APPENDIX H

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

Alaska Deep-Draft Arctic Port System Study

The purpose of the Section 404(b)(1) Guidelines is to restore and maintain the chemical, physical, and biological integrity of the waters of the U.S. through the control of discharges of dredged or fill material. Except as provided under Clean Water Act (CWA) Section 404(b)(2), no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences. In accordance with the Section 404(b)(1) Guidelines (40 CFR Part 230), the potential short-term and long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment must be determined.

The potential for environmental impacts as a result of the construction and operation of the proposed project have been analyzed in the project Integrated Feasibility Study and Environment Assessment to which this evaluation is attached. There were four alternatives developed for Nome Harbor (1A through 1D), varying primarily in the channel depths to be achieved, and therefore in the amount of dredging required (see Appendix A for a detailed description of the four alternatives). Because each of the alternatives are relatively similar in terms of their probable impacts to the aquatic ecosystem/environment, and would therefore be expected to result in similar effects, the analysis below focuses primarily on the proposed project (Alternative 1A).

I. Project Description and Background

A. Location: This evaluation addresses the preferred alternative proposed under the U.S. Army Corps of Engineers Alaska District (Corps) Alaska Deep-Draft Arctic Port System Study; the proposed navigation improvements and harbor expansion activities described are located at Nome Harbor, Alaska.

B. General Description: Proposed in-water construction activities associated with the study's recommended plan includes a 2,150-foot causeway extension, a 450-foot long dock, and dredging to -28 feet MLLW (figure 1). The existing stub breakwater would be demolished, and a 2,150-foot-long extension to the causeway would be constructed, extending the causeway to the -34-foot MLLW isobath. This extension would protect the existing harbor from southeastern waves and provide protection to a new 450-foot-long

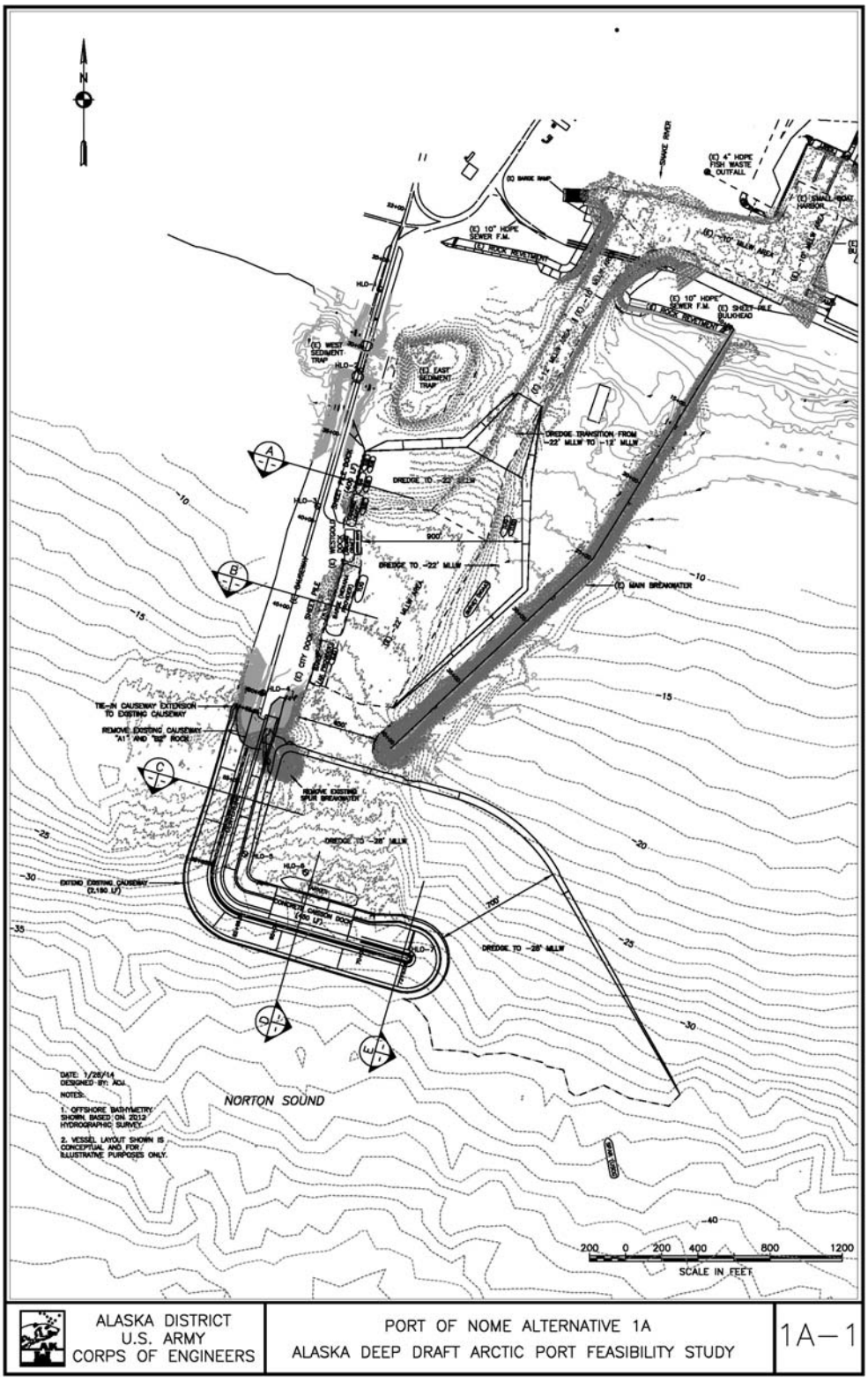

Figure 1: Nome Harbor causeway extension layout and dredging plan

concrete caisson dock parallel to the new causeway extension. The causeway extension would be constructed to match the current causeway elevation on the sea side of +28 feet MLLW and on the harbor side of +15.5 feet MLLW. The extension would also include a 30-foot-wide driving surface for vehicle access to the new 450-foot-long dock.

Table 1 shows the estimated amount of material needed to construct the causeway extension.

Table 1: Causeway Material Amounts

Item	Amount (cy)
A1 Rock	181,600
A5 Rock	29,100
B2 Rock	100,300
B3 Rock	13,350
C1 Rock	30,700
C2 Rock	9,800
D Filter Material	47,725
F Fill Material	82,075
E Fill Material	367,350
Total	**862,000**

Dredging to create the improved navigation channel and harbor area will remove a total of approximately 441,000 cubic yards of material from 120.7 acres of sub-tidal habitat. The approximate average depth of 12 feet in the inner maneuvering area will be dredged to -22 feet MLLW (287,400 cubic yards removed), and the approximate average depths of -25 feet MLLW in the outer maneuvering area will be dredged to -28 feet MLLW (153,600 cubic yards removed)[1]. The outer entrance channel would be flared out to daylight at the existing contours and follow the head radius of the extended causeway. The effective channel width would be 700 feet. A total combined outer entrance channel and maneuvering area of approximately 45 acres would be available to accommodate the new 450-foot caisson dock. The inner channel and maneuvering area would have a combined area of 27.2, compared with the existing 15.4 acres now available.

[1] For comparative purposes, Alternative 1B would require a total of 852,600 yd^3 to be dredged, Alternative 1C would require 1,666,000 yd^3 to be dredged, and Alternative 1D would require 1,673,800 yd^3 to be dredged.

All dredged material will be placed above mean lower low water (MLLW) on the beach immediately east (littoral down-current side) of the harbor breakwater for the beneficial purpose of beach nourishment and shoreline protection, as is the practice with material derived from permitted annual maintenance dredging activities at Nome Harbor.

C. Authority: This study is being conducted under authority granted by the House Public Works Committee Resolution for Rivers and Harbors in Alaska, adopted 2 December 1970. The resolution states:

> *"Resolved by the Committee on the Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports of the Chief of Engineers on Rivers and Harbors in Alaska, published as House Document Numbered 414, 83rd Congress, 2nd Session; and other pertinent reports, with a view to determining whether any modifications of the recommendations contained herein are advisable at the present time."*

Historically, the Rivers and Harbors Act of 1917 (8 August 1917, House Doc. 1932, 64th Congress, 1st Session), as adopted by Public Law (P.L.) No. 37 to complete the improvement to Nome Harbor, provided for an east jetty 335 feet long, a west jetty 460 feet long, a channel 75 feet wide to a depth of -8 feet MLLW from Norton Sound through the Snake River, ending in a basin of the same depth 250 feet wide and 600 feet long near the mouth of Bourbon and Dry Creeks, and revetment along the banks of the river.

The Rivers and Harbors Act of 1935 (30 August 1935, House Doc. 404, 71st Congress, 2nd Session, and the Rivers and Harbors Committee Doc. 38, 73rd Congress, 2nd Session) as adopted, provided for an extension of the east jetty an additional 616 feet, extension of the west jetty another 216 feet, and extension of the basin northward 400 feet.

The Rivers and Harbors Act of 1948 (16 June 1948, P.L. 80-649) as adopted, authorized construction of a rock mound seawall extending easterly from the east jetty along the water front for a distance of 3,350 feet.

Section 101(a)(1) of the Water Resource Development Act of 1999 (P.L. 106-53, 106th Congress), provided for a new entrance to Nome harbor consisting of a 2,986-foot-long breakwater, 230-foot-long causeway spur, and a 3,450-foot-long entrance channel with supporting sediment traps and a causeway bridge. This project was completed in 2006, and resulted in the current configuration of Nome Harbor (Figure 2).

Figure 2: Aerial oblique view of current Nome Harbor configuration; view is towards the east-northeast.

Existing Project	**Length**	**Depth**	**Width**
Main Breakwater	2986 ft		
Spur Breakwater	230 ft		
Entrance Channel	3450 ft	-22, -12, -10 ft	Varies
Bridge	118 ft		30 ft

D. General Description of Dredged or Fill Material: Under the recommended plan, the causeway extension will require submerged placement of 862,000 cubic yards of several different grades of rock, ranging from 8-ton-average-weight armor rock to gravel-sized fill material, converting approximately 16.3 acres of soft-bottom subtidal habitat to hard substrate at a depth of approximately -28 to -34 feet MLLW. The concrete caisson dock would likely be assembled from pre-cast 150-foot by 50-foot by 40-foot modules that are fabricated off-site and towed to Nome Harbor. Dredging is expected to require the removal of 153,000 cubic yards of marine sediment from the outer channel, and 287,400 cubic yards from the inner channel and maneuvering area (a total of 441,000 cubic yards). This sediment is expected to consist primarily of uncontaminated sands and

gravels, although silts may be encountered in the newly-excavated seabed; knowledge of the physical and chemical composition of the marine sediments to be dredged will be refined upon geotechnical investigation of the project site, but the results are likely to be similar to that associated with dredging during the annual maintenance dredging cycle.

E. Description of the Proposed Dredged Material Discharge Site: Since 2009, annual maintenance dredging at Nome Harbor has placed between 20,000 to 50,000 cubic yards of dredged material each year within a roughly 600-foot by 300-foot (less than 5 acre) area about 450 yards east of Nome Harbor; the material is placed - for the beneficial purpose of beach nourishment - where littoral transport will redistribute it eastward along the shoreline, widening the beach along the foot of the seawall and providing additional shoreline protection. This placement of dredged material has substantially increases the width of beach along the foot of the rock seawall protecting the city shoreline.

The dredged material from the proposed construction would be similarly placed for the beneficial purpose of beach nourishment and shoreline protection. The large amount of material involved would require expansion of the placement area, to perhaps 20 acres. The dredged material would be placed above MLLW and the seaward limit of any beach vegetation to ensure that all material remains within the active littoral transport zone.

Based on previous studies, and the high-energy characteristics of the project area, contaminated sediments are not expected to be encountered. However, sediment analyses (physical and chemical) will be conducted during geotechnical investigations performed in the design phase of the project. Should contaminated sediments be identified, these materials will be segregated from otherwise suitable (nontoxic) dredged material, and disposed in an upland disposal site or within a specifically-constructed confined disposal facility (CDF).

Two ocean dredged material disposal sites (ODMDS) immediately offshore of Nome, authorized by the U.S. Environmental Protection Agency (USEPA) under Section 102 of the Marine Protection, Research, and Sanctuaries Act (MPRSA), have been historically used for the discharge of dredged material. These two disposal areas (0.30 nmi^2 and 0.37 nmi^2 in size respectively) flank what used to be the former entrance channel and extend several thousand feet seaward, and have been in use since 1923, with no indications that disposal of dredged material over this period of time has materially altered the characteristics of the ODMDS. The USEPA prepared an environmental impact statement (EIS) designating these interim ODMDS as final ODMDS, with the Record of Decision (ROD) signed in 1992 authorizing the continued use of these sites for the disposal of dredged material for a 10-year period (USEPA, 1984). This designation has since

expired, so there are no formally-approved ODMDS currently available for this project's use.

F. Description of Disposal Method: A cutter-head suction dredge with a transport pipeline has been used successfully in the maintenance dredging program, and is an likely option for placement of the construction dredged material at the placement site. Alternatively, if the dredged material is too compacted and cannot be hydraulically lifted and transported via pipeline, the dredged material may be transported to a site east of the eastern boundary of the Nome ODMDS, and discharged in shallow waters via a barge or scow.

II. Factual Determinations

The project area is located in Norton Sound. There is no evidence that the physical characteristics of the sites differ from those of the remainder of the Sound. Thus, the dispersal, horizontal transport and vertical mixing characteristics, and the prevailing current direction and velocity, in the project area are similar to those of the Sound as described below.

A. Physical Substrate Determinations: The seabed offshore of Nome is a largely featureless expanse of sand and gravel that deepens gradually to depths of -60 to -90 feet MLLW in the Chirikov Basin (the central depression of Norton Sound, and a segment of the continental shelf of the Bering Sea). The gradient of the shelf from the shoreline to a depth of 40 feet is generally 1:120; the slope then decreases to 1:400 from 40 to 60 feet; and then exhibits a shallower gradient onwards to the center of the Chirikov Basin. The nearshore topography (Figure 3-2) is typical of this type of coastline (i.e., an irregular bottom with holes, mounds, and bars from the beach to depths of about 20 feet). Beyond 20 feet the bathymetry is more regular, and only minor topographic features occur to depth of about 40 feet; the shelf remains comparatively smooth to the center of the basin.

The natural environment includes the continuous migration and redistribution of benthic sediments, as well as frequent disruption from ice scouring and violent storms. Varying thicknesses of Pleistocene to recent age sediments cover older bedrock offshore Nome. In general, nearshore sediments are coarse, poorly sorted, and form an irregular belt which extends parallel to shore. Strong currents remove fine sediments and tend to push them offshore.

Although the proposed causeway extension will convert approximately 16.3 acres of soft-bottom habitat to hard substrate (subtidal, intertidal and supratidal), and require the

dredging of 120.7 acres of newly protected soft-bottom substrate to achieve target navigation depths (-28 feet MLLW), the proposed project will not result in a significant change to the overall physical substrate in the vicinity of Nome Harbor.

B. Water Circulation, Fluctuations, and Salinity Determinations:

Circulation within the harbor would be influenced by the tidal prism, water depth, and flow through the causeway, breakwater and the entrance channel. The proposed causeway extension will be located outside and offset from the existing navigation channel. It is estimated that the exchange of water in the new configuration would be similar to that of the existing port during each tide cycle. Since the tide range at Nome is relatively minimal, water exchange due to tidal influence is minor. Wind induced currents and flow from the Snake River are estimated to provide the larger portion of water exchange within the port system. Also, the breaches in the causeway and the main breakwater provide flow paths for wave driven currents and rip currents.

The vertical stability of waters off Nome exhibit strong seasonal temperature and salinity variations. During the winter a single mixed layer exists, while in summer, a two-layer system is present, with cold, saline water below -15 to -30 feet MLLW, and warmer, less-saline water on the surface.

Waves of 2 to 5 feet height are likely to approach Nome Harbor from the west, to south and southeast, 40% to 50% of the time (Tetra Tech, 1980). Greater wave heights occur during local storms. Wave action, both prevailing and storm-generated, will cause mixing and dispersion of sediments deposited either directly on the beach or within the depth to closure[2].

Bottom circulation off Nome is caused by a combination of regional currents, tidal currents, wave action, and motions from wind-driven and storm surge. These currents, generally ranging from 0.15 to 1.35 knots will result in mixing and dispersion of sediment at the existing sites.

The tide range averages 1.6 feet, with maximum heights of 2.4 feet; tidal currents reach bottom velocities of 0.5 knots (Cacchione and Drake, 1979). The tidal currents, which are oscillatory in a generally east-west direction, will result in mixing of the sediments within the project area.

[2] Depth to closure is the seaward limit of sediment transport due to seasonal beach profile changes caused by erosion and accretion.

Side-dumping barges have been historically used to transport dredged material in the area, and can operate in water less than 10 feet deep (Tetra Tech, 1980). Consequently, consideration of littoral drift is important in the dispersal of dredged material at Nome. It is estimated that 650,000 yd^3 of sediments are transported annually along the Nome shoreline (mostly in the summer), of which a net easterly movement of 60,000 yd^3 occurs (Tetra Tech, 1980). Littoral drift is therefore a primary force in the dispersion of dredged materials, and is responsible for some of the shoaling of the channel. The estimated disposal volume of 441,000 yd^3 represents approximately 68% of the annual sediment transport volume.

Ice forms in the sound in the winter months. The surface waters near Nome during the summer range from about 50° to 60°F, with deeper layers in the range of 37° to 41°F. This generally limits recreational activities to fishing and boating.

Although the proposed causeway extension will convert approximately 16.3 acres of soft-bottom habitat to hard substrate (subtidal, intertidal and supratidal), and require the dredging of 120.7 acres of newly protected soft-bottom substrate to achieve target navigation depths (-28 feet MLLW), the proposed project will not result in a significant change to water circulation patterns, temperature fluctuations, or salinity profiles in the vicinity of Nome Harbor.

C. Suspended Particulate/Turbidity Determinations:

An increase in suspended sediment load and turbidity would be expected during and immediately following periods of work. Due to the size and type of sediment to be dredged and discharged, and the characteristics of the nearshore environment in the vicinity of the discharge site, significant plumes would not be expected to occur. Should small plumes occur, they would be localized and short-lived. The high-energy nature of the disposal site will result in a return to ambient conditions shortly after cessation of discharge operations.

While minor benthic topographic irregularities may develop (e.g., mounds following a nearshore disposal event), these irregularities are expected to be temporary, with the bottom smoothing out as sediments are dispersed by wave and current actions. The dispersion of sediments outside the project area's boundaries will be in extremely thin layers.

Although the proposed causeway extension will convert approximately 16.3 acres of soft-bottom habitat to hard substrate (subtidal, intertidal and supratidal), and require the

dredging of 120.7 acres of newly protected soft-bottom substrate to achieve target navigation depths (-28 feet MLLW), the proposed project will not result in a significant long-term change to suspended particulate levels or turbidity in the vicinity of Nome Harbor.

D. Contaminant Determinations: The quarry rock placed to construct the causeway extension would likely originate from Nome Quarry, and be clean and free of contaminants.

Grain size and chemical testing has not yet been conducted on proposed dredged sediments. However, sediments dredged from the Nome Harbor turning basin have historically consisted of silt and sand, whereas sediments from the entrance channel have been predominantly sand. Previous sampling and chemical analysis of harbor sediments at Nome has shown little indication of significant human-generated chemical contamination.

Although the proposed causeway extension will convert approximately 16.3 acres of soft-bottom habitat to hard substrate (subtidal, intertidal and supratidal), and require the dredging of 120.7 acres of newly protected soft-bottom substrate to achieve target navigation depths (-28 feet MLLW), the proposed project is not expected to result in a significant change in water or sediment contaminant concentrations, or the bioavailability of such contaminants in the vicinity of Nome Harbor.

Water Column

Lower wave energy, increased water depths, and altered current patterns behind the breakwater could result in minor insignificant salinity and temperature fluctuations.

Dissolved Oxygen. Dissolved oxygen (DO) concentrations in the waters of northern Norton Sound have been reported to be uniformly high. The project area is in a shallow area where normal and storm mixing ensures similar dissolved oxygen levels in bottom and surface waters. A lowering of DO as a result of dredging and disposal activities could potentially occur as a result of two processes: 1) an increase in phytoplankton as a result of nutrient release, and 2) an increase in Biological Oxygen Demand (BOD) due to the introduction of organics. The oxygen sag caused by these processes should be of short duration due to the project area being located in an area of high mixing and high dissolved oxygen. Therefore, affects on dissolved oxygen should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

pH. The pH levels in Norton Sound have been reported to range between 7.4 and 8.1. There may be a slight depression of the pH in the immediate vicinity of dredged material disposal. This depression, if any, should be of short duration due to the project area being located in an area of high mixing and high dissolved oxygen. Therefore, affects on pH levels should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Nutrients. The waters of Norton Sound are extremely productive and support extensive phytoplankton growth throughout the summer. Levels of dissolved organic carbon in seven samples collected near Nome were reported to be uniform. It appears that nitrogen depletion in the summer limits phytoplankton growth with phosphorus and silicic acid being present in excess. Organic carbon and nutrient data are insufficient to determine seasonality, however the levels in winter are expected to be relatively high due to resuspension from bottom sediments. Dredged sediments will be discharged in a high-energy environment. It is not expected that the transfer of the sediments to an adjacent high-energy area will affect organic carbon and nutrient levels elsewhere in the Sound. Therefore, affects on nutrient levels should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Trace Metals. Total metal concentrations in Norton Sound are similar to those occurring in other oceanic areas, with levels of lead, cadmium, copper, and zinc being uniformly low. While movement of the sediment may result in sane measureable increase in the water column trace metals at the disposal site, these concentrations should rapidly return to ambient conditions due to the high-energy nature of the site. Therefore, affects on trace metal concentrations in the water column should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Petroleum and Chlorinated Hydrocarbons. Hydrocarbon levels in the surface waters of Norton Sound have been reported to be low (generally less than 1 *u*g/L). While no site specific measurements have been made, it is expected that the concentration of petroleum hydrocarbon are consistent with other areas of Norton Sound. The movement of dredged material to the disposal site is not expected to have any effect on the hydrocarbon levels of the area. Therefore, affects on petroleum and chlorinated hydrocarbon concentrations should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Sediments

Material dredged from the Nome Harbor turning basin results from alluvial deposition from the Snake River, while material dredged from the channel is primarily a result of shore erosion and subsequent littoral transport. The proposed disposal site has been used often in the past, so the sediments are probably quite similar to the materials present in the channel.

Trace Metals. Levels of copper, cadmium, and zinc in sediments of Norton Sound near Nome have been reported to show a relationship with clay and organic carbon distributions in the sediments; in general, higher concentrations occurring in finer-grained sediments. The levels of copper were reported to be similar to those found in the northeastern part of the Gulf of Alaska, whereas cadmium and zinc levels were higher in the Nome samples; lead was reported to be below detection limits in all Norton Sound sediments. Since the coarser-grained material to be dredged from the channel is primarily a result of shore erosion and subsequent littoral transport, affects on trace metal concentrations in sediments should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Total Organic Carbon. The total organic carbon (TOC) content of Norton Sound sediments near Nome roughly parallels the distribution of silts and clays, with the finer sediments containing higher levels of TOC. It appears the local distribution of sedimentary TOC is influenced by increasing amounts of finer sediments offshore, and the inputs of fine-grained sediments in the runoff from the Snake River. Since the coarser-grained material to be dredged from the channel is primarily a result of shore erosion and subsequent littoral transport, affects on TOC concentrations in sediments should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Petroleum and Chlorinated Hydrocarbons. Concentrations of sedimentary hydrocarbons, primarily biogenic (terrigenous and marine) hydrocarbons, have been reported to be low. While analyses of petroleum or chlorinated hydrocarbons in the sediments have not yet been reported, it is believed the concentrations of these are low. Since the project is located in the higher-energy environment of the outer harbor and nearshore region of Nome, any affects of petroleum and chlorinated hydrocarbon concentrations in sediments should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

Arsenic. Notably high concentrations (up to 200 mg/kg) of naturally-occurring arsenic have been reported regularly in sediment samples collected from the Nome area. The State of Alaska has not established marine sediment standards, but the U.S. Army Corps of Engineers' Alaska District has historically used a sediment screening level of 57 mg/kg (adopted from the Puget Sound Dredge Disposal Analysis guidelines); the National Oceanic and Atmospheric Administration (NOAA) has published marine sediment threshold effects levels (TELs) for arsenic as low as 7 mg/kg. Previous concern over high concentrations of arsenic in the Nome Harbor dredged material has led to some material being buried within the harbor basin under a 1-meter-thick cap in 1995 and 1996. The elevated concentrations of arsenic in some Seward Peninsula mineral formations, and in the sediments of area streams (including Snake River), are well established. The presence of natural sources of arsenic and the lack of identifiable anthropogenic sources of arsenic at Nome Harbor suggest that the high concentrations of arsenic detected in some samples of the harbor sediment are due primarily to local mineralogy. Soil samples taken from borings along Nome Spit in 2000 also showed consistently high levels of arsenic (up to 93 mg/kg) even at depths of greater than -20 feet MLLW, suggesting that the marine sediments that formed the spit were also rich in arsenic.

In 2013, the Corps collected background sediment samples from the littoral zone east and west of Nome Harbor, and from the Snake River channel upstream from Nome Harbor. The data strongly suggest that marine sediment carried into the harbor area by littoral transport contains significant ambient concentrations of arsenic, and that higher-arsenic sediments present in the Snake River channel and inner harbor do not appear to elevate arsenic concentrations in the littoral sediments as they pass the harbor outlet.

Table 2. Summary of Data from 2013 Sediment Study

	West Littoral (upcoast of the harbor)	Snake River & Inner Harbor	Outer Harbor	East Littoral (downcoast of the harbor)
Sample Number (n)	6	9	2	6
Range, mg/kg As	13-60	52-200	33-47	28-38
Mean, mg/kg As	36	111	40	33
95% UCL, mg/kg As	52	140	--	36

Since the coarser-grained material to be dredged from the channel is primarily a result of shore erosion and subsequent littoral transport, affects on naturally-occurring arsenic concentrations in sediments should be easily assimilated without significant adverse impacts and with no anticipated net functional loss to aquatic resources.

E. Aquatic Ecosystems and Organism Determinations:

Norton Sound contains a diversity of biological life. Continental Slope and open ocean areas of Southeastern Norton Sound support high populations of North Pacific oceanic, interzonal copepods. Zooplankton communities of nearshore coastal areas are composed of littoral and neritic forms adapted to wide ranges of temperatures and salinities. Mollusks, arthropods, and echinoderms appear to be the most abundant epifaunal in vertebrate diets. The eight most abundant demersal fish are reported to be saffron cod, starry flounder, yellowfin sole, Alaska plaice, plain sculpin, toothed smelt, arctic cod, and the shorthorn sculpin. Norton Sound also supports a salmon and red king crab fishery.

Studies of the general biological setting offshore of Nome describe species typical of a high-energy, sandy-gravelly coastal environment dominated by epifaunal and infaunal species such as sea stars, polychaetes, bivalves, and amphipods. The natural environment includes the continuous migration and redistribution of benthic sediments, as well as frequent disruption from ice scouring and violent storms. The dredged material to be discharged is similar to the existing benthic sediments in the discharge area. Some bottom-dwelling organisms will be trapped under the dredged material and be smothered. Others will be able to work their way back to the surface of the sediments and survive. Demersal fish, being more mobile, will be able to escape the sediments as they reach the

bottom, however a few may be pinned down and destroyed. Free swimming fish and other aquatic animals will be able to avoid or escape the descending plume of sediments.

The Snake River, which discharges directly into and through Nome Harbor, has been identified as important for the spawning, rearing, and/or migration of anadromous fishes, including Chinook, sockeye, chum, coho and pink salmon, Dolly Varden, whitefish and resident fish species (e.g., Arctic grayling). Following coordination with the Alaska Department of Fish and Game's Nome Office, it was agreed that the proposed project would likely generate insignificant impacts consistent with those of the already-permitted 10-year annual maintenance dredging activities, and therefore should similarly have no adverse effect on anadromous fish or their habitat, and should not obstruct the free passage of fish (ADFG 2013), provided the conditions of the existing maintenance dredging permit were adopted.

As a result, and as discussed in the environmental assessment, there is no anticipated net functional loss to aquatic resources.

F. Proposed Disposal Site Determinations:

The proposed action would comply with applicable state water quality standards and would have no appreciable detrimental effects on municipal and private water supplies; recreational and commercial fisheries; water-related recreation; or aesthetics.

The dredge and fill operations would have only a temporary effect on the water column. The breakwater would create rock-reef habitat suitable for colonization. Dredged materials would be discharged east of the existing breakwater forming the eastern side of the entrance channel.

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

A minor amount of boat traffic would increase in the Nome area as a result of harbor construction. Increased vessel activity and incidental release of pollutants such as paints, fuel, grease, oils from boats, and from discarded debris have the potential to degrade water quality within the proposed harbor. The degree of degradation would depend upon water exchange behind the breakwater and the proper handling of sewage, refuse, wastes, and other pollutants. The harbor management plan is recommended to include best management practices.

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

A. Adaptation of the Section 404 (b)(1) Guidelines to this Evaluation: The proposed project complies with the requirements set forth in the Environmental Protection Agency's Guidelines for Specification of Disposal Sites for Dredged or Fill Material.

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

The proposed project and the alternatives carried forward for further analyses were determined to be relatively similar in impacts to the aquatic ecosystem/environment, and would therefore result in similar effects. The proposed action, including disposal of dredged materials for the beneficial purposes of beach nourishment and shoreline protection, is the least environmentally damaging practicable alternative after taking into consideration cost, existing technology, and logistics in light of the overall project purpose.

C. Compliance with Applicable State Water Quality Standards: The proposed construction project would not be expected to have an appreciable adverse effect on water supplies, recreation, growth and propagation of fish, shellfish and other aquatic life, or wildlife. It would not be expected to introduce petroleum hydrocarbons, radioactive materials, residues, or other pollutants into the waters near Nome. A temporary increase in turbidity would result from construction activities. The project would comply with State water quality standards. Adherence to water quality standards would be monitored.

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 proposed project will not affect any threatened or endangered species or their designated critical habitat. Threatened and endangered species evaluated in Section 9.2.3 of the environmental assessment are:

1. Steller sea lion (Western distinct population segment (DPS))
2. Bowhead whale
3. Fin whale

4. Humpback whale
5. North Pacific right whale
6. Bearded seal (Beringia DPS)
7. Arctic ringed seal
8. Polar bear
9. Stellar's eider
10. Spectacled eider

This determination has been coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, agencies responsible for management of protected species.

F. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection. Research, and Sanctuaries Act of 1972: Not applicable; no marine sanctuaries are present near the project site.

G. Evaluation of Extent of Degradation of the Waters of the United States: There are no municipal or private water supplies or freshwater bodies in the area that could be negatively affected by the proposed project. There would be no significant adverse impacts to plankton, fish, shellfish, or wildlife. There are no special aquatic sites.

H. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Environment: Incorporating the following avoidance, minimization, and conservation measures into the proposed project would help to ensure that no significant adverse impacts will occur.

1. Consistent with the conditions of Alaska Department of Fish and Game Fish Habitat Permit FH13-III-0027, in-water construction may commence as soon as the ice goes out through June 25th within the harbor and entrance/inner channel, and through July 31st within the breakwater and causeway;

2. Dredging activities will cease if fish are observed in dredged sediments discharged to the beach. Coordination with the Alaska Department of Fish and Game will be initiated to determine if species and/or numbers are of concern before commencing with further dredging;

3. Fish passages constructed in the existing causeway and breakwater will be maintained to facilitate near shore migration of fish;

4. To accelerate recolonization of the causeway extension, all suitable for reuse armor rock removed from the existing breakwaters with sessile or attached adapted marine organisms and marine algae shall be used in constructing the new breakwater segments. If not reused, the rock shall be side cast to the base of the breakwater so that it may continue to provide habitat for marine resources;

5. Breakwater construction shall use core material and B and armor rock clean of organic debris and invasive species;

6. Workers conducting in-water construction will be instructed to watch for marine animals, and cease work if an animal approaches within 50 meters;

7. The selected contractor shall include an Oil Spill Prevention and Control Plan in its Environmental Protection Plan, which is submitted to the Corps for review and approval;

8. 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;

9. Project-related vessels and barges shall not be permitted to ground themselves on the bottom during low tide period unless there is a human safety issue requiring it; and

10. The causeway extension will be constructed prior to dredging. The causeway extension will help contain as much as possible of the turbid water.

I. On the Basis of the Guidelines the Proposed Discharge of Fill Material is: Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

IV. References

Alaska Department of Fish and Game (ADFG). 2013. Fish Habitat Permit FH13-III-0027, Nome Harbor Maintenance Dredging; Snake River (Stream No. 333-10-11200); Harbor Entrance Channel, Sections 25 and 35, T11S, R34W, KRM, Nome C-1, B-1. Issued January 15, 2013; Expires December 31, 2022. ADFG, Division of Habitat, Fairbanks, AK.

Cacchione, D.A. and D.E. Drake. 1978. Bottom and near-bottom sediment dynamics: A. Norton Basin, B. Lower Cook Inlet, C. Northern Bering Sea; Research Unit 430. In: Environmental Assessment of the Alaskan Continental Shelf, Quarterly Rpt, April-June. pp. 571-576.

Tetra Tech. 1980. Phase A feasibility study of Port of Nome, Alaska. Prepared for the City of Nome, Alaska. Report TC-3373. 166 pp.

USEPA. 1984. Environmental Impact Statement (EIS), Nome, Alaska Dredged Material Disposal Site Designation. Office of Water Criteria and Standards Division, Washington, DC. EPA 440/5-84-011. May 1984.

FINDING OF COMPLIANCE FOR

Alaska Deep-Draft Arctic Port System Study
Alaska District, Pacific Ocean Division

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

2. The principle discharge to waters of the U.S. proposed in this project would be the placement of rock for the construction of a rubblemound causeway and the placement of dredged material for the purpose of beach nourishment and shoreline protection. The project area has been previously impacted by similar activities, most recently in 2006 when the current configuration of Nome Harbor was established (western causeway and eastern breakwater, with relocation of the mouth of Snake River), so the additional placement of locally-derived quarry rock to extend the existing causeway is the least environmentally damaging practicable alternative to achieve the project purpose and need. While offshore disposal of dredge material is a viable alternative, the placement of such material in deeper waters has a greater potential to adversely affect benthic organisms, at least on a local scale. The beneficial use of dredged material for beach nourishment and shoreline protection, in an already high-energy dynamic littoral environment, is the least environmentally damaging practicable alternative for dredged material disposal.

3. The planned discharge will not violate any applicable State water quality standards, nor violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

4. Use of the selected disposal site will not affect any endangered species or their critical habitat.

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

6. On the basis of the guidelines, the proposed modifications to the Nome Harbor causeway and attendant dredged material discharge activities, comply with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to Nome Harbor’s aquatic ecosystem.