US Army Corps of Engineers®

404(b)(1) Evaluation

Coastal Erosion Protection – Barrow Reach Revetment Barrow, Alaska

January 2022

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Barrow, Alaska

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U.S. Army Corps of Engineers
Alaska District

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Table of Contents

1.0 Project Description 4
1.1 Location 4
1.2 Authority and Purpose 6
1.3 General Description of Dredged or Fill Material 6
1.3.1 General Characteristics of Material 6
1.3.2 Quantity of Material 7
1.3.3 Source of Material 7
1.4 Description of Proposed Discharge Site 7
1.4.1 Location 7
1.4.2 Size 7
1.4.3 Type of site 8
1.4.4 Types of Habitat 8
1.4.5 Timing and Duration of Discharge 9
1.5 Description of Disposal Methodology 9
2.0 Factual Determination 9
2.1 Physical Substrate Determinations 9
2.1.1 Substrate Elevation and Slope 10
2.1.2 Sediment Type 10
2.1.3 Dredged/Fill Material Movement 10
2.1.4 Physical Effects on Benthos 11
2.1.5 Other Effects 11
2.1.6 Actions Taken to Minimize Impacts 11
2.2 Water Circulation. Fluctuation and Salinity Determinations 11
2.2.1 Water 12
2.2.2 Current Patterns and Circulation 13
2.2.3 Normal Water Level Fluctuations 13
2.2.4 Salinity Gradients 13
2.2.5 Actions That Will Be Taken to Minimize Impacts 14
2.3 Suspended Particulate/Turbidity Determinations 14
2.3.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site 14
2.3.2 Effects (degree and duration) on Chemical and Physical Properties of the Water Column 14

2.3.3 Effects on Biota 15
2.3.4 Actions Taken to Minimize Impacts 16
2.4 Contaminant Determinations 16
2.5 Aquatic Ecosystem and Organism Determinations 16
2.5.1 Effects to Plankton 16
2.5.2 Effects on Benthos 16
2.5.3 Effects on Nekton 16
2.5.4 Effects on Aquatic Food Web 16
2.5.5 Effects on Special Aquatic Sites 16
2.5.6 Threatened and Endangered Species 17
2.5.7 Other Wildlife 17
2.5.8 Actions to Minimize Impacts 17
2.6 Proposed Disposal Site Determinations 18
2.6.1 Mixing Zone Determination 18
2.6.2 Determination of Compliance with Applicable Water Quality Standards 18
2.6.3 Potential Effects on Human Use Characteristic 18
2.7 Determination of Cumulative Effects on the Aquatic Ecosystem 19
2.8 Determination of Secondary Effects on the Aquatic Ecosystem 19
3.0 Findings of Compliance or Non-Compliance With the Restrictions on Discharge 19
3.1 Adaptation of the Section 404(b)(l) Guidelines to this Evaluation 19
3.2 Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem 19
3.3 Compliance with Applicable State Water Quality Standards 19
3.4 Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act 20
3.5 Compliance with Endangered Species Act of 1973 20
3.6 Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection. Research, and Sanctuaries Act of 1972 20
3.7 Evaluation of Extent of Degradation of the Waters of the United States 20
3.7.1 Significant Adverse Effects on Human Health and Welfare 20
3.7.2 Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems 21
3.7.3 Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity and Stability 21
3.7.4 Significant Adverse Effects on Recreational, Aesthetic, and Economic Values 21

3.8 Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem 21
4.0 FINDING OF COMPLIANCE for the Barrow Reach COASTAL EROSION PROTECTION PROJECT 22
5.0 References 22

List of Figures

Figure 1. Designated Reaches from the Corps' Feasibility Study 5
Figure 2. Coastal Erosion Protection Measures 6
Figure 3. Barrow Reach and Approximate Extent of In-water Revetment Construction 7
Figure 4. Approximate In-Water Extent of Revetment Construction 8
Figure 5. Existing Conditions 9
Figure 6. Locations of Contaminated Sites 10
Figure 7. Revetment Cross Section 11

1.0 PROJECT DESCRIPTION

1.1 Location

The coastal community of Barrow, currently recognized as the City of Utqiaġvik, is located approximately 750 miles north of Anchorage along Alaska's Chukchi Arctic coast. The State of Alaska officially renamed the community Utqiaġvik on December 1st, 2016. However, for the purpose of this assessment, the former name of Barrow will be used as a practical matter to keep the name consistent with Corps' feasibility study addressing measures that would reduce or eliminate coastal erosion at Barrow. Barrow is the northernmost community in the United States and is the administrative, economic, social, and cultural center for the North Slope Burrough (NSB).

Barrow experiences frequent and severe coastal storms, resulting in flooding and erosion that threaten public health and safety, the economy of the community, over $1 billion of critical infrastructure, access to subsistence areas, and cultural and historical resources. The NSB has been facing storm damage and erosion problems for decades. Traditionally, foundation materials for local infrastructure would be obtained from the beach or a gravel pit area, updrift (southwest) a mile from Barrow. The overall reduction of natural beach nourishment material coupled with frequent storms is compounded by decreased seasonal ice cover that has left the coastline vulnerable to flooding and erosion. The NSB currently engages in construction of temporary and sacrificial beach berms by bulldozing beach sand into berms that are then supplemented with borrow materials from upland areas. The Corps' feasibility study identified permanent shoreline protection features that would eliminate the requirement for extensive annual beach and coastal bluff shoring activities.

The Corps identified the resources under threat of coastal erosion or flooding along a contiguous five-mile section of the Barrow coastal shoreline and developed various methodologies of shoreline protection for these areas. Within this five-mile section, the Corps has designated six individual reaches for specific shoreline protection measures, from southwest to northeast they are designated the Bluff, Barrow, Lagoon, Browerville, South and Middle Salt, and Naval Arctic Research Lab (NARL) reaches (Figure 1).

Figure 1. Designated Reaches from the Corps' Feasibility Study

To address the risk of coastal erosion, the Corps will construct a rock revetment structure at the Bluff and Barrow reaches, a protective berm at the Lagoon reach, and would subsequently raise the elevation of Stevenson Street at the South and Middle Salt and NARL reaches (Figure 2). Only portions of the proposed revetment structure at the Barrow reach would require in-water construction in the form of native material excavation and the placement of protective rock revetment; no other coastal erosion protection measures detailed in the description of the Corps' project would require in-water work or material placement.

Figure 2. Coastal Erosion Protection Measures

1.2 Authority and Purpose

The purpose of the coastal revetment at the Barrow reach is to protect public health and safety, protect critical infrastructure, maintain access to subsistence areas, and to protect cultural and historical resources.

1.3 General Description of Dredged or Fill Material

Fill will only be placed oceanward of the +0.55 ft MLLW line in the low bluff area of the Barrow reach (Figure 4). All other Corps coastal protection measures would occur landward of the beach and intertidal interface.

1.3.1 General Characteristics of Material

Generally, the material designated for placement will be freshly quarried material suitable for the purposes of the intent of the project. Quarried stone shall range in size from coarse gravels and cobbles to 5-ton armor rock. A small quantity of native material, the sands and gravels excavated from the beach and/or intertidal and subtidal zones to facilitate the placement of the revetment toe, would be utilized to contour the

upper bluff area to achieve the appropriate cross section for the upper revetment structure (Figure 7).

1.3.2 Quantity of Material

In total, approximately 23,200 CY of fill will be placed in the intertidal and subtidal zones of the northern Barrow reach. The material is comprised of 11,900 CY armor rock, 6,600 CY B rock, 2,300 CY Core Rock, and 2,400 CY Gravel.

1.3.3 Source of Material

The Corps has not yet identified a source quarry for the materials.

1.4 Description of Proposed Discharge Site

The proposed placement site is the low bluff, beach, intertidal, and subtidal area corresponding with the Barrow reach identified in the Corps' feasibility study.

Figure 3. Barrow Reach and Approximate Extent of In-water Revetment Construction

The Barrow reach is located at approximately Lat 71.293378° Long -156.789341°.

1.4.2 Size

The total project footprint size is approximately 1.5 acres.

Figure 4. Approximate In-Water Extent of Revetment Construction

The site is unconfined open water, although bounded by the shoreline.

1.4.4 Types of Habitat

Because the nearshore intertidal zone has been encroaching upon the low bluff area along the length of the Barrow reach, the NSB has fortified the bluff toe with sand filled super sacks to reduce erosion and protect critical infrastructure to the greatest degree possible (Figure 5). The beach is generally only a few meters wide along the Barrow reach and is comprised of unconsolidated coarse gravel, sand, and sandy silts. The intertidal swash zone is devoid of established aquatic vegetation and exhibits substrate characteristics similar to those of the beach. Intertidal reaches are subject to disturbance by ice scour, longshore sediment deposition and redistribution, but more so by wave action propagated by coastal storm activity.

The habitat areas that would be most affected by excavation and subsequent material placement during the construction of the revetment include the immediate intertidal zone and supratidal beach area most immediately adjacent to the project footprint. Temporary increases in turbidity to the waters surrounding the proposed project area would result from the mechanical agitation of sediments by an excavator but would likely be highly localized.

Figure 5. Existing Conditions

Because of the seasonal presence of sea ice at Barrow, excavation and material placement activities would occur during the summer and fall. Furthermore, the Corps expects that construction of the Barrow reach revetment would be accomplished in a single season.

1.5 Description of Disposal Methodology

Material placement would be land-based and occur via excavator, front-end loader, or possibly by dump truck, until the revetment design criteria were achieved. Excavation and reutilization of the native materials would occur in a similar fashion.

2.0 FACTUAL DETERMINATION

2.1 Physical Substrate Determinations

The materials comprising the revetment along the Barrow reach meet the criteria set forth in 40 CFR Subchapter H, Part 227.13(b)(1). The material proposed for placement is composed predominantly of sand, gravel, or rock. According to the Alaska

Department of Environmental Conservation's Division of Spill Prevention and Response (ADEC 2022), there are three active contaminated sites in relatively close proximity to Barrow reach, sites 26365 (approximately 150-ft), 1392 (approximately 500-ft), and 26956 (approximately 1,000-ft) (Figure 6).

2.1.1 Substrate Elevation and Slope

The revetment design elevations are integrated with the natural slope of the low bluff and the upper beach profile (Figure 7).

2.1.2 Sediment Type

Native sediments are an unconsolidated mix of coarse gravels, sand, and silty sand. Revetment materials are comprised of graduated sizing of quarried granite from gravels and fist-sized cobbles to 5-ton armor stone.

2.1.3 Dredged/Fill Material Movement

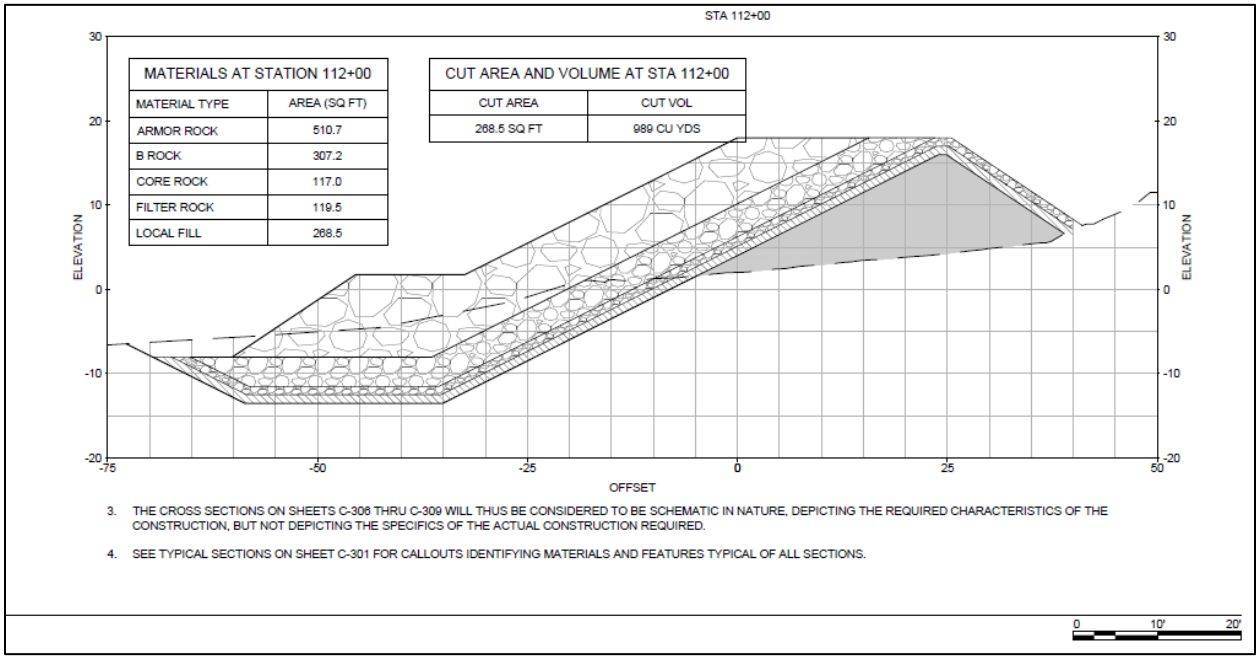
Material placed in support of the Barrow reach revetment is not expected to move or migrate outside of the envisioned project footprint. Specifically, the revetment has been designed in such a manner that it will dissipate wave energy that was eroding the low bluffs.

2.1.4 Physical Effects on Benthos

Physical effects upon the existing benthos would be limited to localized temporary increases in turbidity during material excavation and placement activities. A small area of the soft bottomed intertidal swash zone would be permanently converted to hard bottomed habitat where the revetment stone was placed below MLLW. Figure 7 illustrates the most severe requirement for material placement below MLLW, or 0-ft elevation.

2.1.5 Other Effects

Over time, no further effects to in-water or benthic habitat outside of this evaluation would be expected to occur as a result of USACE's material placement and excavation actions.



2.1.6 Actions Taken to Minimize Impacts

Industry standard best management practices would be employed to preserve the benthos' physical and chemical properties to the greatest extent practicable. Vehicle refueling and/or vehicle maintenance actions would be completed in designated nearby industrial areas. Furthermore, the Corps would require that the contractor conducting the construction actions have a pre-approved spill prevention and response plan.

2.2 Water Circulation. Fluctuation and Salinity Determinations

The Corps' project, as proposed, would not affect nearshore local or regional water circulation, nor would it affect salinity levels or salinity gradients that are observed in the nearshore Chukchi Sea waters adjacent to the Barrow reach.

2.2.1 Water

2.2.1.1 Salinity

Excavation of native materials and the placement of revetment stone would not be expected to affect local or regional salinity values.

2.2.1.2 Water Chemistry

Excavation of native materials and the placement of revetment stone would not be expected to affect local or regional water chemistry characteristics.

2.2.1.3 Clarity

Water clarity may be affected through the mechanical agitation of sediments during excavation and material placement activities. Finer sediments would be liberated into the water column and could migrate into adjacent waters through wave and nearshore current action. However, this effect would be expected to be highly localized and brief in duration because the water column is particularly shallow in the intertidal zone and construction of the revetment is not expected to exceed 30 linear feet per day.

2.2.1.4 Color

Excavation of native materials and the placement of revetment stone would not be expected to affect local or regional water coloration.

2.2.1.5 Odor

Excavation of native materials and the placement of revetment stone would not be expected to affect local or regional water odor.

2.2.1.6 Taste

Although the Chukchi Sea's waters are not used by the local populous as drinking water, the excavation of native materials and the placement of revetment stone would not be expected to affect the local or regional waters' taste characteristics.

2.2.1.7 Dissolved Gas Levels

Ambient dissolved gas levels would not be expected to change as a result of the excavation of native materials and the placement of revetment stone. Typically, dissolved gas values are elevated in the nearshore swash zone through natural wave action and subsequent agitation.

2.2.1.8 Eutrophication

No impact to the existing aqueous nutrient profile or hydrologic exchange that would promote a eutrophic state would be expected as a result of the excavation of native materials and the placement of revetment stone. The Chukchi Sea's physical water characteristics, semi-diurnal tidal regime, and regional atmospheric conditions are sufficient to preclude eutrophication on such a small scale.

2.2.1.9 Others as Appropriate

No other effects to the waters of the nearshore Chukchi Sea, both locally or regionally, outside of this evaluation would be expected to occur as a result of the excavation of native materials and the placement of quarried revetment stone.

2.2.2 Current Patterns and Circulation

2.2.2.1 Current Patterns and Flow

Generally, and as inferred by the observed deposition of longshore sediments to the northeast of the Barrow reach, the prevailing direction of the longshore current is from west to east. The natural migration and deposition of sediments along the coastal Barrow reach would not be expected to be affected by the Corps' project, as proposed.

2.2.2.2 Velocity

The velocity of the longshore current would not be affected by the excavation and placement of revetment materials along the Barrow reach.

2.2.2.3 Stratification

The natural stratification of currents in the Chukchi Sea is not likely to be affected by the excavation of native material and subsequent placement of revetment stone along the Barrow reach.

2.2.2.4 Hydrologic Regime

To what degree the excavation of native material and placement of revetment stone would affect the hydrologic regime of the Chukchi Sea is unknown at this time.

2.2.3 Normal Water Level Fluctuations

It is unlikely, given the potential volume of native sediments to be excavated and revetment stone placed, that perceptible changes in the daily, seasonal, or annual water level fluctuations of the Chukchi Sea would be observed.

2.2.4 Salinity Gradients

It is unlikely, given the physical and chemical constituents of the materials required for the Corps' project that perceptible changes to the salinity of the waters immediately adjacent to the Barrow reach or those of the greater Chukchi Sea would be observed.

2.2.5 Actions That Will Be Taken to Minimize Impacts

Impacts to the current patterns and circulation in the nearshore waters adjacent to the Corps' proposed project area and to the waters of the greater Chukchi Sea are unlikely. Therefore, the Corps would not take actions that might minimize impacts to the local current patterns and circulation.

2.3 Suspended Particulate/Turbidity Determinations

It is expected that highly localized turbidity values would temporarily increase during native material excavation and revetment stone placement activities. Turbidity values would be expected to return to ambient conditions upon the cessation of construction activities.

2.3.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site

Turbidity values in the waters adjacent to the Barrow reach may be affected through the mechanical agitation of sediments during native material excavation and revetment stone placement activities. Finer sediments would be liberated into the water column and would migrate into nearby waters. However, this effect is expected to be highly localized because construction of the revetment would not exceed more than 30-ft per day. Similarly, the majority of the in-water component of the Corps' project occurs in shallow water that already displays elevated turbidity levels as a result of wave action in the swash zone.

2.3.2 Effects (degree and duration) on Chemical and Physical Properties of the Water Column

Because the revetment stone is comprised quarried stone, and the native sediments are homogeneous in the area, it would be unlikely that the chemical or physical properties of the water column would be affected by the Corps' project, as proposed.

2.3.2.1 Light Penetration

Light penetration through the water column may be temporarily affected by the excavation of native sediments and the placement of revetment stone. However, any impacts would be highly localized and temporary in nature.

2.3.2.2 Dissolved Oxygen

Because aquatic areas included in the Corps' project footprint and those waters immediately adjacent to the proposed project occur primarily within the intertidal and swash zones where the water is constantly agitated and mixed with the ambient

atmosphere, dissolved oxygen levels would likely not be affected by the excavation of native sediments and the placement of revetment stone in these same areas. Similarly, it is unlikely that dissolved oxygen levels of the greater Chukchi Sea would be affected by the Corps' project, as proposed.

2.3.2.3 Toxic Metals and Organics

The Corps' project, as proposed, would not liberate or introduce toxic metals or organics into the water column.

2.3.2.4 Pathogens

The Corps' project, as proposed, would not liberate or introduce pathogens into the water column.

2.3.2.5 Aesthetics

Currently, the Barrow reach is beset by the presence of gravel- and sand-filled super sacks (Figure 5), with some in various states of decomposition. This landscape view would be replaced by a uniform rock revetment face that would reach from the blufftop to the swash zone. Whether or not this would be considered an improvement to the overall aesthetics of the Barrow reach is subjective. However, the aesthetics of the existing water column at the foot of the revetment would remain largely intact except for those areas that the revetment plunges below the intertidal zone.

2.3.2.6 Others as Appropriate

None

2.3.3 Effects on Biota

Disturbance to the biota as a result of the implementation of the Corps' project, as proposed, would be temporary in duration. However, a small portion of the unconsolidated sandy gravel substrate in the intertidal zone would be permanently converted to interstitial, hard-bottomed-type habitat which may serve as an attractant for invertebrates and smaller fishes during ice-free periods.

2.3.3.1 Primary Production, Photosynthesis

There would likely be no measurable change to the net primary production of the waters adjacent to the Barrow reach or the greater Chukchi Sea as a result of the implementation the Corps' project, as proposed.

2.3.3.2 Suspension/Filter Feeders

There would likely be no measurable effect upon suspension/filter feeding organisms in the waters adjacent to the Barrow reach or the greater Chukchi Sea as a result of the implementation the Corps' project, as proposed.

2.3.3.3 Sight Feeders

Sight feeders in the intertidal and the immediate subtidal zones would likely be deterred by the disturbance of the in-water construction activity associated with the Corps' project. However, because the intertidal and subtidal habitat immediately adjacent to the project footprint is relatively homogeneous, sight feeders would likely move to these areas to avoid disturbance.

2.3.4 Actions Taken to Minimize Impacts

Industry standard best management practices would be employed to preserve the physical and chemical properties of the waters of the nearshore Barrow reach and greater Chukchi Sea that may affect the local biota to the greatest extent practicable. Vehicle refueling and/or vehicle maintenance actions would be completed in designated nearby industrial areas. Furthermore, the Corps would require that the contractor conducting the construction actions have a pre-approved spill prevention and response plan.

2.4 Contaminant Determinations

Although the Corps has not yet identified the quarry source for the revetment stone, it is assumed that freshly quarried material would be free from anthropologic contaminants. Similarly, the sites listed in the ADEC contaminated sites database, sites 1392, 26365, and 26956, respectively, do not pose a threat of cross-contamination to the aquatic environment because they either exist too far away from the Corps' proposed project or there is no potential risk of disturbance by Corps activities.

2.5 Aquatic Ecosystem and Organism Determinations

2.5.1 Effects to Plankton

No measurable effect.

2.5.2 Effects on Benthos

A portion of the Barrow reach intertidal and subtidal benthic habitat will be converted from relatively soft-bottomed to hard bottomed, rock substrate.

2.5.3 Effects on Nekton

No measurable effect.

2.5.4 Effects on Aquatic Food Web

No measurable effect.

2.5.5 Effects on Special Aquatic Sites

There are no Special Aquatic Sites designated in the immediate vicinity of the Barrow reach.

2.5.5.1 Sanctuaries and Refuges

Barrow and its associated coastal lands and waters occur entirely within the overarching boundary of the Alaska Maritime National Wildlife Refuge, Chukchi Sea Unit.

2.5.5.2 Wetlands

In-water portions of the Corps' project, as proposed, occur entirely within intertidal and shallow subtidal zones of the nearshore territorial sea.

2.5.5.3 Mud Flats

Mud flats do not occur within Corps' project footprint, as proposed.

2.5.5.4 Vegetated Shallows

There are no vegetated shallows in the vicinity of the Barrow reach. Shore-fast sea ice scours the intertidal and nearshore subtidal benthos and combines with seasonal and storm-driven shoaling to preclude the establishment of vegetation in the area of the reach.

2.5.5.5 Coral Reefs

There are no coral reefs in the vicinity of the Barrow reach.

2.5.5.6 Riffle and Pool Complexes

There are no riffle pool complexes in the vicinity of the Barrow reach.

2.5.6 Threatened and Endangered Species

The Corps has determined that its project, as proposed, would not affect threatened or endangered species or their respective designated critical habitat areas.

2.5.7 Other Wildlife

The Corps has determined that its project, as proposed, would not affect other wildlife in the vicinity of the Barrow reach.

2.5.8 Actions to Minimize Impacts

Industry standard best management practices would be employed to minimize temporary impacts from its proposed project upon wildlife to the greatest extent practicable. Vehicle refueling and/or vehicle maintenance actions would be completed in designated nearby industrial areas. Furthermore, the Corps would require that the

contractor conducting the construction actions have a pre-approved spill prevention and response plan.

2.6 Proposed Disposal Site Determinations

2.6.1 Mixing Zone Determination

The mixing zone associated with the Corps' projects, as proposed, would be limited to the smallest practical area to facilitate the safe implementation of the revetment installation. Generally, this area is confined to the intertidal and nearshore subtidal zones of the Barrow reach. The mixing zone would experience temporary levels of increased turbidity during periods of in-water work and a small portion of the sand and gravel substrate would be permanently replaced by revetment stone.

2.6.2 Determination of Compliance with Applicable Water Quality Standards

The Corps' project, as proposed, complies with all applicable water quality standards.

2.6.3 Potential Effects on Human Use Characteristic

Other than the stabilization of the low bluff face and the preclusion to access of a small area of the intertidal and subtidal zone where the revetment would necessarily need to be placed, there would be no effect upon the human use characteristics of the nearshore waters immediately adjacent to the Barrow reach.

2.6.3.1 Municipal and Private Water Supply

No effect

2.6.3.2 Recreational and Commercial Fisheries

No effect.

2.6.3.3 Water Related Recreation

No effect.

2.6.3.4 Aesthetics

Currently, the low bluff area of the Barrow reach is beset by the presence of gravel- and sand-filled super sacks (Figure 3), with some in various states of decomposition. This landscape view would be replaced by a uniform rock revetment face that would reach from the blufftop to the swash zone. Consequently, the aesthetics of the beach and intertidal area along the Barrow reach will be temporarily affected by the presence of vehicles, work crews, and their equipment.

2.6.3.5 Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves

The Corps' project, as proposed, would not affect Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, or Similar Preserves.

2.7 Determination of Cumulative Effects on the Aquatic Ecosystem

If the low bluffs of the Barrow reach are allowed to continue to erode, the nearshore waters could inadvertently come into contact with anthropogenically derived, environmentally persistent compounds like fuels and lubricants, insulation material, industrial use materials, and other such substances. However, the implementation of the Corps' project would reduce this risk. Whether or not the implementation of the Corps' plan would facilitate increased potential for effects to the aquatic ecosystem through other natural or anthropogenic actions is unknown at this time.

2.8 Determination of Secondary Effects on the Aquatic Ecosystem

Secondary effects to the aquatic ecosystem would not be expected to occur as a result of the implementation of the Corps' project, as proposed.

3.0 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

3.1 Adaptation of the Section 404(b)(l) Guidelines to this Evaluation

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

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

The construction of linear rock revetment in the surf zone, at various locations within the project footprint represents the least environmentally damaging practicable alternative. The current practice of placing sand/gravel filled "super sacks" along the bluff face along with mechanically pushing beach sediments into eroded areas of the beach is determined to not meet the project purpose.

3.3 Compliance with Applicable State Water Quality Standards

The Corps' project, as proposed, 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. The Corps' project would not be expected to introduce petroleum hydrocarbons, radioactive materials, residues, or other pollutants into the waters of the United States.

3.4 Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act

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

3.5 Compliance with Endangered Species Act of 1973

The Corps has determined that its project, as proposed, is compliant with the Endangered Species Act.

3.6 Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection. Research, and Sanctuaries Act of 1972

The Corps has determined that its project, as proposed, is compliant with specified protection measures for Marine Sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972.

3.7 Evaluation of Extent of Degradation of the Waters of the United States

The extent to which Waters of the United States would be degraded by the Corps' project, as proposed, would be temporary in duration. The Corps expects that locally, turbidity levels would be elevated in areas of the Barrow reach during periods of in-water construction. However, these values would return to their ambient state upon the cessation of construction activities. Permanent placement of revetment stone in portions of the subtidal and intertidal zones along the Barrow reach does not constitute an effect that would be expected to degrade water quality over the long term. Similarly, the potential risk of degradation to Waters of the United Stated through coastal erosion along the Barrow reach is expected to be reduced by the implementation of the Corps project, as proposed.

3.7.1 Significant Adverse Effects on Human Health and Welfare

The Corps has determined that there would be no significant adverse effects on human health or welfare as a result of the implementation of its project, as proposed. Conversely, failure to address coastal erosion issues at along the Barrow reach may lead to impacts upon human health and welfare.

3.7.1.1 Municipal and Private Water Supplies

The Corps has determined that its project, as proposed, would not affect municipal or private water supplies.

3.7.1.2 Recreation and Commercial Fisheries

The Corps has determined that its project, as proposed, would not affect recreational or commercial fisheries.

3.7.1.3 Plankton

The Corps has determined that its project, as proposed, would not affect local or regional plankton resources.

3.7.1.4 Fish

The Corps has determined that its project, as proposed, would not affect local or regional fisheries resources.

3.7.1.5 Shellfish

The Corps has determined that its project, as proposed, would not affect local or regional shellfish resources.

3.7.1.6 Wildlife

The Corps has determined that its project, as proposed, would not affect local or regional wildlife resources.

3.7.1.7 Special Aquatic Sites

The Corps has determined that its project, as proposed, would not affect special aquatic sites.

3.7.2 Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

The Corps has determined that its project, as proposed, does not present significant adverse effects to life stages of aquatic life and other wildlife dependent upon aquatic ecosystems.

3.7.3 Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity and Stability

The Corps has determined that its project, as proposed, does not present significant adverse effects to aquatic ecosystem diversity, productivity, or stability.

3.7.4 Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

The Corps has determined that its project, as proposed, does not present significant adverse effects to recreational, aesthetic, or economic values.

3.8 Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Industry standard best management practices will be employed to reduce potential effects to the aquatic ecosystem of the Chukchi Sea. Vehicle refueling, or vehicle

maintenance actions would be completed in designated nearby industrial areas and the Corps would require that the contractor constructing the Barrow reach revetment have a pre-approved spill prevention and response plan.

4.0 FINDING OF COMPLIANCE FOR THE BARROW REACH COASTAL EROSION PROTECTION PROJECT

On the Basis of the Guidelines, the proposed material placement site for the Discharge of Fill Material is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

5.0 REFERENCES

ADEC Division of Spill Prevention and Response, Contaminated Sites Mapping Tool. https://www.arcgis.com/apps/mapviewer/index.html?webmap=315240bfbaf84aa0b8272ad1cef3cad3 Accessed January 2022.