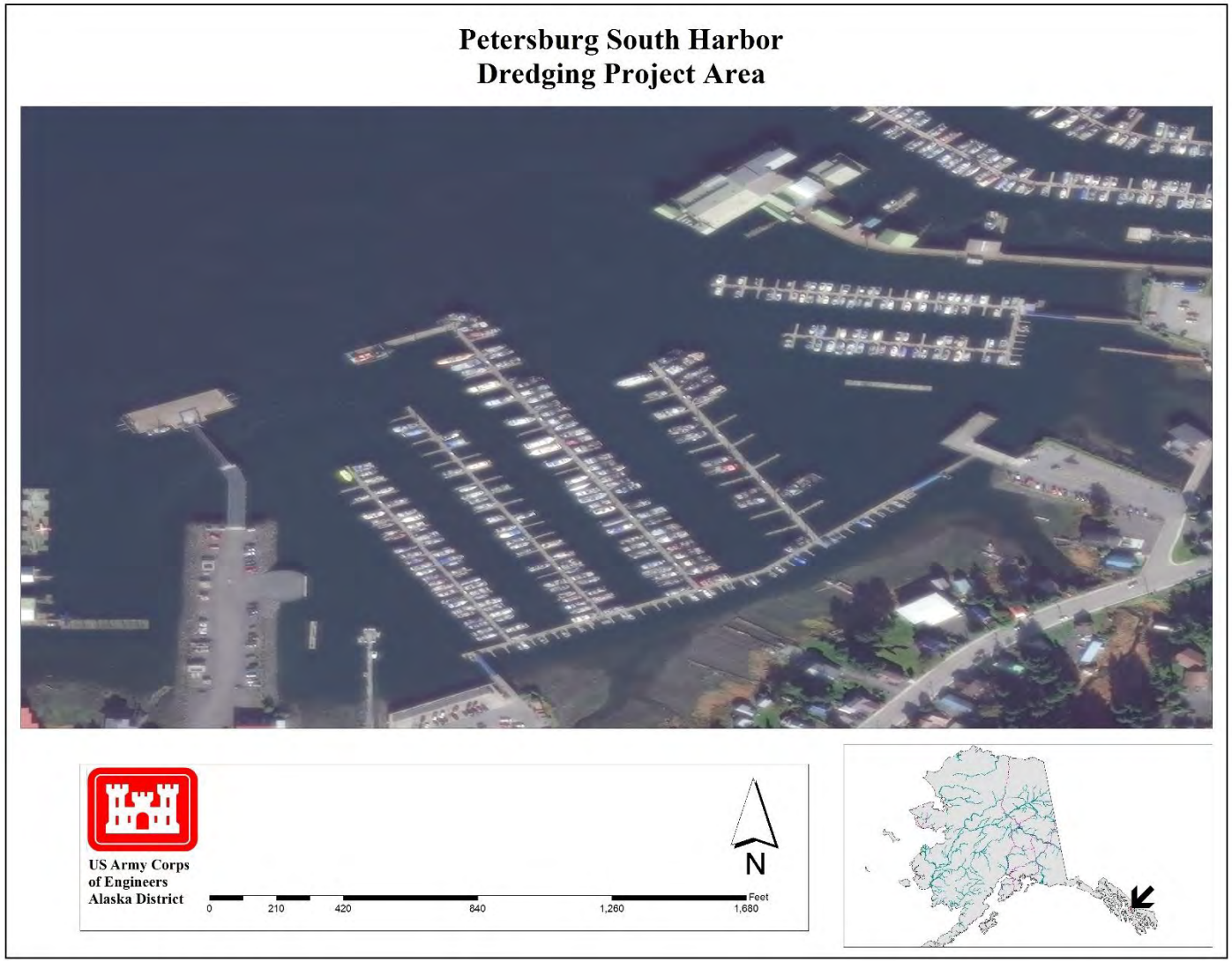

Figure 1. Petersburg South Harbor dredging project area

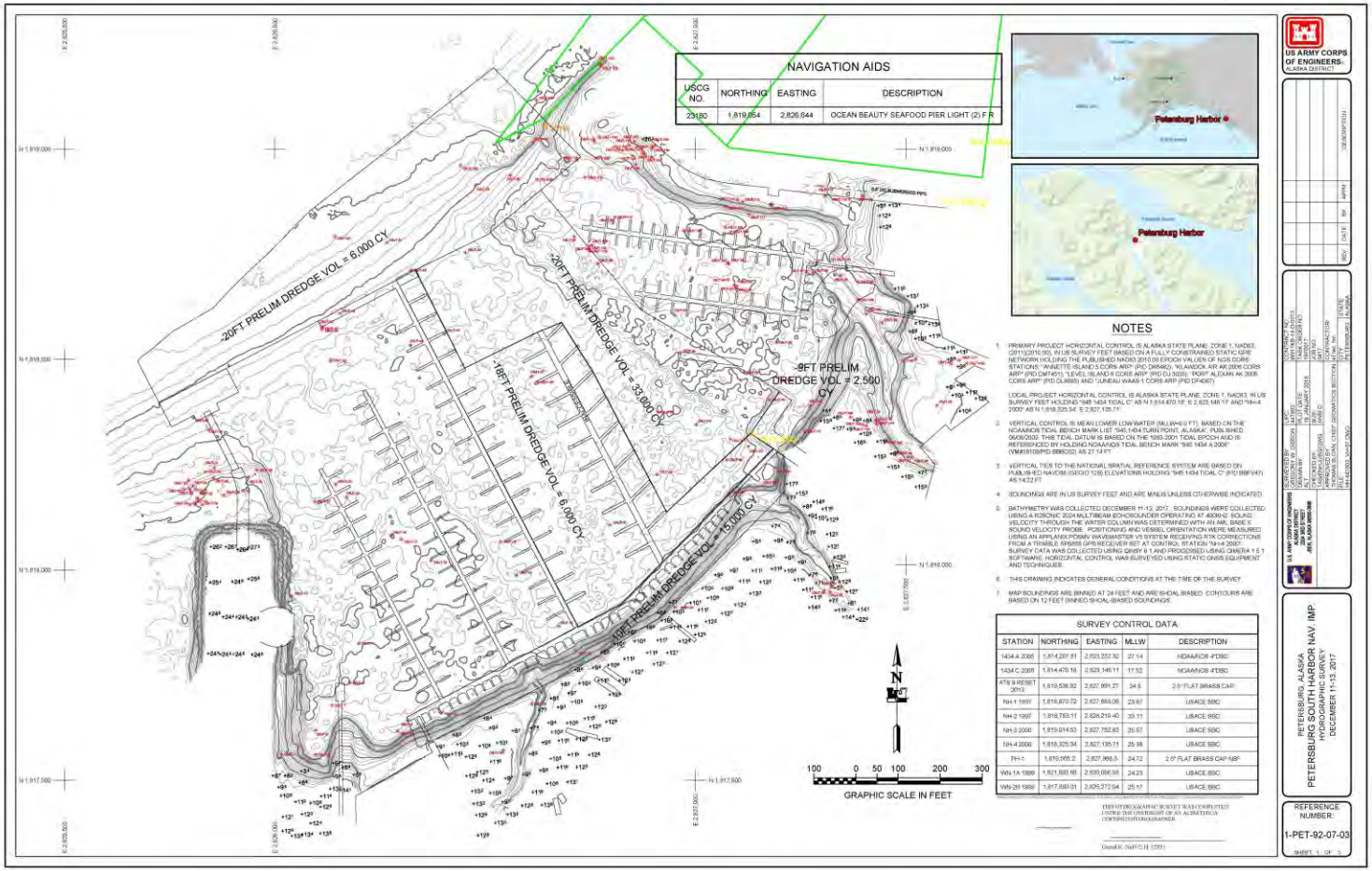

Figure 2. Bathymetry and preliminary dredge volumes

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

June 28, 2018

Mr. Matthew Ferguson
U.S. Army Corps of Engineers
Alaska District
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Dear Mr. Ferguson:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' May 14, 2018 Invitation to Participate in the Scoping Process for the South Harbor Dredging Environmental Assessment, Petersburg, Alaska. The EPA comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Sections 1500-1508) and Section 309 of the Clean Air Act (EPA Region 10 Project Number 18-0014-COE).

The U.S. Army Corps of Engineers, in partnership with the City of Petersburg, proposes to deepen the South Harbor in Petersburg, Alaska, to improve navigability for fishing vessels. Sedimentation and isostatic rebound have resulted in shallow depths affecting efficient use of portions of the Harbor during low tides. The proposed dredging would increase the depth of the Harbor to minus 19.25' below mean lower low water, which would require the dredging and disposal of between 62,000 and 92,000 cubic yards of dredged material.

Purpose and need

We recommend the EA should include a clear and concise statement of the underlying purpose and need for the proposed action, consistent with the NEPA implementing regulations.[1] In presenting the purpose and need for the project, we recommend that the NEPA document convey not only the Corps' purpose, but also the broader public interest and need. The purpose and need, together with its goals and objectives, are important to setting up the analysis of alternatives. To generate a range of reasonable alternatives, we recommend that the purpose and need not be too tightly focused, nor too broadly stated.

Range of alternatives

The NEPA states that "all agencies of the Federal Government shall study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[2] We recommend that the EA include a range of reasonable alternatives that would meet the stated purpose and need for the project and that would be responsive to the issues identified during the scoping process. This is to ensure that the NEPA document provides the public and the decision makers with information that sharply defines the issues and identifies a clear basis for choice among alternatives as required by the NEPA. NEPA regulations

[1] 40 CFR 1502.13
[2] NEPA, Section 102(2)(E); (42 USC Section 4332)

require all reasonable alternatives be considered, even if some of them could be outside the capability or the jurisdiction of the agency preparing the NEPA analysis for the proposed action.[3] The Corps' scoping invitation identifies the proposed dredging of South Harbor and placement of dredged material in the estuarine waters of Thomas Bay as a least cost option. If the material is unsuitable for in-water disposal, it would be disposed in a rock quarry, landfill, or similar location on Mitkof Island.

Thomas Bay, which lies approximately 20 air miles northeast of Petersburg, is surrounded by the Tongass National Forest where the Land Use Designation is primarily "Non-Development." While some logging has occurred in the Bay's southern drainages, it appears generally pristine, affording visitors a wilderness experience of hiking, kayaking, fish and wildlife, and use of a Forest Service cabin.[4] These factors give reason to anticipate that use of Thomas Bay for dredged material disposal may potentially be controversial. Additionally, the historic industrial uses in South Harbor (large fishing fleet and several seafood processors) and previous sediment analysis results indicating contamination in the sediments of Petersburg North Harbor, support the need for a complete sediment analysis to inform the Environmental Assessment.

We recommend consideration of additional alternatives, such as:

- If the dredged material is unsuitable for in-water disposal, we recommend that the Corps identify specific location alternatives for upland disposal. Each potential upland site would also need to be evaluated for applicable regulatory compliance, as well as for potential effects to human health and the environment.
- If the dredged material is of suitable quality for in-water disposal, we recommend that the Corps:
    - Consider beneficial uses for the dredged material. We do not recommend using the dredged material for intertidal fill, such as, for a boat storage area.
    - Identify other potential in-water disposal sites in inland waters under Section 404 Clean Water Act. We recommend that the NEPA analysis demonstrate compliance with the CWA Section 404(b)(1) Guidelines and identify the Least Environmentally Damaging Practicable Alternative (LEDPA).
    - Identify disposal sites in ocean waters under the Marine Protection, Research, and Sanctuaries Act, Section 103, that may have fewer impacts than those to the Thomas Bay estuary. The Corps is given authority under Section 103 of the Marine Protection, Research, and Sanctuaries Act (33 U.S.C 1413) to select a disposal site for a specific project with limited duration when other alternatives are not available. The Corps would apply the criteria and factors as set forth in Section 102(c) of the statute for evaluating the suitability of the disposal site. While this approach requires concurrence by EPA on the selection and use of the site, EPA would not conduct rulemaking or develop a site management and monitoring plan.

Subjects for analysis in the EA

Resources identified by the Corps as potentially affected by the project include migratory birds, fish, marine mammals, recreation, socioeconomics, land use, and water quality. Humpback whales and Steller sea lions, which are listed under the Endangered Species Act, are known to occur in the project

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[3] 40 CFR 1502.14

[4] https://www.fs.usda.gov/detail/tongass/landmanagement/?cid=stelprd3801708

vicinity. Herring, which spawn in nearby Scow Bay, may be present in South Harbor at various times throughout the year. Hammer Slough, an anadromous fish stream, may contain coho and pink salmon and Dolly Varden.

We agree that these subjects are appropriate for the NEPA analysis. We recommend that the Corps identify and characterize the stressors that would affect each of these resources, i.e., the nature, number, frequency, duration, severity, and specific manner in which the stressors would affect the project area ecosystems, habitats, species, and human communities. We offer further comment on several of these and additional related subjects for analysis below.

Sediment characterization: The Corps states that the area to be dredged in South Harbor consists of consolidated clay material underlying sand with silt epipedon. The Corps collected sediment samples from 12 dredged material management units and provided preliminary results to EPA. The information provided is insufficient to make a determination of the suitability of in-water placement or disposal of the dredged material. We recommend that the Corps provide the following additional information related to the evaluation of the dredged material to inform the range of alternatives for the final disposition of this material:

- Include the Sampling Analysis Plan;
- Identify what standards are being used for comparison of the chemical analysis results;
- Provide a full sedimentation characterization report, including PAH results, and analysis of the physical characteristics of the dredged material;
- Clearly describe the sediment sample matrix that was analyzed; and
- Provide an analysis of the potential for debris, anthropogenic or non-anthropogenic, that may be found in the dredged material and the proposed method for ensuring that debris is not disposed in-water.

We recommend that the EA also discuss the anticipated number, frequency, and volume of dredging operations and dredged material disposal events at the proposed disposal site(s). Factoring in the effects of changing climate on the rate and volumes of sediment delivered to South Harbor and other potential locations that may require dredging, which can affect the reasonably foreseeable frequency and volume of dredging events, would be useful to inform the analysis of effects for each alternative, including the cumulative effects.

Once the Corps has assembled the above information, we encourage the Corps to have early and ongoing coordination with EPA, USFWS, NMFS, and the State of Alaska regarding sediment characterization and disposal site selection processes. We would appreciate receiving the draft EA for review, the Public Notice for proposed disposal in inland waters, or the MPRSA Section 103 proposal for disposal in ocean waters. The input by these agencies early in the process would avoid unnecessary delays and inefficient use of government resources as the Corps moves forward with their project.

Disposal site characterization: We recommend that the Corps provide information about the proposed disposal location(s) including: bathymetry, substrate type, benthic fish and invertebrate communities, quality and quantity and potential capacity of habitat and species use of the area to be dredged, and of the disposal site(s). A discussion of potential impacts to important recreational and commercial species and their habitat would also inform the analysis. Data collection methods to gather this information pre- and post- dredging could include multibeam bathymetric surveys and underwater video imagery

surveys. The deeper material to be dredged might be extracted in a consolidated form that, once disposed on the seafloor, could create structure that would change the habitat function of the affected area and provide for a different type of epibenthic ecological community. We recommend that the Corps assess this type of change to the seafloor at the disposal area(s) and implications for recreationally and commercially important species.

Transport of dredged material: The means for and effects of transporting dredged material from South Harbor to the disposal site is also recommended for analysis in the EA. This would include the number, timing, frequency, and duration of transport and disposal events, the type of transport vessel (e.g., a towed barge, discharge from a barge), fuel use, air emissions, and the potential for collisions with wildlife (e.g., marine mammals) or with other boat traffic.

Human uses of potential dredged material disposal sites: To evaluate the potential effects on human health and the environment from dredged material disposal, we recommend the EA also describe the human uses of the proposed disposal sites. For example, the assessment for Thomas Bay would address: subsistence uses, recreational fishing, commercial fishing, recreational and/or commercial crabbing, recreational boating, commercial tourism, and non-water based activities that may be affected by disposal activities, such as, hiking, camping, and wildlife viewing.

Threatened and endangered species: Identification of any endangered, threatened, and candidate species listed under the Endangered Species Act, and any state-listed or other sensitive species within the proposed project area is important to the NEPA analysis. We recommend that the EA also describe the critical habitat for these species, identify any impacts the proposed project would have on these species and their critical habitat, and how the Corps would meet all ESA requirements.

Habitat: Because the proposed project may have impacts on fish and marine mammal habitat, we recommend that the EA describe the current quality and potential capacity of habitat, its use by fish and marine mammals in and near the anticipated project area, and identify known fish and marine mammal corridors, migration routes, and areas of seasonal congregation. The analysis would also include an evaluation of the direct and indirect effects on fish and marine mammals from activities proposed under each alternative including, but not limited to, underwater noise effects. Updated technical guidance for assessing acoustic impacts is available from NOAA Fisheries.[5]

Indirect and cumulative effects: Cumulative impacts result when the effects of an action are added to other effects on a resource in an appropriately specified geographic area and within an appropriately specified timeframe. It is the combination of these effects, and any resulting environmental degradation, that are the intended focus of cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all relevant disturbances because cumulative impacts result from compounding the effects of all actions over time. The cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of the proposed action *and* all other activities affecting the resource. We recommend that the cumulative impacts analysis:

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[5] http://www.nmfs.noaa.gov/pr/acoustics/Acoustic%20Guidance%20Files/opr-55_acoustic_guidance_tech_memo.pdf

- Characterize the resources, ecosystems and communities in terms of their response to change and capacity to withstand stresses;
- Focus on resources that are "at risk" or have the potential to be significantly impacted by the proposed project;
- Delineate and explain the reasoning behind the geographic boundary decision, using natural ecological boundaries to the extent possible. For example, for cumulative aquatic resource impacts, a natural boundary such as a watershed or sub-watershed could be identified for the spatial scope, although an analysis at multiple geographic scales may also be appropriate;
- Include a determination and explanation for the temporal scope of the analyses; and
- Use trend data, where available, to establish a baseline for the affected resources, to project a reasonably foreseeable cumulative baseline for the affected resources, and to predict the environmental effects of the project when added to this baseline.

NEPA mitigation and monitoring: The Council on Environmental Quality's January 14, 2011 guidance on the Appropriate Use of Mitigation and Monitoring addresses establishing, implementing, and monitoring mitigation commitments made during the NEPA process.[6]

Key concepts include:

- Ensuring that mitigation commitments are implemented;
- Monitoring the effectiveness of mitigation commitments;
- Remedying failed mitigation; and
- Involving the public in mitigation planning.

The EIS should include a discussion of how the mitigation measures would be implemented and monitored, such as, identification of the responsible parties, performance objectives, and enforcement clauses to ensure the commitments are stipulated through agency permits or other agreements.

Consultation and Coordination with Tribal Governments: Executive Order 13175, Consultation and Coordination with Indian Tribal Governments,[7] was issued to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes. We recommend that the NEPA document describe the process and outcomes of the government-to-government consultations between the Corps of Engineers and tribal governments, including the major issues raised, and how those issues were addressed in the NEPA analysis.

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[6] CEQ, Memorandum for Heads of Federal Departments and Agencies, Subject: Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, January 14, 2011.
http://ceq.hss.doe.gov/current_developments/docs/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf

[7] Consultation and Coordination with Indian Tribal Governments, Executive Order 13175, Fed. Reg. 67249, November 9, 2000.

We appreciate the opportunity to provide scoping comments. If you have questions about our comments, please contact me at (206) 553-2966 or at somers.elaine@epa.gov. or contact Bridgette Lohrman at (503) 326-4006 or at lohrman.bridgette@epa.gov.

Sincerely,

Elaine L. Somers
Environmental Review and Sediment Management Unit

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish And Wildlife Conservation Office
4700 Blm Road
Anchorage, AK 99507
Phone: (907) 271-2888 Fax: (907) 271-2786

In Reply Refer To: October 10, 2018
Consultation Code: 07CAAN00-2018-SLI-0227
Event Code: 07CAAN00-2019-E-00025
Project Name: Petersburg Dredging

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and some candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that candidate species are not included on this list. We encourage you to visit the following website to learn more about candidate species in your area: http://www.fws.gov/alaska/fisheries/fieldoffice/anchorage/endangered/candidate_conservation.htm

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

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Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Anchorage Fish And Wildlife Conservation Office
4700 Blm Road
Anchorage, AK 99507
(907) 271-2888

Project Summary

Consultation Code: 07CAAN00-2018-SLI-0227

Event Code: 07CAAN00-2019-E-00025

Project Name: Petersburg Dredging

Project Type: DREDGE / EXCAVATION

Project Description: Dredge up to 92,000 cubic yards of sand, silt, and clay to a maximum depth of minus 19.25' mean lower low water using a mechanical dredge plant.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/56.81068986419381N132.96312551671775W

Counties: Petersburg, AK

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

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See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

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Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish And Wildlife Conservation Office
4700 Blm Road
Anchorage, AK 99507
Phone: (907) 271-2888 Fax: (907) 271-2786

In Reply Refer To: October 10, 2018
Consultation Code: 07CAAN00-2019-SLI-0009
Event Code: 07CAAN00-2019-E-00023
Project Name: Ocean disposal or dredged material

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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This species list is provided by:

Anchorage Fish And Wildlife Conservation Office
4700 Blm Road
Anchorage, AK 99507
(907) 271-2888

Project Summary

Consultation Code: 07CAAN00-2019-SLI-0009

Event Code: 07CAAN00-2019-E-00023

Project Name: Ocean disposal or dredged material

Project Type: DREDGE / EXCAVATION

Project Description: Place 92k yards of dredged material in ocean waters

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/56.825542949244415N132.92023350206674W

Counties: Petersburg, AK

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

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Critical habitats

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish And Wildlife Conservation Office
4700 Blm Road
Anchorage, AK 99507
Phone: (907) 271-2888 Fax: (907) 271-2786

In Reply Refer To: October 10, 2018
Consultation Code: 07CAAN00-2018-SLI-0228
Event Code: 07CAAN00-2019-E-00024
Project Name: Thomas Bay dredged material placement

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

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This species list is provided by:

Anchorage Fish And Wildlife Conservation Office
4700 Blm Road
Anchorage, AK 99507
(907) 271-2888

Project Summary

Consultation Code: 07CAAN00-2018-SLI-0228

Event Code: 07CAAN00-2019-E-00024

Project Name: Thomas Bay dredged material placement

Project Type: FILL

Project Description: Placement of up to 92,000 cubic yards of dredged sediment from the Petersburg South Harbor

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/57.0427478375304N132.84291929112862W

Counties: Petersburg, AK

Endangered Species Act Species

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Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

November 14, 2018

Jon Kurland
Assistant Regional Administrator for Protected Resources
NMFS, Alaska Region
PO Box 21668
Juneau, AK 99802

Re: Request for Initiation of Informal Consultation under section 7(a)(2) of the Endangered Species Act (ESA) for the Petersburg South Harbor Navigation Improvement Project

Dear Mr. Kurland:

The U.S. Army Corps of Engineers, Alaska District proposes to construct the proposed project as described below. We request initiation of informal consultation under section 7(a)(2) of the Endangered Species Act for the Petersburg South Harbor Navigation Improvement Project. We have determined that the proposed activity may affect, but is not likely to adversely affect the threatened Mexico Distinct Population Segment (DPS) humpback whale (*Megaptera novaengliae*) or the endangered western DPS of Steller sea lion (*Eumatopias jubatus*). Our supporting analysis is provided below. We request your written concurrence if you agree with our determinations.

Project Description

This proposed project is intended to construct navigation improvements in the Petersburg South Harbor in order to improve access for commercial and subsistence vessels, reduce life and human safety risks, increase regional economic activities, increase regional employment opportunities, and reduce damage to catch and dead-loss caused by delays and contamination. We expect work to commence on **October 1, 2020**, and extend through **March 15, 2021.**

The Corps proposes to employ a barge mounted excavator to remove up to **82,980** cubic yards (cy) of sediment from the South Harbor and transport by barge to a selected location in Frederick Sound for deep water disposal. The exact means and methods for construction will be determined by the contractor. It is expected that materials and equipment will be transported to the project site by barge.

The South Harbor was divided into four units based on the proposed project depths; the recreational boat slips landward of the spine float in Unit 1 would be dredged to minus 10' MLLW, the maneuvering basin between C and D floats would be dredged to minus 18' MLLW and is called Unit 2, the crane dock basin would be dredged to minus 9' MLLW and is called Unit 3, and the entrance channel between South and Middle Harbors would be dredged to minus 19.25' MLLW and is called Unit 4. (Figure 1)

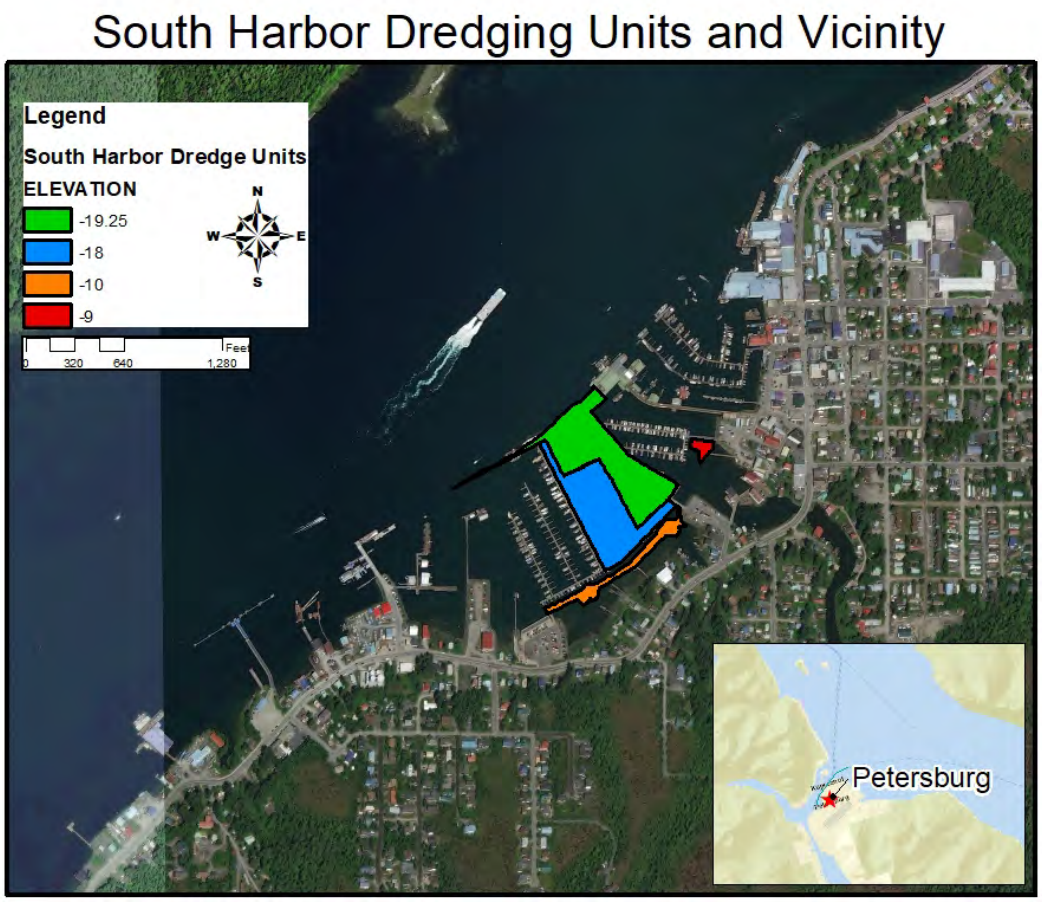


Figure 1. Petersburg South Harbor Project Depths

The Corps would employ a mechanical dredge to remove the sediment from the South Harbor, likely a barge mounted excavator, and transfer into a scow for disposal. The dredge plant type is dictated by the consistency of the sediments in the South Harbor, primarily consolidated material of terrestrial origin. Isostatic rebound is the driver of relative sea level change in the project area, so the dredged material is mostly clay and rock overlain by a thin layer of granular sediment. The minimal rate of accretion in the South Harbor would require very long maintenance intervals, the Corps conservatively estimates no maintenance would be required for 30 years.

Dredged material excavated from the South Harbor would be placed in the ocean waters of Frederick Sound, in depths exceeding 400 feet. The disposal location is approximately two miles from the South Harbor and has been used by the Corps since at least 1952 for the disposal of dredged material from the Wrangell Narrows navigation channel and various Petersburg harbor dredging projects. The contractor will determine the equipment used for disposal, but similar projects have employed barge transits carrying about 1,500 cy of dredged material per trip. This capacity would result in about 62 trips between the South Harbor and the disposal location over the course of about three months in the winter of 2020-21. Dredging projects of this scale often require 10-12 hour workdays in order to complete the project in the most efficient manner.

Weather and daylight will influence the total number of hours each day and the total duration the dredging occurs.

The proposed project would require an excavator mounted on a barge to be anchored or held in position by spuds in the South Harbor, a barge pushed by a tug to transport dredged material from the South Harbor to the disposal location, and a survey vessel to conduct hydrographic surveys of the Harbor and the disposal area before and after construction.

The dredge would be substantially stationary, except for minor repositioning as the project depths are incrementally achieved. It would not be a major source of underwater noise because the engine of the excavator would be located above the water's surface and the only portion of the machine that would operate below the surface would be the bucket and arm. The method of removal and substrate type would not result in impactful underwater sound pressure levels.

The barge transporting dredged material from the South Harbor to the disposal site would be propelled by a tug boat and likely capable of a maximum speed of about 9 knots. The engines and propellers of the tugboat could constitute a substantial source of anthropogenic noise. Blackwell and Greene (2003) recorded underwater noise produced by both large and small vessels near the Port of Anchorage. The larger tugboat Leo produced the highest broadband levels, 149 dB re: 1 μPa at a distance of 335 ft. (102 m), when pushing against a dock at the Port of Anchorage; while the docked Northern Lights (cargo freight ship) produced broadband sound levels of 126 dB re: 1 μPa at 374 ft. (114 m).

Pre and Post construction bathymetric surveys would be conducted in the Harbor and disposal site using a survey boat with multibeam sonar. Additional interim surveys would be conducted in the Harbor on a monthly basis to provide pay quantities for the dredge contractor. A total of five surveys in the Harbor and two surveys of the disposal area would be conducted for the navigation improvement project. The survey vessel would likely be a small craft less than 10 meters in length, powered by two 150 hp four-stroke outboard engines. Lester, et al., recorded received sound pressure levels (SPL) from recreational-sized boats of a similar size and power rating as the craft that would likely conduct the bathymetric surveys for the Petersburg South Harbor project an found that an 8.5m Parker boat with twin 150 hp Johnson four-strokes emitted a maximum SPL of about 140 dB re 1 μPa in the 400-600 Hz range. The ambient SPL in the experimental channel (soft sided mosquito ditch in NJ) exceeded 80 dB around 175 Hz and reached 80 dB around 500 Hz. The engine noise from the Parker boat attenuated to ambient levels within 5m of the source. The survey vessel would be capable of much greater speeds than the barge and likely attain speeds of 20-25 knots during the transit to the disposal area, which would take about 5 minutes each way. During the survey, the vessel would likely operate between 3-5 knots with a maximum survey speed of 10 knots. The sonar device would be a R2Sonic 2022 or similar. The sonar would operate in the range of 200-400 kHz. The transect interval would be determined by the contractor and subject to field conditions; but the May 2018 survey took 60-90 minutes.

While no specific data are available for the ambient sound pressure levels in the Petersburg South Harbor, Wrangell Narrows, and proximal areas in Frederick sound; the District assumes the ambient SPL to be quite high based on existing anthropogenic and natural sources. Blackwell

and Greene recorded underwater sounds in Cook Inlet during August of 2001 and found the highest broadband SPL were received north of Point Possession during the flood tide, reaching 124 dB re 1 μPa. This ambient SPL station is removed from any anthropogenic sources and the high levels are attributed to tidal currents. As a result, the Alaska District largely discounts the hydroacoustic impacts of the proposed project on protected species. The tidal signature in Wrangell Narrows is less extreme that that of Cook Inlet, but Wrangell Narrows is much more constrained and velocities are similar. Vessel traffic from non-project related activities is also much more constrained in Wrangell Narrows than Cook Inlet, concentrating noise sources and introducing acoustic contamination. The same study recorded ambient noise in the Port of Anchorage (now known as the Port of Alaska) and reported broadband SPL on the order of 110-116 dB.

Any water quality perturbations from the dredging or disposal would be temporary and ephemeral given the water current velocities in the Wrangell Narrows and Frederick Sound. The sediments that would be disposed in Frederick Sound do not exceed the chemical screening levels established in the Seattle District Dredged Material Management Plan (DMMP), and are deemed suitable for unconfined in-water placement.

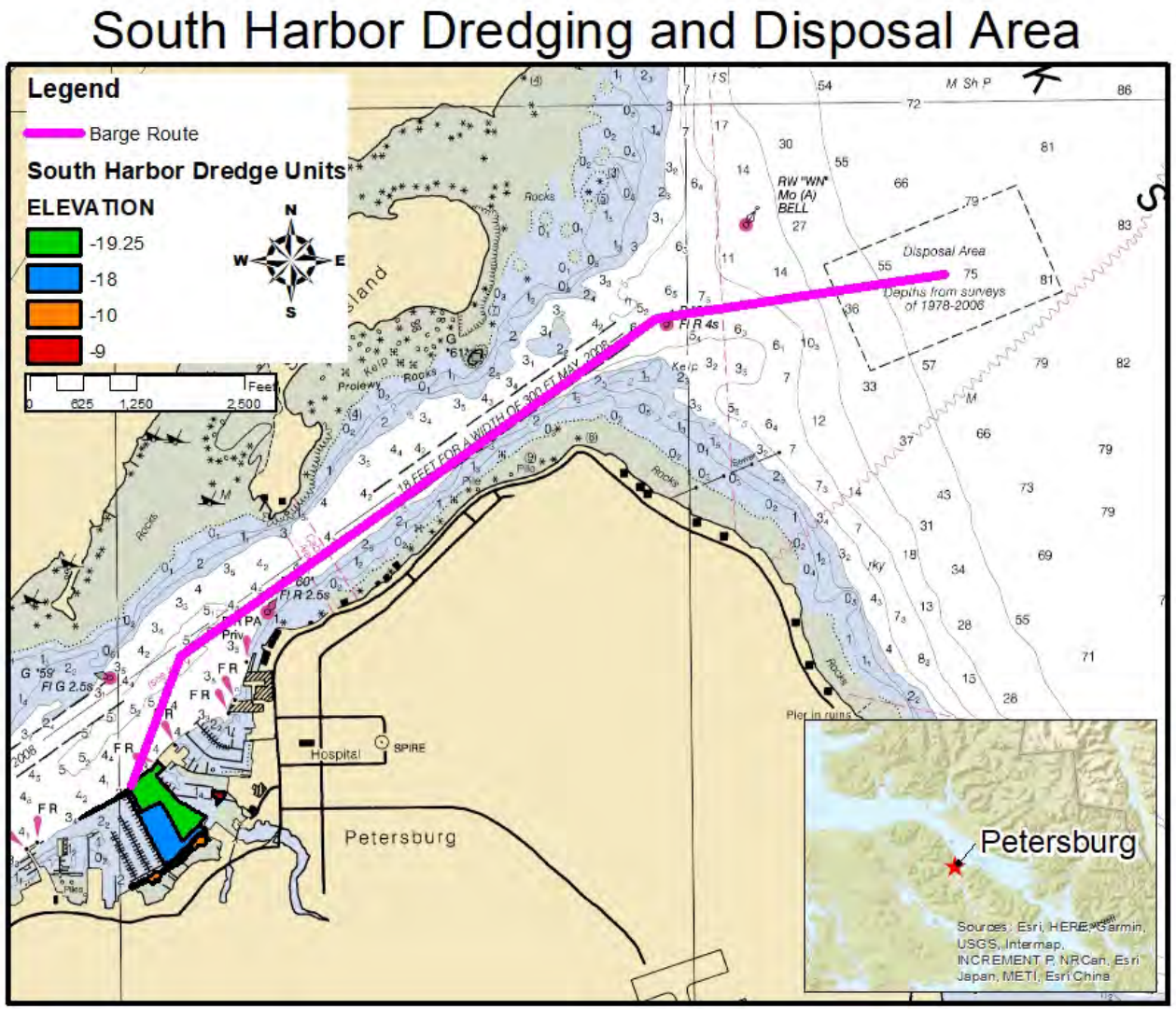


Figure 2. South Harbor Project Depths and Disposal Area

Mitigation Measures

1. Efforts to reduce benthic disturbance in the action area will be made. Specifically:
    a. No dredge material will be stockpiled on the seafloor, and
    b. No seafloor leveling by dragging the bucket or other device will occur.

2. Vessels will adhere to the Alaska Humpback Whale Approach Regulations when transiting to and from the project site (see 50 CFR §§ 216.18, 223.214, and 224.103(b)). These regulations require that all vessels:
    a. Not approach within 100 yards of a humpback whale, or cause a vessel or other object to approach within 100 yards of a humpback whale,
    b. Not place vessel in the path of oncoming humpback whales causing them to surface within 100 yards of vessel,
    c. Not disrupt the normal behavior or prior activity of a whale, and
    d. Operate at a slow, safe speed when near a humpback whale (safe speed is defined in regulation (see 33 CFR § 83.06)).

3. Vessels will also follow the NMFS Marine Mammal Code of Conduct for other species of marine mammals which recommend maintaining a minimum distance of 100 yards; not encircling or trapping marine mammals between boats, or boats and shore; and putting engines in neutral if approached by a whale or other marine mammal to allow the animals(s) to pass.

4. In order to minimize the potential interaction of project vessels and marine mammals, the project will be constructed during the winter when marine mammal densities are lowest. The surveys, dredging, and disposal would occur between October 1st 2020 and March 15th 2021.

Description of the Action Area

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

For this project, the action area includes the South Harbor, disposal area, and transit route between the Harbor and disposal area. In order to provide an additional measure of protection for marine mammals in the project area, the Alaska District established a 100m buffer around the transit route between the disposal area and South Harbor. The action area is depicted in Figure 3.

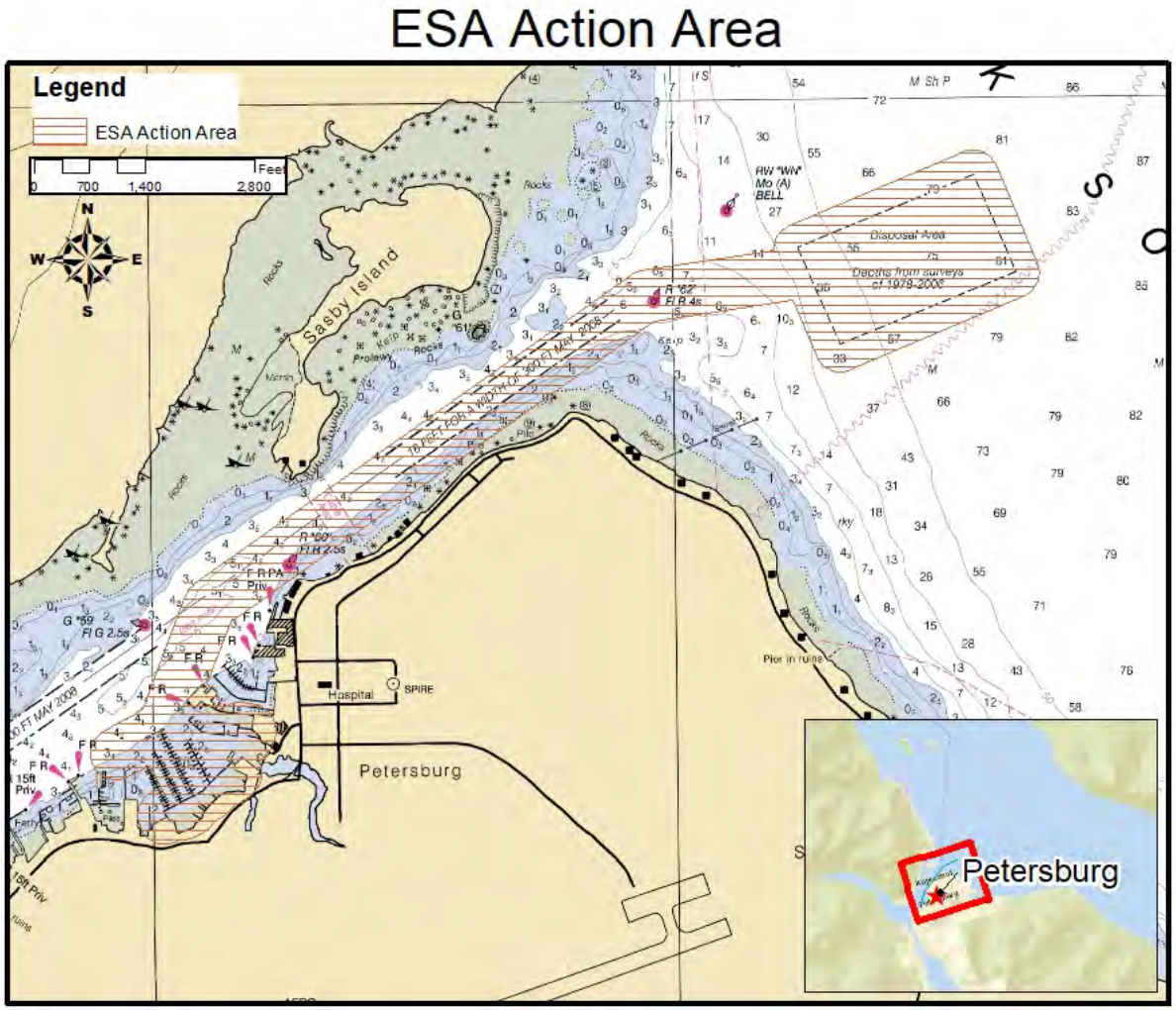


Figure 3. Endangered Species Act Action Area

NMFS Listed Species and Critical Habitat in the Action Area

Humpback whale. Humpback whales were listed as endangered under the ESA in 1970, depleted under the MMPA in 1972, and endangered under the State of Alaska Endangered Species list. This species travels through and forages in Frederick Sound throughout the year but is most abundant in spring and summer months. Local boaters have observed humpback whales in the project area "lounging," or resting in Frederick Sound.

In 2016, NMFS recognized the existence of 14 DPSs of humpback whale, whereas they had been previously listed under the ESA as a single endangered species worldwide. In the 2016 decision, NMFS classified four of the DPSs as endangered, one as threatened, and the remaining nine unwarranting of protection under the ESA. Three DPSs of humpback whales occur in waters off the coast of Alaska: the Western North Pacific DPS, which is an endangered species under the ESA, the Mexico DPS, which is a threatened species, and Hawaii DPS, which is not protected under the ESA. Whales from these three DPSs overlap to some extent on feeding grounds off Alaska.

The two DPSs of humpback whale likely to be encountered in Southeast Alaska and Northern British Columbia are the unlisted Hawaii DPS and threatened Mexico DPS. Humpback whales in the study area are expected to be represented by the unlisted Hawaii DPS 93.9% of the time and the threatened Mexico DPS 6.1% of the time. (NMFS 2016)

There is no humpback whale critical habitat in the project area and most humpback whales are believed to return to the warmer waters off the coast of Hawaii or Mexico, depending on DPS, during the winter to calve. Humpback whales migrate seasonally between warmer, tropical or sub-tropical waters in winter months (where they reproduce and give birth to calves) and cooler, temperate or sub-Arctic waters in summer months (where they feed). In their summer foraging areas and winter calving areas, humpback whales tend to occupy shallower, coastal waters; during their seasonal migrations, however, humpback whales disperse widely in deep, pelagic waters and tend to avoid shallower, coastal waters (Winn and Reichley 1985).

Humpback whales are present in Southeast Alaska in all months of the year. Most Southeast Alaska humpback whales winter in low latitudes, but some individuals have been documented over-wintering near Sitka and Juneau (NPS Fact Sheet available at http://www.nps.gov/glba). Late fall and winter whale habitat in Southeast Alaska appears to correlate with areas that have over-wintering herring (such as lower Lynn Canal, Tenakee Inlet, Whale Bay, Ketchikan, and Sitka Sound), none of which are in the action area (Baker et al. 1985, Straley 1990) Moran and Straley, in press).

Steller Sea Lion, Eastern and Western Distinct Population Segments. In 1997 the NMFS recognized two Distinct Population Segments: the western DPS and eastern DPS. The segment of the population west of 144° W longitude was listed as "endangered," while the segment of the population east of this delineation remained listed as "threatened." The eastern DPS has recovered to the point that it is no longer considered threatened and the western DPS is recovering in much of its range, but remains endangered due to sharp declines in the Western

and Central Aleutians. The study area lies within the range of the unlisted eastern DPS, and within the overlap range of the endangered western DPS.

Steller sea lions are present year-round in the project area and appear to be very habituated to anthropogenic activities. During the Corps' November 2017 site visit, three sea lions were observed swimming in the South Harbor. During the Corps' August 2018 site visit, several sea lions were observed hauled out on the navigation buoy at the entrance of the Wrangell Narrow navigation channel. Local sources have related accounts of killer whale predation of sea lions in the project area, specifically from the navigation buoy at the entrance to Wrangell Narrows. These resident sea lions are presumed to forage on overwintering herring and available year-round Pollock and Hake.

There is no critical habitat designated within the Corps' study area for the western and eastern populations.

Effects Determination

Project construction activities would result in temporary alterations to habitat used by Steller sea lions in the project area. Vessel noise and transit associated with construction activities have the potential to cause avoidance, disturbance, or displacement of Steller sea lions and humpback whales from the Petersburg area during peak Pacific herring spawning activities when Steller sea lions and humpback whales feed on staging and spawning adult herring. Therefore, USACE has proposed to cease in-water construction during peak Pacific herring spawning activities (between March 15 and June 1). Construction activities outside this period coincide with periods when a minimum quantity of marine mammals is present.

Hydroacoustic impacts. Sound propagation in the project area would be attenuated by manmade structures including harbors, ramps, docks, piers, drive-down floats, and natural features such as the narrow channel, shallow water, submerged rocks and reefs, and small islands. The Wrangell Narrows is part of the Inside Passage and would be transited enroute to the disposal location. The Inside Passage is a very busy inland waterway; the Alaska Marine Highway System's Petersburg-Juneau and Juneau-Ketchikan routes pass the Petersburg South Harbor and disposal area four days a week. Noise produced by dredging, transportation of dredged material to the disposal location, and disposal would be in the audible bandwidth of both humpback whales and Steller sea lions; but due to the high level of ambient noise, expected rapid attenutation rate, and timing of the proposed project there would be no affect to marine mammals from acoustic disturbance.

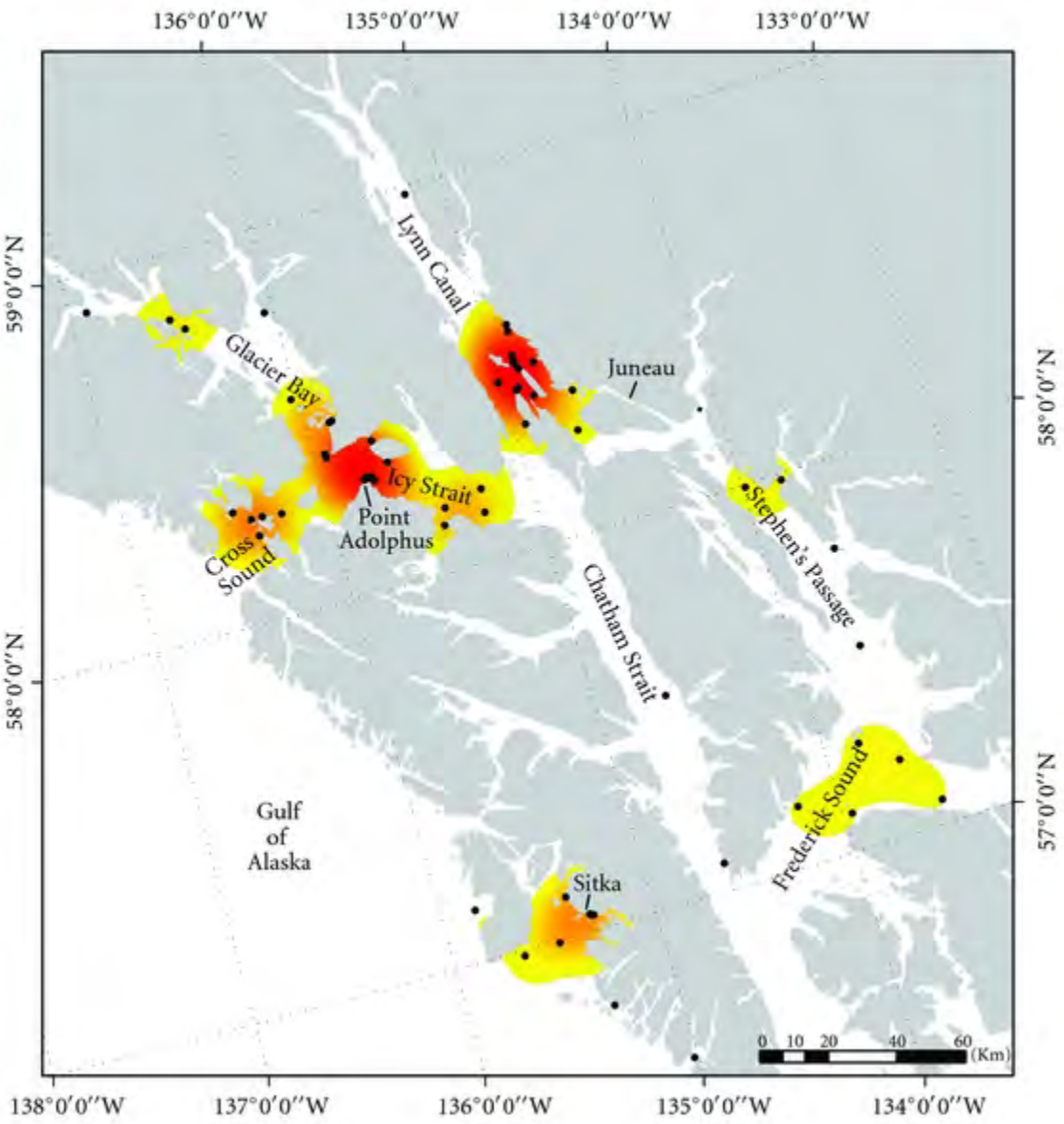
Vessel strike. The majority of vessel strikes involving humpback whales in Alaska occur in Southeast Alaska, due to the high density of vessel traffic in protected waters used by humpback whales. Vessel strikes are a leading cause of mortality in large whales. Neilson et al. (2012) reported the following summary statements about humpback whale and vessel collisions in Southeast Alaska.

- Most vessels that strike whales are less than 49 ft long
- Most collisions occur at speeds over 13 knots
- Most collisions occur between May and September

- Calves and juveniles appear to be at higher risk of collisions than adult whales

The high risk areas shown in red in Figure 3 are also popular whale-watching destinations (Neilson et al. 2012). The action area is not identified as an area of high risk in this analysis.

With the exception of the survey vessel, all project vessels will be greater than 49 feet long and operating at less than 13 knots. The survey vessel will be limited to 13 knots or have onboard a marine mammal observer to avoid striking marine mammals. The project will be constructed in the winter time in order to avoid the season with the greatest potential to impact marine mammals.



Changes in Habitat of Prey Species. The proposed dredging project has been scheduled to avoid impacts to spawning herring, which generally gather in the fall, after the water column becomes mixed and then overwinter in the bays and channels near their spawning areas. Herring may use the South Harbor area during the summer, but are not expected to be present during construction. Video surveys of the disposal area have not revealed any herring in Frederick Sound and it is likely that the deep water of the Sound is unsuitable for overwintering herring due to the distance from the vegetated shallows herring prefer for spawning. The proposed project would have no effect on the habitat of prey species.

Cumulative effects. The proposed dredging project is intended to improve access for commercial and subsistence vessels, reduce life and human safety risks, increase regional economic activities, increase regional employment opportunities, and reduce damage to catch and dead-loss caused by delays and contamination. A significant increase in the number of vessels that call on the South Harbor is not expected to occur as a result of the proposed dredging project, therefore there will be no measureable increase in the risk of vessel strike, acoustic impacts, or habitat change in the post-project condition.

Conclusions

Based on the analysis that all effects of the proposed action will be insignificant and/or discountable, we have determined that Petersburg South Harbor Navigation Improvement Project is not likely to adversely affect any listed species or critical habitat under NMFS's jurisdiction. We have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

Sincerely,

Literature Cited

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THE STATE of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Fish and Game

PETERSBURG AREA OFFICE

16 Sing Lee Alley
P.O. Box 667
Petersburg, Alaska 99833
Main: 907.772.3801
Fax: 907.772.9336

January 17, 2019

Matthew Ferguson
US Army Corps of Engineers, AK District
2204 West 3rd St, CEPOA-PM-C-ER, 2nd Floor Annex
Elmendorf AFB, AK 99506

Dear Mr. Ferguson:

This letter is the Alaska Department of Fish and Game Shellfish Section in Region I's (RI crab group) comments on proposed dumping of Petersburg's South Harbor dredged materials in Thomas Bay. These comments address potential impacts to Tanner crab fisheries and habitat in Thomas Bay.

Thomas Bay (statistical area 110-12) is an important area in the Registration Area A (Southeast Alaska) commercial Tanner crab fishery. Information from fish ticket data on commercial harvest (in pounds), permits fished, and landings from the past ten seasons are shown in Table 1. Thomas Bay is one of the six areas surveyed in the department's annual Tanner crab survey, where a three-stage Catch Survey Analysis (CSA) model is used to estimate biomass and the department survey data are used to assess stock health. Estimates for mature and legal male Tanner crab biomass from the last ten years are provided in Table 2.

Thomas Bay lies within that portion of District 10 in which there is not a customary and traditional use finding for shellfish, therefore fishing under subsistence regulations is not allowed in Thomas Bay. However, Thomas Bay is a popular area for personal use crab fishermen in the Petersburg area. Given the highly utilized recreation sites like USFS recreation cabins at Cascade Creek and Spurt Cove, the area surrounding the proposed sampling sites is likely used by personal use crab fishermen.

The RI crab group does not support dumping of Petersburg's South Harbor dredged materials in Thomas Bay. It's unclear what impacts these dredged materials might have to crab habitat in Thomas Bay, but Thomas Bay is known to be an important area for both commercial and personal use crab fishermen. The Baird Glacier which is near potential dumping sites in Thomas Bay experiences outburst flooding events. An extensive outburst flooding event which pushed glacial water miles into Frederick Sound occurred as recently as September 2015 (https://www.kfsk.org/2015/10/02/scientists-discover-the-cause-of-baird-glaciers-extreme-

outburst-flooding/). If dredged materials are dumped into Thomas Bay, it's unclear whether future outburst flooding events would further distribute dredged materials within the bay, and what effect this might have on the Tanner crab resource in Thomas Bay. RI crab group would support land storage of the dredged material. If in-water storage is the only option, RI crab group would prefer limiting the scope of site determination to the disposal area in Frederick Sound close to Petersburg, which is already defined as a marine disposal area on NOAA charts, or the two alternative sites adjacent to the disposal area. The marine disposal area and adjacent sites in Frederick Sound near Petersburg lie within statistical area 108-60, which historically has exhibited much lower commercial Tanner crab effort and harvest (Table 3; information from fish ticket data).

Thank you for consideration of RI crab group's concerns with placement of dredged materials from Petersburg's South Harbor in Thomas Bay. Please feel free to contact me by e-mail, or at 772-5238, if there is any other information that RI crab group can provide.

Sincerely,

Joe Stratman
ADF&G – Comm. Fish.
Lead Crab Biologist – Region I
joseph.stratman@alaska.gov
907-772-5238

Cc: Lowell Fair – Region I Regional Supervisor
Karla Bush – Region I Shellfish/Groundfish Coordinator
Adam Messmer – Region I Shellfish Biologist II
Tessa Bergmann – Region I Shellfish Biologist I
April Rebert – Region I Shellfish Biologist II
Katie Palof – Region I Crab Biometrician

Table 1 – Commercial Tanner crab harvest, number of permits, and number of landings in Thomas Bay (Statistical Area 110-12), 2008/2009 through 2017/2018 seasons.

Season	Harvest (lb)	Number of permits	Landings
2008/2009	49,319	3	5
2009/2010	31,998	7	10
2010/2011	36,224	5	7
2011/2012	58,819	5	8
2012/2013	59,873	4	7
2013/2014	29,671	3	3
2014/2015	*	*	*
2015/2016	59,357	8	12
2016/2017	19,656	4	6
2017/2018	22,268	3	7
Average**	40,798	5	7

* Confidential data (fewer than three permits fished).
** Average doesn't include the 2014/2015 season.

Table 2 – Legal and mature Tanner crab biomass estimates (lbs) from department Tanner crab surveys in Thomas Bay, 2009-2018.

Year	Legal Biomass (lb)	Mature Biomass (lb)
2009	79,581	129,870
2010	76,335	167,299
2011	108,056	181,748
2012	96,838	136,780
2013	53,927	99,595
2014	52,546	135,081
2015	101,240	141,779
2016	58,422	104,940
2017	65,288	105,573
2018	64,747	99,636
Average	75,698	130,230

Table 3 – Commercial Tanner crab harvest, number of permits, and number of landings in Frederick Sound in District 8 closest to the community of Petersburg (Statistical Area 108-60), 2008/2009 through 2017/2018 seasons.

Season	**Harvest (lb)**	**Number of permits**	**Landings**
2008/2009	*	*	*
2009/2010	*	*	*
2010/2011	*	*	*
2011/2012	*	*	*
2012/2013	*	*	*
2013/2014	0	0	0
2014/2015	7,456	3	3
2015/2016	*	*	*
2016/2017	*	*	*
2017/2018	*	*	*
Average	4,648	1	2

* Confidential data (fewer than three permits fished).

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

February 7, 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 Petersburg Alaska Navigation Improvements and Chemical Data Report

Dear Colonel Borders:

NMFS Habitat Conservation Division has received the Corps of Engineers' (USACE) request for agency review comments on the Essential Fish Habitat (EFH) Assessment for Navigation Improvements in Petersburg, Alaska. The purpose of the proposed dredging project is to restore design depths to allow for safe passage of vessels using the harbor. The harbor is shoaling in four areas with varying design depth requirements. A total of approximately 62,500 to 92,500 cubic yards of sediments are expected to be excavated with a mechanical dredge.

NMFS agrees with USACE's assertion that potential impacts to EFH and Federally managed fish species/species complexes "are likely to be highly localized, temporary, and minimal, and not reduce the overall value of EFH in Frederick Sound." NMFS notes that the proposed mitigation measures are likely to minimize any impacts to EFH and may increase the quality of benthic habitat in Frederick Sound. For example, the use of silt curtains will minimize the disturbance of the water quality during extraction of dredge material and during the release of dredge spoils. The introduction of clay boulders and other rocky material is likely to add a vertical profile to the otherwise limited features of the seafloor. NMFS appreciates the detailed analysis that USACE conducted to choose a disposal site for the dredged material. Compared to other alternatives, the preferred alternative disposal site has lower productivity, involves less vessel activity due to proximity to the project site, and is likely to reduce impacts to juvenile crab.

In accordance with Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act, the USACE is required to consult with NMFS on activities that may adversely affect EFH. NMFS agrees with USACE's determination of "not likely to adversely affect EFH." Thus, Section 305 of the Magnuson-Stevens Act and associated EFH consultation is satisfied.

Should the project or preferred alternative change significantly, NMFS wishes to be informed of any such changes in order to reassess our determination. If you have any questions regarding this consultation, 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 James W. Balsiger, Ph.D.
Administrator, Alaska Region

cc: Matthew Ferguson, USACE, Matthew.W.Ferguson@usace.army.mil

From:	Lohrman, Bridgette
To:	Ferguson, Matthew W CIV USARMY CEPOA (US)
Cc:	McCracken, Betsy W.
Subject:	[Non-DoD Source] Petersburg Harbor dredging
Date:	Thursday, February 14, 2019 3:57:47 PM
Attachments:	MPRSA Sec 103-Site Selection Process.pdf

Hello Matt,

Region 10 appreciates the USACE Alaska District's coordination on the proposed selection of an ocean disposal site for dredged material under Section 103 of the Marine Protection, Research, and Sanctuaries Act. Region 10 provided written comments on June 28, 2018 in response to the Alaska District's invitation to participate in the scoping process for the Petersburg South Harbor Dredging Environmental Assessment.

Since that time, the Alaska District has engaged EPA in discussions and provided information about the proposed dredging and disposal project through several phone calls, emails, and meetings. The Alaska District has provided reports and information as the District has gathered data, coordinated with State and Federal agencies, and continued moving through the District's Feasibility process for this project. EPA has provided comments and feedback about the data collected (i.e., survey videos, sediment grabs, and catch data) through this early engagement process.

We appreciate the Districts early coordination with natural resources agencies as their knowledge, input, and review should be considered by the District for the final selected areas of the disposal site and will be evaluated by EPA during our concurrence review. However, please note that these documents submitted to the Region by the District up to this point do not constitute the formal submittal that is required for EPA's final review and concurrence on the use of the District's selected disposal site. EPA will provide a final review and concurrence via letter from our Regional Administrator once the Region submits a formal request pursuant to 40 CFR 225.

The District recently (02/07/2019) provided EPA August 2018 survey video of the proposed alternate disposal site in Frederick Sound. It is our understanding that you plan to acquire additional video and catch data (e.g., crab and shrimp) during an additional survey in approximately two weeks; and then again during May 2019.

Based on information submitted thus far, please clarify/confirm the following:

* Proposed timing (month, year) of dredging and disposal;
* Volume (cy) of material anticipated to be dredged and disposed at the ocean site;
* Remaining data collection efforts (dates/locations/types of data collected);
* Projected major milestones for process and project;
* Will the District be seeking a CWA 401 water quality certification?

I have attached a flowchart drafted by James McMillan, my Ocean Dumping Coordinator counterpart at the USACE Portland District, for a MPRSA Section 103 site selection process occurring in Oregon. I am unsure if he shared this with you prior.

Feel free to reach out to me with any additional questions. I look forward to our continued engagement on this project.

-Bridgette

~~~~~~

Bridgette Lohrman | Ecologist | U.S. Environmental Protection Agency

Oregon Operations Office | 805 SW Broadway, Suite 500 | Portland, OR 97205 | 503.326.4006 | lohrman.bridgette@epa.gov <mailto:lohrman.bridgette@epa.gov>
~~~~~~

From: Megan O"Neil
To: Ferguson, Matthew W CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] Re: Frederick Sound disposal area (UNCLASSIFIED)
Date: Tuesday, July 24, 2018 11:10:15 AM

Hello Matt,

First of all, thank you, were are very happy that our South Harbor is getting dredge! We have had several of our large boats get stuck on bottom entering and leaving the harbor at low tide in the last several years. And during some low tides, they can¹t make it to the crane dock.

We reviewed the map you provided and our members believe this is a good choice for a dump site again. The area is black mud already with no crab or fish there. This is not a place any of our fleet go to fish and won¹t disrupt any of our fisheries.

Thank you for your work and including us,

Megan O¹Neil
Petersburg Vessel Owner¹s Association
PO Box 232
Petersburg, AK 99833
907.772.9323
pvoa@gci.net
Blockedwww.pvoaonline.org

This email and its attachments are confidential and are intended solely for the use of Petersburg Vessel Owner¹s Association paid membership to whom it is addressed. If you are not the intended recipient of this email and its attachments, you should not disseminate, distribute, or copy this email. Please contact the sender if you have received this email in error.

On 7/19/18, 1:48 PM, "Ferguson, Matthew W CIV USARMY CEPOA (US)" <Matthew.W.Ferguson@usace.army.mil> wrote:

>CLASSIFICATION: UNCLASSIFIED
>
>Hi Megan,
>
>I'm working on the proposed South Harbor dredging project and will be
>performing a site selection analysis for the disposal of dredged material
>generated by the project. As I'm sure you're aware, there is a disposal
>area marked on the chart about 2 miles northeast of Petersburg. Due to a
>regulatory nuance, that area is not currently authorized for the disposal
>of dredged material. In order to reauthorize it, the US Army Corps of
>Engineers has to perform a study and determine that placement dredged
>material in the area would not be contrary to the public interest and
>receive concurrence from the US EPA.
>
>I am interested in any information you have regarding the use of that
>site for the disposal of dredged sediments, or anything else. Part of the

>site selection criteria is making use of a historically used area, so
>knowing its history could really strengthen our argument. I can prepare a
>solicitation notice for you to circulate to your members if that would be
>helpful. I've attached a map showing the disposal area and some of the
>locations within the area that I've tentatively identified for sampling
>via pot fishing and video. It would be good to know if anyone has
>experience with fishing in that area as well. I would ask where someone
>would go to NOT catch fish.
>
>Thanks,
>
>Matt Ferguson, Biologist
>USACE-AK District Environmental
>907-753-2711
>
>
>
>CLASSIFICATION: UNCLASSIFIED

From: Foley, Kevin
To: Ferguson, Matthew W CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] Re: [EXTERNAL] Invasive species in Petersburg South Harbor? (UNCLASSIFIED)
Date: Thursday, November 1, 2018 5:41:15 PM

Hello Matt,

The U.S. Fish and Wildlife Service has management authority for the conservation of a variety of trust resources and their habitats including migratory birds, inter-jurisdictional fish, and threatened and endangered species. Invasive species have the potential to negatively affect our ability to conserve these resources. There are no invasive species of concern that come to mind with a dredging project that occurs entirely within the marine environment near Petersburg, Alaska. Particularly one that does not include an upland component or that does not have transport or use of earth moving equipment. Although several terrestrial invasive species of concern occur in the Petersburg area (as identified through Alaska Exotic Plant Information Clearinghouse Blockedhttp://aknhp.uaa.alaska.edu/maps/akepic/), the project description does not include movements of equipment or machinery from one terrestrial environment to another over water to suggest actions associated with the project may affect terrestrial invasive species spread. Given the lack of identified invasive species of concern occurring within the marine environment of the project area, the Service has no concern on the spread of invasive species within the marine environment.

However, to ensure on-the-ground knowledge of invasive species management, we recommend project contractors review a free self-paced training course on invasive species control that can be found at Blockedhttp://weedcontrol.open.uaf.edu.

Please feel free to give me a call if you have any additional questions.

Sincerely,

Kevin M. Foley,
Fish and Wildlife Biologist
Ecological Services
Anchorage Fish and Wildlife Conservation Office
U.S. Fish and Wildlife Service
4700 BLM Rd
Anchorage, AK. 99507
Phone: (907) 271-2788
Fax: (907) 271-2786
Kevin_Foley@fws.gov <mailto:Kevin_Foley@fws.gov>

"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts."
-Aldo Leopold.

On Thu, Nov 1, 2018 at 2:24 PM, Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil <mailto:Matthew.W.Ferguson@usace.army.mil> > wrote:

CLASSIFICATION: UNCLASSIFIED

Good afternoon,

I received a comment during review that in order to comply with Executive Order 13112, I need to identify actions that may affect invasive species spread and incorporate measures to reduce the spread. Are you guys aware of any invasives we should be concerned about with respect to a dredging project in the Petersburg South Harbor and in-water disposal in Frederick Sound?

Thanks,

Matt Ferguson, Biologist
USACE-AK District Environmental
907-753-2711

CLASSIFICATION: UNCLASSIFIED

From: Dewandel, Shannon S (DEC)
To: Ferguson, Matthew W CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] DEC and USACE Agency Coordination regarding Petersburg Small Boat Harbor dredge project
Date: Friday, November 2, 2018 10:13:18 AM

Good Morning,

DEC and USACE have been communicating and coordinating the Petersburg Small Boat Harbor dredging proposed project beginning on or about April 4, 2018. We reviewed previous sampling efforts (1997), disposal options and requirements needed by ADEC to proceed with a 401 Certificate of Reasonable Assuredness for continued good water quality.

Coordination has continued to November 2, 2018.

Regards,

Shannon

Shannon DeWandel

EPS III

Division of Water, Stormwater/Wetlands Section

Dept. Environmental Conservation

555 Cordova Street, Third Floor

Anchorage, AK 99501

(907) 269-0103

From:	Foley, Kevin
To:	Ferguson, Matthew W CIV USARMY CEPOA (US)
Cc:	Douglass Cooper
Subject:	[Non-DoD Source] South Harbor Dredging, Petersburg, Alaska
Date:	Friday, November 2, 2018 12:11:32 PM

Hello Mathew,

Thank you for reaching out and for the opportunity to provide comment on the South Harbor dredging project in Petersburg, Alaska. We greatly appreciate the ongoing coordination occurring between the U.S. Fish and Wildlife Service and the U.S. Army Corp of Engineers on the South Harbor dredging project. As per our conversation on the phone yesterday, our limited concerns with the project have been addressed. The Service will not request a Fish and Wildlife Coordination Act Report on this project due to limited staff availability at this time. However, we would like to maintain communication and be updated on any project changes and developments that may occur in the future.

Please feel to call me at anytime if you have questions or wish to discuss project updates.

Sincerely,

Kevin M. Foley,
Fish and Wildlife Biologist
Ecological Services
Anchorage Fish and Wildlife Conservation Office
U.S. Fish and Wildlife Service
4700 BLM Rd
Anchorage, AK. 99507
Phone: (907) 271-2788
Fax: (907) 271-2786
Kevin_Foley@fws.gov <mailto:Kevin_Foley@fws.gov>

"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts."
-Aldo Leopold.

From: Kristin Mabry - NOAA Federal
To: Ferguson, Matthew W CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] Re: Petersburg Feasibility Report (UNCLASSIFIED)
Date: Monday, November 5, 2018 4:14:19 PM

Matt, thanks for our conversation last week.
I was happy to get your inquiry and to provide you with technical assistance in this pre-consultation phase of the project. Per your questions:

* Here's a link to the info required for an expedited consultation <Blockedhttps://www.fisheries.noaa.gov/alaska/endangered-species-conservation/expedited-informal-consultation-process-alaska>
* and here is a link to our technical guidance <Blockedhttps://www.fisheries.noaa.gov/alaska/consultations/section-7-consultation-technical-guidance> , including a template for a request for consultation when you have the approximate dates and other information available on the project details.

I look forward to working with you on this consultation when the information is available. Thanks for the heads' up on the dredging workshop in January. I'll likely attend at least part of that, as well.

Let me know how I can be of further assistance.

Kristin

On Fri, Nov 2, 2018 at 2:36 PM Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil <mailto:Matthew.W.Ferguson@usace.army.mil> > wrote:

CLASSIFICATION: UNCLASSIFIED

Hi Kristin,

The Draft Petersburg Feasibility Report can be found at the following web address:

Blockedhttp://www.poa.usace.army.mil/Portals/34/docs/civilworks/publicreview/PetersburgCAP107DraftReportwithAppendices.pdf?ver=2018-10-04-183756-870

It's undergoing review and subject to revisions, but the bones are pretty solid. The disposal discussion will be tightened up to reflect the Frederick Sound disposal site and incorporate the data collection effort thus far.

I've also attached the informal consultation materials I received from NMFS PRD last year, going into the PoA dredging LOC. Are they still relevant?

Thanks,
Matt Ferguson, Biologist
USACE-AK District Environmental
907-753-2711

CLASSIFICATION: UNCLASSIFIED

--

Kristin R Mabry
Protected Resources Division
Alaska Region
National Marine Fisheries Service
907.586.7490

kristin.mabry@noaa.gov <mailto:kristin.mabry@noaa.gov>

From: Stratman, Joseph P (DFG)
To: Ferguson, Matthew W CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] RE: Maps (UNCLASSIFIED)
Date: Thursday, November 8, 2018 4:53:17 PM

Hi Matt,

Thanks for all of the information. It was good to talk to you about your project today. Hope to see you next week.

Joe Stratman
ADF&G - Comm. Fish.
Lead Crab Biologist - Region I
907-772-5238

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Sent: Thursday, November 8, 2018 3:39 PM
To: Stratman, Joseph P (DFG) <joseph.stratman@alaska.gov>
Subject: Maps (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Hi Joe,

Here are a few maps from the August trip

Matt Ferguson, Biologist
USACE-AK District Environmental
907-753-2711

CLASSIFICATION: UNCLASSIFIED

From: Glorianne Wollen
To: Ferguson, Matthew W CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] RE: Next PSG visit (UNCLASSIFIED)
Date: Thursday, November 8, 2018 3:40:58 PM

Excellent!! You are the best!

Glorianne Wollen/Harbormaster
Petersburg Borough
Port and Harbor Department
PO Box 329
Petersburg, AK 99833
Phone: 907-772-4688
Fax: 907-772-4687
Email: gwollen@petersburgak.gov

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) [mailto:Matthew.W.Ferguson@usace.army.mil]
Sent: Thursday, November 08, 2018 3:40 PM
To: Glorianne Wollen <gwollen@petersburgak.gov>
Subject: RE: Next PSG visit (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

You betcha. I got ahold of him and we're gonna grab a beer when I get into town next week.

-----Original Message-----
From: Glorianne Wollen [mailto:gwollen@petersburgak.gov]
Sent: Thursday, November 8, 2018 3:08 PM
To: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Subject: [Non-DoD Source] RE: Next PSG visit (UNCLASSIFIED)

Outstanding Matt! Joe tends to get caught up in the weeds, so I am glad I mentioned it to you!

Glorianne Wollen/Harbormaster
Petersburg Borough
Port and Harbor Department
PO Box 329
Petersburg, AK 99833
Phone: 907-772-4688
Fax: 907-772-4687
Email: gwollen@petersburgak.gov

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) [mailto:Matthew.W.Ferguson@usace.army.mil]
Sent: Thursday, November 08, 2018 11:16 AM
To: Glorianne Wollen <gwollen@petersburgak.gov>
Subject: RE: Next PSG visit (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good to know, although it's not entirely accurate to say that we haven't coordinated with him in regards to the survey. He was copied on the ADF&G Aquatic Resource Permit I received for the survey. I've also been in

coordination with Troy Thynes and Kevin Clark at the comm fish office in Petersburg.

I'll give him a call right now to see what he has to say.

Matt

-----Original Message-----
From: Glorianne Wollen [mailto:gwollen@petersburgak.gov]
Sent: Thursday, November 8, 2018 11:09 AM
To: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Subject: [Non-DoD Source] RE: Next PSG visit (UNCLASSIFIED)

HI Matt,

Just got off the phone with Joe Stratman who is our local shellfish biologist with ADF&G. He said he wrote a few comments and sent them to Amber.

He is concerned that you have not reached out to him in regards to the survey... I did let him know you were coming in for the next round next week. Might be good to reach out to him and settle him down a bit. He seemed a little fired up that he has not gotten to talk to you.

Thanks and see you soon.

Glo

Glorianne Wollen/Harbormaster
Petersburg Borough
Port and Harbor Department
PO Box 329
Petersburg, AK 99833
Phone: 907-772-4688
Fax: 907-772-4687
Email: gwollen@petersburgak.gov

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) [mailto:Matthew.W.Ferguson@usace.army.mil]
Sent: Monday, November 05, 2018 4:12 PM
To: Glorianne Wollen <gwollen@petersburgak.gov>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: RE: Next PSG visit (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Super, one less thing to worry about!

-----Original Message-----
From: Glorianne Wollen [mailto:gwollen@petersburgak.gov]
Sent: Monday, November 5, 2018 3:56 PM
To: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: [Non-DoD Source] RE: Next PSG visit (UNCLASSIFIED)

HA! I think we can get you set up with this!

Glorianne Wollen/Harbormaster
Petersburg Borough
Port and Harbor Department

PO Box 329
Petersburg, AK 99833
Phone: 907-772-4688
Fax: 907-772-4687
Email: gwollen@petersburgak.gov

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) [mailto:Matthew.W.Ferguson@usace.army.mil]
Sent: Monday, November 05, 2018 3:35 PM
To: Glorianne Wollen <gwollen@petersburgak.gov>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: RE: Next PSG visit (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Awesome, thanks Glo! I have another request, since we're talking about Petersburg now. Do you think you could secure a halibut rod for me to use to collect coordinate, temperature, and salinity data? It needs to have line that can be cut to 100 meters in order not to over-pressurize the device.

Matt

-----Original Message-----
From: Glorianne Wollen [mailto:gwollen@petersburgak.gov]
Sent: Monday, November 5, 2018 3:07 PM
To: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: [Non-DoD Source] RE: Next PSG visit (UNCLASSIFIED)

HI Matt, you bet! I will be here to pick you up and get you settled at Diane's B&B. Yes, we are here and the equipment safe and sound for you.

See you soon!

Glorianne Wollen/Harbormaster
Petersburg Borough
Port and Harbor Department
PO Box 329
Petersburg, AK 99833
Phone: 907-772-4688
Fax: 907-772-4687
Email: gwollen@petersburgak.gov

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) [mailto:Matthew.W.Ferguson@usace.army.mil]
Sent: Monday, November 05, 2018 3:05 PM
To: Glorianne Wollen <gwollen@petersburgak.gov>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: RE: Next PSG visit (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Glo,

Charlie said he's g2g for those dates. Also let me know that there was no RKC opener. Bummer.

Mike and I are flying in on the 15th at flight 64; will you be able to pick us up from the airport? I'm not staying at the Scandia House this time, so I might not be entitled to their shuttle.

Anything I need to know about the camera and frame? I assume you'll be around to let us in?

Thanks,
Matt

-----Original Message-----
From: Glorianne Wollen [mailto:gwollen@petersburgak.gov]
Sent: Thursday, November 1, 2018 1:11 PM
To: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: [Non-DoD Source] RE: Next PSG visit (UNCLASSIFIED)

HI Matt,

Sorry missed this on Tuesday! Ok sounds good, I would imagine Diane and Charlie are on the same page... I have not spoken to either though, if you want to talk to Charlie his cell number is (907) 518-1069.

See you soon!

Glorianne Wollen/Harbormaster
Petersburg Borough
Port and Harbor Department
PO Box 329
Petersburg, AK 99833
Phone: 907-772-4688
Fax: 907-772-4687
Email: gwollen@petersburgak.gov

-----Original Message-----
From: Ferguson, Matthew W CIV USARMY CEPOA (US) [mailto:Matthew.W.Ferguson@usace.army.mil]
Sent: Tuesday, October 30, 2018 9:04 AM
To: Glorianne Wollen <gwollen@petersburgak.gov>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: RE: Next PSG visit (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

I have been in loose contact with Diane and booked the Hammer Slough House 15-20 Nov. in order to avoid impacting the RKC opener. Do I need to call Charlie?

Matt

-----Original Message-----
From: Glorianne Wollen [mailto:gwollen@petersburgak.gov]
Sent: Monday, October 29, 2018 9:18 AM
To: Ferguson, Matthew W CIV USARMY CEPOA (US) <Matthew.W.Ferguson@usace.army.mil>
Cc: Metallo, Amber C CIV USARMY CEPOA (US) <Amber.C.Metallo@usace.army.mil>
Subject: [Non-DoD Source] Next PSG visit

Good morning Matt!

Hey just looking at the November calendar and hoping to confirm your next trip out with Charlie & crew? I know

you flexible with Charlie's availability...

See you soon! Glo

Glorianne Wollen/Harbormaster

Petersburg Borough

Port and Harbor Department

PO Box 329

Petersburg, AK 99833

Phone: 907-772-4688

Fax: 907-772-4687

Email: gwollen@petersburgak.gov

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CLASSIFICATION: UNCLASSIFIED

From:	Seanbob Kelly - NOAA Federal
To:	Ferguson, Matthew W CIV USARMY CEPOA (US)
Cc:	Lydia Ames - NOAA Federal; Matthew Eagleton
Subject:	[Non-DoD Source] Petersburg preliminary comments
Date:	Friday, November 9, 2018 11:11:49 AM

Matt,

I just wanted to follow up on our phone call today regarding the Petersburg Navigation Improvement Harbor Draft Feasibility Study. I want to acknowledge Appendix D: Essential Fish Habitat (EFH) Evaluation that recognizes the requirements for an EFH Assessment:

1. A description of the action that may affect EFH

2. An analysis of the potential adverse effects of the action on EFH and the managed species

3. Conclusions regarding the effects of the action of EFH

4. Proposed mitigation, if applicable.

Through our ongoing communication regarding possible adverse impacts to EFH we both recognize that there is not enough information on disposal sites, Fredrick Sound sediment characterization, timing windows, seasonal sampling, and project timelines to complete an EFH assessment. We understand that these data will be forthcoming as a result of planned field projects.

We encourage further review of, and investigation into, the alternative disposal site (i.e., off the slope) in Fredrick Sound.

I look forward to our continued communication regarding potential impacts to EFH and other habitat issues as this project progresses.

Seanbob

Seanbob Kelly

NOAA/NMFS Alaska Region Habitat Division
222 West 7th Ave, Box 43, Room 552
Anchorage, Alaska 99513

Office (907) 271-5195

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

July 11, 2019

Col. Phillip Borders
US Army Corps of Engineers, Alaska District
PO Box 6898
JBER, Alaska 99506-0898

Re: Petersburg South Harbor Letter of Concurrence, NMFS #AKRO-2019-01811

Dear Col. Borders,

The National Marine Fisheries Service (NMFS) has completed informal consultation under section 7(a)(2) of the Endangered Species Act (ESA) regarding the proposed dredging project located in South Harbor near Petersburg, Alaska (Figure 1). The US Army Corps of Engineers requested written concurrence that the proposed action may affect, but is not likely to adversely affect, the western distinct population segment (DPS) of Steller sea lions (*Eumetopias jubatus*) or the Mexico DPS of humpback whales (*Megaptera novaeangliae*). Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determination.

This letter underwent pre-dissemination review in compliance with applicable Data Quality Act guidelines. A complete administrative record of this consultation is on file in this office.

Consultation History

NMFS received your request for consultation on November 30, 2018. Pre-consultation communication was delayed due to a lapse in appropriations and resulting partial government shutdown. Communication resumed after staff returned to the office on January 28, 2019. NMFS requested more information about the project via email and the Corps provided NMFS with additional information regarding the proposed mitigation measures. NMFS provided a letter of concurrence on April 24, 2019, that included some inaccurate information regarding the project, and this letter addresses those discrepancies. NMFS and Corps staff continued discussing an appropriate shutdown zone to make the take of listed species unlikely. The Corps provided the final shutdown zone on June 17, 2019, and NMFS initiated consultation on that date.

Description of the Proposed Action

This proposed project is intended to construct navigation improvements in the Petersburg South Harbor.

Components include:

- Removing 82,980 cubic yards of sediment with an excavator mounted on a barge to be anchored or held in position by spuds in the South Harbor;
- Transporting that dredged material by running approximately 62 trips on a barge pushed by a tug from the South Harbor to the disposal location; and
- Surveying the harbor (5x) and the disposal area (2x) before and after construction. A total of 7 hydrographic surveys would be completed by a small vessel less than 10 meters. Each survey is expected to last between 60-90 minutes.

Work is anticipated to begin October 1, 2020 and extend through March 15, 2021.

Action Area

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

The action area for this consultation includes:

1) the sites proposed for dredging in South Harbor and disposal sites and a 50 meter buffer around the sites;
2) transportation routes to and from the disposal site with a 100 meter buffer around all vessels; and
3) survey tracklines with a 100 meter buffer around all vessels (see Figure 1).

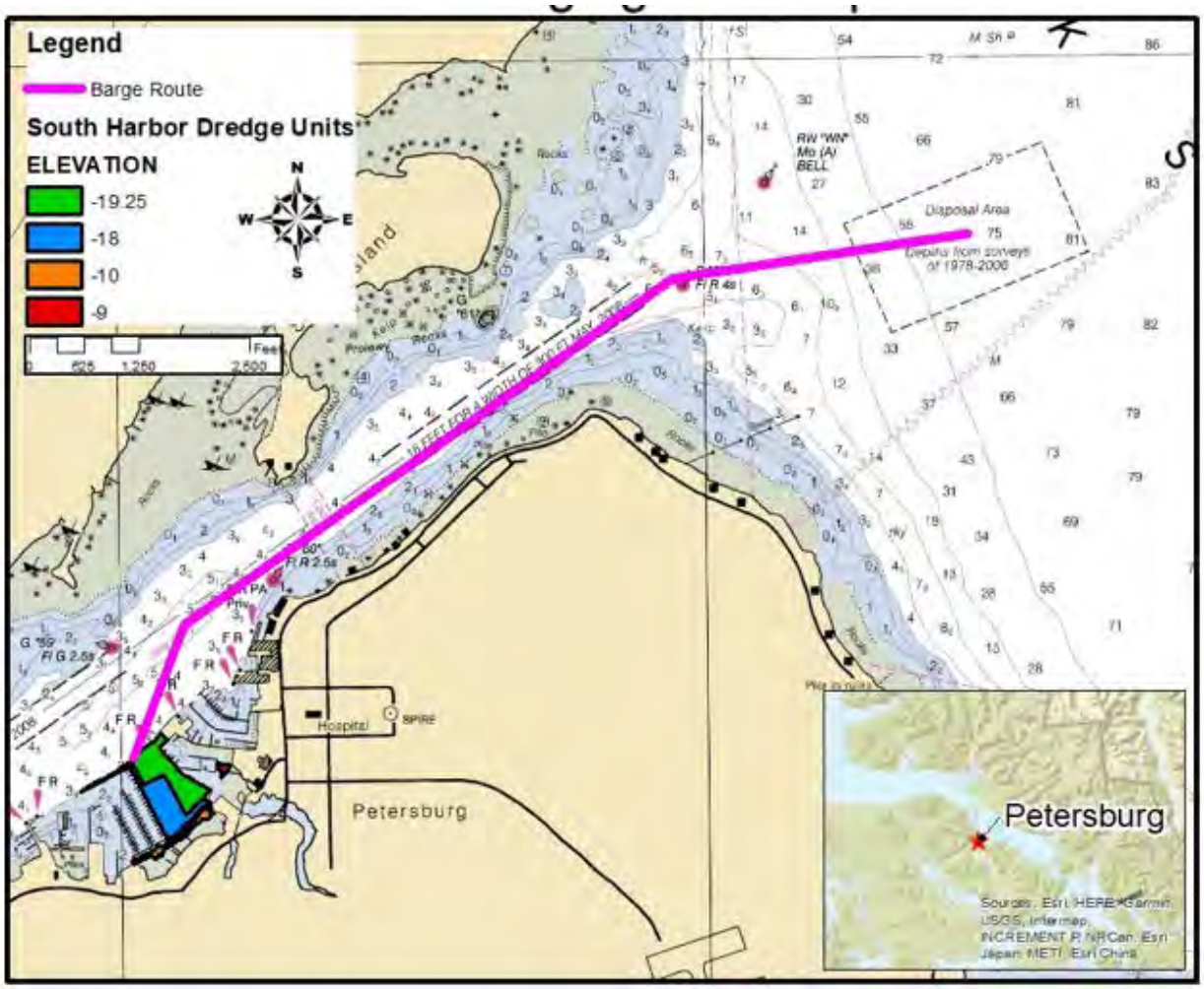

Figure 1. Project location and components.

Mitigation Measures

The Corps informed NMFS via email on March 14, 2019 that the project would incorporate the following mitigation measures:

1. In order to minimize effects to marine mammals, the project will be constructed during the winter when marine mammal densities are likely lowest in the action area. The surveys, dredging, and disposal would occur between October 1, 2020 and March 15, 2021.
2. The Corps will establish a 328 foot (100 m) exclusion (i.e., shutdown) zone around all project vessels during operation; including dredging, transit to and from the disposal area, survey operations, and disposal operations.
3. The Corps will continuously monitor the exclusion zone during project operations for the presence of protected species.

4. The Corps will ensure that pilots of the dredge and barge, and pilots of the support vessels will have clear views of the exclusion zones around each vessel to facilitate effective monitoring for all protected species. These pilots will enforce the established exclusion zones for both stationary and moving vessels.
5. The Corps will stop work when a protected species is observed approaching or within the 328 ft. (100 m) exclusion zone of the project operations.
6. 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.
7. 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 30 minutes from the last protected species sighting within the exclusion zone have elapsed.
8. The Corps will ensure that project vessels do not exceed 13 knots in order to minimize exposure of protected species to vessel strike hazards.
9. No seafloor leveling by dragging the bucket or other device will occur.
10. Vessels may not be operated in such a way as to separate members of a group of marine mammals from other members of the group. A group is defined as being three or more whales observed within a 1641 ft (500 m) area and displaying behaviors of directed or coordinated activity (e.g., group feeding).
11. 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.
12. Consistent with NMFS Alaska Humpback whale approach regulations (50 CFR 216.18, 223.214, and 224.103(b)), operators of vessels will not approach within 300 ft (91 m) of humpback whales.
13. Consistent with NMFS marine mammal viewing guidelines (https://alaskafisheries.noaa.gov/pr/mm-viewing-guide), operators of vessels should, at all times, avoid approaching all other marine mammals within 300 ft (91 m).

Listed Species and Critical Habitat

Threatened Mexico DPS humpback whales and endangered western DPS Steller sea lions may occur in the action area. Critical habitat has not been designated for the humpback whale, and the nearest Steller sea lion critical habitat is the Sunset Island haulout (over 50 km northwest of the action area).

Western DPS Steller Sea Lions

The Steller sea lion was listed as a threatened species under the ESA on November 26, 1990 (55 FR 49204). In 1997, NMFS reclassified Steller sea lions into two DPSs based on genetic studies and other information (62 FR 24345); at that time the eastern DPS was listed as threatened and the western DPS was listed as endangered. On November 4, 2013, the eastern DPS was removed from the endangered species list (78 FR 66139). Information on Steller sea lion biology and habitat (including critical habitat) is available at: http://alaskafisheries.noaa.gov/pr/steller-sea-lions

The proposed project would occur over 50 km from the nearest Steller sea lion critical habitat at Sunset Island. We assume western DPS Steller sea lions could be present in South Harbor for the following reasons:

- Steller sea lions are highly mobile and have large ranges.
- The presence of potential prey sources near the project area (ADF&G 2014):
    - Hammer Slough, a spawning river for coho and pink salmon, is approximately 1,000 feet from the project area.
    - Two other unnamed streams bearing coho salmon are approximately 1/2 mile from the project area.
    - Based on Jemison et al. (2013) and Fritz et al. (2013), NMFS concludes that western DPS Steller sea lions are common north of Sumner Strait (see https://www.fisheries.noaa.gov/resource/document/occurrence-western-distinct-population-segment-steller-sea-lions-east-144deg).

However, the planned late fall construction makes it unlikely to overlap with Steller sea lions foraging for spawning fish.

The ability to detect sound and communicate underwater is important for a variety of Steller sea lion life functions, including reproduction and predator avoidance. NMFS categorizes Steller sea lions in the otariid pinniped functional hearing group, with an applied frequency range between 60 Hz and 39 kHz in water (NMFS 2018).

Mexico DPS Humpback Whales

The humpback whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on December 2, 1970 (35 FR 18319). Congress replaced the ESCA with the ESA in 1973, and humpback whales continued to be listed as endangered. NMFS recently conducted a global status review and changed the status of humpback whales under the ESA. The Western North Pacific DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, and Gulf of Alaska) is listed as endangered; the Mexico DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as threatened; and the Hawaii DPS (which includes most humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is not listed (81 FR 62260; September 8, 2016). Critical habitat has not been designated for the Western North Pacific or Mexico DPSs.

Relatively high densities of humpback whales occur throughout much of Southeast Alaska and northern British Columbia, particularly during the summer months. The abundance estimate for humpback whales in the Southeast Alaska is estimated to be 6,137 (CV= 0.07) animals which includes whales from the Hawaii DPS (94%) and Mexico DPS (6%) (Wade et al. 2016). Although migration timing varies among individuals, most whales depart for Hawaii or Mexico in fall or winter and begin returning to Southeast Alaska in spring, with continued returns through the summer and a peak occurrence in Southeast Alaska during late summer to early fall. However, there are significant overlaps in departures and returns (Baker et al. 1985, Straley 1990). Given their widespread range and their opportunistic foraging strategies, Mexico DPS humpback whales could be in the vicinity during the proposed project activities, but if present, would likely be at low densities.

Effects of the Action

For purposes of the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate, and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. Beneficial effects are contemporaneous positive effects without any adverse effects to the species.

This consultation includes recent NMFS guidance on the term "harass," which means to: "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016).

The potential effects of the proposed action on listed species include the risk of vessel strike, anthropogenic noise, and habitat alteration.

The proposed project would occur over 50 km from the nearest Steller sea lion critical habitat at Sunset Island. This project is not expected to impact any of the physical or biological features that define critical habitat for Steller sea lions, and therefore is not expected to affect Steller sea lion critical habitat**.**

<u>Acoustic Thresholds</u>
Since 1997 NMFS has used generic sound exposure thresholds to determine whether an activity produces underwater sounds that might result in impacts to marine mammals (70 FR 1871). NMFS recently developed comprehensive guidance on sound levels likely to cause injury to marine mammals through onset of permanent and temporary threshold shifts (PTS and TTS; Level A harassment) (83 FR 28824). NMFS is in the process of developing guidance for behavioral disruption (Level B harassment). However, until such guidance is available, NMFS

uses the following conservative thresholds of underwater sound pressure levels[1], expressed in root mean square[2] (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA):

- impulsive sound: 160 dB_{rms} re 1 μPa
- continuous sound: 120 dB_{rms} re 1μPa

Under the PTS/TTS Technical Guidance, NMFS uses the following thresholds for underwater sounds that cause injury, referred to as Level A harassment under section 3(18)(A)(i) of the MMPA (NMFS 2018). These acoustic thresholds are presented using dual metrics of cumulative sound exposure level (L_E) and peak sound level (L_{pk}) for impulsive sounds and L_E for non-impulsive sounds:

Hearing Group	**PTS Onset Acoustic Thresholds* (Received Level)**	
	Impulsive	**Non-impulsive**
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.
Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa^{2}s. The subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

[1] Sound pressure is the sound force per unit micropascals (μPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 μPa, and the units for underwater sound pressure levels are decibels (dB) re 1 μPa.
[2] Root mean square (rms) is the square root of the arithmetic average of the squared instantaneous pressure values.

Acoustic Disturbance

There are three sources of acoustic disturbance associated with the proposed action: noise from excavator dredging, noise associated with vessel operations, and bathymetric surveys.

Excavator Dredging Noise

Dredging activities are considered a continuous noise source that has the potential to impact marine mammals (Todd et al. 2015). The processes which comprise sound sources associated with mechanical backhoe (excavator) dredging activities fall within several categories. Physical removal of sediment from the substrate as the bucket is inserted into the bed, forced through the bed in a "scooping" arc, and removed from the bed produces grinding and scraping sounds (Reine et al. 2012).

Reine et al. (2012) calculated the source level for a backhoe dredger of 179 dB re 1 μPa at 1m. Bottom grab sounds were not detected beyond 175 m from the source. However, NMFS expects that acoustic disturbance from the proposed dredging will be substantially minimized relative to those calculations due to size of the equipment and the substrate.

The Reine study referenced above recorded the backhoe dredge (BHD) New York with an 18m^3 bucket and 3,434 hp installed power. Nedwell et al. 2008, recorded the BHD Manu Peeka with a 14m^3 bucket and 1,515 hp installed power producing 163 dB at the source. The Manu Peeka had about half the power as the Reine study and produced 16 dB less than the Rhine study. The Corps used a Hitachi EX1200 in the Petersburg North Harbor in 2013; that excavator had 760 hp and a maximum bucket capacity of 3.4-6.7m^3. NMFS expects that equipment similar to that used in the Petersburg North Harbor will be used in this project (Figure 2). NMFS expects that with about half the power of the *Manu Peeka*, one could reasonably assume that the source SPL would be significantly lower as well.

Sound source data from the equipment used in this project is not available. Other equipment that the Corps has used in other projects is described below and sound from that equipment is used as a proxy to interpolate expected sound levels in this project. The New York (Reine et al., 2012) was about twice as powerful as the Manu Peeka (Nedwell et al., 2008), 3,434 hp vs 1,515 hp respectively, and produced sounds 16 dB louder. The dredge used in the 2013 maintenance dredging project in Petersburg and that will be used for this project is about half as powerful as the Manu Peeka, (760 hp vs 1,515 hp respectively), so we could assume the source SPL would be reduced by a similar factor (16 dB). Carrying that assumption forward, the Petersburg dredge might produce 147 dB at the source, which would attenuate to 120 dB at 63.1 meters from the source using the TL=15log(R2/R1) practical spreading loss formula to predict attenuation distance. The Corps has agreed to round this up to 100m so that it is consistent with the other exclusion radii to simplify the mitigation.

Underwater sounds produced by dredges and the radiated distance are dependent on several factors, including substrate type, geomorphology of the waterway, site-specific hydrodynamic conditions, equipment maintenance, and dredge operator skill. Reine 2012 recorded the dredge New York excavating coarse gravel-sized rock in the New York/New Jersey channel deepening project. The most intense sounds were recorded when the bucket was drawn backwards to fill material. The SPL produced by buckets striking the channel bottom are dependent on substrate type, as buckets striking coarse sediments produce more sound than strikes in unconsolidated

muds. The substrate in the Petersburg harbor would produce much less intense noise because it is sandy silty clay, sandy silt, silty sand, poorly graded sand with silt, and poorly graded sand with gravel.

Figure 3. Typical substrate in South Harbor - sandy silty clay, sandy silt, silty sand, poorly graded sand with silt, and poorly graded sand with gravel.

It would be extremely unlikely for humpback whales or Steller sea lions to be exposed to continuous noise levels ≥ 120 dB_{rms} re 1µPa because the size of the equipment that will be used for dredging will keep the underwater noise at or near the 120 dB_{rms} re 1µPa level at the source, and the substrate in the action area, water depth, and high velocities will attenuate the sound very quickly. Wrangell Narrows is part of the Inside Passage, a commercial shipping route used by the Alaska Marine Highway System, barges, and other vessels to avoid exposure to the hazards of the open ocean. The heavy vessel traffic through Wrangell Narrows and powerful tidal currents contribute to a high level of ambient noise in the project area. Marine mammals in this area are accustomed to noise from vessels and other harbor-related activity, and additional noise at or near the 120 dB_{rms} re 1µPa level at the source is unlikely to cause significant disruption of normal behavioral patterns. NMFS expects that potential overlap with listed species will be low because the project location is over 50 km away from Steller sea lion haulouts and humpback whales, if present, would like be at very low densities during the late fall construction dates. Also, only a small fraction of Steller sea lions or humpback whales in the area would likely be from an ESA-listed DPS. In addition, the Corps has agreed to cease operations within a 100 meter exclusion zone if Steller sea lions or humpback whales are present there. For all of these reasons, we conclude that any effects to western DPS Steller sea lions and Mexico DPS humpback whales from acoustic disturbance due to dredging are likely to be immeasurably small, and thus the effects are insignificant.

Vessel Noise
Vessel noise associated with the proposed action would include noise generated by a barge, a tug, and a survey vessel.

The barge transporting dredged material from the South Harbor to the disposal site would be propelled by a tug boat and likely capable of a maximum speed of about 9 knots. The engines and propellers of the tugboat could constitute a substantial source of anthropogenic noise. Blackwell and Greene (2003) recorded underwater noise produced by both large and small vessels near the Port of Anchorage. The larger tugboat Leo produced the highest broadband levels, 149 dB re: 1 μPa at a distance of 335 ft. (102 m), when pushing against a dock at the Port of Anchorage; while the docked Northern Lights (cargo freight ship) produced broadband sound levels of 126 dB re: 1 μPa at 374 ft. (114 m).

The survey vessel would likely be a small craft less than 10 meters in length, powered by two 150 hp four-stroke outboard engines. Lester, et al. (2013), recorded received sound pressure levels (SPL) from recreational-sized boats of a similar size and power rating as the craft that would likely conduct the bathymetric surveys for the Petersburg South Harbor project and found that an 8.5m Parker boat with twin 150 hp Johnson four-strokes emitted a maximum SPL of about 140 dB re 1 μPa in the 400-600 Hz range. The ambient SPL in the experimental channel (soft sided mosquito ditch in NJ) exceeded 80 dB around 175 Hz and reached 80 dB around 500 Hz. The engine noise from the Parker boat attenuated to ambient levels within 5m of the source.

Smaller vessels like the tugs associated with the proposed action have higher speed engines and propellers than larger fueling vessels or barges. The smaller vessel noise spectra peak around 300 Hz with a source level ranging from 145-170 dB re 1 μPa depending on if the tug is pulling an empty or loaded barge. Depending on the type of engines on the fueling vessels, the overall source levels of 175 dB re 1 μPa is anticipated (Richardson et al. 1995a). This noise is anticipated to attenuate quickly due to reduced low frequency propagation in shallow water.

Similar to dredging noise, we do not anticipate that marine mammals will be exposed to vessel transit during dredged material disposal and bathymetric surveys due to the transitory short-term presence of a few vessels. Humpback whale reactions to approaching boats are variable, ranging from approach to avoidance (Payne 1978, Salden 1993). Whales have been known to tolerate slow-moving vessels within several hundred meters, especially when the vessel is not directed toward the animal and when there are no sudden changes in direction or engine speed (Wartzok et al. 1989, Richardson et al. 1995a, Heide-Jorgensen et al. 2003). Few authors have specifically described the responses of pinnipeds to boats, and most of the available information on reactions to boats concerns pinnipeds hauled out. However, the mere presence and movements of ships in the vicinity of seals can cause disturbance to their normal behaviors (Henry and Hammill 2001, Ferland and Decker 2005, Shaughnessy et al. 2008, Jansen et al. 2010). Any responses of Mexico DPS humpback whales or western DPS Steller sea lions to vessel noise are not anticipated to significantly disrupt normal behavioral patterns.

We expect that any effects of vessel noise on marine mammals in the action area would be immeasurably small because all vessels associated with this action will follow the mitigation measures as described above which are designed to provide opportunities to marine mammals to

maintain a safe distance from noise associated with vessels in the action area. Therefore we consider any effects from vessel noise to humpback whales or Steller sea lions to be insignificant.

Bathymetric Survey Noise
Pre- and post-construction bathymetric surveys would be conducted in the harbor and disposal site using a survey boat with multibeam sonar. Additional interim surveys would be conducted in the harbor on a monthly basis. A total of five surveys in the harbor and two surveys of the disposal area would be conducted for the navigation improvement project.

The sonar device would be an R2Sonic 2022 or similar. The sonar would operate in the range of 200-400 kHz. The transect interval would be determined by the contractor and subject to field conditions; but the May 2018 survey took 60-90 minutes (Lester et al. 2013). The 2018 Revisions to the Technical Guidance for Assessing the Impacts of Anthropogenic Noise on Marine Mammal Hearing (NMFS 2018) indicate that the generalized hearing range for low-frequency cetaceans such as humpback whales is 7 Hz to 35 KHz, and for Otariid pinnipeds like Steller sea lions is 60 Hz to 39 KHz. The underwater noise that would be produced by the sonar device used for the bathymetric survey would be of a much higher frequency (200-400 KHz), and outside the hearing range of Mexico DPS humpback whales and western DPS Steller sea lions. In addition, the directionality, short pulse duration, and small beam widths for multibeam sonar reduce the risk of exposure.

Because of the very small amount of time the equipment will be active, small beam widths and pulse duration, and small survey area compared to other available habitat, and because surveys will occur a time when humpback whales and Steller sea lions are less likely to be present, NMFS expects that effects to humpback whales and Steller sea lions from the sonar device are so extremely unlikely to occur as to be discountable. In the off chance listed species were to be exposed the operating frequencies of multibeam sonar, the sound is outside their hearing ranges and would be considered an insignificant effect.

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

While 59 confirmed humpback whale-vessel collisions have been reported in Southeast Alaska waters between 2000 and 2018, no collisions have occurred in the proposed action area (NMFS 2019).

This action includes a slow-moving barge, a stationary barge, and a survey vessel. The barge will be travelling below 10 knots and therefore NMFS assumes that marine mammals would have time to change course to avoid vessel strike. The survey vessel would be capable of much greater

speeds than the barge and likely attain speeds of 20-25 knots during the transit to the disposal area, which would take about 5 minutes each way. During the survey, the vessel would likely operate between 3-5 knots with a maximum survey speed of 10 knots. The survey vessel will have an observer on board watching for marine mammals and will institute a 100-meter exclusion zone and reduce speed when a marine mammal is seen in or approaching the vessel's route. All vessels will follow the humpback whale approach regulations and the NMFS Marine Mammal Code of Conduct as described in the mitigation section.

The proposed action may cause a slight increase in vessel traffic in the area due to dredging and survey activities, and the improved access for vessels. However, South Harbor is a fairly busy harbor, and already experiences high vessel traffic. It is unknown how much the improvements would increase vessel traffic relative to the existing traffic in the area, but any increase is anticipated to be insignificant. In addition, the absence of collisions involving vessels and marine mammals in the action area suggests that the probability of collision is low.

Because there will be a very small number of vessels involved with the project including a slow-moving barge; limited overlap of western DPS Steller sea lions and Mexico DPS humpback whales in the action area; limited overlap of humpback whales and Steller sea lions during the construction period; decades of spatial and temporal overlap that have not resulted in a known marine mammal vessel strike in the action area; and there are mitigation measures in place to minimize exposure of marine mammals to vessel activities (speed restrictions, timing restrictions, and approach restrictions), we consider the risk of vessel strike to be extremely unlikely to occur and thus the effects are discountable.

Habitat Alteration

Impacts of the project on marine habitat are expected to be small due to the existing quality of surrounding habitat, high water velocities, and the likely prompt recolonization of the seafloor habitat after dredging is complete. The disposal location is approximately two miles from the South Harbor and has been used by the Corps since at least 1952 for the disposal of dredged material from the Wrangell Narrows navigation channel and various Petersburg harbor dredging projects, so it has experienced disturbance repeatedly and it likely is not high-quality habitat for prey species. Any water quality perturbations from the dredging or disposal would be temporary and ephemeral given the water current velocities in the Wrangell Narrows and Frederick Sound.

The Corps' Alaska District does not have a regional sediment evaluation framework due to the extreme variability between the environmental conditions throughout the State, so the Pacific Northwest Regional Sediment Evaluation Framework (SEF) acts as an acceptable surrogate. The SEF provides a framework for assessing and characterizing sediment to determine the suitability of dredged material for unconfined, aquatic disposal; determine the suitability of post-dredge surfaces; and predict effects on water quality during dredging. The SEF describes procedures for evaluating potential contaminant-related environmental impacts of dredging and the aquatic placement of dredged material in inland waters and the disposal of dredged material in ocean waters. The framework is designed for use in the Pacific Northwest, defined in the SEF as Washington, Oregon, and Idaho; but the use of the SEF in Alaska is appropriate due to similarities in mineralogy, water chemistry, and fauna. The Seattle District's Dredged Material Management Program (DMMP) User Manual includes the same chemical concentration criteria

as the SEF; but is updated more frequently and the matrices are more easily exported for manipulation, so the Alaska District has historically adopted those screening level criteria.

The chemical properties of the sediments were compared to the screening levels for in-water placement described in the Seattle DMMP User Manual, and for terrestrial placement described in the ADEC cleanup levels for soil. The sediments did not exceed the thresholds of unconfined placement in the marine environment, meaning they are suitable for unconfined in-water placement.

Disposal of fill could impact prey species of western DPS Steller sea lions and Mexico DPS humpback whales by crushing, dislodging, or smothering (i.e., clogging of the gills or other feeding structures) prey with displaced sediment. This site does not provide significant foraging habitat for any marine mammal due to its previous use for material disposal. Given these conditions, any physical changes to this habitat would not likely reduce the foraging quality of surrounding waters (i.e., the localized availability of fish) for Steller sea lions and humpback whales in a way that can be meaningfully measured. Therefore effects of habitat alteration are considered to be insignificant.

Conclusion

Based on this analysis, NMFS concurs with your determination that the proposed action may affect, but is not likely to adversely affect, western DPS Steller sea lions or Mexico DPS humpback whales. Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

Please direct any questions regarding this letter to Kristin Mabry at Kristin.Mabry@noaa.gov or 907-586-7490.

Sincerely,

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THE STATE of ALASKA
GOVERNOR BILL WALKER

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

May 10, 2019

U.S. Army Corps of Engineers, Alaska District (USACE, AK District)
Attn: CEPOA-PM-C-ER, Mr. Ferguson
P.O. Box 6898
JBER, AK 99506-0898

Re: USACE (AK District), Petersburg Small Boat Harbor Dredging
ER-19-004, South Harbor, Petersburg/Frederick Sound

Dear Mr. Ferguson:

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 the maintenance dredging of the small boat harbor in South Harbor, Petersburg, 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.)
Michael Noah, USACE, Anchorage
Kate Kanouse, ADF&G
USFWS Field Office Juneau
Matt LaCroix, EPA Operations, Anchorage

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, Attention: Mr. Matt Ferguson, at P.O. Box 6898, JBER, AK 99506-0898, for placement of dredged and/or fill material in waters of the U.S. including wetlands and streams in association with the maintenance dredging of the small boat harbor in South Harbor, Petersburg, Alaska. The USACE AK District circulated a Draft Finding of No Significant Impact during the Public Notice period for the proposed project.

Insufficient depths and existing marine infrastructure within the Petersburg harbor system cause transportation inefficiencies and limit access for commercial fishing and subsistence activities, creating economic inefficiencies for the region and Nation. Currently, ocean going commercial fishing vessels are forced to wait for sufficient tides to operate in and around the harbor system; which is approximately 93 percent commercially utilized. The purpose of this study is to determine the feasibility of constructing navigation improvements to reduce vessel delays due to insufficient depths and improve overall access to the Petersburg harbor system.

The Alaska District has proposed to deepen South Harbor in Petersburg, Alaska in order to enable safe navigation. The existing condition poses a navigational hazard for the deeper drafting vessels that call on the South Harbor. The dredging project is divided into four dredging units according to depth; ranging from minus 9 feet mean lower low water (MLLW) to minus 19.25 feet MLLW. The total volume of material that will be excavated from the South Harbor is approximately 82,980 CY. The sediment will be placed in the Frederick Sound Disposal Area pursuant to the application of the Ocean Dumping Criteria under Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) and its regulations. The Alaska District is seeking concurrence from EPA on the selected disposal site. Project depth would be achieved through the use of an excavator mounted on a barge in order to dislodge the consolidated clay underlying the granular sediment.

The Alaska District has applied for a state issued water quality certification under Section 401 for ocean disposal of dredged material. The proposed activity will be constructed by the U.S. Army Corps of Engineers 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-19-004 posted from March 13, 2019 to March 28, 2019.

The proposed dredging activity is located within Section 27, T. 58 S., R. 79 E., Copper River Meridian; Latitude 56.8105° N., Longitude -132.9622° W. The proposed disposal location is in Frederick Sound, near Petersburg, Alaska.

Frederick Sound Disposal Site Coordinates

	Northing	Easting	Latitude NAD83	Longitude NAD83
Northwest	1,827,689.51	2,837,094.28	56.83586	-132.91188
Southwest	1,825,584.91	2,836,019.11	56.83018	-132.91728
Northeast	1,827,106.17	2,838,272.40	56.83428	-132.90595
Southeast	1,824,990.13	2,837,220.10	56.82852	-132.91132

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 Southeast Alaska (907) 465-5340 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. All dredging shall be conducted so as to minimize the amount of dredge material and suspended sediments that enter South Harbor and Frederick Sound. 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 of the ascending loaded dredge 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 South Harbor and Frederick Sound.

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: May 10, 2019

James Rypkema, Program Manager
Storm Water and Wetlands

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

FEB 2 8 2018

Dear Ms. Bittner:

The U.S. Army Corps of Engineers (USACE) is planning to conduct sediment sampling in the Petersburg Harbor (Section 27, T58S, R79E, USGS Quad Petersburg D-3, Copper River Meridian; Figure 1), Petersburg, Alaska, in preparation for future dredging activities. 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.

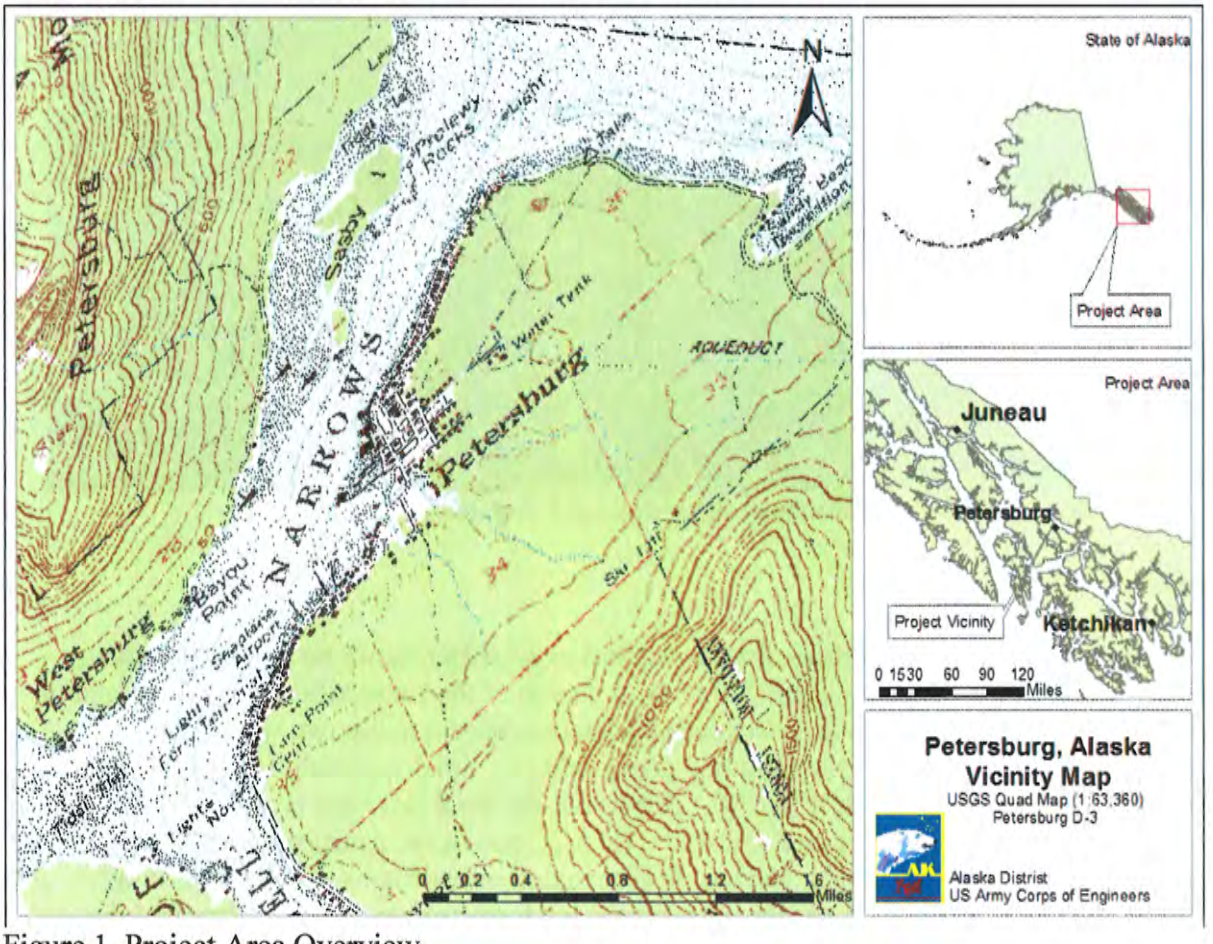

Figure 1. Project Area Overview

Project Description

Shallow depths are affecting the efficient use of portions of the South Petersburg Harbor. Vessels often run aground, and portions of the harbor are inaccessible at lower tidal stages. In April 2018, the USACE is planning to conduct sediment sampling in the harbor in order to create a characterization to be used in future dredged material disposal plans. Sixteen cores will be collected, of which 12 will be collected with a 4-inch-diameter split-spoon vibracore (Figure 2). The remaining four samples will be collected with a 2-inch-diameter push core, operated from the floating docks (Figure 2). Sample depths will be taken to a depth of 4 feet or to refusal. The sampling will be conducted via drill rig placed on a barge.

Figure 2. Proposed boring locations (yellow dots) at Petersburg Harbor.

Assessment of Effect

A search of the Alaska Heritage Resources Survey (AHRS) shows no cultural resources within the limits of the sampling areas (Table 1). A search of the National Oceanic Atmospheric Administration (NOAA) wrecks and obstructions database shows no known wrecks or obstructions within the limits of the sampling area (Table 2). Finally, a search of the Bureau of Ocean Energy Management's (BOEM) 2011 shipwreck database provides no indication that any shipwrecks are within the project area (Table 3). USACE personnel conducted an underwater investigation via waterproof camera and a remote operated underwater vehicle at locations throughout the harbor (Figures 3 and 4). A review of the footage shows a steel plate with bolts attached, cable, and rope at location 5; rope and cable at location 6; a coffee mug at location 7; and pipe and metal debris at location 8.

Figure 3. Locations of underwater surveys.

Figure 4. Still image of typical harbor seafloor from underwater digital video recording.

Table 1. Known cultural resources in general area.

AHRS No.	Site Name	NRHP Status	In APE

PET-119	Sons of Norway Hall (Fedrelandet Lodge No. 23)	Listed	
PET-200	Chugach (Ranger Boat)	Listed	
PET-328	Petersburg Fisheries	None	
PET-513	Turn Point Fish Trap	Eligible	
PET-529	Fishing Vessel Charles W.	Listed	
PET-567	Indian Street Viaduct	None	
PET-569	Nelbro/Norquest Cannery	None	
PET-590	Boat Maintenance Shop	Not Eligible	
PET-702	Petersburg Fishing Industry Historic District	None	

Table 2. Wrecks and obstructions in the vicinity of Petersburg (NOAA 2018).

Type	Status	Narrative	Latitude	Longitude
Wreck	Visible	Always dry	56.813557	-132.993668
Wreck	Visible	Visible Wreck	56.813545	-132.993576
Wreck	Visible	Always dry	56.817669	-132.971664
Wreck	Visible	Always dry	56.818798	-132.969467
Wreck	Visible	Always dry	56.82283	-132.964508
Wreck	Visible	Always dry	56.822731	-132.963211
Wreck	Visible	Old derelict fishing boat on mud flats	56.823265	-132.963104
Wreck	Visible	Old derelict fishing boat on mud flats	56.812103	-132.961716
Wreck	Visible	Always dry	56.820763	-132.961273
Obstruction	Submerged	Two-fathom-two-foot sounding	56.825409	-132.940216
Obstruction	Submerged	USACE disposal area	56.827778	-132.918335
Obstruction	Submerged	Wooden ATON tower depth 3.71m	56.804085	-132.989243

Table 3. Shipwrecks in the vicinity of Petersburg (BOEM 2011).

Name	Type	Year	Location	Narrative Summary
Bonnie Jean	Gas Screw	1922	Scow Bay	Foundered
Liberty Belle	Fishing Vessel	1924	South of Scow Bay	Hit reef
Flora	Gas Screw	1927	Standard Oil Dock, Petersburg	Fire, destroyed
Mission	Gas Screw	1927	Burnet Cannery	Burned
Mildred II	Gas Screw	1928	Off Turn Point, Petersburg	Fire, vessel consumed
Tum Tum	Gas Screw	1933	Petersburg	Burned
St. Martin	Gas Screw F/F	1937	Across from Scow Bay Cannery	Destroyed by fire
31-A-866	Fishing Vessel	1943	Herring Bay near Petersburg	Wrecked
Arab	Gas Screw	1945	Petersburg	Burned
Ronald	Gas Screw	1946	Vicinity of Horn Cliffs	Foundered and lost
Salvor	Oil Screw	1948	Near Petersburg	Burned
31-B-460	Fishing Vessel	1950	Petersburg	Sunk at dock
Odin	Gas Screw	1958	Petersburg	Burned
Lief H.	Fishing Vessel	1965	Channel Light No. 32A	Grounded and sank
Rose	Tug	1977	Kupreanof Beach	Sank and abandoned
Sweetbriar	CG buoy tender	1993	Opposite Scow Bay	Stuck in mud, recovered
Loretta C	Longliner halibut	1998	Petersburg	Burned

Note: The tug *Rose* sank while moored at the Petersburg boat harbor on June 1, 1977 and later became a landmark along the Kupreanof beach where she was abandoned.

The USACE is planning to conduct sediment sampling in sections of the Petersburg Harbor in preparation for future dredging. No sites have been identified within the APE. Following 36

CFR § 800.4(d)(1), the USACE seeks your concurrence on the determination that the 2018 undertaking will result in **no historic properties affected**. If you have any questions about this project, please contact Forrest Kranda by phone at 907-753-2736, or by email at forrest.j.kranda@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Archaeologist
Environmental Resources Section

Cc:

Christina Sakamoto, President, Petersburg Indian Association
Michele Metz, Lands Manager, Sealaska Corporation
Desiree Duncan, Native Lands and Resources Manager, Central Council of the Tlingit and Haida Indian Tribes of Alaska

References Cited

Alaska Department of Commerce, Community, and Economic Development (Community Databse). 2018. Community Database Online, Petersburg. Online document, accessed February 15, 2018.

Alaska Heritage Resources Survey (AHRS). 2018. AHRS Database. Alaska Office of History and Archaeology.

Bureau of Ocean Energy Management (BOEM). 2011. Alaskan Shipwrecks Table. Online document, https://www.boem.gov/Alaska-Coast-Shipwrecks/, accessed January 17, 2018.

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3130-1R COE-Reg

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

RECEIVED
MAR 02 2018
OHA

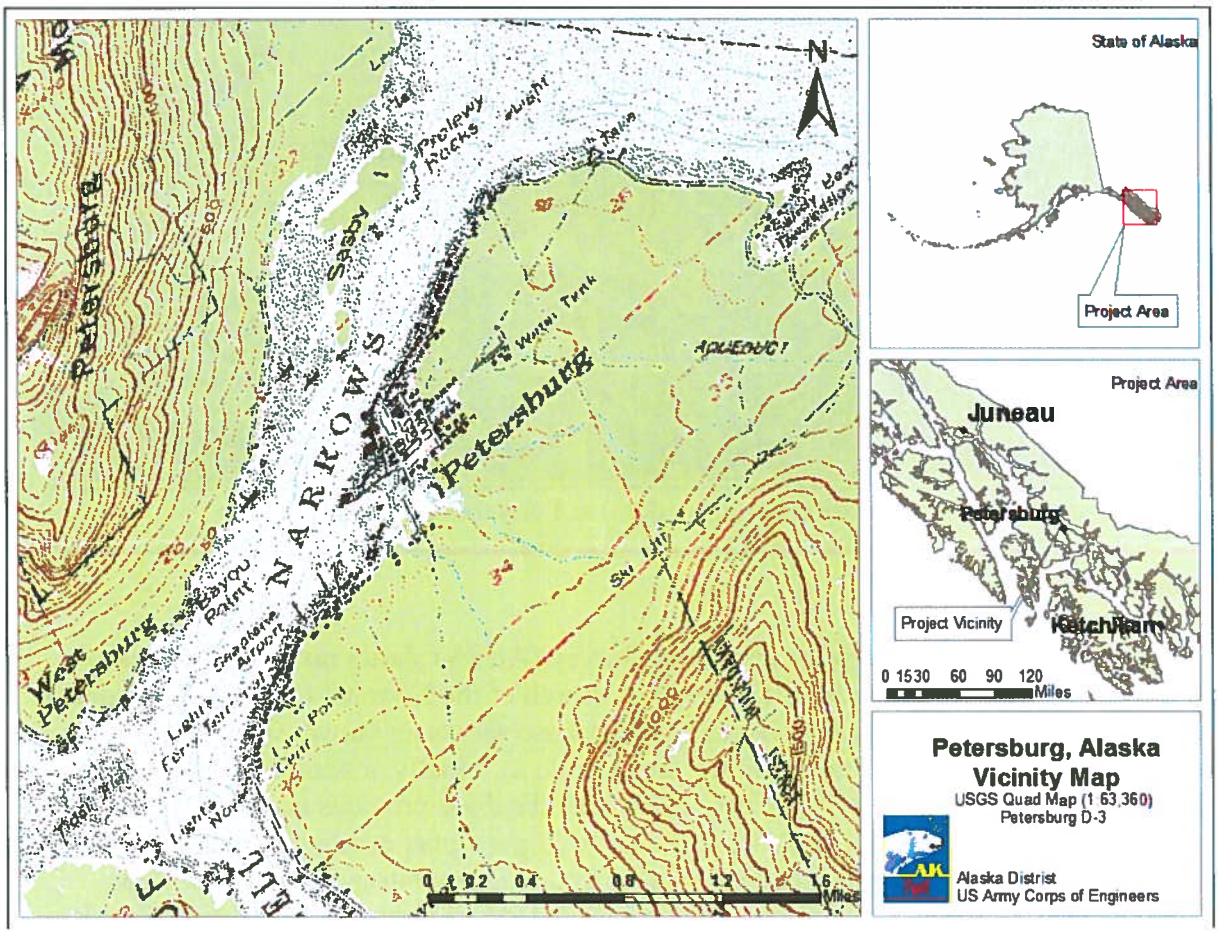
FEB 28 2018

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

SJM No Historic Properties Affected
Alaska State Historic Preservation Officer
Date: 3/30/18 File No.: 3130-1R COE 2018-00271
Please review: 36 CFR 800.13 / A.S. 41.35.070(d)

Dear Ms. Bittner:

The U.S. Army Corps of Engineers (USACE) is planning to conduct sediment sampling in the Petersburg Harbor (Section 27, T58S, R79E, USGS Quad Petersburg D-3, Copper River Meridian; Figure 1), Petersburg, Alaska, in preparation for future dredging activities. 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.



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2018-00271

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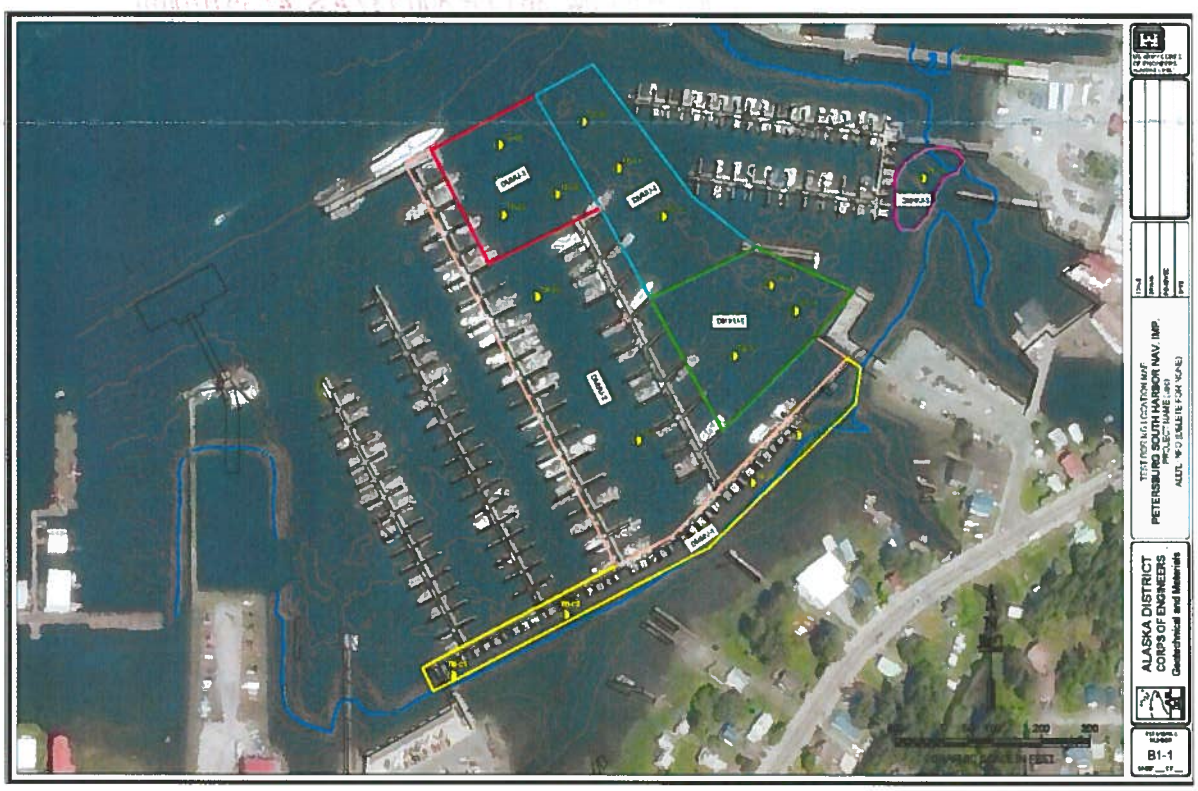

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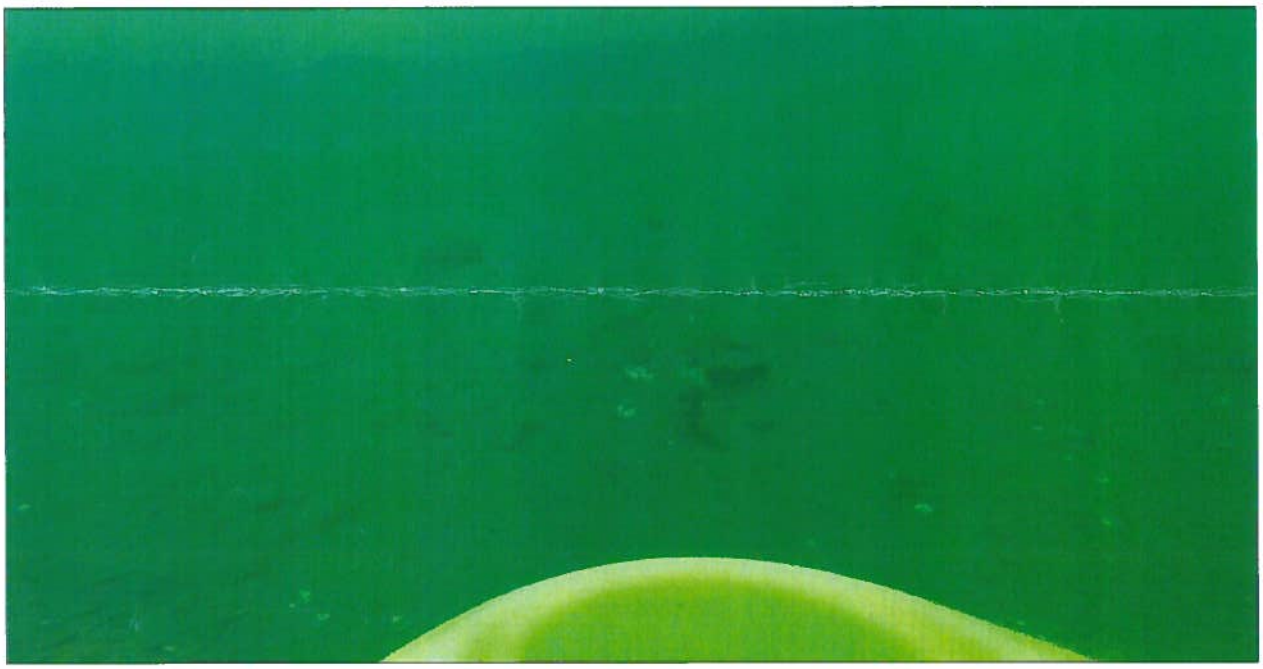

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Department of the Army
Alaska District, U.S. Army Corps of Engineers
P.O. Box 6898
JBER, AK 99506-0898

OCT 17 2018

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

Dear Ms. Bittner:

The U.S. Army Corps of Engineers (USACE) is planning to conduct navigation improvements in Petersburg, Alaska. Proposed improvements include the dredging of an area at the Petersburg South Harbor (Section 27, T58S, R79E, USGS Quad Petersburg D-3, Copper River Meridian; Figure 1), potential disposal of dredged material may occur in Frederick Sound (T59S, R79E, USGS Quad Petersburg D-3, Copper River Meridian; Figure 1) or Thomas Bay (T55S, R79E, USGS Quad Sumdum A-3, Copper River Meridian; Figure 2). 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.

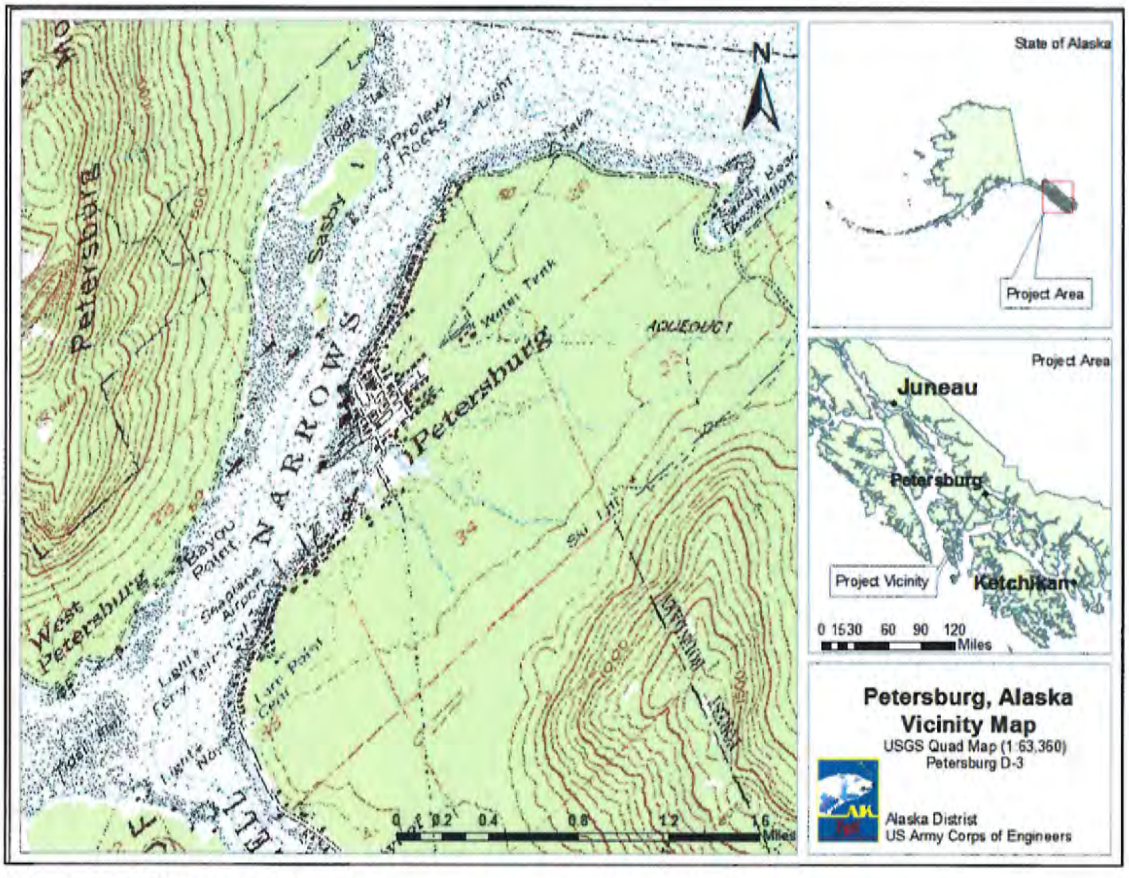

Figure 1: Project area overview.

Context

Inhabitants of Southeast Alaska had some form of maritime adaptation and trade since at least 9,000 years ago, as evidenced by obsidian which was identified from volcanic sources hundreds of kilometers away. Excavations at Shuká Káa Cave (PET-0408) on Prince of Whales Island also demonstrate long term occupation of Southeast Alaska, approximately beginning 10,300 years ago (Kemp et al. 2007). The presence of marine fauna in midden materials also indicates maritime adaptation and evidence of boat use. Additionally, the archaeological record has shown continuity in subsistence practices between the early and late periods of the regions' history through documentation of the use of salmon, fish, shellfish, the occasional bird, and both marine and terrestrial mammals. By and large, archaeological evidence from the region suggests that subsistence resource efforts were focused on intertidal and nearshore environments. By the end of the Pleistocene, sea levels reached modern levels. Although generally ice-free, some areas experienced intense glaciation into the Holocene, which impacted human settlement in more northern areas such as Yakutat (Moss 1998).

Southeast Alaska is the traditional territory of the Tlingit and the Haida. Much of what is known today has been reconstructed from ethnographic data, as the climatic conditions and acidic soils are not conducive to preservation of organic material and changes in past sea level (Moss 2011:86). Moss (1998: 92) defines the cultural sequence of Southeast Alaska as: the Early Holocene Period (10000-5000 BP), the Middle Holocene Period (5000 BP-1500 BP), and the Late Holocene Period (1500 BP - 1741 CE). During the Late Holocene, the Tlingit and Haida both had developed complex societies using unique local materials, a marriage system through Clans, and a hierarchy of classes. They also developed large single tree canoes which were capable of traveling over open sea, which were used for trade as well as for raiding during times of war. While traditional foods were still taken, the Tlingit and Haida were also excellent at village level organization to catch large quantities of salmon, harvest, and preserve the meat through smoking or air drying allowing stored foods to be maintained.

On June 21, 1741, Captain Aleksei Chirikov and crew sailed into the vicinity of Yakobi Island in Southeast Alaska aboard the *Sv. Pavel* (Black 2004). Chirikov was under orders from the Empress of Russia, Anna Ioannovna, to sail to the Americas, explore, and make contact with any people they came across. After losing contact with two shore parties and lacking any additional small boats to reach shore, Chirikov decided to turn back, assuming the parties were not relocated (Black 2004). Contact with Westerners may not have occurred again until 1775, when Spanish explorer Bruno de Hezeta sailed into Sitka, accidently infecting the Sitka Tlingit with smallpox (de Laguna 1990). In the 1790s, Russian trade continued in the region, while plans for a permanent settlement were developed in response to British, American, Spanish, and French trade and exploration in the area. Between first Russian contact in Southeast Alaska in 1741 and 1790, numerous British and French trade vessels visited the region exploring and trading for furs. Between 1795 and 1798, Aleksandr Baranov, manager of the eastern area of the Shelikhov-Golikov Company, later renamed the Russian-American Company (RAC) in 1799, sailed in the vicinities of Sitka and Glacier Bay making contact with the Tlingit (Black 2004).

In 1794, settlers supported by the Shelikhov-Golikov Company, built a permanent camp at Yakutat, which served as a transshipment point for furs going to Kodiak Island and hunters headed to Southeast Alaska. In 1799, Vasilii Medvednikov was selected to head the new

southeast settlement of the RAC. Medvednikov aboard the *Orel* sailed to Sitka with building material for the construction of a new outpost later named Novo-Arkhangel'sk (Davis 1990; Black 2004). In 1802, in response to competition for sea otters, subsistence, and other disagreements between the Unanagan working for the Russians and local Tlingit, Novo-Arkhangel'sk was destroyed during a retaliatory attack by the Tlingit. Baranov assembled a party of 300 kayaks and four other Russian vessels to retake Novo-Arkhangel'sk. During the trip, the party stopped at villages in Kake and Kuiu and ordered them burned (Black 2004). Upon arriving at Novo-Arkhangel'sk, the Russians attacked the Tlingit. After a fierce battle, peace negotiations were reached, resulting in the reoccupation of Sitka by the Russians. Sitka remained occupied by the Russians until the Treaty of Cession in 1867.

After the Treaty of Cession was signed in 1867, the War Department tasked the U.S. Army with administration of Alaska as a military district until 1877. Military occupation of Southeast Alaska continued to sour relations between the United States and Tlingit, often resulting in the use of military force. Between 1879 and 1884, the U.S. Navy was tasked with opening up settlements in Southeast Alaska for prospecting, mining, fishing, canning, and timber harvesting (Worl 1990). These activities, along with missionary and educational efforts and the expansion of Euromerican settlements and military establishments all reshaped the configurations of Tlingit culture (de Laguna 1960).

While there were a number of different industries in the Alaska Southeast, the fish canning industry has traditionally been vitally important to Alaska. During both World War I and II, canned Alaskan salmon served as a main food staple for those experiencing food shortages as a result of the war effort (Guimary 1983). The first canneries in Alaska originated in Sitka in 1878 (Worl 1990). Shortly after their introduction, commercial success spread like wildfire resulting in a large boom in the canning industry. By the late 1920s, there were 159 canneries operating in Alaska (Guimary 1983). From the late 19th century into the early 20th century, mining, fishing, and canning in Southeast Alaska continued and encouraged the settlement of Euromericans in the region (Worl 1990).

In the 1890s, Norwegian fishermen began settling the area around Petersburg. Because of these founding fishermen, the community has retained a distinctly Norwegian identity. Peter Buschmann founded the Icy Strait Packing Company cannery, sawmill, and dock in Petersburg by 1900 (Petersburg 2018). The city was formed in 1910, and by 1930, a census counted 1,252 people living in Petersburg.

Project Description

Shallow depths are affecting the efficient use of portions of the Petersburg South Harbor. Vessels often run aground and portions of the harbor are inaccessible at lower tidal stages. The recommended plan is dredging of shallow portions of the harbor. Figure 2 shows the areas to be dredged and associated depths. The estimated amount of dredge material is 82,360 cubic yards.

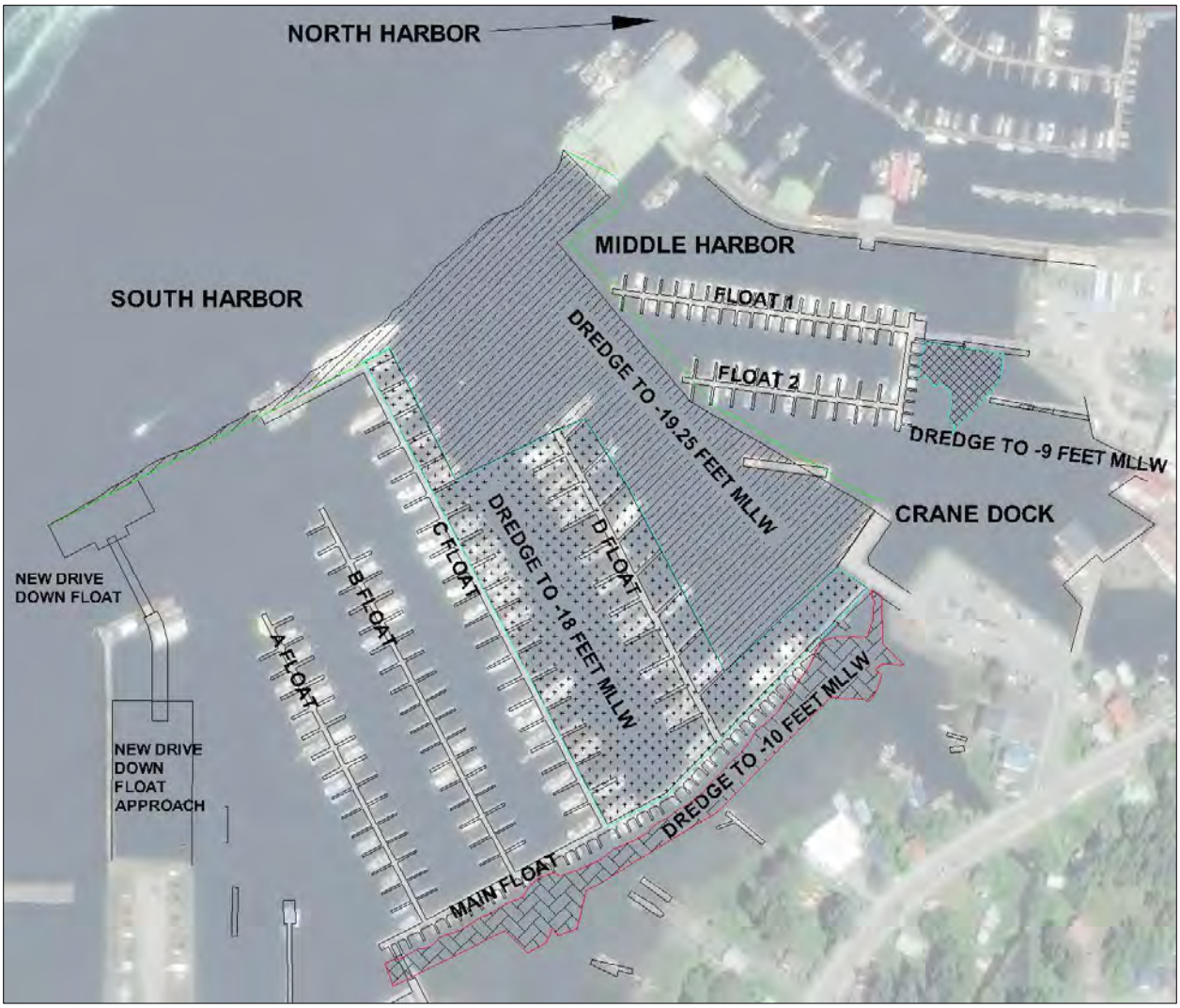

Figure 2: Proposed dredge locations in yellow at Petersburg Harbor.

Dredging and Disposal

Dredging disposal may occur at one of two locations. The first disposal location is Frederick Sound, located approximately two miles east of Petersburg South Harbor. The second location is in Thomas Bay, approximately 20 miles northeast of Petersburg (Figure 3).

Figure 3: Potential in-water disposal locations

Assessment of Effect

Dredging at Petersburg Harbor

A search of the Alaska Heritage Resources Survey (AHRS) shows two cultural resources within the dredging area of potential effect (Table 1). These two known cultural resources, PET-200 and PET-529, are historic watercraft. They are still serviceable and afloat and could be moved to make room for dredging equipment as necessary. Because of this, PET-200 and PET-529 would not be affected by the proposed dredging action.

Table 1: Sites identified within general vicinity of Petersburg Harbor.

AHRS No.	Site Name	NRHP Status	In APE
PET-119	Sons of Norway Hall (Fedrelandet Lodge No. 23)	Listed	No
PET-200	Chugach (Ranger Boat)	Listed	**Yes**
PET-328	Petersburg Fisheries	None	No
PET-513	Turn Point Fish Trap	Eligible	No
PET-529	Fishing Vessel Charles W.	Listed	**Yes**
PET-567	Indian Street Viaduct	None	No
PET-569	Nelbro/Norquest Cannery	None	No
PET-590	Boat Maintenance Shop	Not Eligible	No
PET-702	Petersburg Fishing Industry Historic District	None	No

PET-200 is a 1925 wooden-hulled U.S. Forest Service (USFS) Ranger Boat Marine Vessel (M/V) Chugach (Sorenson 1990). M/V Chugach is the last wooden-hulled ranger boat still in use by the USFS in Alaska. It is listed on the National Register of Historic Places (NRHP), the statement of significance on the NRHP nomination form lists the M/V Chugach as having significance in maritime history and naval architecture (Sorenson and Schley 1991).

PET-529 is the fishing vessel (F/V) *Charles W.* The *Charles W.* is a sailing wood schooner that was launched in 1907 and was brought to Petersburg in 1925 to be modified and operated for shrimping. PET-529 is listed on the NRHP, the statement of significance on the nomination form lists the *Charles W.* as having significance relating to maritime history and commerce in Petersburg, Alaska between 1925 and 1955 (Moulton 2005).

A search of the National Oceanic Atmospheric Administration (NOAA) wrecks and obstructions database shows no known wrecks or obstructions within the limits of the dredging area (Table 2; Figure 4). A search of the Bureau of Ocean Energy Management's (BOEM) 2011 shipwreck database also provides no indication that any shipwrecks are within the proposed dredging area of potential effect (APE) (Table 3).

Figure 4: NOAA Wrecks and Obstructions Database Map, with dredging area in red in Petersburg Harbor, likely number of wrecks are duplicated in NOAA databases on this map (NOAA 2018).

Table 2: NOAA Wrecks and Obstructions Vicinity of Petersburg Harbor.

Type	Status	Narrative	Latitude	Longitude
Wreck	Visible	Always dry	56.813557	-132.993668
Wreck	Visible	Visible Wreck	56.813545	-132.993576

Wreck	Visible	Always dry	56.817669	-132.971664
Wreck	Visible	Always dry	56.818798	-132.969467
Wreck	Visible	Always dry	56.82283	-132.964508
Wreck	Visible	Always dry	56.822731	-132.963211
Wreck	Visible	Old derelict fishing boat on mud flats	56.823265	-132.963104
Wreck	Visible	Old derelict fishing boat on mud flats	56.812103	-132.961716
Wreck	Visible	Always dry	56.820763	-132.961273
Obstruction	Submerged	Two-fathom-two-foot sounding	56.825409	-132.940216
Obstruction	Submerged	USACE disposal area	56.827778	-132.918335
Obstruction	Submerged	Wooden ATON tower depth 3.71m	56.804085	-132.989243

Table 3: BOEM Shipwrecks Database in vicinity of Petersburg Harbor.

Name	**Type**	**Year**	**Location**	**Narrative Summary**
Flora	Gas Screw	1927	Standard Oil Dock, Petersburg	Fire, destroyed
Mission	Gas Screw	1927	Burnet Cannery	Burned
Mildred II	Gas Screw	1928	Off Turn Point, Petersburg	Fire, vessel consumed
Tum	Gas Screw	1933	Petersburg	Burned
St. Martin	Gas Screw F/F	1937	Across from Scow Bay Cannery	Destroyed by fire
31-A-866	F/V	1943	Herring Bay near Petersburg	Wrecked
Arab	Gas Screw	1945	Petersburg	Burned
Ronald	Gas Screw	1946	Vicinity of Horn Cliffs	Foundered and lost
Salvor	Oil Screw	1948	Near Petersburg	Burned
31-B-460	F/V	1950	Petersburg	Sunk at dock
Odin	Gas Screw	1958	Petersburg	Burned
Lief H.	F/V	1965	Channel Light No. 32A	Grounded and sank
Rose	Tug	1977	Kupreanof Beach	Sank and abandoned
Sweetbriar	CG buoy tender	1993	Opposite Scow Bay	Stuck in mud, recovered
Loretta C	Longliner halibut	1998	Petersburg	Burned

*(F/V) Fishing Vessel

Note: The tug *Rose* sank while moored at the Petersburg boat harbor on June 1, 1977 and later became a landmark along the Kupreanof beach where she was abandoned.

Corps personnel conducted an underwater investigation with a waterproof camera and a remote-operated underwater vehicle at 12 locations in South Harbor (Figures 5). A review of the recorded footage shows a steel plate with bolts attached, cable, and rope at Location 5; rope and cable at Location 6; a coffee mug at Location 7; and pipe and metal debris at Location 8 (Figure 6).

Figure 5: Locations of underwater survey in Petersburg Harbor.

Figure 6: Still image of typical harbor seafloor from remote operated underwater survey.

Thomas Bay Disposal Area

Thomas Bay is located approximately 20 miles northeast of Petersburg (Figure 7). In 1978, archaeologist Katherine Arndt surveyed the west side of Ruth Island in search of the Gardner Shrimp Company Cannery (Esposito 2003). The Gardner Shrimp Company Cannery was in operation from 1916 to 1918. Arndt was unsuccessful in locating the cannery.

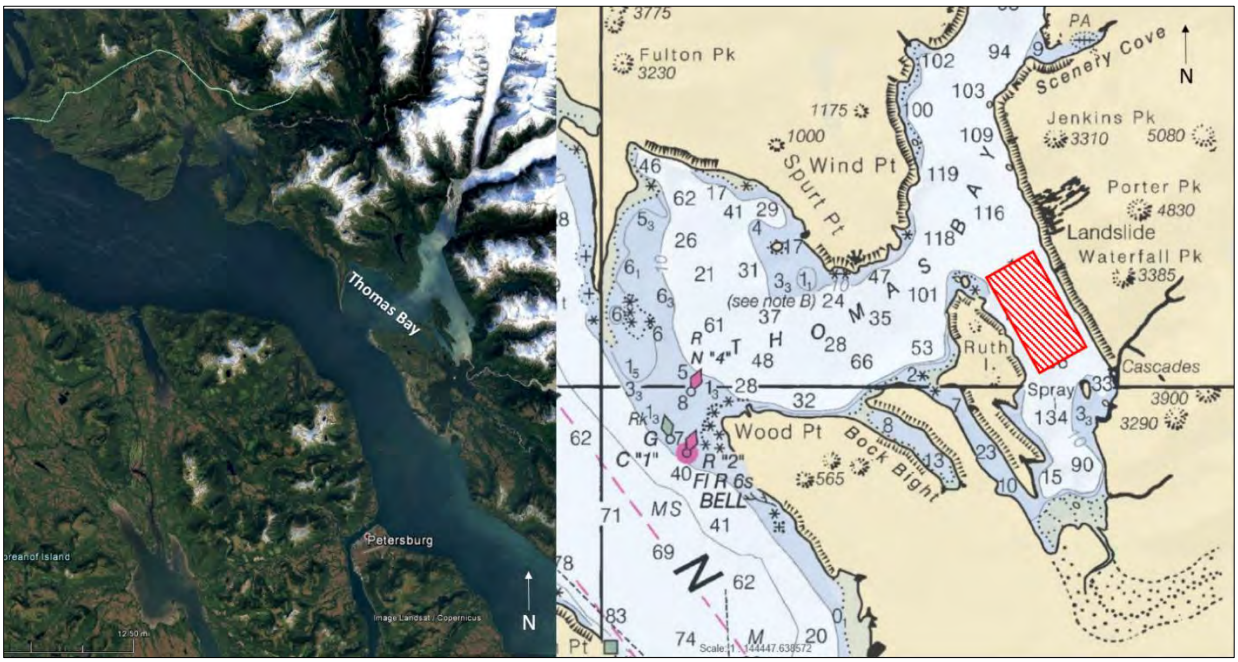

Figure 7 Vicinity map of Thomas Bay and potential in-water disposal location in red (Google Earth Pro 2018; NOAA 2018b).

Cultural resources reported within the general vicinity of the potential Thomas Bay in-water disposal area include both precontact and historic resources, which are located throughout the shores of Thomas Bay and along Ruth Island (Table 4). None of the identified resources falls within the limits of the identified disposal area.

Table 4: Known cultural resources within the general vicinity of Thomas Bay.

AHRS No.	Site Name	NRHP Status	In APE
SUM-007	Scenery Cove	Unevaluated	No
SUM-031	Porter Cove Cabin	Unevaluated	No
SUM-033	Cascade Creek Trappers Cabin	Not Eligible	No
SUM-034	Cascade Creek Civilian Conservation Corps Trail	Not Eligible	No
SUM-068	Duck Point Midden	Eligible	No
PET-424	Ruth Island Camp	Not Eligible	No
PET-426	Rock Shore Structures and Historic Mine	Not Eligible	No
PET-427	Bock Rock Alignment	Not Eligible	No

A search of the NOAA wrecks and obstructions database revealed four obstructions in the form of rocks at the entrance to Thomas Bay and one submerged wreck in the northeast portion of Thomas Bay (Figure 8; Table 5). The submerged wreck is located in Scenery Cove just south of Baird Glacier. All reported wrecks and obstructions are outside the limits of the potential in-water disposal area. A search of the BOEM 2011 Shipwreck database reports two wrecks at the entrance to Thomas Bay. An unnamed and unverified wreck is reported near the entrance of the bay, this wreck has not been verified and may not exist; the second wreck is that of the *Kilamey* and is reported to have wrecked at Wood Point along the southern opening of the bay. No wrecks were reported within the vicinity of the potential in-water disposal area.

Table 5: Shipwrecks in the vicinity of Thomas Bay (BOEM 2011).

Name	Type	Year	Location	Narrative Summary
Unknown	3-mast, Russian Gun Boat	1840	Entrance to Thomas Bay?	Sank, has not been verified.
Kilamey	Gas Screw F/V	1918	Wood Point, Thomas Bay	Foundered, 3 men lost
Evelyn Berg	Steamer	1937	Vandeput Spit, Thomas Bay	Stranded, not a total loss

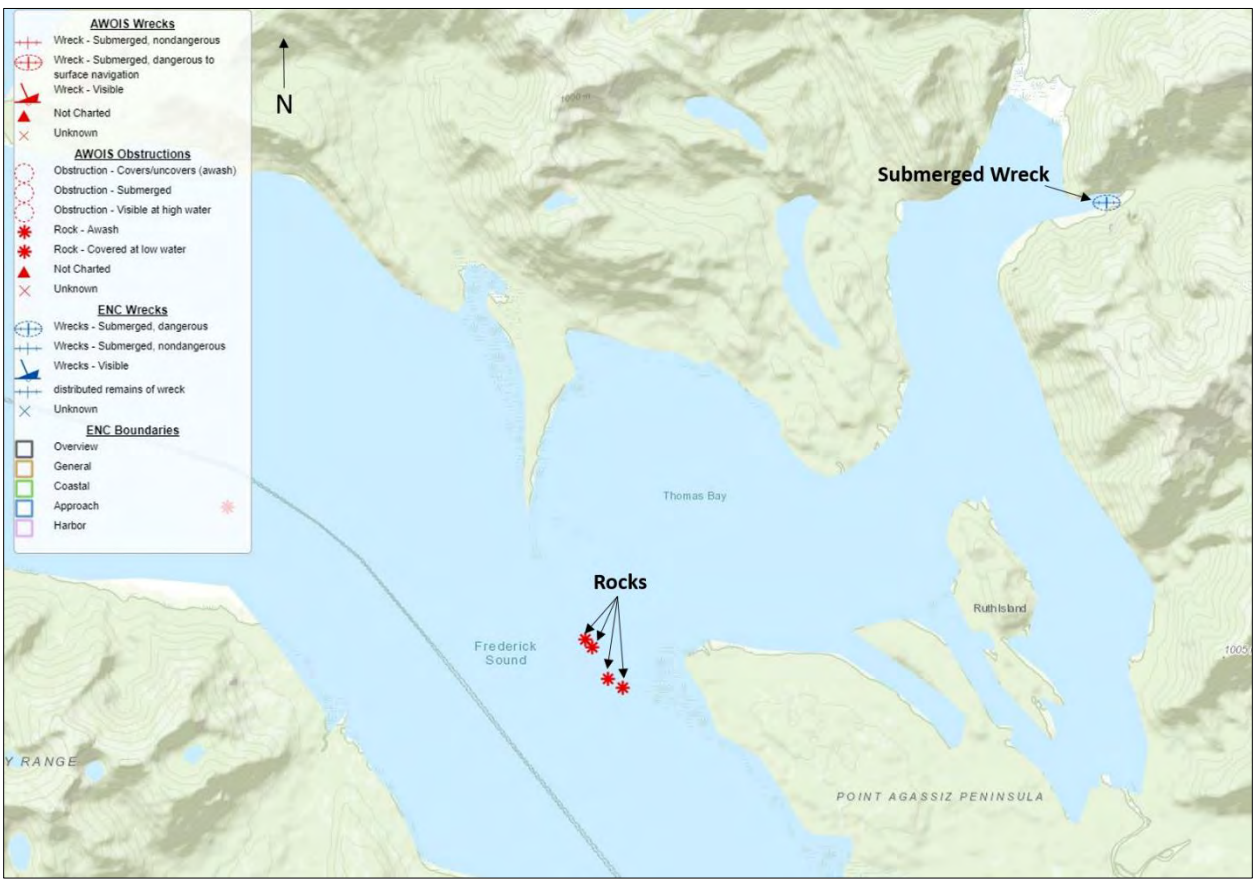

Figure 8: NOAA (2018) wrecks and obstructions map, with wrecks in blue and rocks in red.

Frederick Sound Disposal Area

Frederick Sound is located approximately two miles east of Petersburg (Figure 9). The potential disposal area has been used by the USACE, Alaska Department of Transportation and Public Facilities, and the City of Petersburg for disposal activities. In 1998, the City of Petersburg was authorized to dispose of 80,000 cubic yards of dredge material in the disposal area. The potential in-water disposal area in Frederick Sound was established in 1934 during the development of the Wrangell-Narrows navigation channel project and has been widened and maintenance dredged at least six times between1934 and 2001. Cultural resources reported within the general vicinity of the potential Frederick Sound in-water disposal APE include both precontact and historic resources located along the shores of Frederick Sound on Mitkof Island (Table 4). None of the identified resources fall within the disposal APE.

Table 6 Known Cultural Resources within the General Vicinity of Frederick Sound.

AHRS No.	Site Name	NRHP Status	In APE
PET-027	Sandy Beach Petroglyph Site	Eligible	No
PET-386	Handtroller Camp	Unevaluated	No
PET-387	Tate Cabin and Midden	Unevaluated	No
PET-388	Petersburg Boy Scout Camp	Unevaluated	No
PET-519	Sandy Beach Midden	Eligible	No
PET-520	Sandy Beach CCC Shelters	Not Eligible	No

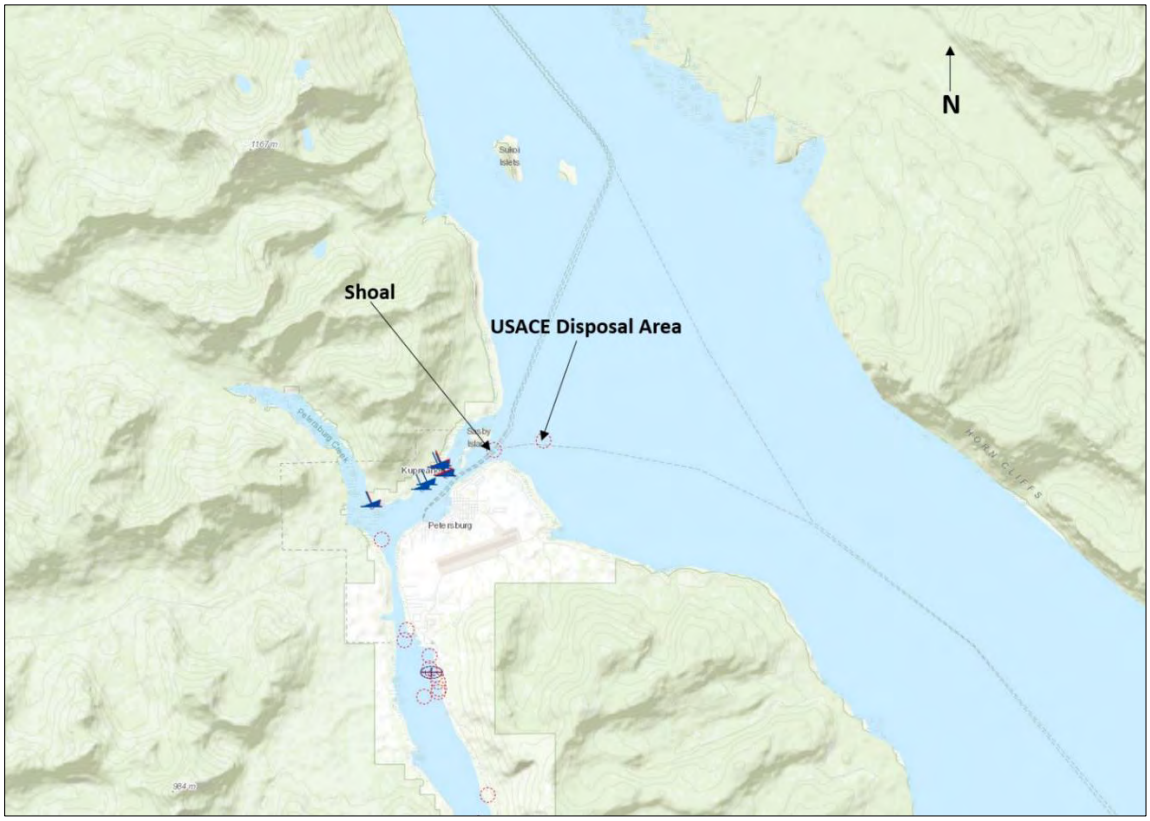

Figure 9: NOAA Map showing reported wrecks and obstructions and the location of the potential disposal location n Frederick Sound

A search of the NOAA wrecks and obstructions database revealed two obstructions and no submerged wrecks in the general vicinity of the potential in-water disposal area. One of the obstructions is identified as a submerged shoal, and the other is identified as the USACE disposal area itself (NOAA 2018). A search of the BOEM 2011 shipwreck database reports two wrecks in the general vicinity of Petersburg. The *Roald*, a gas screw, foundered and sank on January 18, 1946 near the Horn Cliffs east of Petersburg. The *31-B-360* sank at the dock in Petersburg on February 20, 1950 (BOEM 2011). No wrecks were reported within the potential in-water disposal area. Additionally, given the historic use of the potential in-water disposal area since 1934 for deposition of dredged material, it is unlikely that any cultural resources will be disturbed by the disposal activity in Frederick Sound.

Conclusion

The USACE is planning to dredge a section of the Petersburg South Harbor and may use disposal locations in either Frederick Sound or Thomas Bay. No cultural resources have been identified within the APE. Following 36 CFR § 800.4(d)(1), the USACE seeks your concurrence on the determination that the undertaking will result in **no historic properties affected**. If you have any questions about this project, please contact Forrest Kranda by phone at 907-753-2736, or by email at forrest.j.kranda@usace.army.mil.

Sincerely,

Michael R. Salyer

Michael R. Salyer
Chief
Environmental Resources Section

Cc:

Tracy Welch, Council President, Petersburg Indian Association
Michele Metz, Lands Manager, Sealaska Corporation
Desiree Duncan, Native Lands and Resources Manager, Central Council of the Tlingit and Haida Indian Tribes of Alaska

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

CEPOA-PM-C-ER

JAN 2 3 2019

MEMORANDUM FOR RECORD

SUBJECT: Continuation of the NHPA Section 106 Process without SHPO Review

1. On October 17, 2018 the Alaska District, U.S. Army Corps of Engineers (USACE) sent a letter to the Alaska State Historic Preservation Officer (SHPO) requesting review of a finding of no historic properties affected (36 CFR § 800.4(d)(1)) for a Federal undertaking per Section 106 of the National Historic Preservation Act (NHPA).

2. The proposed Federal undertaking consists of dredging the Petersburg South Harbor (Section 27, T58S, R79E, USGS Quad Petersburg D-3, Copper River Meridian) and placing dredged materials in Frederick Sound (T59S, R79E, USGS Quad Petersburg D-3, Copper River Meridian) or Thomas Bay (T55S, R79E. USGS Quad Sumdum A-3, Copper River Meridian).

3. The USACE did not receive a response from the SHPO. Since it has been more than 30 days since submission of the request for review of finding of effect, per 36 CFR § 800.3(c)(4) the USACE will proceed with the Section 106 process and continue under a determination of no historic properties affected.

4. The USACE also sought comments from the Petersburg Indian Association, the Central Council of the Tlingit and Haida Indian Tribes of Alaska, and the Sealaska Corporation. No comments were received from the Petersburg Indian Association or the Central Council of the Tlingit and Haida Indian Tribes of Alaska; however, the Sealaska Corporation concurred that the proposed undertaking would not significantly impact tribal rights or protected resources.

5. Any questions or concerns about this matter should be addressed to Forrest Kranda, Archaeologist, Environmental Resources Section, Civil Works Branch, Alaska District at 907-753-2736.

Michael R. Salyer

MICHAEL R. SALYER
Chief, Environmental Resources Section

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

OCT 17 2018

Desiree Duncan
Native Lands and Resources Manager
Central Council of the Tlingit and Haida Indian Tribes of Alaska
9097 Glacier Highway
Juneau, AK 99801

Dear Ms. Duncan:

The U.S. Army Corps of Engineers (USACE), under the Civil Works Program, is planning to dredge at the south Petersburg Harbor. The project is being conducted in conjunction with the Petersburg Borough under Section 107 Navigation Improvements of the 1960 River and Harbor Act. 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.

You are receiving this letter because we believe that you or your organization may have an interest in the proposed undertaking. We invite you to discuss any cultural resources concerns you may have in the project area. A letter assessing the proposed undertaking is enclosed; it describes the present state of identification and evaluation of cultural resources in the area and the impact that the undertaking may have on those resources. The letter is addressed to the State Historic Preservation Officer (SHPO) who, per Section 101(b)(3) of the NHPA, advises and assists Federal agencies in carrying out their Section 106 responsibilities and cooperates with such agencies, local governments and organizations and individuals to ensure that historic properties in Alaska are taken into consideration at all levels of planning and development.

Please consider this letter our notification of proposed activity under the USACE Tribal Consultation Policy. If you believe this activity may significantly affect tribal rights and/or protected resources, and you wish to enter into government-to-government consultation please advise me or the Project Manager, Amber Metallo, in writing as to which tribal rights and/or protected resource you wish to consult about.

If you have questions or concerns about this project, or would like to share information with us, please email Forrest Kranda at forrest.j.kranda@usace.army.mil or call at 907-753-2736, or Amber Metallo at amber.c.metallo@usace.army.mil or call at 907-753-5632.

Sincerely,

Forrest J. Kranda
Archaeologist
Environmental Resources Section

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

OCT 17 2018

Michele Metz
Lands Manager
Sealaska Corporation
One Sealaska Plaza, Suite 400
Juneau, AK 9981-1276

Dear Ms. Metz:

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If you have questions or concerns about this project, or would like to share information with us, please email Forrest Kranda at forrest.j.kranda@usace.army.mil or call at 907-753-2736, or Amber Metallo at amber.c.metallo@usace.army.mil or call at 907-753-5632.

Sincerely,

Forrest J. Kranda
Archaeologist
Environmental Resources Section

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

Tracy Welch
President
Petersburg Indian Association
P.O. Box 1418
Petersburg, AK 99833-1418

OCT 1 7 2018

Dear President Welch:

The U.S. Army Corps of Engineers (USACE), under the Civil Works Program, is planning to dredge at the south Petersburg Harbor. The project is being conducted in conjunction with the Petersburg Borough under Section 107 Navigation Improvements of the 1960 River and Harbor Act. 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.

You are receiving this letter because we believe that you or your organization may have an interest in the proposed undertaking. We invite you to discuss any cultural resources concerns you may have in the project area. A letter assessing the proposed undertaking is enclosed; it describes the present state of identification and evaluation of cultural resources in the area and the impact that the undertaking may have on those resources. The letter is addressed to the State Historic Preservation Officer (SHPO) who, per Section 101(b)(3) of the NHPA, advises and assists Federal agencies in carrying out their Section 106 responsibilities and cooperates with such agencies, local governments and organizations and individuals to ensure that historic properties in Alaska are taken into consideration at all levels of planning and development.

Please consider this letter our notification of proposed activity under the USACE Tribal Consultation Policy. If you believe this activity may significantly affect tribal rights and/or protected resources, and you wish to enter into government-to-government consultation please advise me or the Project Manager, Amber Metallo, in writing as to which tribal rights and/or protected resource you wish to consult about.

If you have questions or concerns about this project, or would like to share information with us, please email Forrest Kranda at forrest.j.kranda@usace.army.mil or call at 907-753-2736, or Amber Metallo at amber.c.metallo@usace.army.mil or call at 907-753-5632.

Sincerely,

Forrest J. Kranda
Archaeologist
Environmental Resources Section

PHONE/CONVERSATION LOG

Conversation with: Susan Harai, TTP Roads Director	Date: 17 October 2018
Address/location: USACE AK District	Time: 1015
Phone: 907-772-3636	[ ] Placed Call
Subject: Dredging Petersburg S. Harbor	[X] Received Call
	Petersburg CAP 107

Discussion:

Susan Harai, TTP Roads Director returned a call placed by Mr. Kranda during the week of 08 October. Ms. Harai informed Mr. Kranda that she discussed the project with Petersburg Indian Association staff and they did not have any concerns with the project. Information was also given to Council President Tracy Welch, who will discuss the project with the board, and if there are any questions, comments, or concerns from the members they will contact Mr. Kranda directly via phone or email.

Follow-Up Action:

KRANDA.FORREST.JAMES.1411398206

Digitally signed by KRANDA.FORREST.JAMES.1411398206
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=KRANDA.FORREST.JAMES.1411398206
Date: 2019.03.15 10:25:26 -08'00'

From: Michele Metz
To: Kranda, Forrest J CIV USARMY CEPOA (US)
Subject: [Non-DoD Source] Dredge at the South Petersburg Harbor
Date: Monday, October 29, 2018 2:18:48 PM

Mr. Kranda,

Thank you for initiating consultation with Sealaska Corporation on the planned dredging at South Petersburg Harbor. I have reviewed the attached material and have determined that this project will not significantly affect tribal rights and/or protected resources. Sealaska has no need for further consultation on this project unless you inadvertently discover cultural resources or human remains as you pursue this project.

Thank you.

Michele

Michele Metz

Lands Manager

Natural Resources, Haa Aani, LLC

Sealaska Corporation

One Sealaska Plaza, Suite 400

Juneau, AK 99801

907.586.9270 (direct)

907.957.2727 (cell)

Blockedwww.sealaska.com <Blockedhttp://www.sealaska.com/>

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