



**US Army Corps
of Engineers**
Alaska District

Environmental Assessment Amendment and Finding of No Significant Impact

Innovative Readiness Training at Mertarvik Nelson Island, Alaska



Evacuation Center site at Mertarvik (Photo by Mike Coffey at ADOT)

March 2011

Finding of No Significant Impact
Innovative Readiness Training at Mertarvik, Nelson Island, Alaska

The 2008 U.S. Army Corps of Engineers environmental assessment (EA), amended by a finding of no significant impact in 2010, addressed the major features associated with evacuation center access and construction. National Environmental Policy Act (NEPA) requirements for the state's original barge landing and the second barge landing constructed by the Innovative Readiness Training (IRT) were addressed by the Corps of Engineers in their evaluation and decision process for the Clean Water Act section 404 permit and revisions for those actions.

The 2011 action will substantially improve constructability of the evacuation center by simplifying design, placing it closer to transportation, and by developing a quarry to provide gravel for roads. The action also will provide meaningful and challenging training opportunities for participating military units.

I have considered the biological and social resources and the potential effects of IRT and evacuation center construction on those resources. I find that the action addressed by the 2011 EA for IRT at Mertarvik is consistent with coastal resource planning and that the action addressed in that assessment will not cause significantly adverse effects to the human environment.

A handwritten signature in black ink, appearing to read "Karen G. Truethlood". The signature is fluid and cursive, with the first name "Karen" being more prominent.

Karen G. Truethlood
Captain, United States Navy

Table of Contents

1.0 Purpose and Need	1
1.1 Project Purpose	1
1.2 Document Purpose	1
1.3 Documentation to Date	2
1.4 Implementation to Date.....	3
2.0 Proposed Action and Alternatives	6
2.1 Range of Alternatives Considered	6
2.2 No Action Alternative.....	6
2.3 Action Alternatives	6
3.0 Affected Environment.....	15
3.1 Environmental Resources and Concerns	15
3.2 Climate, Air, and Water	15
3.3 Geology and Soils	15
3.4 Tides and Currents	16
3.5 Vegetation and Wetlands	16
3.6 Fish.....	16
3.7 Birds.....	16
3.8 Marine Mammals	17
3.9 Terrestrial Mammals	17
3.10 Endangered Species	18
3.11 Cultural Resources	18
4.0 Environmental Consequences	20
4.1 Environmental Resources of Concern	20
4.2 Air, Water, and Other Physical Environment Considerations	20
4.3 Vegetation and Wetlands	21
4.4 Fish.....	21
4.5 Birds	21
4.6 Marine Mammals	22
4.7 Terrestrial Mammals	22
4.8 Endangered Species	22
4.9 Cultural Resources	22
4.10 Cumulative Effects.....	23

5.0 Coordination and Compliance	23
6.0 References.....	25

List of Figures

Figure 1. Project location.....	3
Figure 2. Project that was addressed in the 2010 Department of Defense FONSI.....	4
Figure 3. Project site at Mertarvik at the end of the 2010 construction season.	5
Figure 4. Proposed location of Mertarvik Evacuation Center..	7
Figure 5. Proposed layout of Mertarvik Evacuation Center (MEC).....	8
Figure 6. Proposed quarry location and road alignemnt.....	10
Figure 7. Mertarvik quarry features.....	11
Figure 8. Cross section for new quarry road.....	13
Figure 9. A favorite berry picking area at Mertarvik.....	19

Environmental Assessment Amendment

Innovative Readiness Training at Mertarvik Nelson Island, Alaska

1.0 Purpose and Need

1.1 Project Purpose

The United States Department of Defense proposes to conduct Innovative Readiness Training (IRT) on Nelson Island, which is in the vast delta formed by the Yukon and Kuskokwim rivers in western Alaska. Department of Defense personnel will train to meet mission-essential objectives by developing skills in road construction, rock quarry development and operation, vertical construction, communications, and logistical support to military units in a remote, undeveloped, subarctic location. IRT site development and construction during the exercise will assist the community of Newtok to construct an emergency evacuation center, develop a quarry to provide gravel necessary for construction, and construct a road to connect the evacuation center and quarry to existing barge landing sites on the coast of Baird Inlet.

1.2 Document Purpose

This document amends and supplements a 2008 environmental assessment (EA) and a finding of no significant impact (FONSI) prepared by the Corps of Engineers. The Department of Defense subsequently modified and adopted the EA in January 2010. Plans for the action substantially changed during the summer and autumn of 2010, and the EA is being further amended to bring those changes to the public and the Federal decisionmaker before IRT continues at Mertarvik in 2011.

Changes in the proposed action that require this amendment are identified in section 2. They include substantial changes in road alignments and in the location and design of the evacuation center. A quarry site also has been identified and is addressed.

While the proposed action has changed, the environment that will be affected by the action and the state of our knowledge related to that environment are relatively unchanged. No additional resources of concern have been identified, and there have been no substantial changes in protection status for land, biological, or cultural resources of the area. Additional information has been developed about the soils, permafrost, geology, and tides in the affected area, but the additional information is generally consistent with findings in the Affected Environment section of the 2008 EA. Information from the 2008 EA is incorporated by reference in this document. It is summarized in section 3 as needed and any relevant changes are noted, but it is not reproduced in this document. Both the 2008 EA and the 2010 FONSI are available to the public. Discussions of environmental consequences also are summarized from the earlier documents, and any changes are specifically identified.

1.3 Documentation to Date

Proposed construction of the evacuation center and associated features are described in a U.S. Army Corps of Engineers (Corps) environmental assessment (EA) titled: *Revised Environmental Assessment and Finding of No Significant Impact, Newtok Evacuation Center, Mertarvik, Nelson Island, Alaska*, released in July 2008. The public review did not identify any substantial issues or objections. The Corps' Alaska District Commander signed a finding of no significant impact for the action on September 4, 2008. The Corps did not continue into construction of the project. Authorization for the program was repealed by Congress in 2009.

The 2008 EA reported that the community of Newtok (population approximately 350) needs an emergency evacuation center. The nearby Ninglick River is eroding as much as 300 feet per year toward the community, and seasonal high water events flood the community almost every year. There is no feasible way to halt erosion, which is predicted to reach the school and other essential facilities by 2017, or to prevent flooding. The closest feasible building site for an evacuation center is at a site named Mertarvik on Nelson Island, across Baird Inlet and 8 miles south of Newtok. Newtok is not connected to other communities by road, and constructing a connecting road for evacuation is not feasible. Figure 1 shows the location of Newtok and the project site at Mertarvik.

The 2008 EA addressed five primary construction features associated with the evacuation center:

1. an access road from the state-constructed barge landing to an evacuation center site
2. a 13,000-square-foot evacuation center on a 32,400 square-foot gravel pad
3. a service road to a water well drilled by the State of Alaska
4. a sewage lagoon and land fill with a service road
5. a road to a quarry site

The evacuation center was originally sized to shelter 150 people and temporarily shelter up to 300 people until evacuation to other shelters or communities could be organized. The total area of the project was estimated to be 33.34 acres. While a quarry is required for the project, a specific site was not identified in the 2008 EA.

The EA determined that the proposed action would not cause more than minor, local effects to marine mammals, fish, terrestrial mammals, or birds. Endangered species would not be adversely affected, and no special status lands or their use would be affected. Cultural resource sites in the vicinity would be avoided and would not be affected. Most of the project area is in moist or wet tundra, which are wetlands. This habitat type is common in the surrounding Kuskokwim River delta region. Project features were sited to avoid higher value wetlands bordering streams or used by nesting waterfowl. Uplands were used to the maximum extent practicable to reduce the area of wetlands affected.

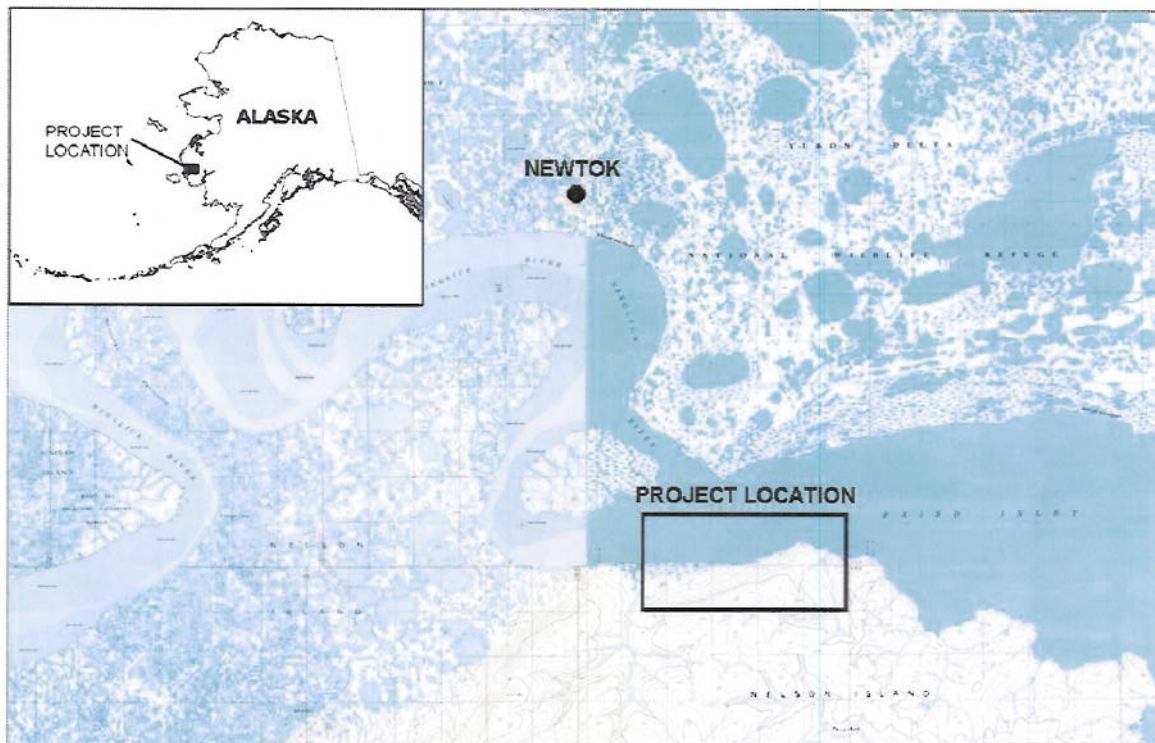


Figure 1. Project location

In 2009 the Office of the Assistant Secretary of Defense (Reserve Affairs) undertook the action proposed in the Corps' 2008 EA as an IRT exercise. The Office of Reserve Affairs adopted the Corps 2008 EA and signed a finding of no significant impact (FONSI) on 23 February 2010 as the responsible Federal agency. Permits the Corps had acquired for the project were transferred to the Alaska Department of Transportation and Public Facilities, which is partnering with the IRT for this action. The FONSI documented minor changes in the proposed road alignment and in the evacuation center. It also added a turnaround/staging area to the road between the barge landing sites and the evacuation center site. Figure 2 shows the project features addressed in the 2008 EA along with the minor revisions recorded in the 2010 FONSI.

1.4 Implementation to Date

The people of Newtok are in the process of moving to a new community site at Mertarvik on Nelson Island. They have acquired the land, developed conceptual community plans, and committed to making the move. In 2008, Newtok acquired permits to construct a barge landing, a short road, a deadman for barge mooring, and a staging area on Nelson Island at Mertarvik. Newtok modified the permits in early 2009 to increase the project size and the state of Alaska constructed the barge landing in 2009.

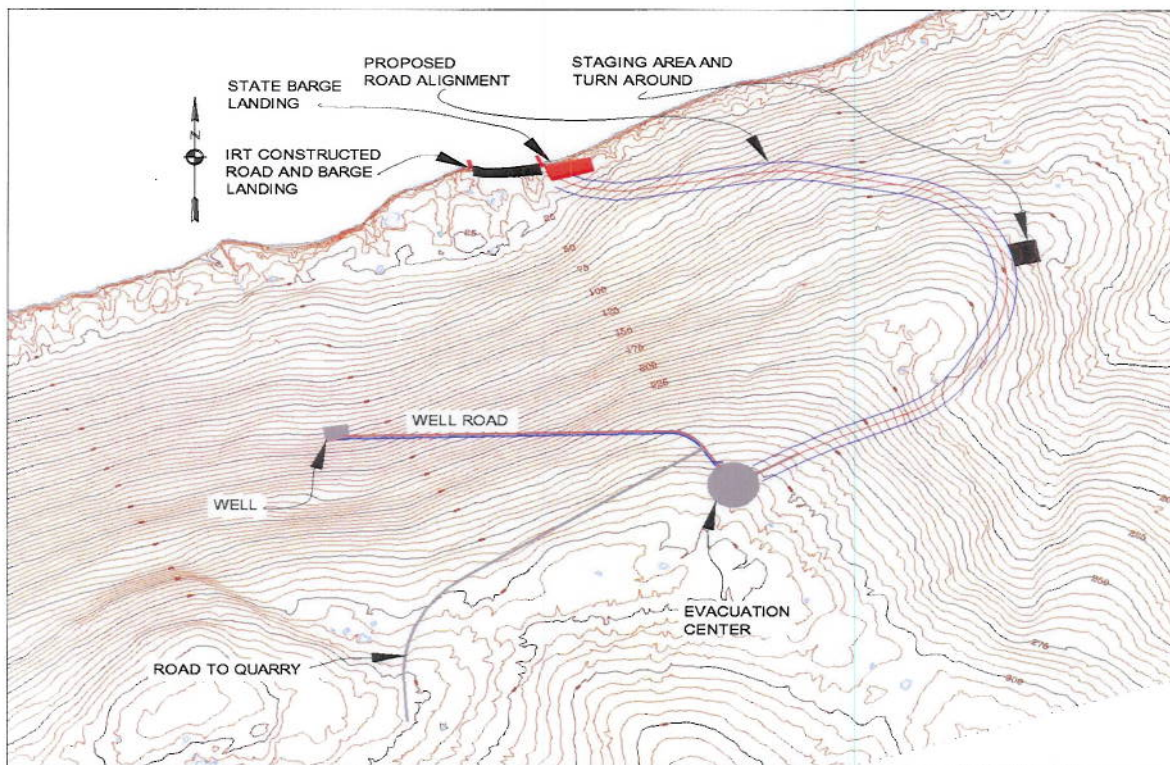


Figure 2. This is the project that was addressed in the 2010 Department of Defense FONSI.

Military IRT units were unable to land their vessel at the state-constructed barge landing in the summer of 2009, but they located a suitable landing site approximately 500 feet west. The community of Newtok, with assistance from the state of Alaska, applied for and received a modified barge landing permit. The state and IRT constructed a new barge landing and connected it with the earlier barge landing with a 12-foot-wide road along the shoreline.

The IRT units constructed base camp facilities and a construction staging area near the earlier state-constructed barge landing. Figure 2 shows the state barge landing site, the site constructed in 2009 by the IRT units, and the connecting road.

In 2010, IRT units constructed approximately 1,700 feet of road along the alignment identified in the 2008 EA (figure 2) and constructed a turnaround at the termination of that road segment. The road alignment was altered as required by site conditions. Figure 3 shows the project at the end of the 2010 summer construction season.

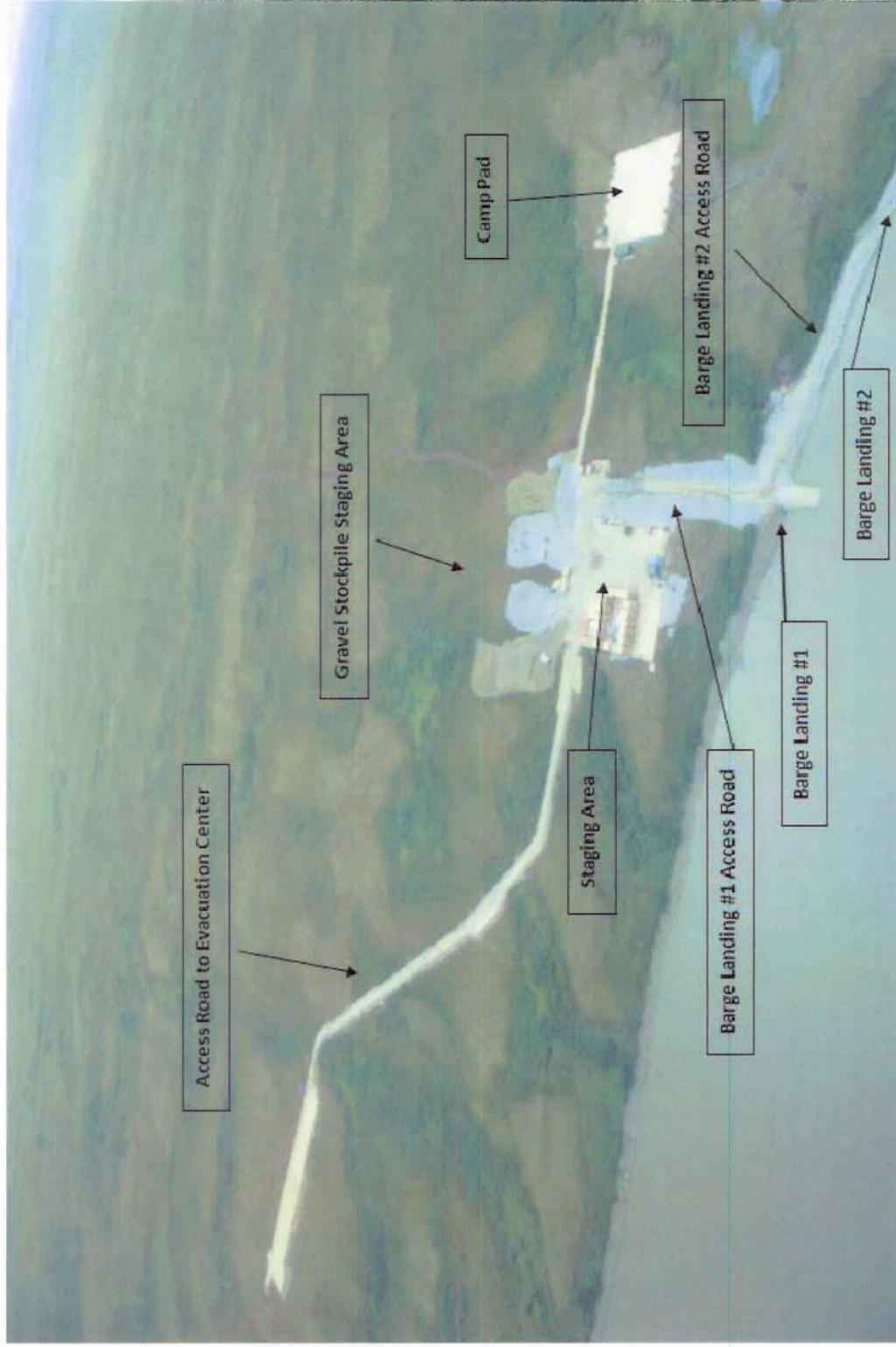


Figure 3. Project site at Mertarvik at the end of the 2010 construction season.

2.0 Proposed Action and Alternatives

2.1 Range of Alternatives Considered

The alternatives considered in this amendment are limited to the construction of an evacuation center and associated facilities at Mertarvik and the alternative of no action. The Corps of Engineers' 2008 EA considered a much broader range of alternatives. Those alternatives included other sites for an evacuation center and other means to protect the people of Newtok. That evaluation and the broader decisions that came out of the 2008 EA are incorporated by reference in this document and are not considered further.

2.2 No Action Alternative

The no action alternative would halt innovative readiness training at Mertarvik. Department of Defense personnel would lose valuable training opportunities in a challenging location. The people of Newtok could be expected to continue to work toward constructing an evacuation center at Mertarvik and toward establishing a new community there. Environmental impacts would be approximately the same, but actions would be delayed until funding became available from other sources.

2.3 Action Alternatives

This amendment specifically addresses the following changes from the 2008 EA and the 2010 FONSI:

- Evacuation center changes in size, configuration, and location
- Wastewater treatment changes and other utilities changes for the center
- A quarry site is identified and conceptual plans for developing the quarry are presented
- Road alignment changes for the main access road and for other project roads
- Staging, turnarounds, and other construction fills to support the construction camp and the evacuation center are identified
- Temporary roads or trails are identified for construction, including a pioneer trail from the existing road to the quarry site, and restoration of trails is discussed.

Evacuation Center Changes The evacuation center location was described in earlier documents as a building to be constructed on a gravel pad on a hill top above the barge landing site, almost 400 feet above sea level and approximately 1.5 miles by road from the coast (figure 2). The people of Newtok and the agencies assisting them in planning have determined more recently that the evacuation center should be near the point where road construction ended in 2010, closer to the barge landing site and Baird Inlet. Site conditions there may not be as good for construction, but the site clearly is adequate and offers several advantages:

- It is closer to primary transportation and important subsistence resources
- It is better protected from winds
- It is outside safety zones for potential airfield locations
- Construction can start sooner than at the original site

This site is approximately 70 feet above sea level, well above tides and storm surges, and is in an area that will resist erosion. The proposed location is at the left side of figure 3, just downhill from the end of the road. Figure 4 shows the Mertarvik Evacuation Center location in relation to the barge landing.

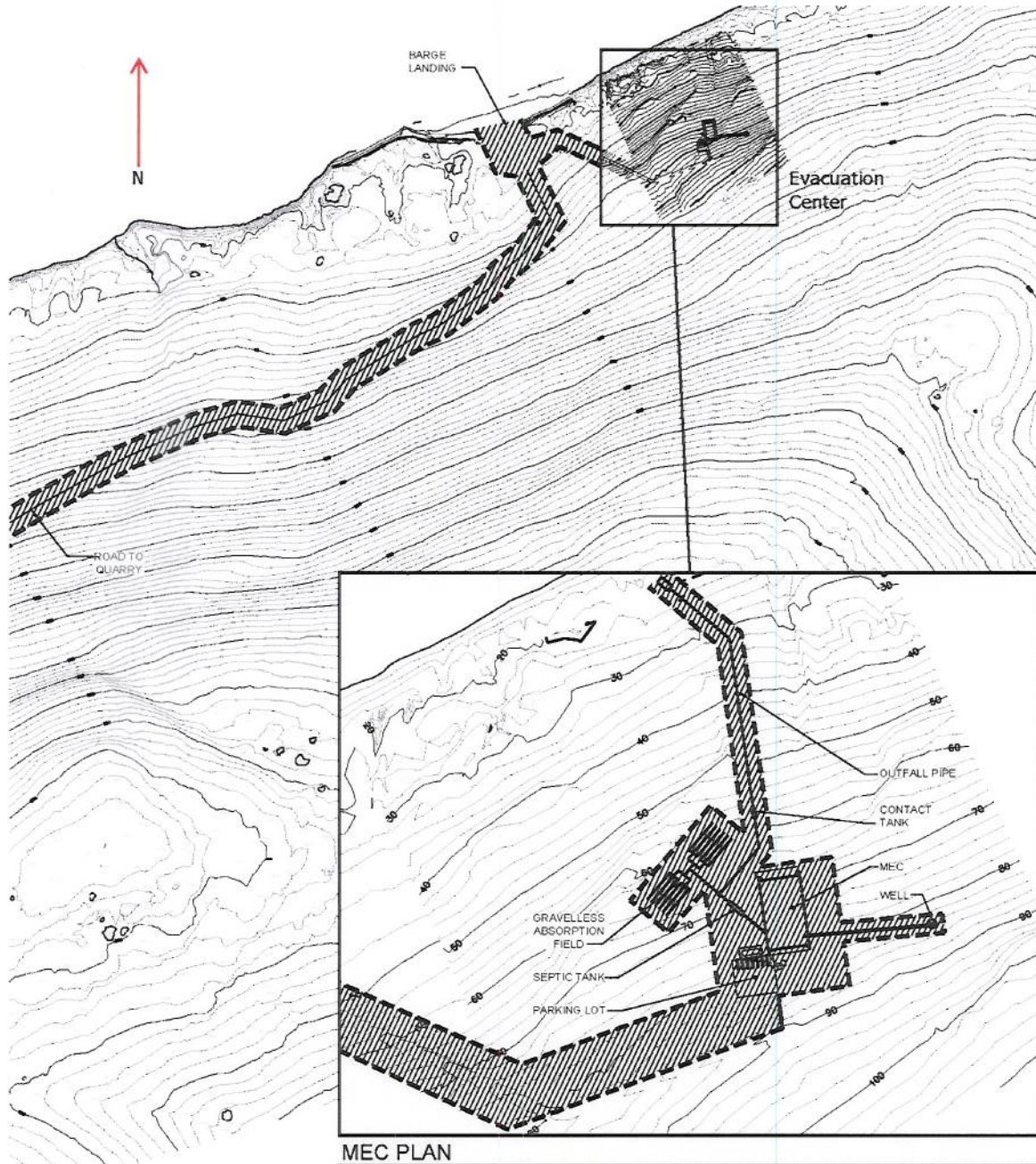


Figure 4. Proposed location of Mertarvik Evacuation Center. Approximate locations of water and wastewater utilities are shown. Areas to be filled are not depicted.

Building size and design plans also have been altered. The evacuation center will be constructed on pilings, rather than on a gravel pad, as envisioned in earlier planning. Constructing the evacuation center on pilings will minimize site preparation time and costs on this sloping site. Minimum gravel necessary for access and approaches would be placed during initial construction. Placing a gravel pad before construction at the new site would be prohibitively expensive. Additional gravel could be placed later, after locally produced gravel was available, if needed to make the site more usable.

The evacuation center design is being downsized to 7,000 square feet from the 13,000 square feet originally proposed. The smaller building is less complex to build and has fewer code requirements for alarms, sprinklers, and other expensive mechanical systems. The smaller evacuation building would provide basic shelter to the people who need it most during an emergency and for a cost that is more likely to be funded. Figure 5 shows the basic dimensions and footprint of the proposed evacuation center. It also shows where gravel fill would be placed for parking. The widened area at the end of the road and the area between road's end and parking are staging areas that are being constructed with gravel and composite panels.

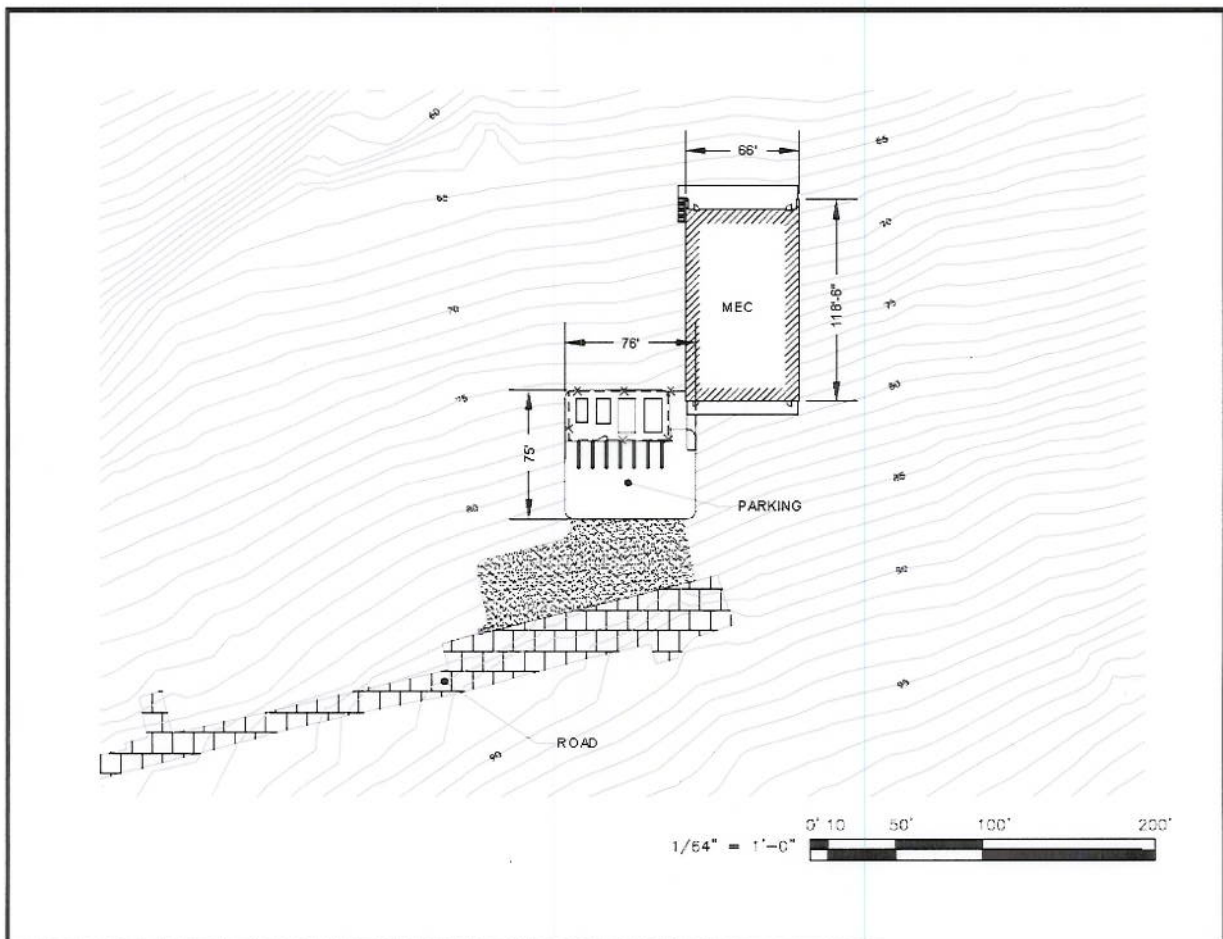


Figure 5. Proposed layout of Mertarvik Evacuation Center (MEC).

Alternatives to Proposed Changes. The evacuation center could be constructed in the location proposed in the 2008 EA, but that location is less suitable to the needs of the people of Newtok than the proposed site. Other locations close to the barge landings might be suitable, but less is known about soils and geology at other locations.

The 13,000-square-foot evacuation center could be constructed as originally proposed in the 2008 EA, but the building would be more complex, would be subject to more code requirements, and would be more than twice as expensive to construct as the smaller building that is now proposed. Funding for the larger building would be more difficult to obtain, and construction could be substantially delayed.

Wastewater Treatment and Other Utilities. A simple gravity-fed line will carry waste to a buried septic system. The septic system will be sized to handle domestic waste and wastewater generated during project construction and while the evacuation center is in maintenance or caretaker status. A holding tank system and chlorine treatment will be used only during evacuation events. During those events, chlorine would be used to treat wastewater to kill microbes. The treated wastewater would then be discharged through a buried pipeline.

Potable water will be provided by a new well drilled at the evacuation center. The well road identified in the earlier assessment will not be needed if the new well produces adequate water. Figure 4 shows the layout of utilities now being proposed.

Alternative Wastewater Treatment. Other systems would be more complex, more expensive to construct, more difficult to maintain and to bring on line during an emergency, and less certain to meet emergency needs. The proposed system could be expanded to serve additional users.

Quarry. Site investigations during the summers of 2009 and 2010 identified a quarry site that could produce rock suitable for project roads, pads, and other features. The quarry site is on the ridgeline above and southwest of the barge landings and the evacuation center site. Figure 6 shows the proposed quarry location.

An estimated 15.2 acres will be cleared of overburden and quarried to produce up to 150,000 cubic yards of gravel required for the entire project. Quarry operations also will require a 6.5-acre staging area for equipment, fueling, and other support activities. Quarried rock will be crushed, sorted, and stored in a 10-acre area between the quarry and the staging area.

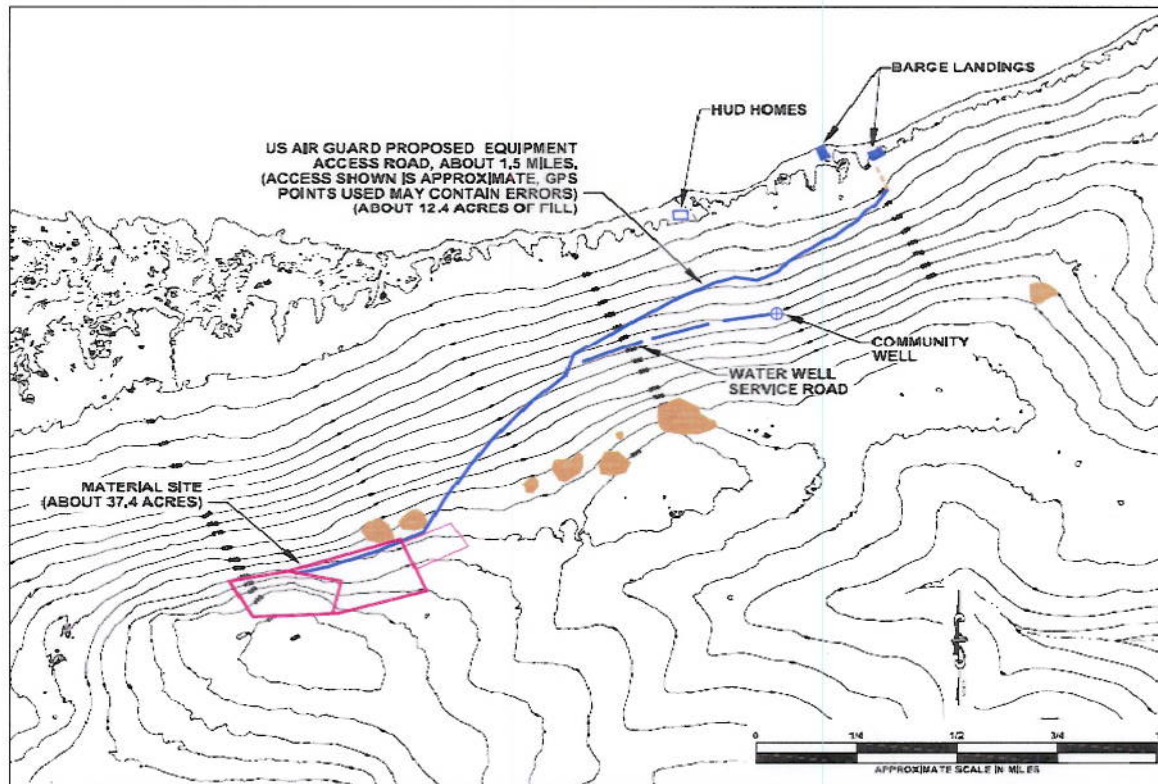


Figure 6. Proposed quarry location and road alignment. The water well road is speculative and is not proposed for permitting at this time. Tan blots below (north of) the hill crest represent boulder patches, which are not project features.

Overburden stripped for quarry development will be stored in a 4-acre site adjacent to the quarry. The overburden will be used for restoration and revegetation along project roads and around gravel pads. Figure 7 shows locations of principal quarry features. A quarry plan will be completed before quarry development begins. Provisions to minimize potential for sediment and turbidity in runoff will be consistent with the storm water pollution prevention plans (SWPPP). Road alignments will be checked before construction to ensure that migratory birds would not be taken by construction activities.

Fuel for quarry operations will be stored in a designated site at the staging area with spill containment and cleanup provisions to meet state Department of Environmental Conservation requirements. Runoff will be controlled to prevent sediments from migrating off site.

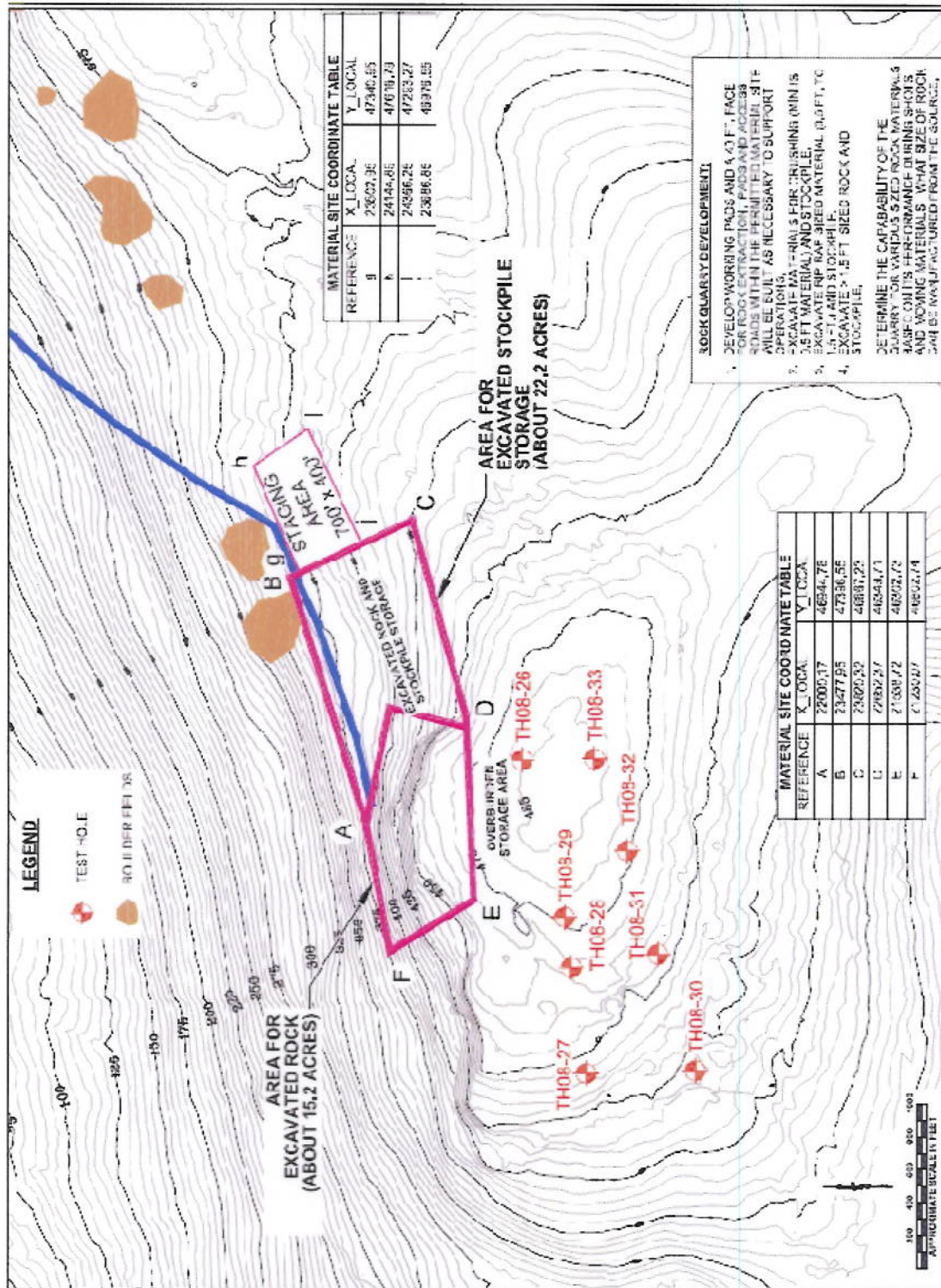


Figure 7. Mertarvik quarry features

A quarry could be developed in another location, but any other location would require more overburden removal, more road construction, and/or more expense. Gravel would be prohibitively expensive to import from an off-site quarry. The evacuation center and the facilities required to operate and maintain it cannot be constructed and maintained unless gravel can be obtained at reasonable cost, which requires a quarry near the project.

Roads. The main project access road was aligned in earlier plans to gradually climb about 1.5 miles to an evacuation center site near the ridgeline south of the barge landings (figure 2). Another road almost 2 miles along the ridgeline would have connected the access road and evacuation center to the quarry. With the evacuation center relocated to a much lower elevation, the planned access and quarry roads can be replaced with shorter, more direct routes. The existing evacuation center access road was constructed in 2008 and ended about 1,700 feet from the barge landing (figure 3), so it is about 1 mile shorter than the originally planned road. The new quarry road alignment is illustrated in figure 5. It goes from the barge landing staging area, along a steep but constructible route past berry picking and fish camp areas, past the existing water well, and up to the quarry site.

The new quarry road alignment is approximately 1.5 miles long. It, along with the 1,700-foot-long road from the barge landing staging area to the new evacuation center, will serve the same functions as both the access and quarry roads described in earlier plans and permits. Those earlier road alignments totaled approximately 15,000 feet in length. The new road alignment to both the evacuation center site and the quarry totals approximately 9,600 feet, so the new alignment is approximately 5,400 feet shorter. Final road alignment will be staked in the field before construction begins in the summer of 2011. This will allow minor alignment shifts to avoid excessive excavation and fill and will minimize impacts to drainage.

The new alignment will reduce road length, but the steeper hillside location and the need to allow greater safety for passing vehicles may require a wider footprint than the original alignment. Maximum footprint of the road will be 70 feet wide, 22 feet wider than the road footprint originally proposed. Figure 8 shows a cross section for the new quarry road. The road will require up to 6 feet of gravel fill over geotextile and will have a surface width of 20 feet. The road may be widened slightly at intervals for passing turnouts. The new access road alignment will occupy a 14-acre footprint. Thirty-inch-diameter culverts will be placed beneath the road as needed to maintain drainage. Culverts will be placed to avoid ponding and to prevent runoff across the road. The road will be constructed first as a trail to transport equipment and supplies to the quarry site, and then as a pioneer road as the quarry is developed, and finally to its full dimensions as more gravel is produced.

Overburden from the quarry will be used for fill along the road, to retard erosion, and to provide soil suitable for revegetation. The project storm water pollution prevention plan (SWPPP) will identify best management practices to be employed to prevent erosion and maintain water quality downslope from the road during and after construction. Road

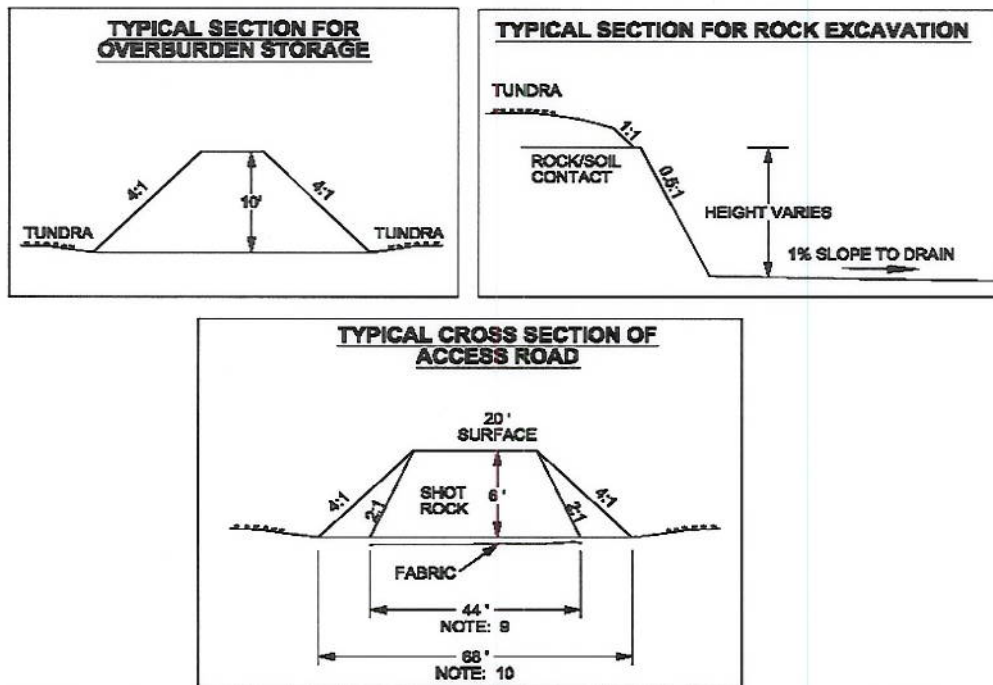


Figure 8. Cross section for new quarry road.

alignments would be examined before construction to ensure that migratory birds and their nests would not be taken by construction activities.

Road Alternatives. The original alignment would provide better access to the quarry and adjacent uplands during severe weather conditions. The uplands may eventually be developed for an airport. Another, more gently climbing road may be required at that time. It is not proposed for initial access because it is a poor route for initial access, it would be more expensive than required for immediate needs, and later planning could make it unnecessary. Widening the road as proposed would allow the road to be constructed with more fill, which would reduce potential for frost heaving and attendant maintenance.

Staging Areas and Other Construction Fills. Coordination and permits for construction in 2010 provided for a 1.5-acre material stockpile near the barge landing for a working area and stockpiling gravel and other material for road construction. This permitted area was partially developed in 2010. It is expected to be fully utilized in future years and to be retained as a staging and parking area for the barge landing.

A 40,000-square-foot staging and turnaround area was permitted for a location about 3,600 feet up the road alignment from the barge landing site, about halfway to the

original evacuation center site. This feature was not constructed. The 2010 road construction terminated about 1,700 feet from the barge landing site adjacent to the proposed new evacuation center site. The constructed road surface was widened at that point, but stayed generally within the permitted road alignment footprint. The 40,000-square-foot turnaround and staging area will be relocated to encompass the turnaround that was constructed adjacent to the new evacuation site in 2010. Figure 4 shows the proposed new turnaround and staging area.

Original plans were to construct a 33,000-square-foot parking and access gravel pad around the evacuation center. Less fill will be required around the new evacuation center, but gravel will be placed beneath the newly designed center to minimize ponding and facilitate access for maintenance. A total of 20,000 square feet will be filled and covered with gravel to support activities at the evacuation site.

IRT personnel and support functions have been based near the barge landing sites and have used several permitted staging and camp areas. They also used Duramat panels to lay down a temporary landing zone for helicopter operations. That site has transitioned into a camp area for personnel tents away from traffic and heavy equipment. This site will remain a temporary facility with no fill. A Section 404 permit will not be required unless the staging area becomes a permanent project feature. Construction and operation of staging areas will employ best management practices and will be consistent with the SWPPP. Staging areas and other fill sites would be checked before construction to ensure migratory birds are not taken by construction activities.

Staging Area Alternatives. Staging areas are the minimum required to construct and support the evacuation center. Alternative sites would be less functional without any reduction in environmental effects.

Trails and Temporary Roads. Initial access to the quarry site will be over the tundra. Heavy equipment for quarry development, personnel, and supplies will travel over the tundra to and from the quarry as needed. Travelers will be advised to minimize damage to the vegetative mat, but small areas may be grubbed, filled, or otherwise modified to allow safe passage. Travel to and from the quarry will be confined to within the road alignment so that any damage will be covered by the completed road. The project SWPPP will identify best management practices to be employed to prevent sediment runoff.

Geotechnical exploration and other site exploration activities have left trails over the tundra that are aesthetically objectionable and that could develop into erosion problems. The IRT has not been responsible for any off-road trails and will avoid creating new trails outside road alignments. Any ground disturbance required for construction access will be addressed in the SWPPP. Temporary road alignments would be checked before construction to ensure migratory birds were not taken by construction activities.

3.0 Affected Environment

3.1 Environmental Resources and Concerns

Project development with the people of the region and scoping with agencies and other stakeholders identified the following resources and related issues of particular concern:

- **Cultural resources**, including traditional uses of the land, tribal interactions, spiritual beliefs, and subsistence practices were identified as being especially important to the people of Newtok and are being given special weight in planning for the evacuation center. Protection of historic properties is important locally and is required by state and federal regulations.
- **Special use lands**, including parks, refuges, and other designated properties are of national importance.
- **Air and water quality** is protected by state and federal statutes.
- **Plants and plant communities**, including rare and endangered species, important wildlife habitat, subsistence foods, and wetlands are locally and nationally important.
- **Fish, mammals, birds, and their habitats**, are protected by federal and state regulations and are important nationally and locally. Endangered species, migratory birds, marine mammals, and fish habitat are specifically protected by federal regulations.

3.2 Climate, Air, and Water

The project site is in a transitional Alaska climatic zone. Average annual precipitation is 17 inches, with 22 inches of annual snowfall. Average summer temperatures range from 42 to 59° F. Average winter temperatures range from 2 to 19° F (ADCED 2007). There is no substantial development or population near the project site. Water is limited by permafrost, but quality is good, and well water is available. Surface and ground water at and near the project site are largely unaffected by human activity. Air quality has not been tested or monitored, but appears to be excellent. There are no sources of human-generated contaminants and no areas of glacial dust or other major natural sources of particulates in the region.

3.3 Geology and Soils

Bedrock on Nelson Island is Tertiary grey basalt over Cretaceous greywacke and siltstone. Soils generally are basalt weathered to sand and silt, typically overlain with 1 to 2 feet of organic material. Most soils in the project area are ice-rich permafrost with an active layer 18 to 24 inches deep. Additional information is in the 2008 EA and in file reports available through the Alaska District, U.S. Army Corps of Engineers (USACE).

3.4 Tides and Currents

Limited data indicate a maximum tidal range of 3 to 5.5 feet (USACE 2004). Storm surges may influence Baird Inlet, but water level elevation records are poor. Currents are tidal and vary with location.

3.5 Vegetation and Wetlands

Most of Nelson Island is treeless wetland habitat typical of western Alaska permafrost environments. Woody plants are limited to low-growing shrubs such as dwarf birch, willow, blueberry, cloudberry, lowbush cranberry, and crowberry. The 2008 EA presents maps and additional information about wetland assemblages in the project area.

The following wetland habitats and plants may be of particular importance:

- Riparian wetlands in and along streams ponds can be important to protect stream integrity. They also can provide important habitat and food for fish and other animals that use those water bodies.
- Coastal wetlands in this area provide food and nesting habitat for waterfowl and shorebirds
- Wild berries associated with wetlands provide food that is important in the diets and cultural traditions of the people of the region. Other plants are important in subsistence traditions, but berries are particularly important. Wild berries also are important food for geese, other waterfowl, ptarmigan, other birds, and small mammals.

3.6 Fish

Project site is between two streams that drain the highlands of Nelson Island. 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 the Mertarvik site to the Ninglick River. The Ninglick River and Baird Inlet border the project. Figure 10 in the 2008 EA shows locations of those streams. None of those water bodies would be in the project area. Previous work at the project site affected a small area of shoreline at Baird Inlet.

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 may occasionally be near 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.

3.7 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 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 project site, is home to a colony reported to have 4,500 to 10,122 nesting pairs of Pacific black brant (Derksen and Ward 1993; Pearce 2002). This is about 25 percent of the black brant nesting on the delta. The Yukon-Kuskokwim Delta also is the summer home of tens of thousands of freshwater and marine ducks, loons, shorebirds, raptors, passerine birds, and ptarmigan. Birds, primarily waterfowl and their habitat, are principal biota of concern for most projects in this region.

The project area is not particularly suitable habitat for nesting waterfowl or shorebirds (USFWS 2006), but they migrate through and feed in similar habitat over much of Nelson Island. In late summer, emperor geese begin to stage for migration. They feed on wild berries of the region, including those on Nelson Island. Newtok ecological knowledge tells us that emperor geese feed on crowberries during this period. Hillsides near the project site are known feeding areas.

Sea birds are not common in the project area. The closest seabird colony is on the outer coast of Nelson Island, approximately 40 miles from the site.

Migratory birds nest throughout Alaska and may nest in the project area. No regularly used nesting habitats or sites that are of particular importance to nesting migratory birds have been identified. The project area and much of surrounding Nelson Island are used for nesting and feeding by ptarmigan, which are not migratory, but are protected by state laws and regulations.

3.8 Marine Mammals

Nelson Island and the project site are at the western boundary 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 seals are commonly seen in the waters of Baird Inlet.

3.9 Terrestrial Mammals

Arctic and red foxes, beaver, small mammals, moose, introduced musk oxen, and occasionally brown bears are reported on Nelson Island. Newtok residents say they are rare in the project vicinity (D. Charles personal communication November 2007). Moose are sparse on Nelson Island. They occasionally range into the project, but are reported to be rare near the project site (D. Charles, personal communication, November 2007). An estimated 200 to 300 musk oxen are on Nelson Island (Perry 2005) and are occasionally seen near the project site. 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, although they range over most of the surrounding Yukon-Kuskokwim Delta lowlands.

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). Beavers are present in growing numbers on Nelson Island, but habitat in the project area is unsuited for them.

There are no critical or especially important habitats for mammals in the project area.

3.10 Endangered Species

Several species of endangered whales inhabit the Bering Sea, but these large, oceanic baleen whales do not swim up the Ninglick River or enter Baird Inlet. Steller sea lions are endangered 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 they do not regularly nest on the delta now. Some areas of the Yukon-Kuskokwim Delta are designated critical habitat for Steller's eider, but there is no indication this species nests near the project site.

Spectacled eider, a threatened sea duck, nests in low numbers on the Yukon Delta National Wildlife Refuge. This species once nested on southern 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 near the project site.

Kittlitz's murrelet is listed as a candidate species. The center of distribution for this small fish-eating sea bird is Glacier Bay in northern southeastern Alaska. Small summer populations are found in the Bering and Chukchi seas, and a few could occasionally range into Baird Inlet. Kittlitz's murrelet nests are typically associated with glaciers at high elevations. They would not nest in or near 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. 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. The U. S. Fish and Wildlife Service identified critical habitat for spectacled and Steller's eider on the Yukon Delta National Wildlife Refuge. The project area is not in or near the designated critical habitat.

3.11 Cultural Resources

Earlier archaeological work in the Nelson Island area has been limited to a few sites outside the project vicinity and to a few recent archaeological surveys near Nightmute and Toksook Bay. U.S. Army 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) about 1 mile northeast of the barge landing site. 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.

Newtok residents harvest seals; moose, muskoxen, and other big game; herring; salmon; halibut; geese; tomcod; trout (Dolly Varden char); ptarmigan; various berries, and other plant and animal material for food and for other traditional uses. Muskoxen, geese, and ptarmigan may be harvested occasionally in the project area. Residents identified to areas of particular importance in subsistence harvest practices in the immediate project area. An area on the lower hillside southwest of the barge landing is a favorite berry picking site (figure 9). The shoreline adjacent to the berry picking site is regularly used for fish camps.

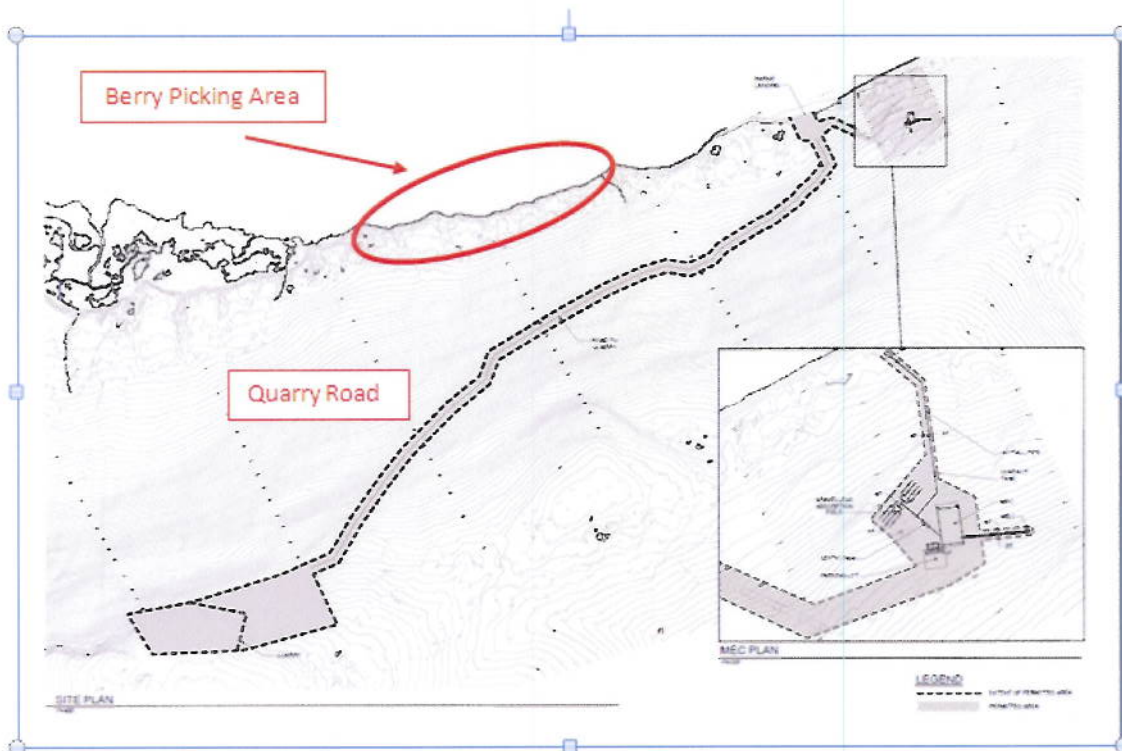


Figure 9. A favorite berry picking area at Mertarvik.

4.0 Environmental Consequences

The 2008 EA addressed environmental consequences of the action as it was proposed at that time. It addressed potential environmental effects of each proposed action. Changes in the proposed project since then have not substantially altered the area affected or potential impacts. This section summarizes conclusions in the 2008 EA and the 2010 FONSI and identifies any changes that might have been identified since then.

4.1 Environmental Resources of Concern

Scoping for the 2008 EA and more recent public and agency contacts identified principal needs and concerns associated with the proposed action. Resources of concern are identified in section 3 of this EA and in section 4 of the 2008 EA. Review of scoping input and of data about resources indicates that evaluation of potential environmental consequences should be directed towards plants and animals gathered for food and used in other subsistence practices; birds, especially migratory waterfowl, and most particularly waterfowl listed under the Endangered Species Act; and wetlands, which are a major part of western Alaska lands, but are nationally important and will be affected. Cumulative impact potential also is an important concern that is relevant to all the resources that are addressed in this section.

4.2 Air, Water, and Other Physical Environment Considerations

Nelson Island is not in a nonattainment area for air quality. Air quality in the region may be affected by global sources, but regional sources are miniscule compared with more developed areas of the United States. Construction and operation of the evacuation center and supporting facilities would emit diesel exhaust and create small amounts of dust. The quarry will produce dust from clearing, quarrying, and gravel production. Dust will be controlled as part of the quarry management plan. Developing and operating the quarry is expected to continue for four summer seasons during construction. Fuel burn for the quarry is expected to total less than 20,000 gallons over the 4-year period.

Nelson Island is exposed to windy Bering Sea coastal weather systems throughout the construction seasons. Exhaust emissions will not noticeably affect air quality. Road and other construction dust will be minimized by construction methods that will minimize excavation, place gravel as soon practical, re-establish vegetation, and water as needed to control dust. Water will not be required to control dust in the 2011 construction season, but could be applied in ensuing years.

Water quality could be affected by construction runoff and by operation of the evacuation center during high-occupancy emergency events. Construction run-off will be controlled by best management practices documented in the SWPPP, which will be developed and approved before construction begins. Proper planning and implementation will avoid effects on receiving waters of Baird Inlet. Wastewater from the evacuation center during normal operations will be directed into a permitted septic system. This will not affect water quality. During an emergency occupation that overwhelmed the system, wastewater disinfected with chlorine could be released and could reach Baird Inlet. This could cause minor, temporary, local effects to water quality in receiving waters.

Project construction and operation will not substantially affect soils, geology, tidal influence, or currents of the region.

4. 3 Vegetation and Wetlands

The original plans for the evacuation center identified 33.34 acres of wetland fill and included an 8-acre quarry. The current proposed action increases the quarry to 43.8 acres, but reduces road requirements and locates quarry features to minimize use of wetlands. The current proposed action would increase wetland fill by approximately 4 acres over the plan proposed in the 2008 EA.

Affected wetlands are primarily classed as palustrine emergent persistent/scrub-shrub evergreen and palustrine emergent persistent/scrub-shrub evergreen moss peat. Both types are common in the region and may support a variety of wetland functions that may be valuable to humans and other biota. Section 3 of this EA identified wetlands of particular importance, specifically riparian wetlands and coastal wetlands. It also defines the value of vegetation important in the diets and cultural traditions of the people of the region.

None of the wetlands that would be affected by the proposed action is riparian habitat or coastal wetlands. Wild berry plants occur throughout the project area, but the most productive areas are particularly valued by the people of Newtok. Those areas are shown in figure 9. None of the project features would directly impact those important berry-picking areas. The quarry road would, however, improve access for berry pickers.

4. 4 Fish

None of the actions proposed for this project would affect fish or their habitat. The only actions in or adjacent to fish-bearing waters would be the watercraft activity as personnel, equipment, and supplies were delivered. Those activities would be so limited in scope and area that no meaningful habitat losses would result.

In the 2008 EA, the Corps 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. That determination is not altered by the current proposed action.

4. 5 Birds

Nesting surveys in construction areas before work begins will prevent taking of migratory birds, but nesting could be displaced by habitat loss. This minor loss of less than 40 acres of potential nesting habitat for the entire project would have no substantial effect on bird populations of Nelson Island or the Yukon-Kuskokwim delta region.

Emperor geese and any other waterfowl that feed on berries would be displaced by new roads and by activity during construction. The roads avoid prime berry areas, but are aligned through areas that are less productive. Relatively small areas of feeding habitat could be lost. Similar habitat is found on large areas of Nelson Island, so losses would

not be biologically meaningful. Nesting ptarmigan could be disturbed or destroyed during construction. Much of the region is ptarmigan nesting and feeding habitat, so habitat losses would be minor. Construction would be conducted to ensure that migratory birds and their nests would not be taken.

4.6 Marine Mammals

Spotted seals are the only marine mammals regularly seen in the project vicinity. They would not be directly impacted except that they might occasionally be displaced by boat traffic and on-shore activity. Other marine mammals in Baird Inlet and along the west coast of Alaska occasionally could be disturbed or displaced by boat and barge traffic between the project site and Newtok, Bethel, and the contiguous United States.

4.7 Terrestrial Mammals

Small mammals may be destroyed or displaced by road construction and use. Musk oxen would be displaced from a small part of their Nelson Island range, but would not be affected at the population level. Herd size is limited by harvest management rather than by habitat availability.

4.8 Endangered Species

Project construction and operation occasionally would displace emperor geese from feeding habitat. Listed marine mammals also could occasionally be disturbed or temporarily displaced. These effects would not cause a taking as defined by Endangered Species Act regulations and guidance. The National Marine Fisheries Service and the U.S. Fish and Wildlife Service concur that further consultation is not required.

4.9 Cultural Resources

The project area, including the proposed road and quarry areas, were surveyed by a qualified archeologist. No historic material or other resources were identified in the immediate project area. A burial site, a site used for reindeer herding, and a site where clay was gathered for pottery were identified in the general vicinity of the project, but all are well away from the proposed project features. The proposed action would not affect any known historic site. Construction personnel will be instructed to cease work if any object of potential historic or cultural interest is identified. Work would be halted and the State Historic Preservation Officer would be consulted before the object or site was disturbed.

The proposed action would not adversely affect harvest of berries, fish, birds, or other plants or wildlife for local use. Other communities on Nelson Island were consulted. They did not indicate that their traditional and personal use harvest practices would be adversely affected by the proposed action.

The evacuation center is compatible with potential future community development and with traditional uses and practices. Plans to locate the center closer to Baird Inlet will help with subsistence activities. No historic properties will be adversely affected.

4.10 Cumulative Effects

The 2008 EA identified potential future development at and near the project site, including impacts associated with the reasonably foreseeable move of the people of Newtok to the site. That analysis is in section 6 of the 2008 EA. It determined that the action would not cause significant cumulative effects. The proposed action is similar in scope to the action addressed in 2008, the environment of the region and our state of knowledge about the environment is substantially unchanged, and there are no new major construction projects or other regional sources of potential impact that would substantially alter the analysis or the conclusions of the 2008 EA.

5.0 Coordination and Compliance

The action proposed in this EA was coordinated with the people of Newtok and the tribal council, with stakeholder agencies involved in long-term planning for Newtok, with resources agencies with special knowledge or responsibilities, and with agencies that have regulatory responsibilities.

Specific coordination and permit requirements relevant to this action, actions that have and will be taken to meet those requirements, and the status of compliance are as follows:

Clean Air Act (42 USC Section 7401 et seq.), as amended in 1977 and 1990. Proposed action is not in a non-attainment area and does not require further evaluation for compliance.

Clean Water Act of 1972, as Amended

- Section 404 permit for discharge of fill material into waters of the United States (wetlands) that was issued to Alaska Department of Transportation-Public Facilities (DOT-PF) is being revised to address proposed changes in the project.
- Section 401 Certificate of Reasonable Assurance from Alaska Department of Environmental Conservation will be revised during review of the Section 404 permit.
- Section 402 of the CWA authorizes the EPA to issue permits under procedures established to implement the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program regulates point and non-point source discharges into waters of the United States. ADOT-PF will submit a Notice of Intent to the appropriate regulating agency, and incorporate contractor preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) into the construction specifications.

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

CRSA to the maximum extent practicable. Alaska Department of Natural Resources has been notified of proposed changes and will review for consistency,

Endangered Species Act (16 USC Section 1531-1544), as amended in 1988. Status of listed species is unchanged; agencies were contacted informally. No further consultation is required.

Fishery Conservation and Management Act of 1976 (16 USC 1801-1882; 90 Stat. 331; as amended). Action will not alter activities in or affecting critical fish habitat. Further consultation is not required.

Migratory Bird Treaty Act of 1918, as amended. Construction activities will be conducted to avoid taking of migratory birds. Areas to be cleared will be surveyed for nesting birds before vegetation is removed. Construction will be delayed or diverted if required.

National Environmental Policy Act of 1969, as amended. This EA will meet all requirements of regulations implementing the Act.

National Historic Preservation Act of 1966, as amended. The Alaska State Historic Preservation Officer (SHPO) consulted for the initial action. The SHPO will be notified of project changes. Consultation will be reinitiated if previously unknown archaeological or historical properties are encountered.

Executive Order 11988 Floodplains. Executive Order 11988 requires federal agencies to evaluate the potential effects of any actions in floodplains and potential effects of flooding on project viability. The proposed action is not in a designated floodplain or in an area subject to flooding.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The action would not adversely affect minority or low-income populations.

Protection of Wetlands (E.O. 11990). The action complies with the order by minimizing impacts to wetlands to the maximum extent practicable.

Environmental Health and Safety Risks to Children (E.O. 13045). The proposed action would not adversely affect schools, playgrounds, or other areas frequently used by children or otherwise increase health risks to children. The action would reduce risk to children by providing a place of refuge during flooding in Newtok.

6.0 References

- ADCED. 2007. Alaska Community Database Community Information Summaries (CIS): Newtok. Alaska Dept. Commerce, Community and Economic Development, Division of Community and Regional Affairs.
http://www.dced.state.ak.us/dca/commdb/CF_CIS.htm.
- Charles, D.. Personal communication. Dominick Charles EPA IGAP program coordinator. Newtok, Alaska. November 2007.
- Derksen, D. V., and D. H. Ward. 1993. Life history strategies and habitat needs of the black brant. U.S. Fish and Wildlife Leaflet 13.1.15.
- Fischer, J. B., R. A. Stehn, T. D. Bowman, and G. Walters. 2005. Nest Population Size and Potential Production of Geese and Spectacled Eiders on the Yukon-Kuskokwim Delta, Alaska, 2005. U.S. Fish and Wildlife Service. Anchorage, AK.
- Grover, M. A. 2007. Archaeological Evaluation of Cultural Resources Around Mertarvik, Alaska: Proposed Relocation Site for Newtok. Alaska District Corps of Engineers Archaeological Survey Report. April 2007.
- NMFS. 2007. Essential Fish Habitat Interactive Mapping Database. National Marine Fisheries Service. <http://mapping.fakr.noaa.gov/Website/EFH/viewer.htm?simple>.
- Pearce, D. 2002. Testimony of Drue Pearce, Senior Advisor to the Secretary of the Interior for Alaska before the Senate Committee on Energy and Natural Resources, Subcommittee on Public Lands and Forests regarding: S. 2016 Bill to Authorize the Exchange of Lands Between the Newtok Native Corporation and the Department of the Interior. July 30, 2002. <http://www.doi.gov/ocl/2002/s2016.htm>.
- Perry, P. 2005. Unit 18 musk ox management report. Pages 1-12 in C. Brown, ed. Musk ox management report of survey and inventory activities 1 July 2002 –n30 June 2004. Alaska Department of Fish and Game. Juneau, AK.
- USACE. 2004. Design Analysis. Emergency Shelter Shishmaref, Alaska. Alaska District Corps of Engineers, Elmendorf AFB, AK. *Unpublished* October 2004.
- USFWS. 2006. Field Reconnaissance of Takikchak, Preferred Town Site for Relocation of Newtok Village-Report to the Army Corp of Engineers. U.S. Fish and Wildlife Service. Region 7. Anchorage, AK. August 2006.