Elim Subsistence Harbor Feasibility Study Appendix A: 404(b)(1) Clean Water Act Evaluation

Elim, Alaska

April 2020

U.S. Army Corps of Engineers
Alaska District

EVALUATION UNDER
SECTION 404(b)(1) CLEAN WATER ACT 40 CFR PART 230
Elim Tribal Partnership
Elim, Alaska

I. Project Description

The project intent is to create a protected multi-purpose navigation feature that will accommodate small local watercraft, commercial fishing tenders, and cargo barges. Under the tentatively selected plan (TSP), Alternative 5, two rubble mound breakwaters would provide a mooring basin approximately 6.2 acres with a required dredged depth of -9.0 feet mean lower low water (MLLW) and a maximum pay depth of -11.0 feet MLLW. The west breakwater would be 1,082 feet long and the east breakwater 468 feet long. The entrance channel, tender dock access, barge landing access, and turning basin would have a required dredged depth of -12.0 feet MLLW with a maximum pay depth of -14.0 feet MLLW. Local service facilities required would include an extension to the fuel header located on Elim Beach, a single boat launch, uplands with an area of 3.9 acres for parking and turn-around at the boat launch, a tender dock, a barge landing, two mooring points, and a road connecting the uplands to Front St. to the harbor uplands. The road would be approximately 0.15 miles and relatively flat. Construction of the tender dock would require about 200 linear feet of sheet pile, and two moorage points (pilings) would be installed in the uplands adjacent to the barge landing (Figure 1).

A. Authority

Section 203 of the Water Resources Development Act (WRDA) of 2000 as amended by Section 1031(a) of the Water Resources Reform and Development Act of 2014 (WRRDA 2014), and Section 1121 of the Water Infrastructure Improvements for the Nation Act of 2016 (WIIN/WRDA 2016), provides authority for the United States Army Corps of Engineers (USACE), Alaska District, in cooperation with Indian tribes and heads of other federal agencies to study and determine the feasibility of carrying out projects that will substantially benefit Indian tribes.

B. General Description of Dredged or Fill Material

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

- Placement of rock material for the construction of the breakwaters;
- Placement of fill for the construction of uplands;
- Disposal of dredged material.

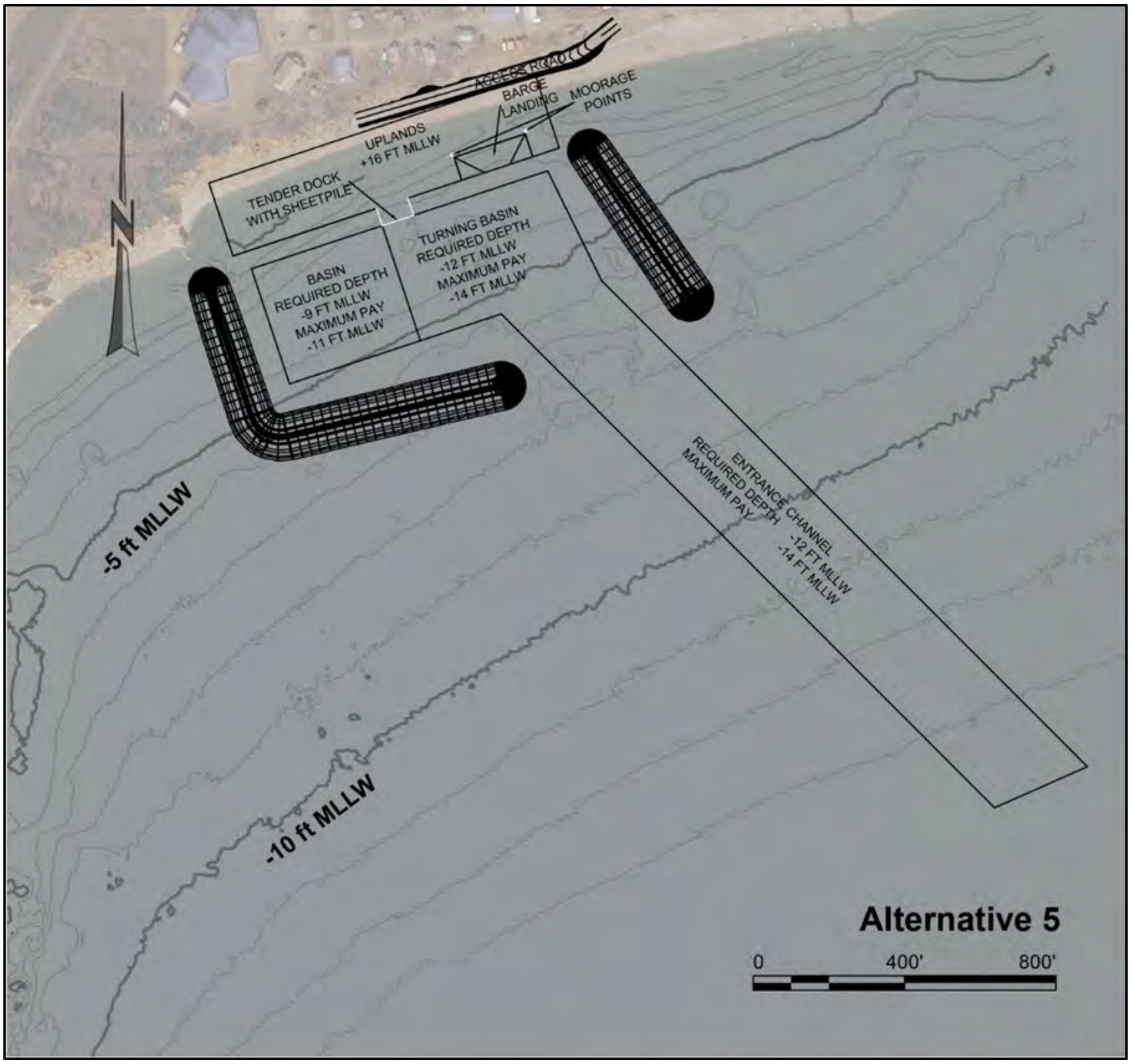

Figure 1. Alternative 5 layout.

An estimated 89,692 cubic yards of various grades of rock material would be used to build the breakwaters, while 117,327 cubic yards of fill and rock would be placed to create the uplands. Not all of this material would be placed within waters of the U.S. Armor stone, and other large rock would likely come from the established quarry at Cape Nome, while fill material may be obtained from local borrow sources. Fill material for the uplands may be taken from the construction dredged material if that material is determined to be suitable.

An estimated 159,000 cubic yards of material would be dredged from the seafloor during construction. This dredged material is expected to consist primarily of sand and crushed rock. The dredging prism has not been directly sampled or characterized. Geophysical surveys performed in 2019 suggest that the seabed within the project footprint consists of three layers (USACE 2019):

a. A surface layer of loose alluvium (coarse sand and gravel with cobbles and boulders) at the surface, varying in thickness from nonexistent to about three feet thick (Figure 2);

b. A layer of dense alluvium or weathered bedrock interpreted to range in thickness from about two feet to nine feet; and

c. Bedrock.

Figure 2. Underwater video screenshot of typical seafloor in the project area.

C. Descriptions of the Proposed Discharge Sites

The project footprint is in a flat, shallow, predominantly sandy area of the seafloor (Figure 2). Dredged material not used as fill in project construction would be discharged at an open-water disposal site. The proposed disposal site is a square, 2,000 feet on a side, located approximately 2 nautical miles east-southeast of the project site, in waters at least 5 fathoms (30 feet) deep (Figure 3). This site is within the Norton Bay “closing line,” and therefore, within “inland waters,” The seafloor at the disposal site is presumed to be flat and mostly sandy.

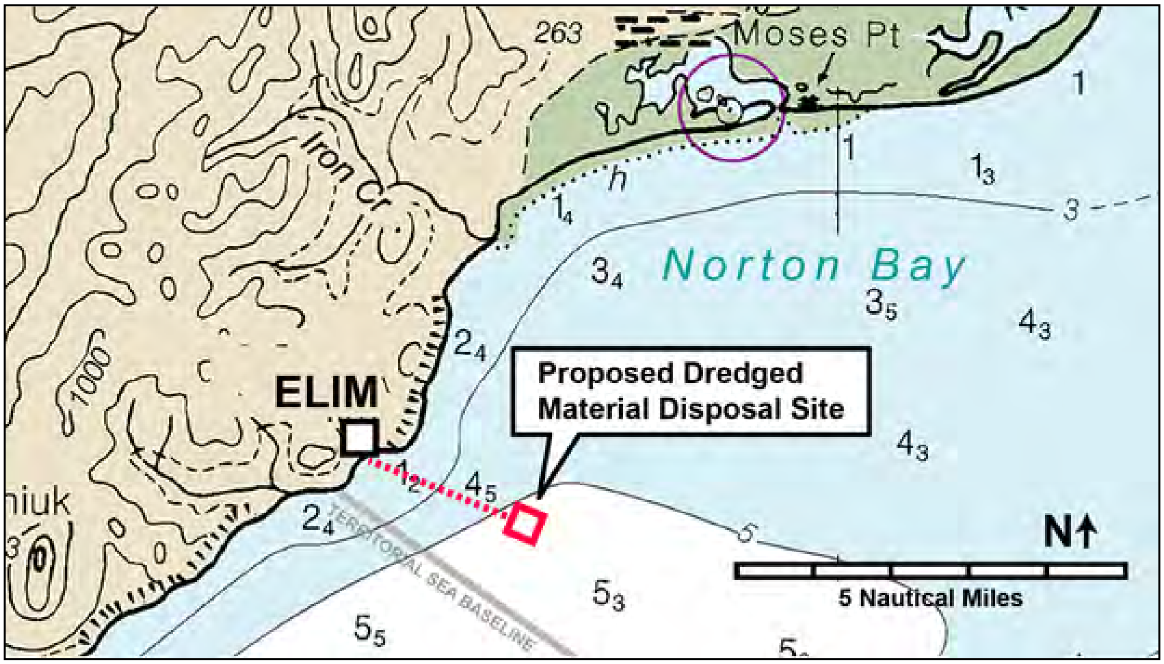

Figure 3. Generalized location of the proposed dredged material disposal site.

D. Descriptions of Discharge Methods

Dredged material would most likely be transported to and placed at the disposal site using a bottom-dump scow. Rock for the breakwaters would be placed by an excavator located on a barge or other floating platform. Fill for the uplands would be placed by excavator and other construction machinery.

II. Factual Determinations

A. Physical Substrate Determinations

The dredged material would contain a considerable quantity of crushed rock and thus likely be coarser than the surface sediment at the disposal site. The estimated dredged material volume (159,000 cubic yards) evenly spread over the 4-million-square-foot disposal site would form a layer roughly one foot thick. Likely, the coarser particles of dredged material would soon be covered with finer sediments transported and redistributed by storm surge.

The rock breakwaters would replace approximately 4.8 acres of sandy substrate with a high-relief rocky substrate.

B. Water Circulation, Fluctuations, and Salinity Determinations

The placement of dredged material at the disposal site is not expected to cause discernable changes to water circulation, fluctuations, or salinity within Norton Bay. The dredged material would form a layer roughly 1 foot thick at the disposals site and is likely to be redistributed by storm surge and other natural processes.

The proposed breakwaters would reduce wave energy within and near the area they enclose, which will cause localized changes to water circulation along the beach at Elim. The presence of the breakwaters and constructed fill would protect a portion of the shoreline at Elim from further erosion. No freshwater streams will enter the area enclosed by the breakwaters, and the breakwaters would not affect the discharge from Elim Creek, so no noticeable effects on salinity are anticipated.

C. Suspended Particulate/Turbidity Determinations

Much of Norton Sound experiences high turbidity during the open-water season, due to its shallow depth, energetic wave environment, high sediment load discharged by the Yukon and other rivers, and disturbance of the seafloor by gray whales, beluga whales, walruses, and other benthic feeders. Background turbidity can exceed 100 nephelometric turbidity units (NTUs), and sustained background turbidity can remain above 25 NTUs up to 74% of the time during two weeks.

The dredging is expected to be performed with a mechanical clamshell dredge, or excavator operated from a crane stationed on a barge and depositing the dredging spoils into an adjacent scow. A hydraulic ripping attachment to an excavator may be necessary to remove consolidated sediment or weathered bedrock within the dredging prism. In mechanical dredging, the sediment becomes suspended into the water by:

a) the impact of the dredge with the seafloor,
b) fallback of sediment as the dredge is raised to the surface,
c) dewatering of the sediment as it is stockpiled on the scow, and
d) discharge of the sediment from the scow at the placement site.

Placement of rock for the breakwater and constructed uplands is not expected to significantly increase turbidity in the project area, as the substrate contains little in the way of fine particles to be disturbed. Rock and fill material would contain residual fines that may become suspended in the water column and contribute minimally to turbidity.

D. Contaminant Determinations

The project footprint is on and offshore of an unimproved beach, currently used to launch small watercraft and land cargo barges. While small fuel spills may have occurred on the beach, there is no record of significant discharges of contaminants in the intertidal zone.

The Alaska Department of Environmental Conservation (ADEC) has identified several contaminated sites within several hundred feet inland of the project area (ADEC 2020). A small fuel tank farm (Figure 4) was operated by the Alaska Village Electric Corporation (AVEC) prior to the construction of the current, larger AVEC facility west of the village. The aboveground storage tanks were removed from the small tank farm in 2012. A small area of stained soil, approximately 3 feet by 4 feet, was identified during a 2009 site visit. Still, the former tank farm site has never been sampled, and contaminated subsurface soil and groundwater are possible. This site is approximately 350 feet from the shoreline.

Diesel fuel-contaminated soil was encountered during the preparation of the foundation at the new high school (Figure 4). In 2001, 3,000 cubic yards of bedrock and soil were removed, but some fuel contamination remains in bedrock fissures that could not be reached during excavation. No evidence of seepage of contamination has been observed along the beach bluff immediately south of the school. ADEC determined that there is no unacceptable risk to human health or the environment, and conditionally closed the site in 2007 (ADEC 2020). This site is approximately 200 feet from the shoreline.

A site on the north edge of the community consists of the current city shop and storage area for broken equipment, disabled vehicles, used oil, and batteries (Figure 4). An ADEC inspection (ADEC 2013) identified heavily stained soil within a bermed area that once held aboveground fuel storage tanks. In 1980, a former landfill closed and is in the area. This site is approximately 790 feet from the shoreline.

Another closed landfill exists immediately northeast of Elim School, approximately 520 feet from the shoreline (Figure 4). The community’s active landfill is located on Moses Point Road, roughly 2 miles northeast of Elim (ADEC 2013).

The community septic system discharges primary-treated sewage from the west side of Elim into Norton Bay a few hundred feet east of the project site (Figure 4). The exact point of discharge is unknown, as the pipe has reportedly been damaged offshore. The shoreline septic tanks that feed the outfall pipeline have a history of overflowing (IHS 2005).

Figure 4. Potential sources of contamination at Elim discussed in this evaluation.

For these contaminated sites to be relevant to the proposed project, the contaminants would not only have to migrate to the shoreline but also become entrained and persist in the seafloor materials proposed to be dredged. The area to be dredged begins roughly 200 feet offshore; the intervening area will be covered with fill as shown in Figure 1 and Figure 4.

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

The marine sediments at Elim are unlikely to show the high levels of naturally occurring arsenic or other metals such as observed within Snake River and its discharge into Nome Harbor. The Snake River watershed encompasses over 86 square miles and has been heavily disturbed by surface mining for more than a century. Elim Creek is a minor stream draining roughly 5 square miles of mostly undisturbed forest and shrub wetlands.

E. Aquatic Ecosystems and Organism Determinations

The uncharacterized benthic community within is believed to be similar to that observed in the nearshore project area. It is described as low densities of mollusks and marine worms inhabiting a substrate of coarse mobile sand, predated upon by sea stars and similar invertebrates. Discharge of dredged material at the disposal site would likely change the surface particle size distribution, adding more coarse material to the existing sand, which may alter its suitability for some burrowing invertebrates. Many burrowing and seafloor invertebrates should survive the gradual addition of an additional foot of sand and gravel to the disposal site, as they will have adapted to the frequent disturbance of benthic sediments by storm surge.

Construction of the breakwaters would replace approximately 4.8 acres of flat sandy substrate with a high-relief rock substrate. The rock structures would be similar to large boulders and bedrock outcroppings observed on the seafloor near the rocky headland west of the project site (see the Essential Fish Habitat Assessment in Appendix H for further descriptions) and would be expected recruit similar communities of marine algae and invertebrates.

F. Proposed Discharge Site Determinations

The dredged material would consist of coarse sand, gravel, and crushed rock, with very little fines. The USACE expects the discharged dredged material to descend through the water column onto the disposal site with minimal dispersion. However, the deposited dredged material would be subject to disturbances from storm surge and other natural processes and be redistributed beyond the identified disposal area.

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

Natural processes would gradually dispers dredged material placed at the disposal site, and no permanent long term effects are anticipated. The USACE estimates that maintenance dredging of the completed project will require the removal of 80,000 cubic yards of accumulated sediment every 15 years. Assuming that the maintenance dredged material is discharged into the proposed disposal site, the 15-year interval is sufficiently long that the previous discharge of dredged material will have completely dispersed; no cumulative effects on the environment from maintenance dredging are anticipated.

The construction of the rock breakwaters would alter the local ecosystem in the long term, although not necessarily in a negative way. The rocky substrate should support new communities of aquatic organisms not currently found along the beach at Elim, but similar to those found in nearby rocky coastal habitat. The constructed project would be expected to be used by boats currently launching from Moses Point and would bring in larger boats (e.g., the fish tender) that currently do not visit Elim. This diversion of the current fleet would create a potentially higher risk of small fuel or other pollutant releases at Elim.

III. Findings of Compliance or Non-Compliance with the Restrictions on Discharge

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

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

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

If the dredged material is suitable for the purpose, some of it may be used as fill for the proposed constructed uplands. No other beneficial use, such as beach nourishment, has been identified for this project. Placement of the dredged material in the very shallow waters near shore may have unknown, unevaluated impacts on navigation, use of the beach, and on the rocky marine habitat near the headlands to the east and west of the project site. The USACE does not consider placement/disposal of the dredged material on land as practical or desirable, due to the lack of upland storage areas, and the impacts and cost of transporting the dredged material inland by truck through the community on its limited road system. Placement of the dredged material in a relatively thin layer in deeper offshore waters is determined by the USACE to be the least environmentally damaging practicable alternative (LEDPA).

C. Compliance with Applicable State Water Quality Standards

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

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

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

E. Compliance with Endangered Species Act of 1973

The USACE has been in informal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), under Section 7 of the Endangered Species Act (ESA). The ESA-listed species that have been considered under this study and is summarized in Table 2. The USACE has determined that some listed marine mammal species may be adversely affected by this project, and will initiate formal consultation with the NMFS. The USFWS has concurred with the USACE's determination of "may affect, but not likely to adversely affect" for polar bear, Steller's eider, and spectacled eider.

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

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

Table 2. ESA-Listed Species Potentially Affected by the Proposed Action

Species Common Name	**Listed Population**	**ESA Status**	**USACE Determination of Effect**	**Critical Habitat Adversely Modified?**	**Agency Jurisdiction**
Ringed seal	Arctic DPS	Threatened	**May effect, likely to adversely affect**	N/A	NMFS
Bearded seal	Beringia DPS	Threatened	**May effect, likely to adversely affect**	N/A	NMFS
Gray whale	W. North Pacific DPS	Endangered	**May effect, likely to adversely affect**	N/A	NMFS
Humpback whale	W. Pacific DPS	Endangered	**May effect, likely to adversely affect**	N/A	NMFS
	Mexico DPS	Threatened			NMFS
Steller sea lion	Western DPS	Endangered	**May effect, likely to adversely affect**	**No**	NMFS
Sperm whale	All	Endangered	No effect	N/A	NMFS
N. Pacific right whale	All	Endangered	No effect	**No**	NMFS
Bowhead whale	All	Endangered	No effect	N/A	NMFS
Fin whale	All	Endangered	No effect	N/A	NMFS
Blue whale	All	Endangered	No effect	N/A	NMFS
Beluga whale	Cook Inlet DPS	Endangered	No effect	No	NMFS
Polar bear	All	Threatened	May affect, but not likely to adversely affect	No	USFWS
Spectacled eider	All	Threatened	May affect, but not likely to adversely affect	No	USFWS
Steller's eider	All	Threatened	May affect, but not likely to adversely affect	No	USFWS
Northern sea otter	SW Alaska DPS	Threatened	No effect	No	USFWS
Short-tailed albatross	All	Endangered	No effect	N/A	USFWS

IV. References

Alaska Department of Environmental Conservation (ADEC). 2020. Division of Spill Contaminated Sites Database website: https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP

ADEC. 2013. Waste Erosion Assessment and Review (WEAR) Trip Report, Elim. 25 September 2013.

Indian Health Service (IHS). 2005. Sanitation Tracking and Reporting System (STARS) Report # AK23784-2005 Elim Sewer Treatment Improvements.

U.S. Army Corps of Engineers Alaska District (USACE). 2019. Geotechnical Feasibility Report, Elim Navigation Improvements, Elim, Alaska. 13 December 2019.