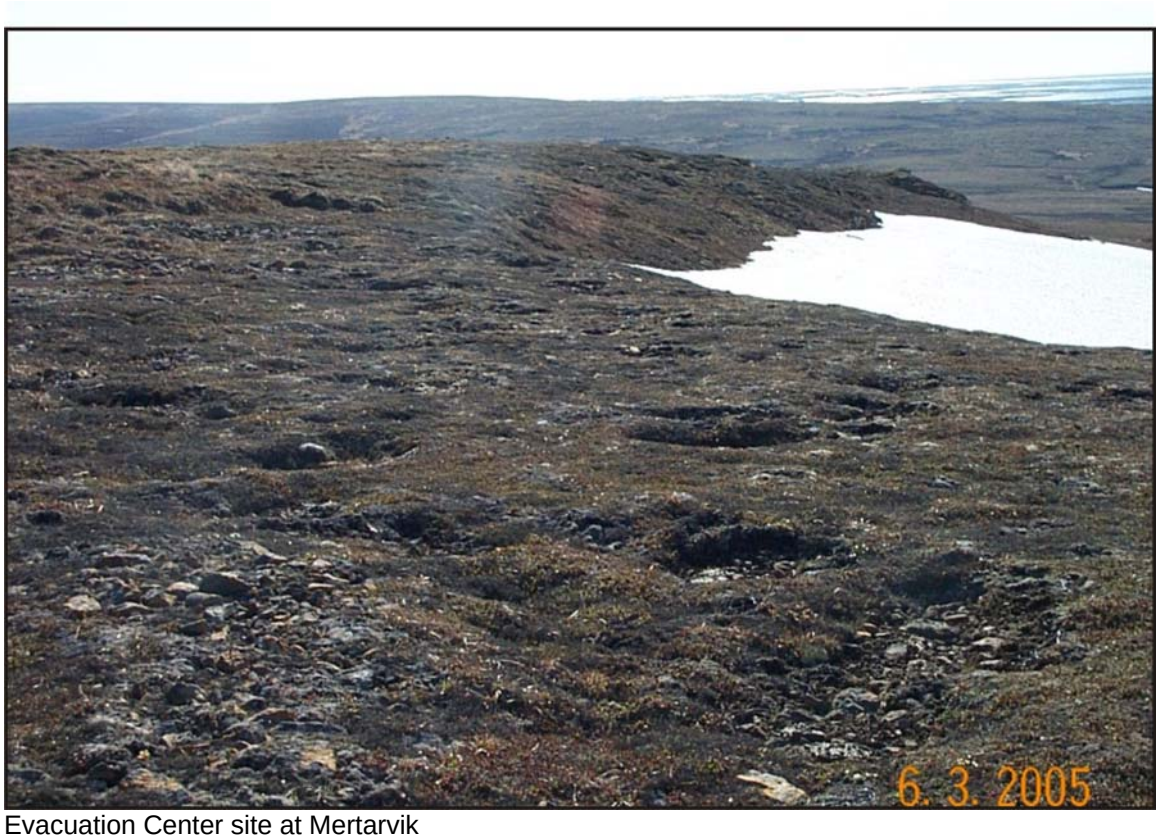
US Army Corps of Engineers
Alaska District

Revised Environmental Assessment
Finding of No Significant Impact

Newtok Evacuation Center
Mertarvik, Nelson Island, Alaska



Evacuation Center site at Mertarvik

July 2008

Finding of No Significant Impact

In accordance with the National Environmental Policy Act of 1969, as amended, the U.S. Army Corps of Engineers, Alaska District (Corps), has assessed the environmental effects of the following action:

Newtok Evacuation Center
Mertarvik, Nelson Island, Alaska

The Corps will construct an emergency evacuation center at Mertarvik on northern Nelson Island for residents of Newtok, Alaska. The community of Newtok is subject to catastrophic flooding that can leave many residents of Newtok without shelter, food, water, sanitation, and a safe to place gather during emergencies. The Mertarvik site can be reached by small boats from Newtok, is a suitable building site, and an evacuation center there is consistent with long-range community planning.

The primary construction features for the evacuation center are: (1) an access road from a barge landing that will be constructed by the State of Alaska; (2) a 13,000-square-foot building on a 32,400 square-foot gravel pad; (3) a service road to the water well drilled by the State of Alaska; (4) a sewage lagoon and land fill with a service road; and (5) a road to a quarry site. Diesel generators for electrical power will be provided. The center will be designed to shelter 150 people, but could temporarily shelter up to 300 people until evacuation to other shelters or communities could be organized. The population of Newtok is about 350 people, but not all people are expected to need evacuation during most emergencies. The total area of the project is estimated to be 33.34 acres.

An environmental assessment (EA) for this action was released for NEPA review in March 2008. This EA is has been revised from the March 2008 EA to accommodate a change in the location of the barge landing by the State of Alaska and recommendations from a value engineering review. It also provides additional information requested by the U.S. Environmental Protection Agency.

This project has been evaluated for its effects on significant resources, including fish and wildlife, threatened or endangered species, marine resources, wetlands, and cultural resources. Coordination was conducted with Federal agencies in compliance with the Endangered Species Act and the Magnuson-Stevens Fishery Conservation Act. The Corps also coordinated with the State Historical Preservation Officer (SHPO) in compliance with the National Historic Preservation Act. The project was evaluated in compliance with Sections 401 and 404 of the Clean Water Act and other applicable acts and Presidential Executive Orders, including the Coastal Zone Management Act.

This Corps action complies with the Endangered Species Act, the Clean Water Act, the Magnuson-Stevens Fishery Conservation and Management Act, the National Historic Preservation Act, the National Environmental Policy Act and applicable Presidential Executive Orders. The completed environmental assessment supports the conclusion that construction of the evacuation center does not constitute a major Federal action significantly affecting the quality of the human environment. An environmental impact statement will not be prepared for the action.

_____ _____

Kevin J. Wilson
Colonel, Corps of Engineers
District Commander

Date

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1.0 Purpose and Need for Action

The community of Newtok (population about 350) is on the west coast of Alaska in the broad, low-lying delta between the Yukon and Kuskokwim rivers (figure 1a). Newtok is in low marshy terrain on the bank of the lower Newtok River (also known as the Kealavik River) just upstream of its confluence with the brackish waters of the Ninglick River, a tributary of Baird Inlet(figure 1b). Baird Inlet is an estuary that drains to the Bering Sea on the north end of Nelson Island. The meandering rivers of the region have eroded their banks, cut new channels, and abandoned old channels since their origin. The Ninglick River is eroding toward Newtok at an average rate of 72 feet per year. The maximum yearly observed rate of erosion is 300 feet per year. Historical and projected erosion of the Ninglick River toward Newtok is shown in figure 2. At that rate, the Ninglick River would reach the community school by about 2017. The school is the largest and most important structure in the community. Its loss would severely impact the function and continued existence of the community.

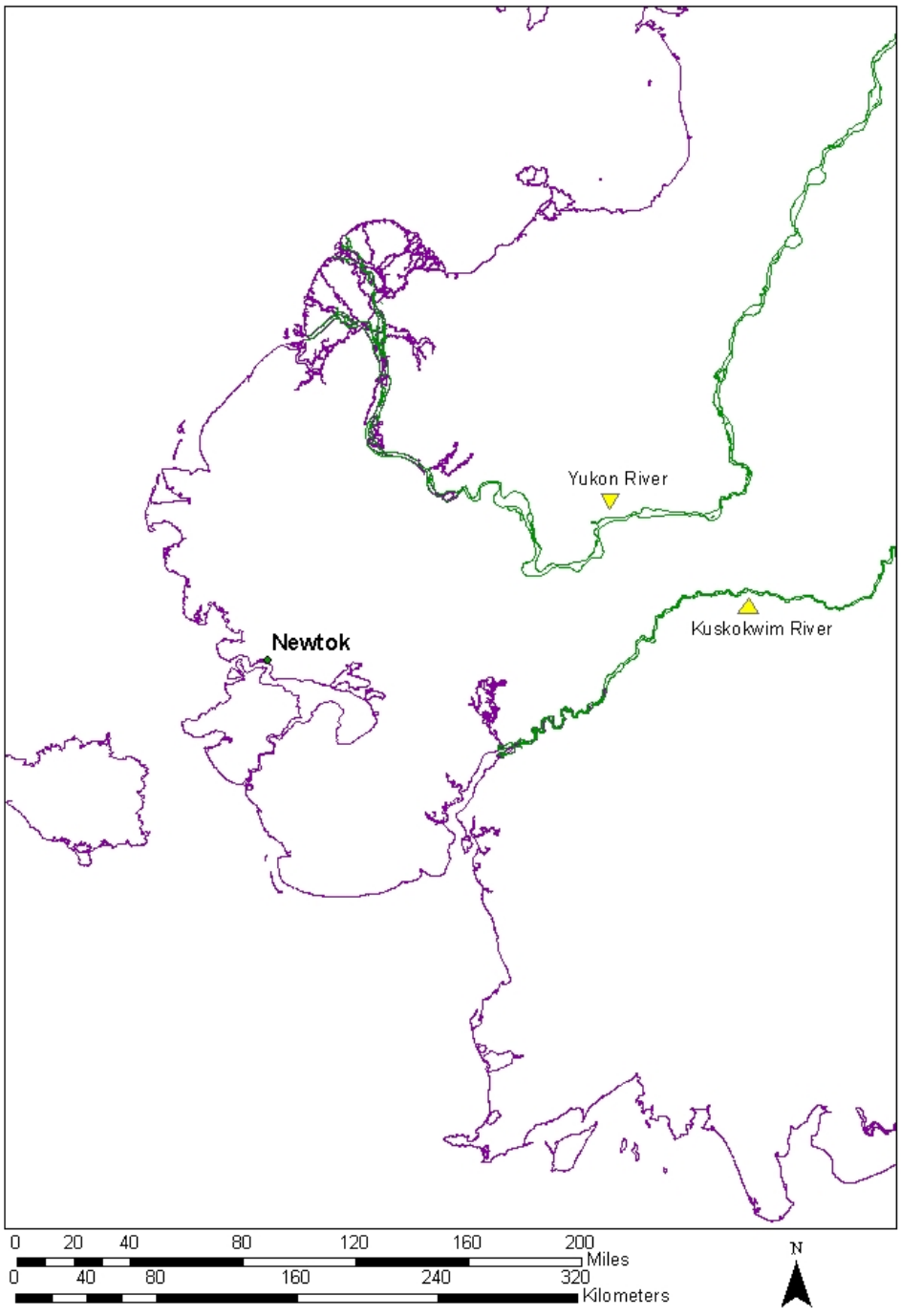

Figure 1a. Location Map.

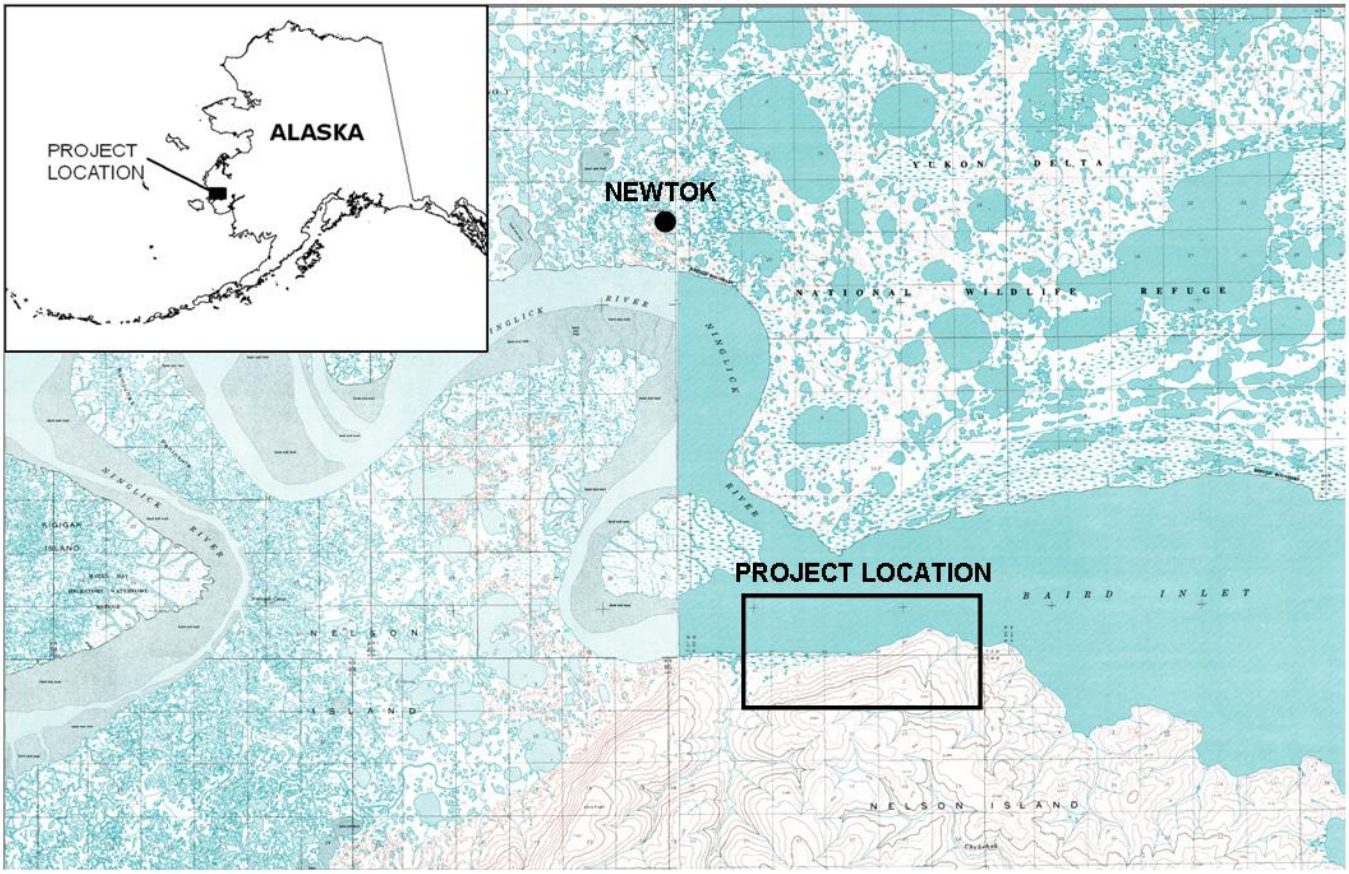

Figure 1b. Proposed location of the Newtok evacuation center on Nelson Island, Alaska.

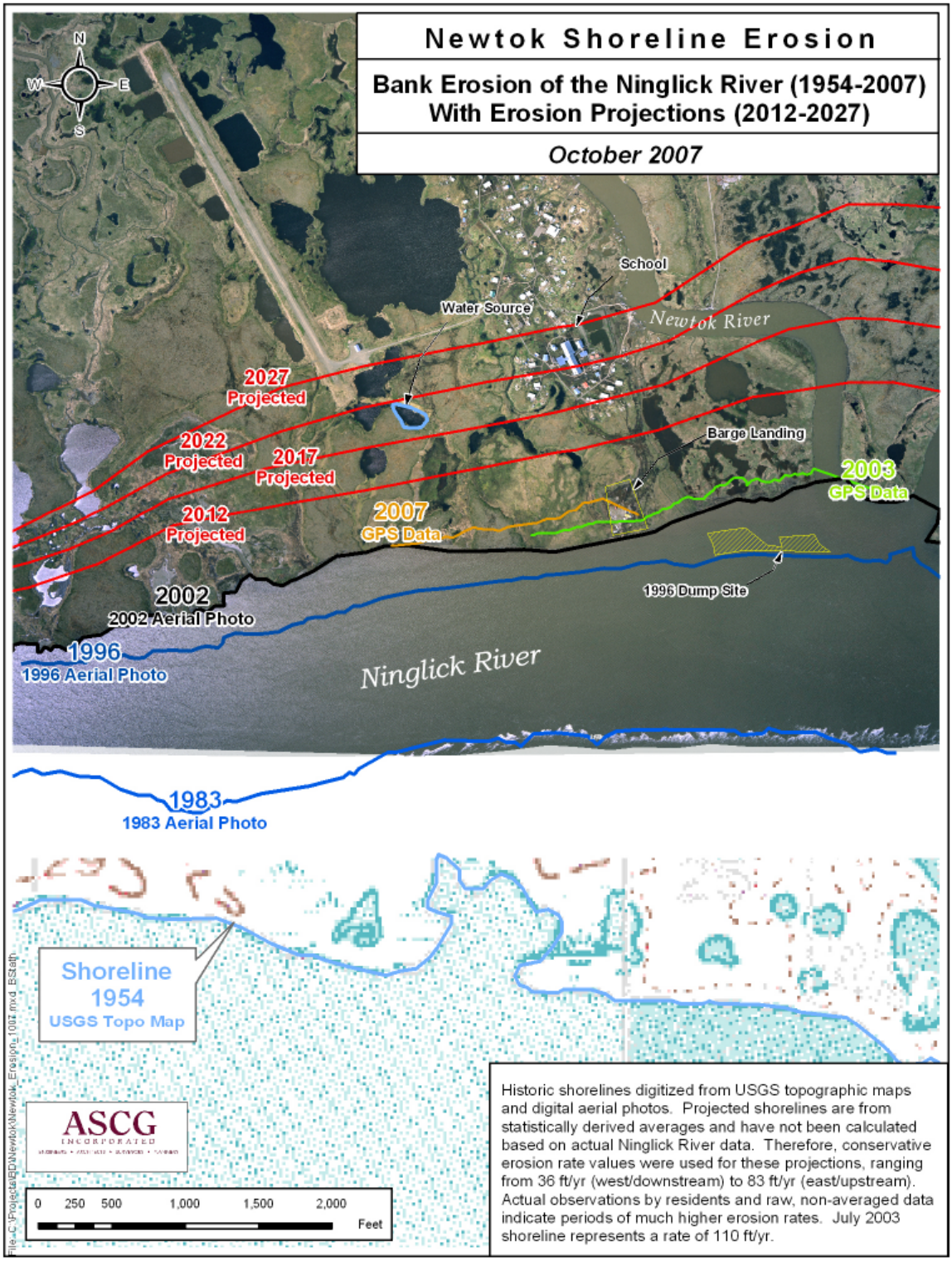

Figure 2. Historical and projected erosion of the Ninglick River banks at Newtok, Alaska (Arctic Slope Consulting Group (ASCG), Inc. 2004, Figure revised October 2007).

Changes in river channels that surround Newtok also have increased the frequency and severity of flooding in the community. Lower lying areas of the community flood almost every year, and recent, more severe floods have flooded substantial areas of the community. Figure 3 shows the area around Newtok that was flooded in 2005 by an estimated 20-year flood. Newtok was flooded again in February 2006. These events flooded the village water supply, caused raw sewage to be spread throughout the community, displaced residents from homes, destroyed subsistence food storage and other facilities, and shut down essential utilities. Examples of damage from flood events are shown in figure 4. A 50-year flood (figure 5) would flood almost the entire community and could drive people onto the airstrip or other limited high ground where they would not have shelter. High ground on which to build a community shelter in Newtok is limited.

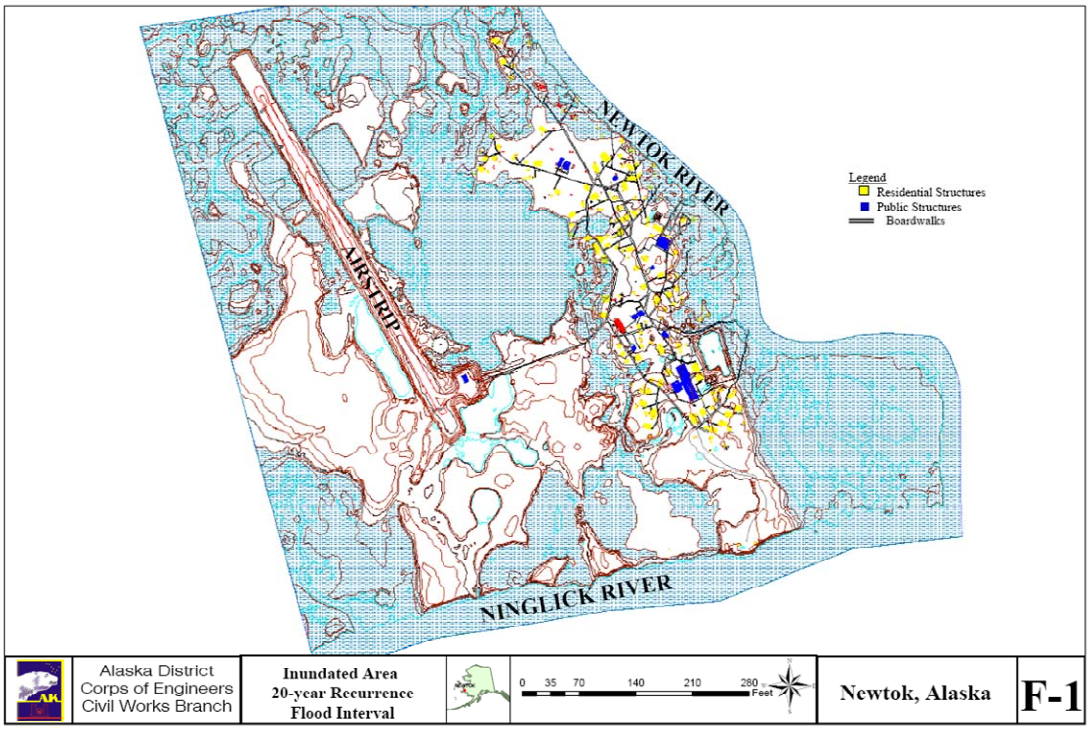

Figure 3. Area inundated in the 2005 flood at Newtok, Alaska.

Newtok is not connected by road to other communities, and there is no reasonable way for the people of Newtok to evacuate to shelter and emergency services in another community. The nearest communities relatively comparable in size to Newtok and capable of providing the barest shelter are Tooksok, Tununak, and Nightmute. These communities are on the Bering Sea coast of Nelson Island and are 40 or more miles from Newtok and at least 50 miles from Newtok by boat. These Nelson Island communities are not connected by roads. Small boats in Newtok can travel in the protected waters to the nearby north shore of Nelson Island (figure 1) in relatively severe conditions, but cannot safely cross unprotected waters and could not safely and quickly evacuate the population of Newtok to another community during a catastrophic flood event.

Figure 4. An abandoned drill rig shows how rapidly the shoreline at Newtok, Alaska is eroding.

Floating ice during spring and late autumn flooding can make boating unsafe, especially for longer trips, and high winds and large waves might be present along the open Bering Sea coast. The small fixed-wing aircraft used by commercial air carriers of the region are also limited in the number of people they can move and by the number of hours per day Federal Aviation Administration rules allow commercial pilots to fly.

An emergency evacuation of Kivalina, a community on the northwest coast of Alaska similar to Newtok in population, serves as an example of the difficulties encountered during an emergency evacuation of a community facing natural disaster. During a partial emergency evacuation in the autumn of 2007, local air carriers evacuated less than half of the population before all available pilots reached mandatory flight time limits and were required to stop flying. Lack of precision approach instrumentation, potential for damage to the only landing strip, severe winds, icing, and other weather conditions also can make evacuation by aircraft unsafe or even impossible.

The people of Newtok need an emergency center they can reach and safely occupy for a limited time. For planning purposes, it is assumed the center might be occupied for up to 14 days during an emergency evacuation.The center could be in the existing community of Newtok or in some other location that would be reasonably accessible during a flood or erosion event and that would offer life-sustaining shelter and facilities for the population.

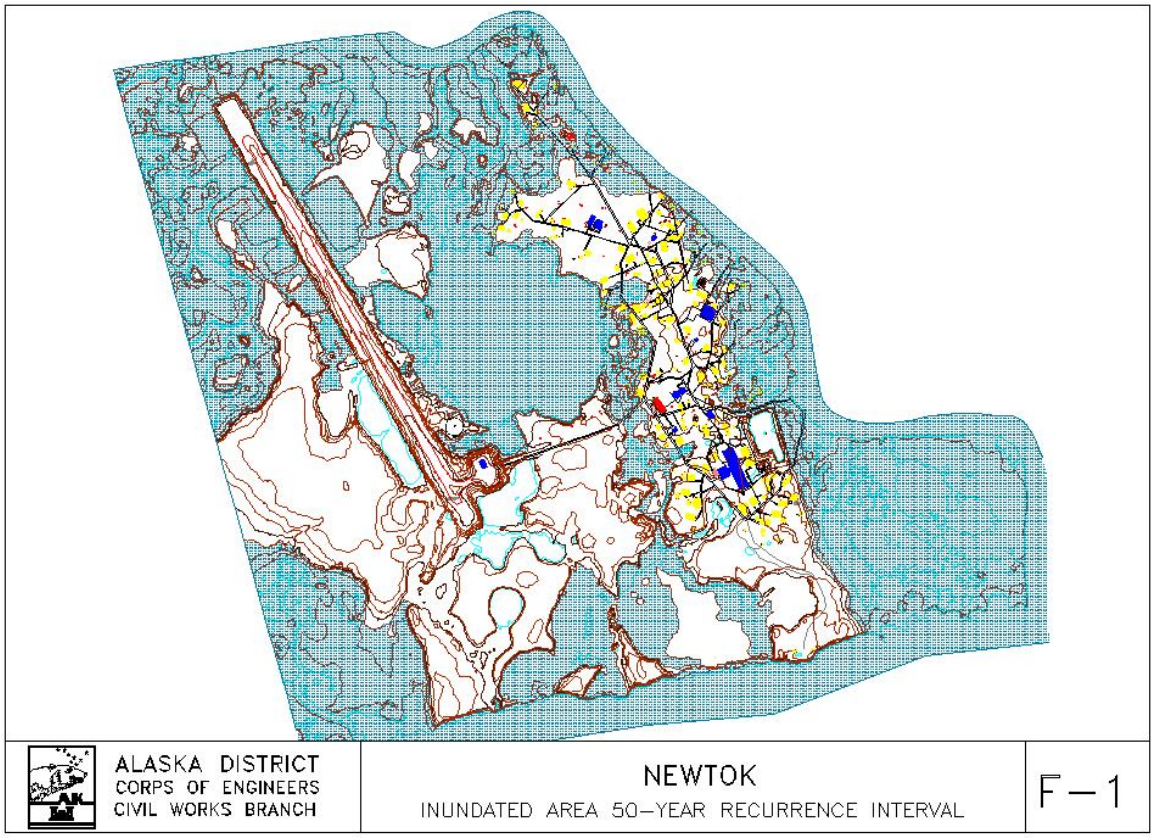

Figure 5. Area that would be flooded during a 50-year flood event at Newtok, Alaska.

The Corps of Engineers presented a plan for an evacuation center for Shishmaref in *Design Analysis, Emergency Shelter, Shishmaref, Alaska, October 2004* (COE 2004). Assumptions used in that analysis were used to define a similar structure for Newtok. The center would be designed to provide emergency shelter for 150 people, but could provide shelter for up to 300 people for 3 days until some of the people could be evacuated to other shelters. The emergency center would include kitchen facilities, toilets and shower

rooms, storage area, first aid room, and communications and office areas (table 1). The storage area would have space for food, water, cots, blankets, and miscellaneous items needed for up to 14 days of emergency support. The facility would have its own water supply, sewage lagoon, electrical power generation, communications capability, and parking area, and would be accessible by a single-lane, all-weather road leading from an access point on the shore of Baird Inlet. The access point would be a barge landing designed and constructed by the State of Alaska. Area requirements are estimated in table 1.

Table 1. Proposed areas and estimated footage for the Emergency Shelter building.

Area	Square Feet
Main living	8,680
Kitchen	450
Toilets and showers	1,100
Food and water storage	350
Miscellaneous storage	200
Office and communications center	250
First aid station	400
Arctic entry and air circulation	1,000
Janitorial	30
Mechanical room	400
Electrical and communications	140
Total	13,000

2.0 Alternatives Initially Considered

This document examines alternative locations for an emergency facility of this approximate size and function, and the alternative of no Federal action. It also considers the potential effects constructing an emergency facility might have on natural and cultural resources of concern. This environmental assessment (EA) is a companion document to another Alaska District Corps of Engineers report (Section 117, Storm Damage Reduction Project, Newtok, Alaska), which presents information about planning, costs, and project features (COE 2008b).

2.1 No Action

The Federal government could decide to take no action to prevent or alleviate effects of flooding or other natural disasters to the people of Newtok. No action by the Federal government is the No-Action alternative. There are no specific near-term plans to protect Newtok from flooding, although there are pending grant proposals and other requests that could eventually reduce flood hazards to some structures. There are no plans or reasonably foreseeable actions that would protect potable water sources, sanitary facilities, or otherwise allow the community to function and preserve the health and safety of residents during a flood.

Figure 5 indicates that many residents of Newtok would have to leave their homes to find shelter on higher ground during a 50-year flood. They might be able to crowd into unflooded buildings, but there is no assurance that there would be enough room for

everyone for even a short period. The community would be without drinking water, power, or sanitary facilities and would be surrounded by contaminated water during and for a period after the flood. A severe flood could leave homes uninhabitable after waters receded and the people could require other shelter until homes were repaired or rebuilt. Weather or damage to the airstrip could also stop aid from reaching the community by fixed-wing aircraft. The lack of an adequate evacuation facility could substantially increase the potential for disease and injury during a severe flood.

This alternative is considered in detail because the Federal government could, for a variety of reasons, decline to fund measures to prevent or alleviate flooding and its effects on residents of Newtok.

2.2 Construct Flood and Erosion Protection at Newtok

A flood protection structure consisting of an earth-filled levee could be constructed to surround the entire community, including the airport. The levee would be about 1.5 miles long and could be constructed high enough to protect Newtok from a 50-year flood (figure 5). This alternative might be effective only if the advancing erosion of the Ninglick River (figure 4) could be stopped. The levee would have to be engineered as an erosion control structure along about 1,800 feet of its length. The erosion protection alone could be expected to cost about $88 million to construct and an average of about $600,000 per year to maintain. The remainder of the levee might more than double that cost and would still leave internal drainage, water supply, and sewage contamination problems. This alternative was eliminated from detailed consideration because it would be excessively expensive and would not lead to resolution of other problems associated with flooding in Newtok.

2.3 Raise Buildings Above Flood Level

Newtok is applying for a Federal grant that would pay to raise 19 of the lowest-lying structures in the community to above at least some flood elevations. This action, if implemented, would protect some homes from direct flood damage. It would not prevent loss of utilities and domestic water, and would not lessen the potential for contamination and resulting health effects. The measure would provide limited short-term protection to some structures until they were destroyed by advancing erosion. This interim action might provide more time for Newtok to find a more permanent solution, but would not effectively address the broader need for action. It is not considered in detail as a long-term alternative to an emergency evacuation center.

2.4 Move the Community

Moving the entire community of Newtok to a location with higher ground that would not be subject to frequent flooding was considered, but is outside the scope of present Corps funding and authorization. Newtok is attempting to move to a location on Nelson Island, but does not have the funding or the necessary participation of many state and federal agencies needed to plan and build a community at their preferred site, which the community has named Mertarvik. Any evacuation facility should be consistent with community relocation plans, but potential for larger and more complex community

relocation in the future is not an effective substitute for an immediate action to provide emergency shelter for victims of flooding.

2.5 Construct an Evacuation Center in Newtok

An evacuation center could be constructed in or near Newtok. It would have to be constructed above flood levels shown in figure 5. Available land in or near Newtok that is high enough to serve this purpose is limited, but fill or pilings could be used to raise it above flood elevations. While an evacuation center could be constructed above flood elevations, the center would not have potable water, surrounding land to support fuel tanks and other facilities, a feasible location for wastewater treatment, or protection from contaminants released by flooding from the existing sewage disposal area. Further, unless extensive erosion protection was constructed in the foreseeable future, the evacuation center and/or the community of Newtok would be destroyed by the advancing Ninglick River. As noted in Section 2.2, constructing effective erosion protection would be infeasible, so this alternative is eliminated from detailed consideration.

2.6 Construct an Evacuation Center on Nelson Island

An evacuation center could be constructed on suitable soils, near potable water, and above potential flooding, if it could be located away from Newtok. There is no suitable site on the mainland of Alaska near Newtok. The nearest and most accessible high ground suitable for construction is about 8 miles from Newtok on nearby Nelson Island (figure 1b). The people of Newtok have been planning to move the community for many years. They, with help from several state and federal agencies, have been examining building sites, material sources, water sources, and transportation options on Nelson Island that could be developed for their new community. The Newtok Native Corporation selected and acquired about 11,000 acres on eastern Nelson Island from the U.S. Department of Interior for the eventual relocation of people from Newtok. That acquired land contains areas that are suitable for constructing and maintaining an evacuation center, has relatively good access to water-borne traffic, and is close to gravel sources and water. The alternative of constructing an evacuation center on Nelson Island land already conveyed for the purposes of relocating Newtok is considered in detail in Section 3.2.

3.0 Alternatives Considered in Detail

3.1 No Action

The No-Action alternative is discussed in Section 2.1.

3.2 Construct an Evacuation Center on Nelson Island

The closest suitable land available for an evacuation center that could be constructed and operated without extraordinary measures or undue expense is land conveyed to the Newtok Native Corporation on Nelson Island. Using Nelson Island for the evacuation center poses two difficulties: (1) access to the site requires evacuees to travel several miles up and across the Ninglick River to Baird Inlet in available boats to reach it, and (2) there is no suitable building site on the coast of Nelson Island, so a road would be required to reach a site in the uplands. Both difficulties are surmountable. Baird Inlet is

relatively protected from the sea and it can be crossed with available boats, so access across the inlet is a reasonable alternative. About 50 boats are estimated to be available in Newtok. While a road to the uplands would add costs and potential for impacts, there are viable routes that could be developed at reasonable cost and that could be developed in an environmentally responsible manner. There are good construction sites within a mile of the coast and within 8 miles of Newtok.

The people of Newtok are working to relocate the community. They, with assistance from state and federal agencies, have evaluated potential building sites, water sources and access alternatives for years. They have identified a site that meets all their requirements, that would also be suitable for an evacuation center, and that is the closest accessible and feasible site to the existing community of Newtok. They have named the site Mertarvik. The Corps of Engineers proposes to take advantage of the local and technical knowledge and information already compiled about the site and to construct the evacuation center at Mertarvik. The location of Mertarvik is shown in figure 1b. Constructing the evacuation center at Mertarvik would be compatible with on-going community planning and the Mertarvik site can be accessed by small boat during most weather conditions.

The Mertarvik site has a good supply of potable water and has sufficient land area for construction of a landfill and sewage lagoon. A single-lane, all-weather road to the evacuation center site can be readily constructed and connected to a barge landing and staging area. The barge landing would be constructed by the State of Alaska. The shoreline at Mertarvik is not subject to rapid erosion like the shoreline at Newtok. Safe fuel transportation and storage facilities can be built onsite. Materials for construction of pads and roadbeds can be quarried from the basalt at the Mertarvik site.

Communities on Nelson Island are not connected to one another or to the Mertarvik site by road. Consequently, an airfield is of primary importance to an evacuation center so people who are sick, injured, or needing shelter can be airlifted out and medical services and supplies can be airlifted in. The Mertarvik site is the nearest site to Newtok where an airfield can be constructed with locally quarried materials. An airfield would not be constructed as part of this action, so the existing Newtok airport would be used for emergency transportation for the immediate future. In the longer term, an airfield may be constructed as an initial step of relocation to Mertarvik.

3.2 1 Project Components

Access Point. A barge landing on the intertidal waters of Baird Inlet (figure 6) would be the point of access to an emergency center at the proposed project site. A barge landing location was originally identified near the point in figure 6 (DCA 2006, COE 2008a), but has been relocated approximately 1 mile west of the original location. The barge landing would be constructed by the State of Alaska Department of Commerce, Community, and Economic Development as a Multi-Use Marine Support Center in preparation for future relocation of Newtok to the Mertarvik site (DCA 2006, EDA 2006). The Corps of Engineers Regulatory Division approved construction of the landing at the original location near the point (POA-2005-533-9), and the State of Alaska would seek permit modification to construct the landing at the location in figure 6. The barge landing would

include a 20-foot-wide-ramp, a small float system, and a 0.17-acre staging area (DCA 2006). The access road to the evacuation center would begin at the landing.

Figure 6. Proposed location for the Multiuse Marine Support Center (barge landing) for the Newtok Evacuation Center (figure used with permission).

Access Road. A single-lane, all-weather gravel-surfaced access road would connect the evacuation center to the barge landing (figure 6). The alignment of the road is shown in Figure 7. The road would have an 18-foot-wide surface and a typical elevation of 5 feet with shoulders sloped 3:1 to approximately a 48-foot-wide footprint. The road would be 6,685 feet (1.3 miles) long. The footprint of the road would cover 7.4 acres of ground. Material to construct the road may come from a local quarry. The road would be built to minimize turbidity from storm water runoff through engineering design and best management practices. Drainage culverts would be installed as needed to maintain natural drainage patterns.

The access road would have a gravel surface because other surfaces would present problems. A dirt-surface would be muddy during wet weather and dusty during dry weather, while a paved surface would be expensive to maintain and would be slippery during icy weather. A paved access road would require sanding in addition to plowing during weather with ice and snow.

Other road alignments were considered, but the proposed alignment is the shortest that would provide a grade that could be negotiated throughout the year and that would be well away from streams.

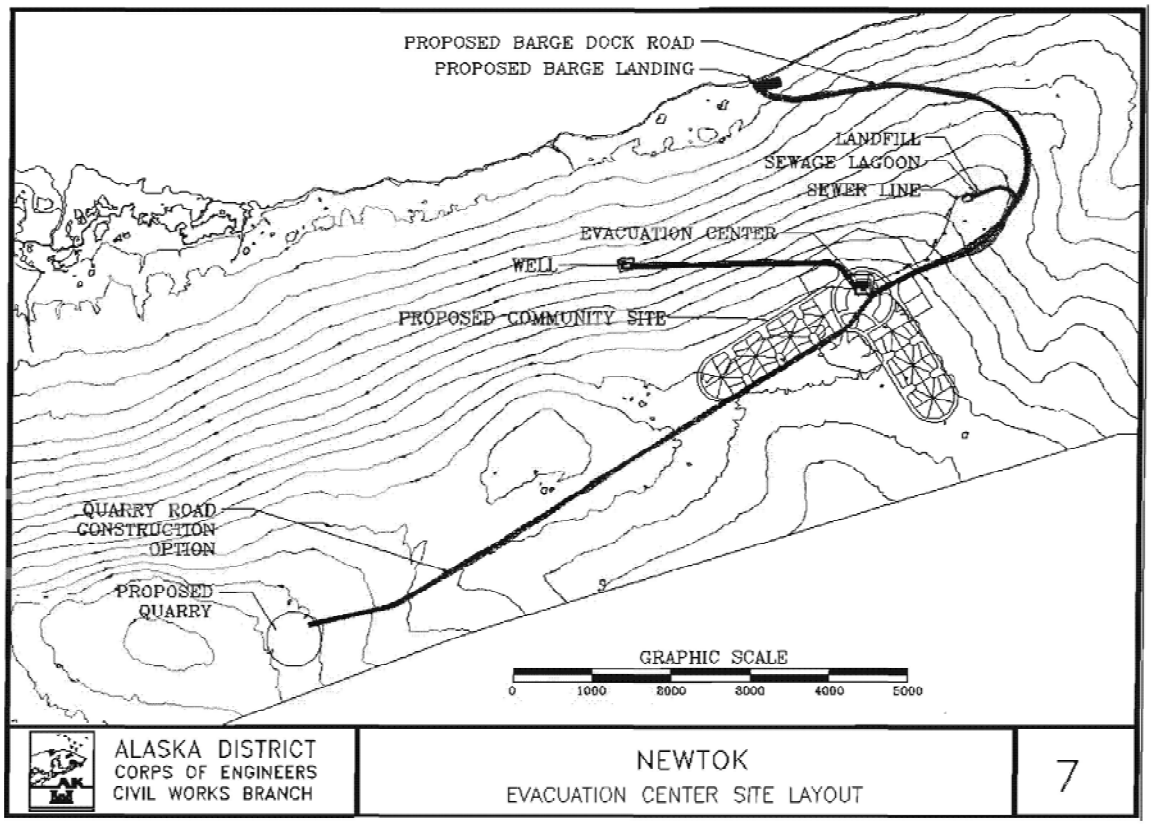

Figure 7. Major features of the proposed Newtok Evacuation Center.

Evacuation Center Pad. The access road would terminate at a gravel pad with a 0.75-acre footprint. The evacuation center would be built on that site (figure 7). The proposed location is a suitable building site and is consistent with community planning. Other sites in the available uplands would be of similar size and would have similar potential for minor, local environmental consequences.

Building. The proposed 13,000 ft^2 building (table 1) would cover about 0.3 acre of the proposed 0.75-acre building pad. The remaining 0.45 acre (19,400-ft^2) of the pad would be available for vehicle parking and material and fuel storage. The building would not sit directly on the gravel pad but would be elevated.

The building is modeled after a design for an evacuation center for the community of Shishmaref on the northwest Alaska coast (COE 2004). The building would shelter 150 people for 14 days with supplies expected to be on hand, but could shelter up to about 300 for a shorter time until the extra people could be evacuated to other shelters. This design has the minimum area practicable. No other alternatives for a building site were considered. Other feasible alternatives would have similar potential for minor, local environmental consequences.

Water Well. Potable water for the evacuation center would come from a well drilled near the site (Golder Assoc. Inc. 2007). Water would be piped to the center where it would be treated for domestic use. A one-lane gravel service road 12 feet wide and 3,000 feet long

(0.57 mile) with a 3.8-acre footprint would parallel the pipeline. A 60 by 100-foot turnaround with 3:1 slopes covering 0.46 acres would be added to this road. The larger footprint of this turnaround is due to the steeper slope at the turnaround.

Sewage Lagoon. Sewage and wastewater would gravity-flow untreated into a 0.08-acre (60 by 60-foot) lined and fenced sewage lagoon near the location shown in figure 7. The sewage pond would be connected to the access road by a single-lane gravel service road 12 feet wide and 700 feet long with a typical elevation of 5 feet and 3:1 slopes. It would cover 0.63 acre. The road would have a 60 by 100-foot turnaround with 3:1 slopes covering 0.25 acre.

Earlier plans considered use of "package plant" aerobic treatment units for sewage. This treatment alternative was eliminated from consideration because it required trained operators and several days startup time to develop microbial cultures to work efficiently.

Landfill. Non-hazardous waste would be disposed of in a fenced and lined landfill of approximately 900 ft^2 (0.02 acre) adjacent to the sewage lagoon (figure 7). Non-hazardous waste would be sorted from hazardous waste and placed in the landfill. Hazardous waste would be handled, stored, and disposed of according to approved methods. The sewage lagoon service road would also serve the landfill.

Power. Diesel generators sized to the expected peak loads of the center would provide electrical power. Fuel for one or more generators would be transported by truck in tanks or bladders from the barge landing and stored in aboveground tanks on the center pad. Aboveground storage tanks for the generators would be less than 10,000 barrels (442,000 gallons) and would not be regulated by the Alaska Department of Environmental Conservation, Division of Spill Prevention and Response (L. Pearson personal communication December 2007). The storage tanks would be in a lined pit that would meet EPA guidelines for spill prevention control and countermeasure (SPCC) plans and the U.S Coast Guard regulations (http://www.epa.gov/Oilspill/spcc.htm).

Other sources of electrical power including wind turbine, solar, and geothermal sources were considered. Wind turbine and solar technologies were considered impractical for this application because they would not provide the year-round, all-weather capability required. Geothermal power from moderate temperature sources may be possible (Brasz et al. 2005), but the cost of development (Kolker 2007) could only be justified for a base-loaded, continually operating facility. Fixed construction and operating costs would make intermittent operation too expensive.

Quarry and Haul Road. The material for construction of roads and pads may come from a proposed quarry shown in figure 7. The approximately 8-acre quarry would be connected to the evacuation center, access road, and barge landing by road. The quarry road would have an 18-foot-wide surface and a typical elevation of 5 feet with shoulders sloped 3:1 to approximately a 48-foot-wide footprint. The quarry road would be 8,448 feet long (1.6 miles) and have an estimated footprint of 9.3 acres.

The quarry would likely produce surface gravel in addition to crushed material from blasted rock. Development of a quarry on site would require drilling, blasting, crushing and hauling during project construction.

3.3 Proposed Action

3.3.1 Project Features

This section summarizes the area of habitat that would be covered by the main project features (Table 2).

Table 2. Area of main project features of the Newtok evacuation center proposed for construction at Mertarvik, Nelson Island, Alaska.

Feature [a]	Area (ft2)	Area (acres) [a]
Access road	329,520	7.60
Evacuation center pad	32,400	0.75
Water well service road	165,800	3.80
Water well turnaround	20,000	0.46
Landfill	900	0.02
Sewage Lagoon	900	0.02
Sewage lagoon/landfill service road	27,500	0.63
Sewage lagoon/landfill turnaround	20,000	0.46
Quarry	348,477	8.00
Quarry haul road	474,500	10.90
Evacuation center	32,400	0.75
Area occupied	1,452,397	33.34

a. The barge landing that would be constructed by the State of Alaska would add about 0.2 acre to the above total acres for an upland staging area (DCA 2006).

3.3.2 Timing

The project likely would be built in phases as funding became available. The quarry would be developed, and the roads and pad would be built with first phase funding. The emergency shelter, water well, sewage lagoon, and landfill would be developed as additional funding became available. Permits for features that would be constructed later would be obtained by the contractor prior to construction.

The U.S Fish and Wildlife Service recommends construction time periods for clearing vegetation to reduce potential impacts to migratory birds protected by the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703). All birds in Alaska with exception of grouse are protected by this act. The Service recommends that clearing of vegetation on the Yukon-Kuskokwim Delta, including the project location, be avoided from May 5 through July 25 to provided maximum protection to birds occupying shrub or open habitat (Appendix A). Road construction would result only in burying tundra beneath a geotex-type fabric covered with gravel. To prevent thermal degradation of discontinuous permafrost on the project site, tundra would not be disturbed by cutting or removing vegetation. The Corps would place contractual restrictions to protect nesting migratory birds or would develop measures to minimize disturbance.

4.0 Affected Environment

4.1 Climate

The climate at the proposed project site would be similar to Newtok's with some minor differences in microclimate because of the topography. Newtok's climate is a transitional Alaska climatic zone (ADCED 2007). Average annual precipitation at Newtok is 17 inches, with annual snowfall of 22 inches. Average summer temperatures range from 42 to 59 degrees Fahrenheit, and average winter temperatures range from 2 to 19 degrees Fahrenheit (ADCED 2007).

4.2 Physiography and Soils

Nelson Island topography is highly dissected and probably of late Tertiary period. The Tertiary period was known for abundant volcanic activity, which resulted in a basalt cap that covered Cretaceous siltstone and greywacke over much of northern and eastern Nelson Island (Coonrad 1957).

Terrain becomes more rugged, with several elevations over 1,300 feet in the central and northern areas of the island. The highest elevation on the island is 1,485 feet. The southern area of the island is low-lying and covered with small lakes and streams. There are no large rivers on Nelson Island, but several smaller creeks drain into the Ninglick River and Baird Inlet on the north and east, the Kolavinarak River on the east and south, and into the Bering Sea on the west side of the island (Woodward-Clyde 1984).

The Alaska District, U.S. Army Corps of Engineers conducted a subsurface exploration on the project site in September 2007 (G. Carpenter personal communication November 2007). The exploration investigated soil conditions at the barge landing, along the road from the barge landing to the evacuation center site, at the evacuation center site, and at the water well site. This subsurface exploration confirmed the findings of Woodward-Clyde (1984). Surface rock in the vicinity of the proposed project site is vascular basalt. The basalt appears to be at least 30 to 60 feet thick where exposed, and it could be much thicker (COE 2002).

The soil in most areas is basalt weathered to sand and gravel. The surface of the unweathered basalt ranged from 7 to more than 31.5 feet below the ground surface. The ground surface has a layer of organics that varies in depth, but is generally 1 to 2 feet thick. Below the surface organics there is a transition layer of silt that contains roots and organics. The volume of organics decreases with depth.

A 110-foot-deep water well drilled on the project site (figure 7) in 2007 (Golder Assoc. 2007) produced a bore log at this site. Stratigraphy at the well site is reported by Golder Associates (2007) as:

> *The stratigraphy encountered in the 110 ft deep borehole at the location of TW#1 included 21.5 ft of over burden consisting of organics and brown silt. These soils were underlain by a series of hard grey rock, probably basalt flows, interspersed with brown and gray silt to 104.5 ft bgs. To this depth, five layers of rock were encountered with thickness ranging from 2 to 20 ft. The silt layers ranged from 4*

to 20 ft with two layers of silt also containing rounded gravel. No groundwater was encountered until a fractured basalt aquifer was penetrated at a depth of 104 ft bgs. This depth is similar to the spring source at 30 ft MSL.

Permafrost in the general project area was confirmed in 2002 by excavating a pit by hand (COE 2002). The depth to permafrost in most areas is probably about 18 to 24 inches. Permafrost under the project site was confirmed during the subsurface exploration in 2007. There are thawed areas near the beach and along drainage channels. Generally, thawed areas can be identified as areas where willows are growing or, at higher elevations, in areas where the surface is collapsed due to thawing. These collapsed features range from 2 to 4 feet deep. The permafrost is ice rich and has moisture content (on the basis of weight) of 20 to 30 percent. There is surface evidence that ice wedges are present in the area, although none was observed.

A small drainage with intermittent flow is east of the access road alignment (figure 7), but project features would be on high ground with no prominent drainage paths to creeks or ponds.

4.3 Tides and Currents

There are no tide stations in Newtok or most of Western Alaska. Local residents report the tides generally have a range of 3 to 5 feet. Woodward Clyde Consultants (1984) measured tidal elevations and estimated a tidal range of 5.5 feet (COE 2007).

4.4 Wetlands and Vegetation

Wetlands with wetland vegetation typical to western Alaska dominate the lowlands of the Yukon-Kuskokwim Delta (Gray and Harbanuk 2005). As the distance inland from the tidal influence of the coastline increases, the vegetation changes to heath tundra, a complex of vegetative associations that vary according to small differences in exposure, drainage, and disturbance. Heath tundra is characterized by a moss and lichen mat on which other plants grow. Sedges and grasses are abundant. In drier areas, woody plants consisting primarily of prostrate or low-growing shrubs such as dwarf birch (*Betula nana*) or willow (*Salix* sp.) may be present. Blueberry (*Vaccinium uliginosum*), lowbush cranberry (*Vaccinium vitisidaea*), crowberry (*Empetrum nigrum*), and cloudberry (*Rubus chamaemorus*) are common.

In 2005 the Corps of Engineers refined the delineation of wetland and vegetation types around the proposed project site (Figures 8 and 9). Wetland vegetation at the project site is composed mostly of palustrine emergent persistent/scrub-shrub evergreen/moss and palustrine emergent persistent/scrub-shrub broad-leaved deciduous wetland. Vegetation types are mostly mesic shrub-birch ericaceous and tussock tundra interspersed with low, open willow shrub and blue joint herb shrub complex patches. These wetland and vegetation types are typical and widespread throughout higher ground on Nelson Island and are not unique to the project site.

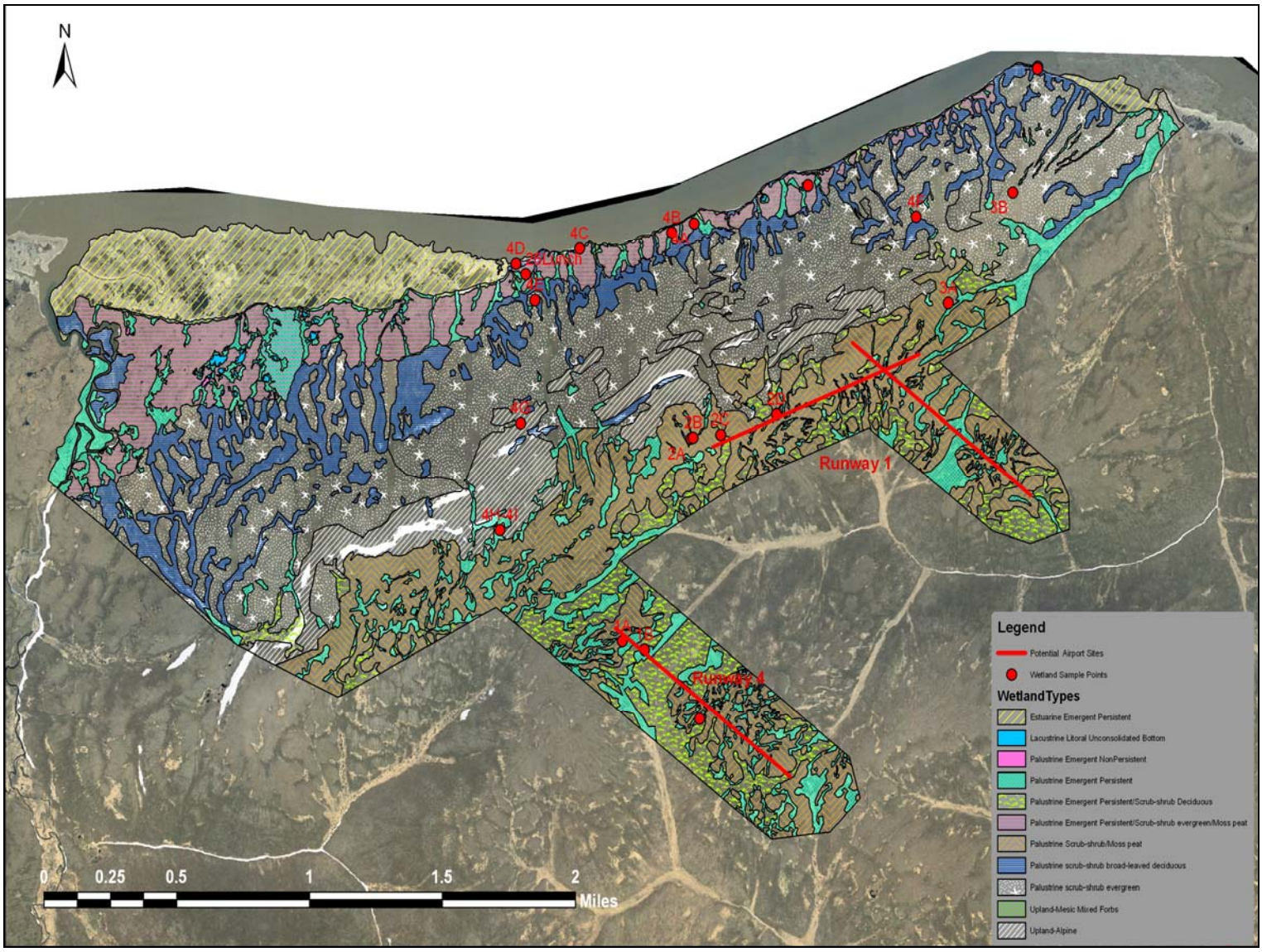

Figure 8. Wetland types near the Evacuation Center site.

4.5 Marine Mammals

Nelson Island and the project site are at the western edge of Baird Inlet, a large brackish estuary connected to the Bering Sea by the Ninglick and Kolavinarak rivers. Steller sea lions and beluga whales of the eastern Bering Sea stock may occasionally ascend the Ninglick River to Baird Inlet, but this would not be a common occurrence. The nearest sea lion rookery is at Cape Nehalem, approximately 175 miles southeast of the project site.

Spotted seal, a species closely related to the common harbor seal, is the marine mammal more likely to be seen in the Ninglick River and Baird Inlet. Several spotted seals were seen in vicinity of the proposed barge landing by Corps geotechnical engineers during geophysical studies of the project site in September 2007 (G. Carpenter personal communication).

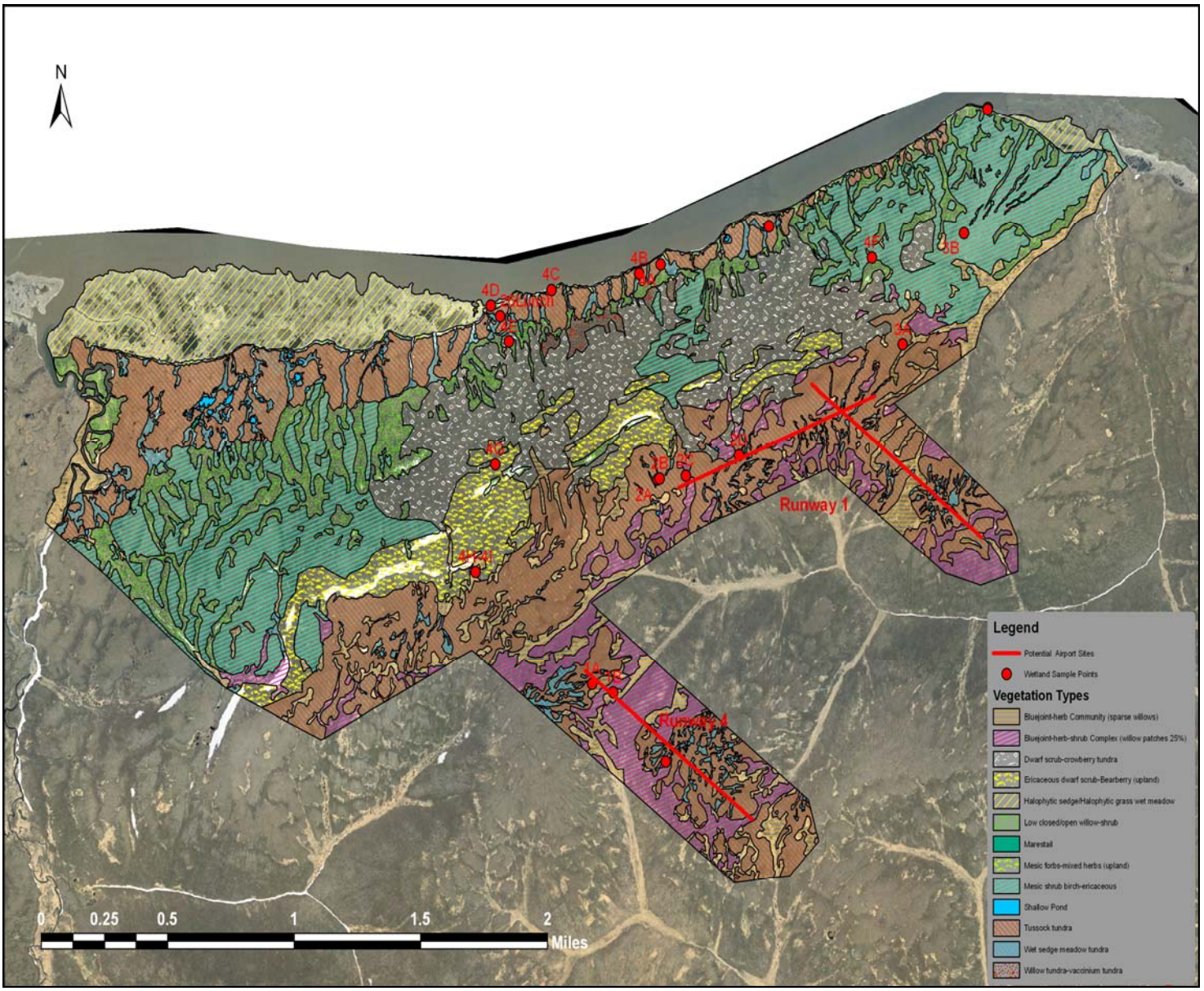

Figure 9. Vegetation types near the Evacuation Center site.

4.6 Terrestrial Mammals

Terrestrial mammals on Nelson Island are relatively low in diversity and consist of Arctic and red foxes, beaver, small mammals, moose, introduced musk ox, and possibly an occasional brown bear.

Brown bears are found mainly in the mountains east of the Yukon-Kuskokwim Delta lowlands and near the major rivers. Lowland habitats of the delta have very few brown bears (Seavoy 2003). Brown bears are also known to feed on sea mammal carcasses washed ashore in some areas of the Bering Sea coast south of Nelson Island (Gray and Harbanuk 2005). Brown bears could swim to Nelson Island, but Newtok residents say they are rare in the project vicinity (D. Charles personal communication November 2007).

Moose are rare near the project site (D. Charles, personal communication, November 2007), but Alaska District geotechnical engineers saw moose droppings on the hillside near the project (figure 7). The engineers did not see any moose (G. Carpenter, personal communication, November 2007). Alaska District biologists conducting fisheries studies in nearby Takikchak Creek during September and bird and vegetation studies on the project site during June and August did not see any moose or signs of their presence (C. Hoffman, personal communication; E. Campellone, personal communication, November 2007).

From 200 to 300 musk ox are on Nelson Island (Perry 2005) and are occasionally seen near the project site (D. Charles personal communication, November 2007). Alaska District geotechnical engineers saw two small groups of musk ox, six to seven animals in each group, near the project site during September 2007 (G. Carpenter, personal communication, November 2007).

Small mammals, including voles, shrews, lemmings, short-tailed weasels, and mink, range across much of Nelson Island and could be present throughout the project area. Fish and Wildlife Service biologists noted an abundance of voles and lemmings during an August 2006 field study of the area (USFWS 2006).

Traditional ecological knowledge tells us that the numbers of beavers on Nelson Island have increased significantly since the 1970's (Anderson et. al. 2004, Gray and Harbanuk 2005), and Newtok residents say they are seen in the Takikchak Creek drainage (D. Charles, personal communication). Alaska District biologists saw beavers in the Takikchak Creek drainage during site visits, and Fish and Wildlife Service biologists also noted beavers during an August 2006 field study of the area (C. Hoffman and E. Campellone, personal communications, November 2007, USFWS 2006). It is unlikely, however, that beavers would be present on the higher ground proposed for this project.

Reindeer were introduced to Nelson Island in 1934, but there are no reindeer on the island today. There are also no caribou on Nelson Island. Caribou range to north, east, and southeast of Nelson Island, but their range does not extend to the island. The Mulchatna herd, which ranges south of the Kuskokwim River, possibly comes closest to Nelson Island (Seavoy 2005).

4.7 Birds

The Yukon-Kuskokwim Delta is rich in bird species diversity, especially during the summer when the delta hosts large numbers of nesting waterfowl. It is clearly one of the most productive areas in the world for geese (Fischer et al. 2005). The delta is home to the world population of cackling Canada geese, nearly all of the world's population of emperor geese, about 80 percent of the world's population of Pacific black brant, and tens of thousands of greater white-front geese. Almost 75 percent of Alaska's sandhill cranes also breed on the Yukon-Kuskokwim Delta. Baird Inlet Island, about 5 miles southwest of Newtok and 4 miles north of the proposed project site, is home to a colony of about 4,500 to 10,122 nesting pairs of Pacific black brant (Derksen and Ward 1993; Pearce 2002). This colony averages about 25 percent of the black brant nesting on the delta. The

delta is also the summer home of tens of thousands of freshwater and marine ducks, loons, shorebirds, raptors, passerine birds, and ptarmigan. Birds are the principal animal group of concern for this project.

The sea bird colony closest to the proposed project site is on the outer coast of Nelson Island, approximately 40 miles from the site (WASCP 2001).

Several waterfowl surveys have been conducted on wetlands near the project site (Hoffman 2005a, USFWS 2006). These surveys show that waterfowl use some of the wetlands near the project site, but Fish and Wildlife Service biologists did not identify project area wetlands as particularly suitable habitat for nesting waterfowl or shorebirds (USFWS 2006). Alaska District geotechnical engineers identified family groups of emperor geese feeding on berries on hillsides near the project site (G. Carpenter personal communication November 2007). Alaska District biologists also saw substantial numbers of emperor geese flying to inland feeding areas during site visits to characterize fisheries and vegetation resources in the project area (C. Hoffman and E. Campellone, personal communication, November 2007). Newtok traditional knowledge is that emperor geese seasonally feed on crowberries (D. Charles, personal communication, November 2007). Feeding areas for geese would be widespread on Nelson Island where crowberries and other low-growing berries are commonly found and would not be limited to the proposed project site or its vicinity.

4.8 Fish

The proposed project site is between two streams that drain the highlands of Nelson Island (figure 10). Takikchak Creek is west of the project site and flows into the Ninglick River, and Chakchak Creek is 8 miles south of the site and flows east to the Kolavinarak River. Mertarvik Spring flows from the hillside below Mertarvik site to the Ninglick River. The Ninglick River and Baird Inlet borders the proposed project site on its northern side (figure 10).

The Alaska Department of Fish and Game maintains an interactive web page showing distribution of anadromous fish (ADF&G 2006). The ADF&G web page reported coho salmon as the only salmon species in Takikchak Creek, but in 2005 Corps biologists found five species of Pacific salmon in Takikchak Creek (Hoffman 2005b). Dolly Varden char and stickleback were also reported in Takichak Creek. No fish, juvenile or adult, were captured or seen in Mertarvik Spring.

There are no waterbodies at the proposed project site. An Alaska Department of Natural Resources (DNR) Title 41 Fish Habitat Permit (FHP) would not be needed to construct this project.

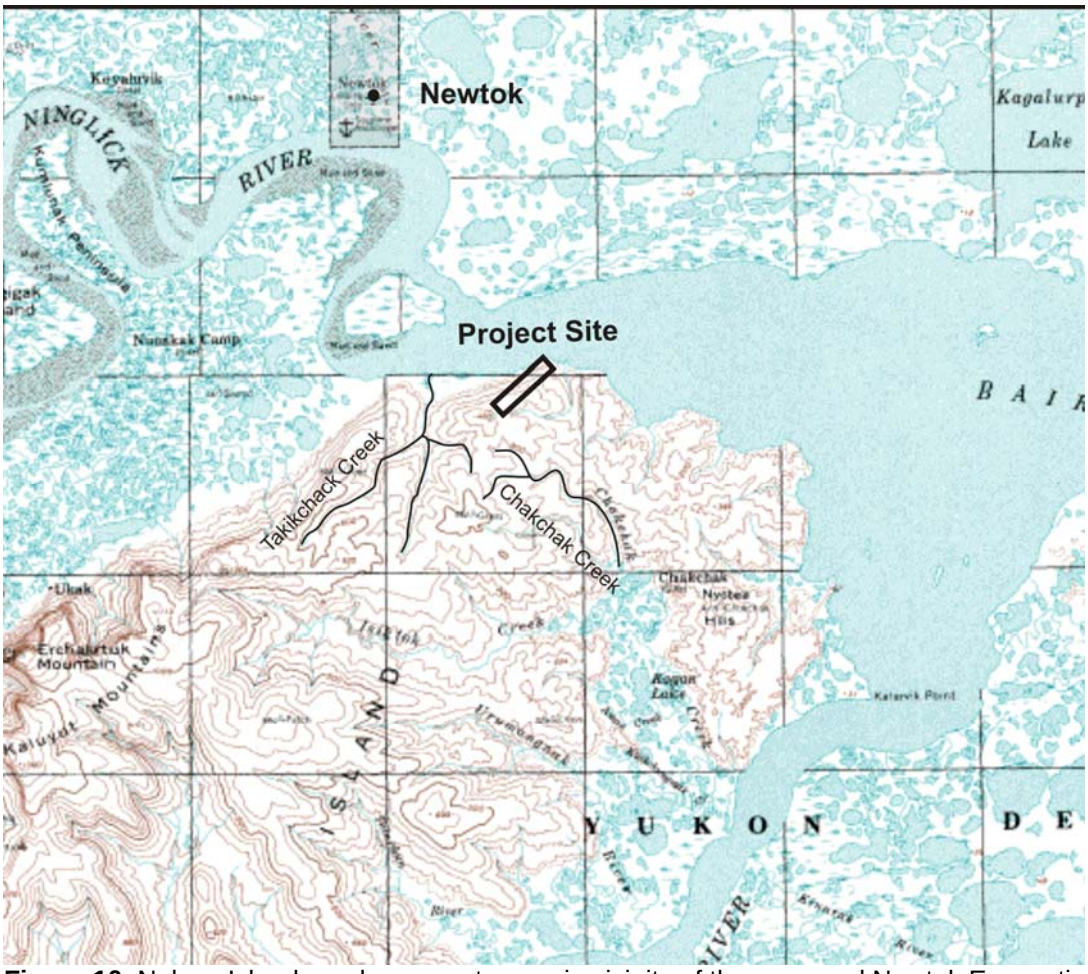

Figure 10. Nelson Island anadromous streams in vicinity of the proposed Newtok Evacuation Center project site.

4.9 Special Use Areas

The Yukon Delta National Wildlife Refuge (YDNWR) (figure 11) surrounds the proposed project site. Newtok Native Corporation acquired the 11,000-acre Mertarvik site, which includes the proposed project site, through a land exchange with the U.S. Fish and Wildlife Service, authorized by Public Law 108-129 on November 17, 2003. Special refuge sites near the Mertarvik site or on the vessel traffic route to the site include Naskonat Peninsula and Kigigak Island, sites of long-term waterfowl research (including spectacled eider), on the YDNWR (Fischer et al. 2005), and Baird Island, the nesting site for over 4,500 nesting pairs of Pacific black brant (Derksen and Ward 1993; Pearce 2002). Naskonat Peninsula and Kigigak Island are at the mouth of the Ninglick River, and Baird Island is near the Ninglick River outlet of Baird Inlet.

The coastal area north of Ninglick River and Nelson Island to the Askinuk Mountains at Cape Romanzof (989 mi^2) and the northwest portion of Nelson Island is designated critical habitat for spectacled eider nesting (Federal Register Vol. 66, No. 25 / Tuesday, February 6, 2001 / Rules and Regulations, USFWS 2002a page 24).

The coastal area of the Yukon-Kuskokwim Delta, designated as critical habitat for spectacled eiders, is also designated critical habitat for Steller's Eiders (USFWS 2002a). According to the figure on page 12 of the U.S. Fish and Wildlife Service's October 2002 publication Alaska's Threatened and Endangered Species (USFWS 2002a), the northwest portion of Nelson Island is also designated as critical habitat for Steller's eider.

The proposed project site is in the Mertarvik site acquired from the U.S. Fish and Wildlife Service. The Mertarvik site does not contain any special use areas but is within the Ceñaliulriit Coastal Resource Service Area of the Alaska Coastal Management Program (Appendix B Ceñaliulriit Coastal Resource Service Area Management Plan).

Figure 11. Location of the Newtok Evacuation Center site and the Yukon Delta National Wildlife Refuge, Alaska (Map: USFWS Region 7).

4.10 Endangered Species

Several species of endangered whales inhabit the Bering Sea west of the proposed project site. Species of endangered whales in the Bering Sea include the humpback whale, fin whale, sei whale, blue whale, northern right whale, and bowhead whale, but these large, oceanic baleen whales do not swim up the Ninglick River or enter Baird Inlet.

Steller sea lion is endangered west of Longitude 144 (Federal Register / Vol. 62, No. 86 / Monday, May 5, 1997 / Rules and Regulations). This species is present in the Bering Sea and might occasionally be present in the general project area in the spring when Pacific herring spawn in coastal waters.

Steller's eider, a threatened sea duck, once nested on the Yukon Delta National Wildlife Refuge, but nesting on the delta now would be a rare occurrence (USFWS 1997, Flint and Herzog 1999). In October 2002, the nesting population of Steller's eider on the Yukon Delta National Wildlife Refuge was believed to be from tens to hundreds of eiders (USFWS 2002b). Portions of the Yukon-Kuskokwim Delta are designated critical habitat for Steller's eider (USFWS 2002a), but there is no indication this species nests on or anywhere near the proposed project site.

Spectacled eider, a threatened sea duck, nests in low numbers on the Yukon Delta National Wildlife Refuge (USFWS 1999, Federal Register/ Vol. 66, No. 25 / February 6, 2001 / Rules and Regulations). This species once nested on the southern portion of Nelson Island and is now known to nest on Naskonat Peninsula and Kigigak Island near the mouth of the Ninglick River. There is no indication spectacled eiders nest on or near the project site.

Kittlitz's murrelet is listed as a candidate species (Federal Register: May 4, 2004 (Volume 69, Number 86, Proposed Rules). The center of distribution for this small fish-eating sea bird is Glacier Bay in northern Southeastern Alaska. Small populations are found in the Bering and Chukchi seas during summer, and it is possible a small number of Kittlitz's murrelets could be found in Baird Inlet. Kittlitz's murrelet nests are typically associated with glaciers at high elevations. They would be unlikely to nest in the project area.

The threatened population of northern sea otter that inhabits near-shore waters of the Alaska Peninsula and Aleutian islands typically does not range into the Bering Sea as far north as the proposed project site (Federal Register / Vol. 70, No. 152 / Tuesday, August 9, 2005 / Rules and Regulations, USFWS 2005). They are unlikely to be near the project site.

Informal consultation was conducted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to determine the presences of species listed under the Endangered Species Act that could be affected by the proposed project. These agencies determined that none of the listed species is at the project site (Appendix A). The U. S. Fish and Wildlife Service identified critical habitat for spectacled and Steller's eider on

the Yukon Delta National Wildlife Refuge, but determined the project would not be likely to impact critical habitat for these threatened species.

4.11 Essential Fish Habitat

The Ninglick River and Baird Inlet are essential fish habitat for Pacific salmon (NMFS 2007). The adults and juveniles of five species of Pacific salmon would potentially pass by the barge landing where equipment and supplies for the proposed project would be offloaded from barges or landing craft. The juveniles of some species could be present year round, but the adults would likely be present only during the summer spawning migration.

4.12 Cultural Resources

Archaeological work in the Nelson Island area has been limited to a few sites outside the project vicinity (Collins 1927, Okada et. al. 1982) and to a few recent archaeological surveys near Nightmute and Toksook Bay mentioned in the Nelson Island Natural and Cultural Knowledge Project (Riordan 2006). Corps of Engineers Alaska District and U.S. Fish and Wildlife Service archaeologists surveyed the Mertarvik area, including the project site, in 2002 (Grover 2007). They identified several archaeological sites near the mouth of Takikchak Creek, but did not find any sites that would be affected by the project described in this EA. The site nearest to the proposed project area consists of several shallow pits (site XBI-00183 in Grover 2007) near the point about 1 mile northeast of the barge landing site identified in figure 6. The pits are about 3 feet in diameter and 18 inches deep. Newtok residents identified them as pits where clay was excavated for making pottery.

4.13 Subsistence Resources

Newtok residents rely heavily upon subsistence foods (Anderson et al. 2004). Seal meat, seal oil, herring, salmon, halibut, geese, tomcod, trout (Dolly Varden), and ptarmigan are the most important subsistence foods. The primary subsistence foods at the proposed project site are musk ox, berries, moose, ptarmigan, and geese. Moose are rare and geese are seasonally present feeding on berries. Musk ox is hunted by permit, but the Musk Ox Herd Cooperative Management Plan does not allow hunting when the herd on Nelson Island falls below 250 animals (Perry 2005). Pacific salmon and Dolly Varden char are harvested from Takikchak Creek near the proposed project site, but not on the project site.

5.0 Environmental Consequences

The following three subjects address the environmental consequences of this action relative to the main project features listed in Section 2.4 of this EA: (1) biological consequences to wildlife and vegetation, (2) physical consequences to air, water, soil, landforms, and habitat, and (3) consequences to cultural resources. The proposed project is inland on high ground where the project footprint would not affect marine mammals or other offsite wildlife other than during the construction period when material would be transported to the project site. Impacts associated with transportation would be common

to all the proposed project components because materials for each would be transported to the project site by barge or landing craft.

Assuming most materials and equipment would be transported to the proposed project site by barge from Seattle, Washington or Anchorage, Alaska, transporting materials would result in a small and temporary increase in shipping traffic through the Gulf of Alaska, Unimak Pass, across the Bering Sea, and up the Ninglick River to Baird Inlet. An increase in shipping traffic can expose marine mammals to increased noise, disturbance, and pollution, and increase the potential of collisions with vessels. Because this is a relatively small project, the amount of additional shipping traffic generated by the project would also be relatively small, and the risk of adverse impacts to marine mammals along the shipping route would be low. The National Marine Fisheries Service determined that the small amount of barge traffic through the Gulf of Alaska, Bering Sea, Ninglick River and into Baird Inlet would not result in adverse impacts to marine mammals (Appendix A).

Shipping traffic to the proposed project site would pass three potentially sensitive areas identified in Section 4.10 of this EA. These three sites–Naskonat Peninsula, Kigigak Island, and Baird Island–are important waterfowl nesting areas. Spectacled eiders nest on the Naskonat Peninsula and Kigigak Island, and about 25 percent of the Yukon-Kuskokwim Delta population of Pacific black brant are believed to nest on Baird Island. Barge traffic during early summer nesting season would have the potential to cause minor and temporary disturbance to waterfowl nesting at these locations.

High intensity lights on vessels can attract sea ducks, sea birds, and waterfowl during periods of twilight, darkness, and foggy weather (MMS 2006). Although daylight prevails almost around the clock during the summer, bright lights used on tug boats during twilight and foggy weather could increase the potential for sea birds, sea ducks, and other waterfowl to collide with the vessel. There are few, if any, navigational aids in the Ninglick River (NOAA 2007), so it is unlikely that tugs pulling barges would operate within the narrow confines of the Ninglick River during darkness or foggy conditions. This would minimize the potential for adverse impacts to sea birds, sea ducks, and other waterfowl. Large barges might temporarily anchor in Baird Inlet while equipment, materials, and supplies are lightered to the barge landing by smaller landing craft. High intensity lights may be used temporarily during these operations.

There are two general wildlife issues associated with the upland construction of this project. They are: (1) temporary and permanent loss of habitat through construction and disturbance, and (2) the long-term effects on wildlife populations and use of habitat because access to the area would be easier. The loss of habitat due to project footprint would be minor because the total project footprint of 33.34 acres (table 2) would be less than 0.006 percent of habitat on the 539,520-acre Nelson Island. Also, because the project site would be on high ground away from marsh wetland and riparian areas, it is not the best quality wildlife habitat available. The loss to wildlife populations from subsistence hunting due to improved access through wildlife habitat formerly relatively

inaccessible is not calculable, but would likely have an impact on wildlife populations that use the area.

5.1 Access Point

The access point for this project would be a barge landing and staging area proposed for construction by the State of Alaska. The barge landing access road alignment described in figure 7 of this EA would lead to this revised barge landing site. The State of Alaska relocated the proposed barge landing from near the point in figure 6 (DCA 2006, COE 2008a) to the location shown in this EA. The environmental consequences of the barge landing at the original site are described in an EA written by the State (DCA 2006) and FONSI written by the EDA (EDA 2006). The environmental consequences of constructing a barge landing at the new location may be similar and the State of Alaska is expected to revise the 2006 environmental assessment and FONSI as necessary.

5.2 Access Road

The access road would be a 1.3-mile-long road from the barge landing to the evacuation center (figure 7). Construction of this road would destroy 7.6 acres of mixed tundra and low shrub habitat (table 2). Mostly small mammals and some species of terrestrial birds use this habitat for shelter, feeding, and nesting. Emperor geese are also known to feed on berries near the road (G. Carpenter personal communication, D. Charles personal communication). Large mammals, principally moose and musk ox, may occasionally use this habitat for feeding. Construction of the road would result in the loss of 7.6 acres of habitat used by these animals. The loss of 7.6 acres of habitat is not expected to adversely impact animal and bird populations on 539,520-acre Nelson Island.

Traffic on the road after its construction could cause minor and temporary disturbance to some animals. Larger animals such as moose, musk ox, and fox would likely be affected most. Emperor geese may become habituated to maintenance and evacuation traffic. Feeding geese were reported to be relatively tolerant of the drill rigs during a geophysical survey of the road route. Traffic on the road for maintenance and evacuation of Newtok is also not expected to result in long term adverse impacts to larger animals or to feeding geese.

Construction of the road might result in some sediment on the tundra next to the road. Temporary runoff turbidity is not expected to reach waters with fish populations or to Mertarvik Spring.

The quality of air in the vicinity of construction would be affected by diesel exhaust from heavy equipment. Effects would be temporary and minor. The road surface would be gravel and some dust might result from placement and use.

No cultural resource would be impacted by construction of the access road (Grover 2007).

5.3 Evacuation Center Pad

Construction of the building pad and building would destroy 0.75 acre of tundra and low shrub habitat used by small and large mammals and terrestrial birds (table 2). Emperor geese may forage for crowberries on the site during late summer. Animals that use this 0.75-acre site would be displaced to similar habitat on 539,520-acre Nelson Island. The loss of 0.75 acre of habitat on Nelson Island is not expected to adversely affect wildlife populations on Nelson Island.

No cultural resources would be impacted by construction of the evacuation center pad (Grover 2007).

5.4 Water Well

A well-head pipeline and service road would destroy approximately 3.8 acres of tundra and low shrub habitat (table 2). The loss of this small amount of habitat for a service road to the well and a pipeline to the evacuation center is not expected to adversely impact wildlife populations on Nelson Island.

No cultural resources would be impacted by construction of the pipeline or service road for the well (Grover 2007).

5.5 Sewage Lagoon and Landfill

Wastewater generated at the evacuation center building would be gravity fed to a 900 ft^2 sewage lagoon (figure 7). The pipeline to the sewage lagoon would be an aboveground insulated pipeline and would result in minimal habitat loss, but the lagoon itself would use 900 ft^2 of tundra and low shrub habitat used by large and small mammals, terrestrial birds, and emperor geese when crowberries are in season. A service road and turnaround to the lagoon and landfill would use another 1.09 acres of habitat (table 2). The loss of 1.13 acres of habitat for the combined sewage lagoon, landfill, service road and turnaround is not expected to have an adverse impact on wildlife populations on Nelson Island.

The landfill would be adjacent to the sewage lagoon and be serviced by the same road. The landfill would impact 900 ft^2 of habitat. The landfill would be fenced to prevent terrestrial mammals from entering the landfill.

No cultural resources are on the sewage lagoon-landfill site or along the route of the pipeline or service road that would be impacted by their construction (Grover 2007).

5.6 Power

Electrical power for the evacuation center would be produced by one or more diesel generators sized to handle the maximum expected load. When online, these generators would be expected to create some muffled noise and particulate matter in the atmosphere due to the exhaust. The generators are not expected to be constantly online. The noise and particulate matter produced would be intermittent and temporary, and would have only minimal impacts on the local environment.

Fuel for the generators would be trucked by tanker or bladder from the barge landing to storage tanks at the evacuation center. The storage tanks would be in a lined pit approved for storage of fuel, but any transfer or handling of fuel increases the risk of spillage and ground contamination near its use. Transporting and storing fuel for the generators could result in low-level soil contamination near storage tanks, transfer points, and on the surface of the access road.

Generation of electrical power with diesel generators is not expected to impact any cultural resources in the project vicinity.

5.7 Quarry and Quarry Road

The quarry and quarry road would result in the loss of a combined 18.9 acres of tundra and low shrub habitat (table 2) used by small and large mammals, terrestrial birds, and possibly emperor geese when crowberries are in season. The loss of 18.9 acres of ridge top habitat (figure 7) is not likely to have an adverse impact on wildlife populations on Nelson Island. There would be some temporary displacement of wildlife over a wider area due to development of the quarry and the construction of and traffic on the haul road.

Development of a quarry would generate some temporary dust and noise from drill rigs, and the blasting and crushing of rock. The heavy equipment used to crush and transport the material would also result in some temporary particulate matter in the air from diesel exhaust. These temporary emissions would not seriously degrade air quality on Nelson Island or result in adverse impacts to adjacent wildlife habitat on Nelson Island. Dust during construction of roadways would be mitigated by wetting with a water truck.

Minor sediment from storm runoff might result during construction of project facilities. The total area disturbed would be more than 1 acre, and the constructing contractor would apply for a Notice of Intent (NOI) under the National Pollutant Discharge Elimination System (NPDES). The contractor would prepare a storm water runoff best management practices plan that would include mitigation practices to minimize the potential effects of storm-water runoff. Sediment from the project is not expected to adversely impact adjacent tundra or any fish-bearing water body in the project vicinity.

No known cultural resources are at the quarry site or along the route of the haul road that would be impacted by its construction (Grover 2007). Further review and consultation would be conducted during or after the contractor's quarry plan.

5.8 Endangered Species

The project would not adversely impact species listed as endangered, threatened or a candidate for threatened or endangered status. Vessels operated by the contractor for transport of equipment, materials, and supplies would be advised to keep the maximum distance practicable from habitat near the mouth of the Ninglick River that may have nesting Steller's or spectacled eiders and to keep the use of high intensity lights on vessels to a minimum to reduce the possibility of attracting threatened sea ducks or sea birds like Kittlitz's murrelets to the lights during darkness or foggy weather. Vessels

used for transport of material to the project through the Gulf of Alaska and Bering Sea would have no effect on threatened or endangered marine mammals that inhabit these waters.

Species listed as threatened or endangered are not known to use the habitat that would be covered by the footprint of this project.

The Corps has determined that this project would not be likely to result in any adverse impacts or effects to any known listed threatened or endangered species. The National Marine Fisheries Service and the U.S. Fish and Wildlife Service have agreed that formal consultation is not required.

5.9. Essential Fish Habitat

This action is expected to only minimally affect essential fish habitat along the shoreline where barge landings would take place. Barge or landing craft unloading equipment and supplies might cause minor scour and temporary turbidity increases. Adult salmon would not be affected, but juvenile salmon that occupy near-shore habitat during their seaward migration could be minimally affected by landing operations.

The Corps has determined that barge operations in support of this project's construction and operations would not result in significant long or short-term adverse impacts to essential fish habitat in the project area.

5.10 Physiography and Soils

The landform along the route would be permanently changed by road construction from the barge landing to the evacuation center and quarry. Permafrost under the sewage lagoon would thaw resulting in a thaw bulb under the lagoon similar to the thaw bulb under a natural tundra pond. The road would likely result in uneven permafrost where the surface would tend to lower under the toes where the R value of insulation would be lowest and increase in the center where the R value would be highest. An elevated building would have little, if any, affect on permafrost. The evacuation center building would be elevated to avoid permafrost degradation.

The saturated active layer overlying permafrost at the project site is wetlands. Some of the project footprint would be on relatively steep rocky ground with good drainage, and not all the project footprint would be on saturated wetland. The portion that would be on wetland would destroy the wetland by covering it with a rock and gravel road and by building a pad and developing a quarry. If the entire project area were wetland, 33.34 acres of wetland would be destroyed (table 2). The actual area of saturated wetland impacted is not known, but it would be less than this total area. Effects to wetlands would be minimized by keeping road width and other construction footprints as small as possible, and by siting project features away from riparian habitats.

5.11 Cultural Resources

Cultural resources in the project area are identified in Grover (2007). No cultural resources would be affected by this project. The nearest known cultural resource is

Mertarvik Spring, a traditional source of water west of the barge landing (figure 6). The access road leading to the barge landing would not affect this cultural resource.

The Corps has determined that this project is not likely to result in adverse impacts to cultural resources in the project area. If unidentified cultural resources were discovered during project construction, the project would stop until the SHPO was consulted and approval to continue was granted.

5.12 Subsistence Resources

This action is not expected to adversely affect local inhabitant's ability to harvest subsistence resources, at least not initially. A road to the evacuation center and quarry would make it easier for subsistence hunters from Newtok to access the area with all terrain vehicles. Government to Government inquires with the tribes on Nelson Island did not result in any objections to construction of an evacuation center on Nelson Island for the people of Newtok (Appendix A). This EA complies with Section 4-4 of Executive Order 1289 in that it communicates the potential risk to local consumptive use subsistence patterns to local residents.

6.0 Cumulative Effects

Mertarvik, the proposed project site, is largely undeveloped. Existing development at or for Mertarvik consists of a temporary barge landing and several recently constructed private houses staged near the barge landing site. The uplands at and around the proposed evacuation center location are undeveloped, and the only development activity has been site surveys and testing for water and other resources.

The people of Newtok plan to move their community to the Mertarvik site in the relatively near future and have worked many years toward that move. Newtok's intent is widely known and has received support from many who are familiar with problems the community faces at their present site. The move would help people relocate their homes and the supporting infrastructure at Newtok to Mertarvik. The name Newtok would also be relocated with the community (S. Cox personal communication). Homes staged near the barge landing at the site are there in anticipation of the move. The relocation would include the school, community offices, utilities, roads, power generating capacity, fuel storage, and everything else required to make a community function.

Newtok does not yet have the funding to move. A number of federal and non-federal entities have participated in planning for the move and have expressed willingness to assist when authorization and funding are available. People of Newtok have clearly stated they intend to move to Mertarvik regardless of the level of funding they receive. Many people who live in Newtok are convinced that in a few years Newtok will cease to exist as a viable community, and moving to Mertarvik is the only way the people of Newtok can survive and retain their cultural identity.

This firmly stated determination to move is important in the assessment of cumulative impacts. This evaluation assumes that the people of Newtok will move to Mertarvik and cumulative impacts are based on that assumption. Construction of an evacuation shelter

at Mertarvik could, and probably would, in some way facilitate that move, but it would not affect the community's determination to move or the reasonable certainty they will do so. Construction of this evacuation center should not be viewed as a catalyst for the intended relocation of Newtok. The people of Newtok will move with or without this project, but some people may choose to remain at the original town site.

Development of community infrastructure at Mertarvik, including transportation infrastructure, is the only reasonably foreseeable development in the vicinity. Newtok acquired about 11,000 acres by trade with the Federal government. The surrounding lands are federally owned and are managed as a national wildlife refuge. Substantial development in the refuge is unlikely, and the new residents of Mertarvik are unlikely to develop their lands on Nelson Island more than necessary to support a subsistence-based community typical of western Alaska. Some of those communities have included small, locally owned commercial or light industrial enterprises (e.g. small-scale on-shore fish smoking or packing). Larger-scale industrial or commercial industry is uncommon in those western Alaska communities and is unlikely to develop in Mertarvik.

Developing and operating an airfield and local roads for Mertarvik might directly and permanently impact approximately 50 acres more than the 33.34 acres required for the excavation center and quarry. The existing community of Newtok encompasses 640 acres of land (ADCED 2007) and could be expected to occupy a similar portion of the 11,000-acre Mertarvik relocation site once housing, schools, and other buildings are constructed. In total, the proposed evacuation center and expected development for the new community of Newtok at Mertarvik could be expected to permanently and substantially affect about 640 to 700 acres of Nelson Island habitat. Much of that habitat is moist tundra wetlands, with a smaller percentage of wet tundra wetlands. Streams and salt marsh wetlands would not be directly affected by this development

Many communities are erecting fences around airfields, sewage lagoons and landfills, and these facilities at Mertarvik would be fenced. Fencing would not cause substantial direct impacts to the land, but would tend to exclude larger animals that could not go through or over the fence. A small rural community in western Alaska might fence from 20 to 25 acres to isolate these facilities.

A new community at Mertarvik would bring additional use into the area. At Newtok, people walk to nearby areas to pick berries and gather other foods and materials, but rely on boats in the open-water season and snowmachine in the winter to get to more distant resources. The move to Mertarvik would shift local use to that part of Nelson Island and away from the present Newtok. Boats would still be used to reach fish camps and other areas traditionally used for subsistence gathering. People from Mertarvik would be able to walk to good berry picking areas on Nelson Island that are now reached only by boat, so use of those areas would increase. Other subsistence uses on that part of Nelson Island also would increase. There would be more fishing pressure on local streams, more hunting for local waterfowl, for ptarmigan and other birds, and more local hunting and trapping of smaller mammals. Hunting for large mammals would change less. Hunters from Newtok boat or snowmachine to customary places for large game and marine

mammals and would continue this tradition. Boating access to those resources would change little, but people at Mertarvik would have better land access to large land mammals on Nelson Island. There would be more opportunity for hunting access by all-terrain vehicles (ATV's) and potential for increased pressure on Nelson Island game. The harvest of wildlife across Alaska is regulated to meet management goals, and harvest regulations would help ensure viable populations were maintained.

The surrounding wetland habitat limits off-road use of ATV's at the existing Newtok community during summer. Snowmachines generally are more efficient and much faster in the winter. ATV use would increase on the high ground of northern Nelson Island and people would be able to range much farther than they can with ATV's at Newtok. Extensive ATV trails could be developed the Mertarvik site as a result of the Nelson Island terrain being higher and dryer than that surrounding Newtok. ATV use on the refuge could be restricted by the responsible Federal agency (U.S. Fish and Wildlife Service).

Some of the structures, facilities, and abandoned equipment at Newtok would remain after relocation to Mertarvik. They could include the Newtok landfill, sewage collection and disposal areas, non-movable structures, heavy equipment such as the abandoned well drilling rig in figure 4, equipment parts (figure 12), the airport and possibly large fuel tanks (figure 13). If these structures and facilities at Newtok were abandoned, they would contribute pollution in the form of petroleum products and debris to the Baird Inlet area of Western Alaska. Some people may choose to remain at the original town site and continue to use some of these facilities. Cleanup and environmental restoration of the original town site would rest with the community and with Federal and State agencies. No cleanup plans for the existing community site have been developed. There is not enough information about who would move, what would remain, ownership, and other issues to formulate a cleanup plan at this time.

Spectacled and Steller's eiders are known to nest on the Yukon-Kuskoquim Delta (YKD) (USFWS 1997, 1999, 2002b). The USFWS surveyed the Mertarvik relocation site in 2005 and determined that these species were not present on the site (USFWS 2006). The general nesting areas for these threatened sea ducks on the YKD are well known (Fischer et al. 2005; Moran 2002; Quakenbush et al. 2002), and relocation from Newtok to Mertarvik would move the population of Newtok farther from these areas. Relocation of Newtok to the Mertarvik site is not expected to have cumulative impacts on endangered Steller sea lions found in the Bering Sea.

Figure 12. Abandoned equipment parts in Newtok, Alaska.

Figure 13. Major fuel tanks in Newtok, Alaska.

7.0 Compliance Statements

Compliance for Federal acts and executive orders applicable to this project are summarized in the below tables.

Table 3. Compliance table for the proposed action on applicable Federal acts.

Congressional Acts	Status of Compliance
Clean Water Act, as amended (33 U.S.C. §§ 1251 et seq.)	**Partial compliance.** This action need was evaluated in accordance with guidelines set forth by Section 404(b)(1) of the Act. The State of Alaska, Department of Environmental Conservation will evaluate the action in accordance with Section 401 of the act and issue a certificate of assurance after review of this EA and resolution of comments.
Clean Water Act National Pollutant Discharge Elimination System (NPDES)	**Pending Compliance.** The contractor would apply for a Notice of Intent (NOI) prior to project construction**.**
Coastal Zone Management Act (16 U.S.C. §§ 1451-1464)	**Partial compliance.** A coastal consistency determination will be coordinated with the Alaska Department of Natural Resources concurrent with the State's review of this EA. Coordination will be completed prior to implementation of the action.
Endangered Species Act of 1973 as amended (16 U.S.C. §§ 1531 et seq.).	**Full compliance**. Informal consultation with the Fish and Wildlife Service (Service) and the National Marine Fisheries Service (NMFS) was completed. No formal consultation with these agencies is required.
Estuary Protection Act (16 U.S.C. §§ 1221 et seq.)	**Full compliance.** The project site was evaluated and it was determined this action would have minimal impact and no adverse impact on coastal resources.
Magnuson-Stevens Fishery Management and Conservation Act (16 U.S.C. §§ 1801 et seq)	**Full compliance.** Potential impacts of this action on EFH was evaluated by the Corps of Engineers and determined to have no effect on essential Fish habitat. The National Marine Fisheries Service concurred with this assessment.
National Historic Preservation Act as amended (16 U.S.C. §§ 470 et seq)	**Full compliance.** The Alaska State Historic Preservation Officer (SHPO) has been consulted regarding this action. Consultation will be reinitiated if previously unknown archaeological or historical properties are encountered as a result of this action.
Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. §§ 703 et seq)	**Full compliance.** The Corps would place contractual restrictions to protect migratory birds.

Table 4. Compliance table for the proposed action on applicable executive orders.

Executive Orders	Status of Compliance
Floodplain Management (E.O. 11988)	**Full compliance.** This action was evaluated in accordance with the provisions of Executive Order No. 11988 Flood Plain Management and it complies with the order. There would be no construction in a floodplain.
Protection of Wetlands (E.O. 11990)	**Full compliance**. This action was evaluated in accordance with the provisions of Executive Order No. 11990 Protection of Wetlands and it complies with the order by minimizing impacts to wetlands to the maximum extent practicable.
Environmental Health and Safety Risks to Children (E.O. 13045)	**Full compliance.** An analysis of the environmental health and safety risks to children by implementation of this action was evaluated and no environmental health and safety risks to children were identified.
Environmental Justice in Minority Populations and Low Income Populations (E.O. 1289) Sec. 4-4. Subsistence Consumption Of Fish And Wildlife.	**Full compliance.** This EA communicates to local residents the potential risk to consumptive subsistence patterns that might result from this project. Minority and low income populations would not be adversely affected.

7.1 Alaska Coastal Management Program

The Corps has evaluated this action for consistency with the Alaska Coastal Management Program (ACMP) and the enforceable policies of the Ceñaliulriit Coastal Resource Service Area (CRSA) and has determined that this project is consistent with the standards of the ACMP and enforceable policies of the CRSA to the maximum extent practicable.

A guide to preparing an ACMP consistency determination for Federal activates will be submitted to the State of Alaska Department of Natural Resources/ACMP along with this EA to assist the State in determining consistency of this project with the ACMP and the Ceñaliulriit CSRA enforceable policies.

8.0 Preparers

This EA was prepared by the following U.S. Army Corps of Engineers Alaska District staff: Larry D. Bartlett, Biologist; Chris Campbell, Archaeologist and Margan Grover, Archaeologist, Civil Work Branch. Greg Carpenter, Geotechnical Engineer, Engineering Services Branch, contributed to the assessment. Technical review was provided by Guy R. McConnell, Environmental Resources Section Chief and Julie Woodkie, Alaska District Regulatory Division. The EA was edited and formatted by Diane Walters. John Baum, Civil Works Branch contractor, contributed to distribution and mailing.

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APPENDIX A

CORRESPONDENCE

National Marine Fisheries Service Correspondence Reply

From: Bartlett, Larry D POA
Sent: Tuesday, December 11, 2007 11:59 AM
To: 'Brad Smith'; Matthew Eagleton
Cc: McConnell, Guy R POA
Subject: RE: Mertarvik Nelson Is Consult

Brad,
OK. I agree. No effect. We will enter a no effect determination into the official record and change text in the EA accordingly.
Thanks
Larry B.

-----Original Message-----
From: Brad Smith [mailto:Brad.Smith@noaa.gov]
Sent: Tuesday, December 11, 2007 11:43 AM
To: Matthew Eagleton
Cc: Bartlett, Larry D POA; McConnell, Guy R POA
Subject: Re: Mertarvik Nelson Is Consult

I cannot concur with a determination of "not likely to adversely affect"
via e mail, but I can to a determination of no effect.

Bartlett, Larry D POA wrote:
Matthew,
Although the emergency evacuation center project on Nelson Island is upland, there will be a relatively small amount of barge traffic through the GOA, AIBS, and up the Ninglick River into Baird Inlet to deliver equipment, materials and supplies in support of constructing the project. I would expect this barge traffic to not likely result in adverse impact to endangered whales and sea lions that might be along this route. If the NMFS concurs with this determination, a brief ESA consult e mail to that effect will suffice.
Thanks
Larry B.

Original Message-----
From: Matthew Eagleton [mailto:Matthew.Eagleton@noaa.gov]
Sent: Friday, December 07, 2007 12:41 PM
To: Bartlett, Larry D POA
Cc: Brad Smith
Subject: Mertarvik Nelson Is Consult

Larry,
We received you letter last Nov 20th. EFH side of consult is ok. Do you still need ESA info?
Matt

U.S. Fish and Wildlife Service Correspondence Reply

2008-0064

In reply refer to: AFWFO

United States Department of the Interior

FISH AND WILDLIFE SERVICE Anchorage Fish & Wildlife Field Office 605 West 4th Avenue, Room G-61 Anchorage, Alaska 99501-2249

January 9, 2008

Larry Bartlett
U.S. Army Corps of Engineers P.O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Re:

Emergency Evacuation Center, Mertarvik, Nelson Island (consultation number 2008-0064)

Dear Mr. Bartlett,

Pursuant to section 7 of the Endangered Species Act of 1973, (as amended 16 V.S.C. 1531 et seq.; ESA), the V.S Fish and Wildlife Service (FWS) is responding to your request for concurrence that constructing a new emergency evacuation center in Mertarvik, Nelson Island is not likely to adversely affect Steller's (Polysticta stelleri) and spectacled eiders (Somateria fischeri). The proposed evacuation center will provide emergency shelter for up to 100 residents of Newt ok. The V.S. Army Corps of Engineers (ACOE) proposes to construct a barge landing and staging area, an all weather road, water and sewage facilities, a 1.6 km (1 mi) long water pipe, and a diesel fuel generator. Gravels will be quarried from an estimated 3.24 ha (8 acre) site near Mertarvik.

The village of Newt ok is near sea level and situated on a layer of peat underlain with frozen silt that is highly susceptible to erosion when thawed. Melting permafrost and decreased extent and duration of sea ice, consequences of global warning (Hassol 2004), are causing increasing rates of shoreline sloughing along the banks of the Ninglick River. In recent years, spring ice jam on the Ninglick River and westerly wind storms from the Bering Sea have increased the vulnerability of Newt ok to flooding and erosion. The village of Newtok proposed to relocate to the northeast coast of Nelson Island, approximately 14 km (9 mi) south, to a new site called Takikchak. In November 2003, Congress approved a land exchange between the Newtok Village Corporation and the FWS. In April 2004, 4,428 ha (10,943 acre) at Takikchak were conveyed to Newtok. Although the proposed barge landing site differs from the one proposed in 2004, this proposed project to construct an emergency evacuation site in Mertarvik, Nelson Island is a similar to the proposal for Takikchak, Nelson Island.

Steller's and spectacled eiders were listed as threatened under the ESA in 1993 and 1997, respectively. Both species nest or have historically nested within the wetlands of the Yukon-Kuskowim Delta. Kigigak Island, located about 22 linear km (14 mi) from the proposed barge landing at Mertarvik, hosts a spectacled eider nesting concentration and is within designated Critical Habitat for those species. Ideal nesting habitat for spectacled and Steller's eiders is a complex of sedge-grass meadows, pond shorelines, peninsulas and islands (Dau 1974).

In June, 2005, FWS biologists conducted a waterfowl nest survey of a 175 ha (432 acre) wetland complex adjacent to the then-proposed village site of Takikchak (Bowman and Lance 2005). Nearly all suitable nesting habitats within the proposed relocation site were searched. Bowman and Lance (2005) concluded that spectacled or Steller's eiders were not nesting at the proposed relocation site at the time of the survey. Given these survey data, the FWS concurs with your determination that constructing an emergency evacuation center in Mertarvik, Nelson Island is not likely to adversely affect species protected under the ESA. In view of this, requirements of section 7 of the ESA have been satisfied. However, obligations under section 7 of the ESA must be reconsidered if new information reveals project impacts that may affect listed species or critical habitat in a manner not previously considered, if this action is subsequently modified in a manner which was not considered in this assessment, or if a new species is listed or critical habitat is determined that may be affected by the identified action.

Your letter, which we received on December 20, 2007, requests information on Kittlitz's murrelets (Brachyramphus brevirostris) and yellow-billed loons (Gavia adamsii) as well as other species of concern that may inhabit the waters of Baird Inlet or the Ninglick River. To our knowledge, neither of those species typically occurs in the proposed action area. Survey information suggests, however, that the wetland complexes in the vicinity of the Mertarvik are valuable to a variety of other birds and mammals as a feeding and resting area (Bowman and Lance 2005). Emperor geese (Chen canagica), red listed by IUCN as "near threatened" (IUCN 2007), were observed in abundance within the proposed evacuation area and two nests were found during the brief survey period (Bowman and Lance 2005). Further, bar-tailed godwits (Limosa lapponica), black turnstones (Arenaria melanocephala) and dunlin (Calidris alpine) were all observed in the area or nests were found. All three of these bird species are considered of conservation concern by the FWS (U.S. Fish and Wildlife Service 2002).

Numerous, more common migratory birds, like savanna sparrow (Passerculus sandwichensis); American tree sparrow (Spizella arborea), and Lapland longspur (Calcarius lapponicus) nest in the proposed action area (Bowman and Lance 2005). Clearing of vegetation for this project during the local breeding season may destroy migratory bird nests, which is in violation of the

Migratory Bird Treaty Act (MBTA). Moreover, some migratory birds are vulnerable to disturbance caused by some construction activities other than clearing. We recommend you review and follow the attached advisory (Attachment I) to avoid violations under the MBT A.

Finally, Baird Inlet Island, which is located about 6 km (4 mi) from the proposed barge landing at Mertarvik, provides exceptional nesting habitat for waterfowl species including black brant (Branta bernicla nigricans) and emperor geese (Wilson 2007; Mike Wege, FWS, Yukon Delta National Wildlife Refuge, personal communication). In order to protect this important nesting habitat, the ACOE should ensure that the new barge landing is supplied with kits designed to control and prevent the spread of oil in case of a spill. Further, waterfowl nest on Baird Inlet Island in high densities and they are an important source of subsistence foods for the local people. The ACOE should work closely with the Yukon Delta National Wildlife Refuge, the Newtok village and the corporation to monitor changes in boat traffic patterns and harvest patterns on the waterfowl nesting on Baird Inlet Island. Increased boat traffic past the island and increased hunting and egging could have a negative impact on the waterfowl populations, and may be an indirect result of this proposed action.

This letter relates only to federally listed or proposed species and/or designated or proposed critical habitat under our jurisdiction. It does not address species under the jurisdiction of National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, or the Bald and Golden Eagle Protection Act.

This concludes section 7 consultation on the Emergency Evacuation Center, Mertarvik, Nelson Island. Thank you for your cooperation in meeting our joint responsibilities under section 7 of the ESA. If you have any questions, please contact me at (907) 271-1467. In future correspondences regarding this consultation please refer to consultation number 2008-0064.

Sincerely,

L

Ellen Lance
Endangered Species Biologist

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Attachment I. Recommended timing windows to avoid taking nesting migratory birds.

U.S. Fish & Wildlife Service

ADVISORY: Proposed Time Periods for Avoiding Vegetation Clearing in Alaska in order to Protect Migratory Birds

General Information:
Under the Migratory Bird Treaty Act (MBTA){16 U.S.C. 703), it is illegal for anyone to "take" migratory birds, their eggs, feathers or nests. "Take" includes by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. Take and possession under MBT A can be authorized through regulations, such as hunting regulations, or permits, e.g., salvage, research, depredation, or falconry. The MBT A does not distinguish between intentional and unintentional take. In Alaska, all native birds except grouse and ptarmigan (protected by the State of Alaska) are protected under the MBT A.

Destruction of active bird nests, eggs, or nestlings that can result from spring and summer vegetation clearing, grubbing, and other site preparation and construction activities would violate the MBT A. The following timing guidelines are not regulations, but are intended as recommendations to help you comply with the MBT A. Some species and their nests have additional protections under other federal laws, including those listed under the Threatened and Endangered Species Act (ESA), and bald and golden eagles (protected

under the Bald and Golden Eagle Protection Act or BGEP A). Please contact the U.S. Fish and Wildlife Service to ensure compliance with ESA and BGEP A if these species may be present in your project area.

These Timing Guidelines are current for 2007.

Directions:
1. Apply timing window guidelines to your project planning, unless project-specific review results in unique guidelines from the USFWS for your project.

2. If you encounter an active nest at any time, including before or after the local timing window, leave it in place and protected until young hatch and depart. "Active" is indicated by intact eggs, live chicks, or presence of adult on nest. Timing guidelines should considerably reduce the risk of inadvertent nest destruction, but final compliance with the law is your responsibility: do not destroy eggs, chicks, or adults of wild bird species.

3 If you have any questions regarding the MBT A and the timing guidelines, including projects that may occur in "boundary areas" between regions described on the matrix, contact your local Fish and Wildlife Field Office for assistance:

Anchorage (907) 271-2888 Fairbanks (907) 456-0203

Kenai (907) 262-9863 Juneau (907) 780-1160

U.S. Fish & Wildlife Service

Recommended Time Periods for Avoiding Vegetation Clearing

HABITAT TYPE → / REGION ↓	Forest or woodland[1] *(i.e., trees present)*	Shrub or Open *(i.e., shrub cover or marsh, pond, tundra, gravel, or other treeless/ shrubless ground habitat)*	Seabird colonies *(including cliff and burrow colonies)*	Raptor and raven cliffs
Southeast	April 15 – July 15	May 1 – July 15 [2]	May 1 – September 15 [3]	April 10 – August 10
Kodiak Archipelago			April 15 – September 7 [3]	
Southcentral *(Lake Illiamna to Copper River Delta; north to Talkeetna)*	May 1 – July 15 [2]			
Bristol Bay/AK Peninsula *(north to Lake Illiamna)*	April 10 – July 15	May 1 – July 15 [2, 4]	May 10 – September 15	
Interior *(north of Talkeetna to south slope Brooks Range; west to treeline)*	May 1 – July 15 [2]		May 1 – July 20 [5]	April 15 – August 1
Aleutian Islands		April 25 – July 15	May 1 – September 15 [3]	April 1 – August 1
Yukon-Kuskokwim Delta *(east to treeline)*		May 5 – July 25 [2, 4]	May 20 – September 15	April 15 – August 15
Seward Peninsula		May 20 – July 20 [4]		
Northern *(includes northern foothills of Brooks Range)*		June 1 – July 31 [4]		
Pribilof and Bering Sea Islands		June 1 – July 15	May 25 – September 1	

USFWS May 2007

[1] Owl species may begin to nest two or more months earlier than other forest birds, and are fairly common breeders in forested areas of Alaska. You may wish to survey for nesting owls (or other early spring tree-cavity nesters) prior to tree-cutting. It is your responsibility to protect active nests from destruction.
[2] Canada geese and swan habitat: begin April 20
[3] Storm petrel burrow habitat: April 1 – October 15
[4] Black scoter habitat: through August 10
[5] Seabird colonies in Interior refer to terns and gulls

Government to Government Correspondence Reply

Nelson Island Government to Government follow-ups:
Jennifer Brown, Alaska District USACE

Tununak IRA Council, President Theodore Angaiak

- Called council January 22, 2008. Spoke with administrator James James. They received the letter and shared it with the president. As he recalled the president didn't have much to comment on. However, they wanted to share it with their corporation, which he commented may not matter if it's not on Corporation land. They're supposed to have a joint meeting with the council on Jan 23, 2008, where the subject should be brought up. However, he has to go out of town and may not be at the meeting - so he can't guarantee it'll be discussed. He's going to try and put something together for us and fax it as soon as possible.

- Received James' fax in the afternoon. Copy of letter with Council's statement of `no comment' on the proposed construction and their support for the Newtok community. Fax was given to project manager. Mr. James will mail a hard copy as well.

Nightmute Traditional Council, President Joseph Post

January 22, 2008: made several attempts to contact council. However, the line was busy. Called Council on January 23, 2008. Spoke with administrator Noah Lawrence. They received the letter and do not have any questions or concerns at this time. They are going to discuss it at tomorrow's meeting (January 24th). He asked that I call him back next week when he has more information or he'll call me. February l, 2008, spoke with Noah Lawrence. The council discussed the letter and they feel that it looks okay, they, have no concerns. He'll draft a letter to mail to Colonel Wilson and email/fax a copy to us.

Umkumiut Tribal Council, President Jay Dull, Sr.

- Left voice mail message on January 22, 2008. No return that afternoon.
- Called council again January 23, 2008. Spoke with Clemt (Clemet ? check sp) George. He was the 3rd person in the office I spoke with. No one was familiar with the letter. I confirmed the address and president - both were correct. The administrator wasn't in the office at the time. I asked if they'd like me to resend/fax the letter. Mr. George said yes. I faxed a copy of the original letter and will mail a hard copy tomorrow (January 24, 2008).

- Jan. 24, 2008: Resent copy of original letter with enclosures.
- Feb. 26, 2008: Mr. George is out of town; spoke with the office's bookkeeper Phillip Tulik. He thinks they drafted a letter, but could not be certain. Said he would look around and email something if possible.

Nunakauyak Traditional Council (Nunakauyarmiut Tribe), Chairman Simeon John

- January 22, 2008: made several attempts to contact Council during the afternoon. There was no answer.
- January 23, 2008: made several attempts to contact council again, however, the line was busy.
- February 1, 2008: Made contact with Henry (last name?). He said the council discussed the letter. They didn't have much to say about it and no concerns, as the evacuation center is in the area of Newtok's relocation. However, they wondered, "What about the community of Toksook?" Henry said he didn't receive any instructions at the meeting on what to do with the letter. He'll ask again at their next meeting on February 5th. I told him it would be most helpful if they could mail us a letter with their decision/thoughts.

APPENDIX B

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

Evaluation Under Section 404(b)(1) of the Clean Walter Act for the Revised Newtok Emergency Evacuation Center Environmental Assessment Mertarvik, Nelson Island, Alaska

I. Proposed Project Description

The U.S. Army Corps of Engineers, Alaska District proposes to construct an emergency evacuation center for the residents of Newtok Alaska at Mertarvik, Nelson Island, Alaska. Newtok is subject to frequent catastrophic flooding of the Ninglick and Newtok rivers and high ground for placement of an emergency center in Newtok is limited. The proposed project site is on the 11,000-acre Mertarvik site that was acquired by the community of Newtok in a land exchange with the U.S. Fish and Wildlife Service, and is proposed for future relocation of Newtok. The purpose and need for this action is described in detail in the environmental assessment to which this evaluation is appended.

The project would consist of several elements including a 1.3-mile-long access road from a proposed barge landing to a 0.75-acre gravel pad on which the 13,000-square-foot shelter would be constructed. The center would have electrical power provided by diesel generators and water from an existing well drilled by the State of Alaska. A fenced and lined sewage disposal lagoon and fenced and lined a landfill, as described in the above mentioned EA, would provide for disposal needs. Hazardous materials would be separated from non-hazardous materials and handled and disposed of in accordance with approved methods. Materials for construction of the road bed and building pad would come from an 8-acre quarry that would be developed by the Corps of Engineers contractor at the terminus of an 8,500 foot-long single-lane gravel surface road. The contractor would secure all permits and have a quarry development plan approved prior to construction. The general locations of the proposed project features are shown in Figure 7 in the EA.

II. Physical and Biological

A. Substrate, wetland and vegetation

Soils within the project footprint are volcanic basalt weathered to a consistency of sand and gravel with a 2 or 3-foot-thick layer of silt and organic material. Ice rich silt and permafrost is found throughout the area where soil is present. The proposed project route shown in Figure 7 of the EA follows higher ground with some non-wetland area, but an active layer of wetland persists on the surface of most of the project area. For simplicity, the entire 33.34-acre project area in Table 1 below will be considered wetland.

Table 1. Area of main project features of the Newtok emergency evacuation center proposed for construction at Mertarvik, Nelson Island, Alaska.

Feature [a]	Area (ft2)	Area (acres) [a]
Access road	329,520	7.60
Evacuation center pad	32,400	0.75
Water well service road	165,800	3.80
Water well turnaround	20,000	0.46
Landfill	900	0.02
Sewage Lagoon	900	0.02
Sewage lagoon/landfill service road	27,500	0.63
Sewage lagoon/landfill turnaround	20,000	0.46
Quarry	348,477	8.00
Quarry haul road	474,500	10.90
Evacuation center	32,400	0.75
Area occupied	1,452,397	33.34

a. The barge landing that would be constructed by the State of Alaska would add about 0.2 acre to the above total acres for an upland staging area (DCA 2006).

Wetlands on the wetland substrate that would be impacted by this project are described as mostly palustrine emergent persistent/scrub-shrub evergreen/moss and palustrine emergent persistent/scrub-shrub broad-leaved deciduous wetland. Vegetation types growing in the wetland are mostly mesic shrub-birch ericaceous and tussock tundra interspersed with low close open willow shrub and blue joint herb shrub complex patches. Up to 33.34 acres of wetland and vegetation described above would be lost. These wetland and vegetation types are typical and widespread throughout higher ground on Nelson Island and are not unique to the project site.

B. Wildlife

Wildlife that use this wetland vegetation consist of small mammals including voles, shrews and lemmings, and large mammals including musk ox, moose, fox , and brown bear. Small mammals, musk ox, and fox would be relatively common, moose would be occasional, and brown bears would be rare.

A variety of migratory passerine birds would use this vegetation during summer, but perhaps the most important avian species that would use the project footprint is the emperor goose. This goose is common on the Yukon-Kuskokwim Delta National Wildlife Refuge that surrounds the project area, and is known to feed during the late summer on crowberries that grow on this and similar Nelson Island habitat. Habitat used by the emperor goose and other wildlife on Nelson Island is not limited to the project area. No species listed under the endangered species act is known to nest or be present on the project footprint or in the immediate project area. Willow ptarmigan could use the project habitat year around.

Construction of the proposed project would displace wildlife from the project footprint. A loss of 33.34 acres of wildlife habitat would result.

C. Aquatic Ecosystems

Most of the proposed project footprint is considered wetland because of surface saturation relative to the active layer of permafrost that prevails in the project area. The proposed activity would cover up to 33.34 acres of this wetland with fill to construct the project features described in the EA. The wetland under the project footprint would be permanently lost. The total area disturbed would be over 1 acre and the constructing contractor would apply to the Environmental Protection Agency (EPA) for a Notice of Intent (NOI) under the National Pollutant Discharge Elimination System (NPDES). The rock and gravel road surface is expected to have little, if any, turbid runoff after construction. The proposed activity, therefore, is expected to have only minor impacts on the aquatic wetland ecosystem that prevails in the project area.

D. Aesthetics

Visual aspects of the Mertarvik area on Nelson Island would be permanently changed as a result of this project. The natural landscape would be bisected with a gravel surfaced road from the water's edge to a ridge-top area where a gravel pad and building would be placed. A quarry and haul road that would also permanently change the landscape would be developed as a material source for the road beds.

E. Other Determinations

The proposed action would have no appreciable detrimental effects on any of the following:

- Municipal and private water supplies;
- Water-related recreation;
- Commercial fisheries;
-Subsistence;
-Cultural Resources;
-Parks, Refuges, Wilderness Areas, Wild and Scenic Rivers.

A well was drilled on the Mertarvik site by the State of Alaska (EA Figure 7). Water would be piped from this well to the evacuation center. This project would not impact any municipal or private water supplies.

This project would not interfere with water related recreation or commercial fisheries.

The proposed project would open access for the potential of increased subsistence use of the area. Improved access to subsistence resources could result in future shortages of subsistence resources such as musk ox, moose, and ptarmigan that would be adjacent to the project site.

The project footprint and area was surveyed for cultural and historical resources. The proposed project would not affect cultural or historical resources.

The project area is surrounded by the Yukon-Kuskokwim Delta National Wildlife Refuge, but is not on refuge land. Land surrounding the project site was acquired by the community of Newtok through a land exchange with the U.S. Fish and Wildlife Service.

The Ninglick River supply route to the proposed project site would pass between two special areas–Kigigak Island, a waterfowl research area, and the Naskonat Peninsula, a spectacled eider research area and designated critical habitat for the threatened spectacled eider. Neither of these two special areas would be adversely impacted by the proposed project.

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

The project site is within the Mertarvik relocation site for the community of Newtok. The site is largely undeveloped with exception of an existing temporary barge landing and a few houses erected by Newtok residents in anticipation of a future move to the site by most residents of Newtok. The State of Alaska intends to construct a permanent barge landing on the Mertarvik site. The effects of this project on the aquatic ecosystem of the Mertarvik site would be cumulative to the existing and planed development. Secondary effects to the surrounding aquatic ecosystem could result if more people were to relocate to Mertarvik solely because of this project. This project however, should not be viewed as a catalyst for community relocation. The people of Newtok secured the Mertarvik site through land exchange with the Department of the Interior and intend to relocate to this site with or without this project. This project would provide a safe haven for residents of Newtok during emergencies until the community relocates to the site. Relocation to the Mertarvik site is expected to take place before erosion is reaches buildings in Newtok in about 2017 (EA Figure 2).

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 Project Site in Accordance with the No Net Loss National Wetland Policy.

An environmental assessment was prepared and revised in conjunction with planning for this project. Alternatives to the proposed project site are discussed in the assessment. No practicable alternatives to the proposed project site were identified. The proposed project site is the environmentally proposed project site.

This project was compared to the national policy of no net loss of wetlands. The U.S. Army Corps of Engineers describes wetlands as a marsh, swamp, bog, or similar area that filters and cleans drinking water supplies, retains floodwaters, harbors extensive fish and shellfish populations, and supports a diverse array of wildlife. Wetlands also function to recharge adjacent creeks, rivers, and lakes that support populations of fish, birds, and other aquatic wildlife. In performing these functions, wetlands provide valuable ecosystem services. Consequently, their destruction can increase flooding and runoff, harm neighboring property, cause stream and river pollution, and result in the loss of

valuable habitat. The no net loss wetland policy evaluates the function and value of wetlands by the above criteria.

The wetland considered by this project was determined by the U.S. Fish and Wildlife to be of relative low value to nesting waterfowl compared with other wetlands of the Yukon-Kuskokwim Delta National Wildlife Refuge (USFWS 2006). Vegetation growing on this wetland is the same species composition of vegetation growing on abundant regional wetlands.

Wetlands are regionally abundant and the area of the wetland proposed for use by this is comparatively small (≤0.006 percent off Nelson Island). Use of this wetland area would not likely have adverse effects on the function of regional wetlands for the criteria guidelines of the national no net loss policy on wetlands. Compensatory mitigation for replacement of functional wetland value would not be necessary in this case. The Final Rule on Compensatory Mitigation for Losses of Aquatic Resources would not apply to this project because it was submitted for NEPA review prior to the effective June 9, 2008 date of the final ruling (FR 33CFR 19594, Apr. 10, 2008).

C. State Water Quality Standards

The proposed project would not be expected to have a long-term adverse effect on water quality or recreation. The proposed project is not expected to introduce significant petroleum hydrocarbons, radioactive materials, residues, or other pollutants into wetlands and other waters. No known water body or drainage would be affected by the proposed project.

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

The proposed project is not expected to significantly increase levels of contaminants in the aquatic or terrestrial ecosystems. Mitigative measures would be taken to prevent contaminant release into the environment from heavy machinery operation associated with construction of this project or operation of the emergency evacuation center after construction is completed.

E. Endangered Species Act of 1973

The proposed project would not have an adverse effect on Steller's and spectacled eiders, the western stock of Steller sea lions, listed whale species, or other threatened and endangered species or their critical habitats. 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. Essential Fish Habitat

The action would not adversely impact essential fish habitat (EFH) including salmon groundfish, and forage fish populations or their habitats. This determination has been coordinated with the National Marine Fisheries Service, which is responsible for managing EFH under the Magnuson-Stevens Fishery Conservation and Management Act.

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

There are no municipal water supplies in the area that could be negatively affected by the proposed project. A water supply for the proposed project would be developed. Recreation and commercial interests would not be adversely impacted. There would be no significant long-term adverse impacts to plankton, fish, shellfish, wildlife, or special aquatic sites.

H. Appropriate and Practicable Steps Taken To Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

This project minimizes impact to wetlands by placing project features on hard, well drained surfaces as much as practicable. Impacts to wetlands are mitigated by minimizing road width to one lane and road routing to the shortest routes that will connect project features while avoiding riparian and coastal habitat. Project features are sited to avoid ecologically important wetlands as much as practicable. All appropriate and practicable steps would be taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. The proposed project would comply with the requirements of the guidelines.