U.S. DEPARTMENT OF HOMELAND SECURITY

United States Coast Guard

ENVIRONMENTAL ASSESSMENT FOR PROPOSED US COAST GUARD COMMUNICATIONS SITES AT MIDDLE CAPE AND AKHIOK, KODIAK ISLAND, ALASKA

Prepared for:

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UNITED STATES COAST GUARD AND
UNITED STATES FISH AND WILDLIFE SERVICE
ENVIRONMENTAL ASSESSMENT
FOR

PROPOSED US COAST GUARD COMMUNICATIONS SITES AT MIDDLE CAPE AND AKHIOK, KODIAK ISLAND, ALASKA

This Environmental Assessment (EA) was prepared in accordance with US Coast Guard Commandant's Manual Instruction M16475.1D and the US Department of Interior Departmental Manual 516, and is in compliance with the National Environmental Policy Act of 1969 (and subsequent amendments) (PL 91-190) and the Council on Environmental Quality Regulations dated November 1978 (40 CFR 1500-1508).

This EA serves as a public document to briefly provide sufficient evidence and analysis for determining the need to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

This EA concisely describes the need for the proposal, a reasonable range of alternatives, and potential environmental impacts of the proposed action and the alternatives. The EA provides a list of the agencies and persons consulted during EA preparation.

1 Mar 2010		
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Acronyms

AAC	Alaska Administrative Code
ACMA	Alaska Coastal Management Act of 1977
ACMP	Alaska Coastal Management Program
ACMP	Alaska Coastal Management Plan
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
ADL	Alaska Department of Labor and Workforce Development
AGM	absorbed glass mat
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
BLM	Bureau of Land Management
BMP	best management practice
BP	before present
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMP	coastal management plan
CZM	coastal zone management
CZMA	Coastal Zone Management Act
DSC	digital selective calling
EA	environmental assessment
EM	electromagnetic
EPA	US Environmental Protection Agency
ER	electromagnetic radiation
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
GPS	global positioning system
KIB	Kodiak Island Borough
KIBCMP	Kodiak Island Borough Coastal Management Plan
KNWR	Kodiak National Wildlife Refuge
Leq	equivalent sound level
Ldn	day-night sound level
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NDRS	National Distress and Response System
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Association
NPS	National Park Service
PL	public law
RF	radio frequency
sf	square feet
SPEA	supplemental program environmental assessment
USACE	US Army Corps of Engineers
USC	US Code
USCG	US Coast Guard
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
VHF	very high frequency

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Executive Summary

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The proposed action consists of the construction of two communications facilities by the US Coast Guard (USCG): a facility in the Middle Cape area in the southwest corner of Kodiak National Wildlife Refuge (KNWR) and a microwave repeater at Twin Peaks approximately 35 miles south-southwest of the Middle Cape site to provide line-of-sight communication via microwave with existing communications facilities at the village of Akhiok. The Twin Peaks repeater facility is required because topography blocks line-of-sight microwave communication from the Middle Cape site to Akhiok. Minor modifications are also proposed for the existing communications link facility at Akhiok.

The proposed communications facility at Middle Cape would consist of a communication tower, communication equipment shelter, generator shelter, propane fuel tanks, solar arrays, a wind generator on a stand-alone tower, and all necessary electronic equipment capable of receiving and transmitting radio signals within the relevant service area. The Twin Peaks repeater site would consist of a tower, solar array, and electronics shelter. Each site would occupy an area of about 0.125 to 0.25 acre.

Construction will require temporary offsite staging areas for materials. The staging areas under consideration are Halibut Bay for the Middle Cape facility and Ocean Beauty Seafood's Alitak production facility (Alitak production facility) for the Twin Peaks facility.

LAND USE

The Middle Cape and the Twin Peaks sites are located in areas of natural character with little evidence of human alteration by either traditional Alaska Native or modern technology. The primary human use of lands in the vicinity of both sites is for subsistence by local residents.

The proposed communications project would add structures at the Middle Cape and Twin Peaks sites. It would not change the overall character of the sites or their function as part of KNWR. It would have no effect on nearby inholdings of Alaska Native lands or subsistence use of the area.

WILDERNESS

There are no designated wilderness areas within KNWR; however, the proposed Middle Cape site is outside of the area recommended for wilderness designation. Overall, the construction and operation of the proposed communications facilities will have an adverse impact on the wilderness character of the area. However, since

Section 1310 of ANILCA allows for this type of facility to be constructed and maintained in Conservation System Units, including designated wilderness areas, the proposed project would not likely affect the area's eligibility for designation as wilderness.

RECREATION USE

Because no existing recreational use of the Middle Cape and Twin Peaks sites have been identified, a communications facility would not affect their potential as recreational resources. At the temporary staging area on Halibut Bay, helicopter noise from slinging materials to the communications site may result in short-term disturbance to local wildlife, hunters, and sightseers. The facility will not adversely affect recreational ocean fishing in the Shelikof Strait and Halibut Bay and will indirectly enhance recreation use by providing more effective emergency communication.

VISUAL AND AESTHETICS

The Middle Cape site is visible from the west by boats in Halibut Bay and vicinity. The site is one slightly higher element in a series of ridges that rise from Shelikof Strait. The proposed facility would have negligible visual quality impacts for observers on Shelikof Strait east of Halibut Bay. For observers on Halibut Bay, or closer to the site, the level of change would be minimal. The repeater site would result in minimal visual quality impacts because it is considerably below the elevation of the Twin Peaks, the dominant visual element of the vicinity.

AIR QUALITY

Air quality in western Kodiak Island is classified as unimpaired. The only sources of air emissions from the project would be propane used to power the generators at the Middle Cape and Twin Peaks sites and emissions from infrequent helicopter trips. The very small volume of emissions would have no detectable effect on air quality.

NOISE

The three potential sources of noise produced by the facilities are, in descending order, helicopter visits, the propane-powered generator, and the wind generator. During construction, the noise impacts would be greatest to potential receivers at the Halibut Bay staging area, where recreational and subsistence uses are likely to be highest. Noise levels during construction are expected to be in approximately the same range as those from existing use of float planes. Operational noise from the generator used to recharge batteries would attenuate to near background levels within a distance of about 500 ft. The wind generator would not produce noise above background levels.

GEOLOGY AND SOILS

Construction will remove soil from the areas where the footings for the towers, shelters, etc., are anchored to the underlying rock. However, this will not substantially change the overall soils or geology at the Middle Cape or Twin Peaks sites. The facilities' footprints are very small relative to the surrounding areas. Maintenance and communications operations will not have adverse effects on geology or soil.

Beach sand at the Halibut Bay staging area will be disturbed, but only temporarily and at negligible levels. The soil at the link site in Akhiok would not be impacted.

FLOODPLAINS

The Middle Cape and Twin Peaks sites are not located within floodplains. One of the proposed staging areas at Halibut Bay is located near the mouth of a creek and is considered a floodplain. If this location is chosen, the staging operation will not adversely affect the floodplain because of its short life and its small footprint relative to the size of the floodplain. The Alitak production facility staging area is located at an existing facility and is not within a floodplain.

WATER RESOURCES AND WATER QUALITY

There are no streams, rivers, lakes, or water bodies near the Middle Cape site or Twin Peaks repeater site. Akhiok Bay is 200 yards away from the existing Akhiok communications link facility. The Halibut Bay and Alitak production facility staging areas are located along coastal beaches of Kodiak Island. Barges will be stationed at the staging areas but will not change water quality or water resources during their short stays.

WETLANDS AND VEGETATION

No wetlands are present at any of the sites. Both the Middle Cape site and the Twin Peaks repeater site are located along sparsely vegetated ridgelines. Vegetation would be disturbed by the construction, but not substantially because the footprints of the facilities are small relative to the surrounding areas.

Staging activities at Halibut Bay will be temporary. The existing Akhiok communications link facility site is located in a disturbed area surrounded by grasses and small shrubs. Rotor wash from the helicopter may disturb local vegetation at all sites, but this impact would be temporary.

COASTAL ZONE MANAGEMENT PLANS

The installation of navigation aids such as the proposed Middle Cape facilities directly supports the goals of providing needed communications infrastructure and providing essential emergency communications that allows coastal-oriented users to operate successfully in an environment where unanticipated circumstances or mishaps would

otherwise be more likely to result in loss of life or property. The design and operation of the facility will comply with goals for location, subsistence, habitat, and cultural resources.

FISH AND WILDLIFE

The proposed facilities will not have adverse effects on fish and wildlife in KNWR because the facilities' footprints are small relative to the surrounding areas and will not change habitat areas. Also, there is no proposed in-water work to disturb fish, marine mammals, or seabirds. Daily operations at the facilities will not affect land mammals, and risks to migratory birds will be minimal.

THREATENED AND ENDANGERED SPECIES

The proposed facilities will not have adverse effects on threatened and endangered fish and wildlife in KNWR because the facilities' footprints are small relative to the surrounding areas and will not change habitat areas. Also, there is no proposed in-water work to disturb fish, marine mammals, or seabirds. Construction activities and helicopter noise may disturb Kittlitz's murrelet flight patterns or birds nesting nearby the sites, but these activities would be temporary with no long-term adverse effects. Timing construction activities, especially the slinging of construction materials by helicopter, to avoid the most critical periods of nesting can eliminate potential effects on breeding/ nesting Kittlitz's murrelets. Impact to birds are expected to be minimal.

HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The proposed facilities will not have an adverse effect on historical, archaeological, or cultural resources because of the low probability that such resources are present at the sites. Cultural resources are more likely to be found at the staging sites; however as construction materials will be temporarily placed on the surface, no excavation will take place and the likelihood of disturbance of resources is very low.

SOCIOECONOMICS

There is no human habitation at or in the immediate vicinity of the Middle Cape site. The proposed facilities will not have an adverse or a beneficial impact on the socioeconomic character of the affected communities because of their geographic distance from the communities and the lack of effect on subsistence use. There will be few opportunities for employment by local residents because of the specialized skills needed for construction. In reducing safety risks, the provision of enhanced emergency communications facilities may indirectly increase subsistence and commercial fishing, hunting, and gathering.

ENVIRONMENTAL JUSTICE

Alaska Natives are considered a minority population, although they constitute the majority of the population in nearby communities. There will be no disproportionate impacts on minority or low-income populations because of the sites' distances from communities and the potentially positive effect of better emergency communications on subsistence use.

HAZARDOUS MATERIALS AND WASTE MANAGEMENT

No hazardous materials have been identified at the Middle Cape site, Twin Peaks repeater site, or the Halibut Bay staging area. Construction materials and waste will be removed after construction is complete. Long-term operations and maintenance at the communications sites are not expected to adversely impact the surrounding environment. Staging at the Alitak production facility will utilize the dock and will not impact the remainder of the facility.

PUBLIC HEALTH AND SAFETY

There are no current public health resources or issues related to any of the communications sites. The operation of the communications facilities will generate no waste or other materials of concern to public safety. Potential health impacts of microwave transmission will be addressed by meeting Federal Communications Commission exposure standards. The improvement in emergency communications capability will improve public health and safety.

TRANSPORTATION

No transportation impacts are anticipated as a result of construction and operation of the communications sites. Sufficient capacity is available on Kodiak Island and in the region to provide transportation to the project sites for construction and operation without straining infrastructure or displacing other users.

CUMULATIVE IMPACTS

No additional cumulative impacts from existing activities in the vicinity of the communications sites have been identified by these analyses.

STATEMENT OF ENVIRONMENTAL SIGNIFICANCE OF THE PROPOSED ACTION

Based on the analysis of impacts on specific elements of the environment, no significant adverse impacts on the natural or human environment have been identified for the proposed communications facilities at the Middle Cape, Twin Peaks repeater, and existing Akhiok communications facility sites.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible or irretrievable commitments of resources would be made during construction through materials used to build the facilities and during operation through fuels for electricity generation and helicopter access. No other irreversible or irretrievable commitments have been identified by the analysis of potential environmental impacts.

1 Introduction

The US Coast Guard (USCG) and the US Fish and Wildlife Service (USFWS) are conducting a joint environmental review and site selection process to develop two communications sites within or near Kodiak National Wildlife Refuge (KNWR) in Alaska. The two communications sites are designed to provide service to portions of the Shelikof Strait that are currently not served by existing communications facilities. The proposed project is part of the National Distress and Response System (NDRS) Modernization Project, now called Rescue 21.

This Environmental Assessment (EA) was prepared to evaluate potential impacts from the proposed project in compliance with the National Environmental Policy Act (NEPA), the Alaska National Interest Lands Conservation Act (ANILCA, 16 USC 51), and the KNWR Comprehensive Conservation Plan (USFWS 2006). This EA provides sufficient evidence and analysis for determining whether there is potential for significant impact, thus requiring an Environmental Impact Statement, or whether there is justification to prepare a Finding of No Significant Impact.

The EA also provides important information for pending decisions by the USCG and USFWS. The USFWS will decide whether to issue a right-of-way permit (see Appendix A for the permit application) for the construction of the proposed facilities in KNWR. If the USFWS decides that the permit can be issued, the USCG will decide whether to construct, operate, and maintain the proposed communications facilities at Middle Cape. If the US Coast Guard receives a permit from the USFWS, then a property lease will be sought for the Twin Peaks repeater.

1.1 Purpose and Need

The USCG is required by its enabling legislation to evaluate and improve the safety of navigation and vessels. Congress has approved funding in the US Coast Guard budget for facilities that will enhance very high frequency (VHF) communications throughout the nation as well as the southern portions of the State of Alaska, including improved coverage wherever there are local gaps in the communications coverage.

The USCG has identified the need for improved maritime distress and response communications coverage in the Shelikof Strait to the west and southwest of Kodiak Island. Severe communications limitations would be eliminated by establishing new communications facilities to correct the current deficiency in this area.

1.2 Summary of Key Environmental Requirements

Applicable environmental requirements at both the federal and state level are summarized below.

1.2.1 National Environmental Policy Act of 1969

NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

This Environmental Assessment is a site-specific document tied to the Supplemental Program Environmental Assessment (SPEA)(URS 2002) that addressed the modernization of the USCG NDRS. This assessment addresses the USCG action proposal to locate, construct, operate, and maintain new communications facilities in KNWR.

This Environmental Assessment also addresses the administrative action by the USFWS to permit the location of such facilities within KNWR.

1.2.2 ANILCA/ANCSA

The Alaska National Interest Lands Conservation Act (ANILCA) which was passed in 1980, is often called the most significant land conservation measure in the history of the United States. The statute protected over 100 million acres of federal land in Alaska, doubled the size of the country's national park and refuge system, and tripled the amount of land designated as wilderness.

Many of the issues addressed by ANILCA have their roots in the 1959 admittance of Alaska as a state. When Alaska became a state in 1959, virtually all of its land was federally owned. Under the Statehood Act, Alaska was granted the right to select 104 million acres of land, which it could manage as a revenue base.

During the first 8 years of statehood, Alaska identified 26 million acres for selection. Alaska Natives, however, had a traditional interest in lands identified for selection by the state. Consequently, the Native community argued that, without a treaty or an act of Congress extinguishing Native title, the state should not continue to make selections. The Secretary of the Interior agreed and declared a freeze on any additional state land selections.

The Alaska Native Claims Settlement Act (ANCSA), which was passed in 1971, created 12 Native-owned regional corporations, granted $962 million in seed money, and authorized the Native corporations to select 44 million acres of federal lands in Alaska. In addition, ANCSA Section 17(d)(2) directed the Secretary of the Interior to withdraw 80 million acres of significant federal lands from development. These lands, referred to as "d-2" lands, were to be available for potential congressional designation as national parks, wildlife refuges, wild and scenic rivers, or national forests. ANCSA also set a deadline for Congress to respond; if it did not act to designate these lands earmarked for special protections by 1978, the withdrawal would expire and the lands would be reopened to development. In 1978, over 100 million acres of federal lands were withdrawn, some under the authority of the Secretary of the Interior and some by designation as National Monuments.

ANCSA affected Kodiak National Wildlife Refuge by establishing rights for five Native villages (now represented by three corporations) to acquire not more than 345,600 acres of land within the refuge boundary. All lands conveyed under ANCSA located within the refuge boundaries at the time ANCSA was passed remain subject to the laws and regulations governing use and development of KNWR, as specified in Section 22(g) of ANCSA. In addition, the United States retained right of first refusal (at the time of the first sale) should the Native village corporations decide to dispose of any of these lands.

Negotiations to re-acquire large parcels of land from the Native corporations were ongoing for many years. Funding made available by the settlements resulting from the Exxon Valdez oil spill) in 1989 provided money to finalize these acquisitions. In 1995, funds from the 1989 spill and other sources allowed purchase from Akhiok-Kaguyak Inc. and Old Harbor Native Corporation of 99,400 acres, as well as acquisition from Koniag Inc. of 59,426 acres with an additional 56,860 acres protected by a temporary non-development easement that was established in 2002. In addition, the Native corporations relinquished all their remaining village selections within KNWR (USFWS 2006).

1.2.3 Integration of Other Environmental Statutes and Regulations

Both the USCG Commandant Instruction M16475.1D (National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts) and the Department of Interior Departmental Manual 516 require the consideration of numerous statutes, regulations, and environmental features in preparing environmental documents, including, but not necessarily limited to the following:

- National Historic Preservation Act and related executive orders (16 USC 470 et seq.)
- Coastal zone management (Public Law [PL] 92-583)
- Coastal barriers (16 USC 3501)
- Wetlands (Executive Order 11990)
- Floodplains (Executive Order 11988)
- Endangered species (16 USC 1531 et seq.)

1.3 AGENCY AND PUBLIC INVOLVEMENT

Members of the USCG, Windward Environmental LLC (Windward), and Parametrix, Inc. met with representatives of USFWS and KNWR on October 16th, 2009, to discuss the scope of the proposed action. Invitations to comment on the proposal were mailed in the form of a scoping letter on October 22nd, 2009, to federal, state, and local governments as well as members of local organizations, universities, and tribal organizations. The scoping letter is included as Appendix B. The mailing list was

compiled based on previous mailing lists used by the National Park Service (NPS), USFWS, and the Federal Aviation Administration (FAA). Recipients were asked to indicate whether they would like to remain on the mailing list. Recipients who indicated in the affirmative will be sent a copy of the EA.

2 Proposed Action and Alternatives

This section of the EA describes the proposed action. Details are presented for two alternatives, one of which is No Action. Other options that were considered but not evaluated in detail are mentioned at the end of this section.

2.1 Description of the Proposed Action and Alternatives

The USCG is modernizing the NDRS by deploying new communications technology throughout the terrestrial regions of the continental US, Alaska, Hawaii, the Caribbean, and Guam (URS 2002). Alternatives for the SPEA were developed based on the need for the USCG to modernize the NDRS with the capacity for two-way voice and data communications between shore stations, vessels, aircraft, and vehicles in the maritime environment. Currently, the NDRS consists of approximately 300 remotely controlled VHF radios and antenna high-level sites. The USCG estimates that a nationwide total of 377 sites is needed to provide coverage in current gap areas and to resolve localized coverage deficiencies. The USCG intends to modernize the current system by deploying new communications technology to existing communications sites that support the NDRS. However, because coverage gaps exist in the current system, the USCG must consider additional strategies, including the deployment of new facilities to undeveloped sites or development of existing sites where other equipment may be co-located. A vicinity map for the proposed action is shown in Figure 2-1, and the gap in coverage to be addressed is shown in Figure 2-2.

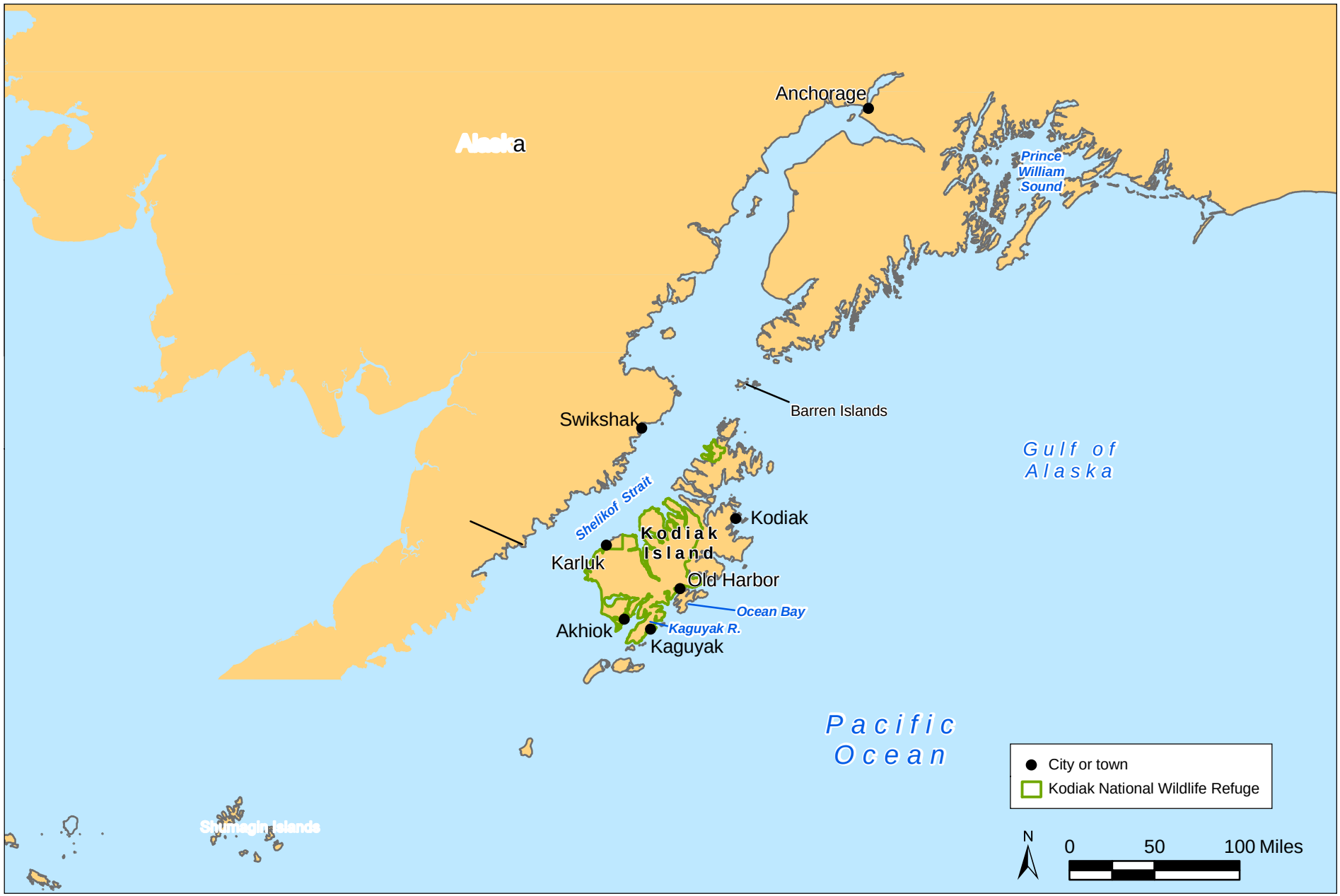

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Figure 2-1. Vicinity map, Kodiak Island, Alaska

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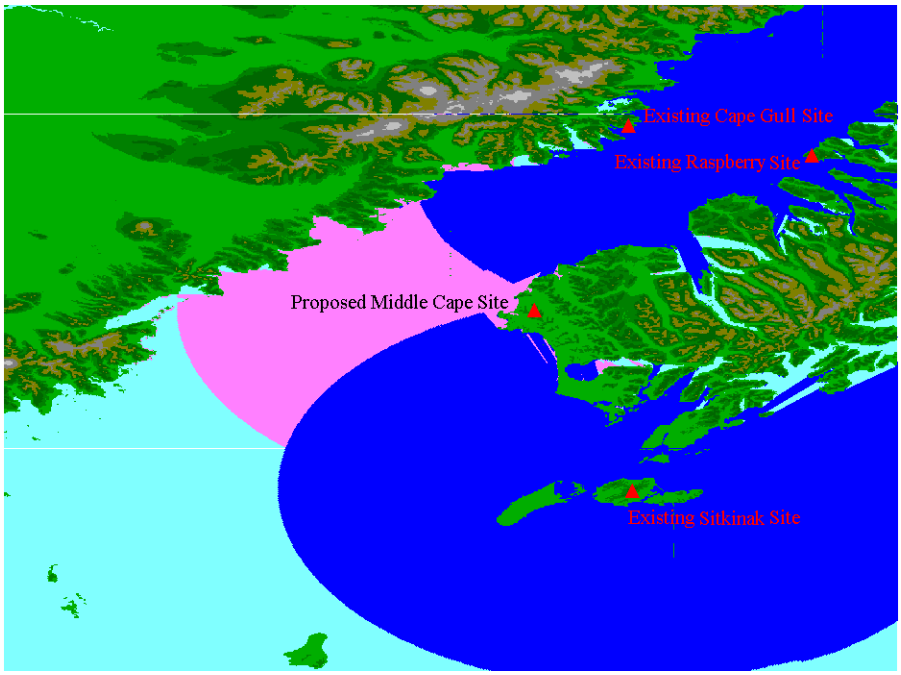

Figure 2-2.Coverage gap near Kodiak Island

Note: The pink zone represents the additional coverage provided by the proposed action. The coverage area depicted is based on a 1-watt handheld device 2 m above sea level, as from a small watercraft.

The USCG Rescue 21 Alaska program is designed to provide an integrated emergency communications system extending 20 nautical miles from the facility with the following services:

- Monitoring of distress calls from vessels (MAYDAY)
- Improvement in communications for other operational missions, including search and rescue, maritime law enforcement, maritime pollution prevention and response, and homeland security/national defense
- Support for US compliance with international treaties including digital selective calling (DSC) capability in Global Maritime Distress and Safety System, in accordance with the International Maritime Organization Safety of Life at Sea Convention

These services will be accomplished by the following actions:

- Reducing coverage gaps in the current VHF-FM system, such as in the Shelikof Strait
- Increasing channel capacity, which allows for simultaneous communications on multiple channels (including VHF Channel 16)
- Having DSC capability that will quickly provide a vessel's name, exact location, nature of distress, and other vital information when used in conjunction with

an integrated global positioning system (GPS) receiver and properly registered Maritime Mobile Service Identity number

- Digitally recording communications for instant playback
- Reducing system "down time"
- Improving interoperability among the USCG and other federal, state, and local communications systems

The Shelikof Strait is a major maritime route used by commercial freight, oil tanker vessels, barges, fishing vessels, and recreational vessels traveling between Anchorage and the Aleutian Islands. At present, there is a gap between the coverage areas of nearby existing VHF communications sites in the Shelikof Strait. This area is informally known in the USCG as the Kodiak Triangle because vessels in the area disappear from radio contact. Additional communications facilities in this region would improve communications coverage in the Shelikof Strait.

2.2 ALTERNATIVE A DESCRIPTION (THE PROPOSED ACTION)

The proposed action consists of the construction of two communications facilities by the USCG: a facility in the Middle Cape area in the southwest corner of KNWR and a repeater site approximately 35 miles south-southwest of the Middle Cape site to provide line-of-sight communication via microwave link with existing communications facilities at the Village of Akhiok (Figure 2-3). The repeater site is required because topography blocks line-of-sight microwave communication between the Middle Cape site and Akhiok. Minor modifications are also proposed for the existing communications facility at Akhiok.

The Middle Cape site is on the top of a bare ridge, approximately 1,500 ft above sea level. The proposed communications facility at Middle Cape would consist of a communication tower, communication equipment shelter, generator shelter, propane fuel tanks, solar arrays, a wind generator on a stand-alone tower, and all necessary electronic equipment capable of receiving and transmitting radio signals within the relevant service area. The repeater site would consist of a tower, solar array, shelter, and two microwave dishes on the tower. Each site would occupy an area of about 0.125 to 0.25 ac.

Details for each component of the proposed facilities are provided below.

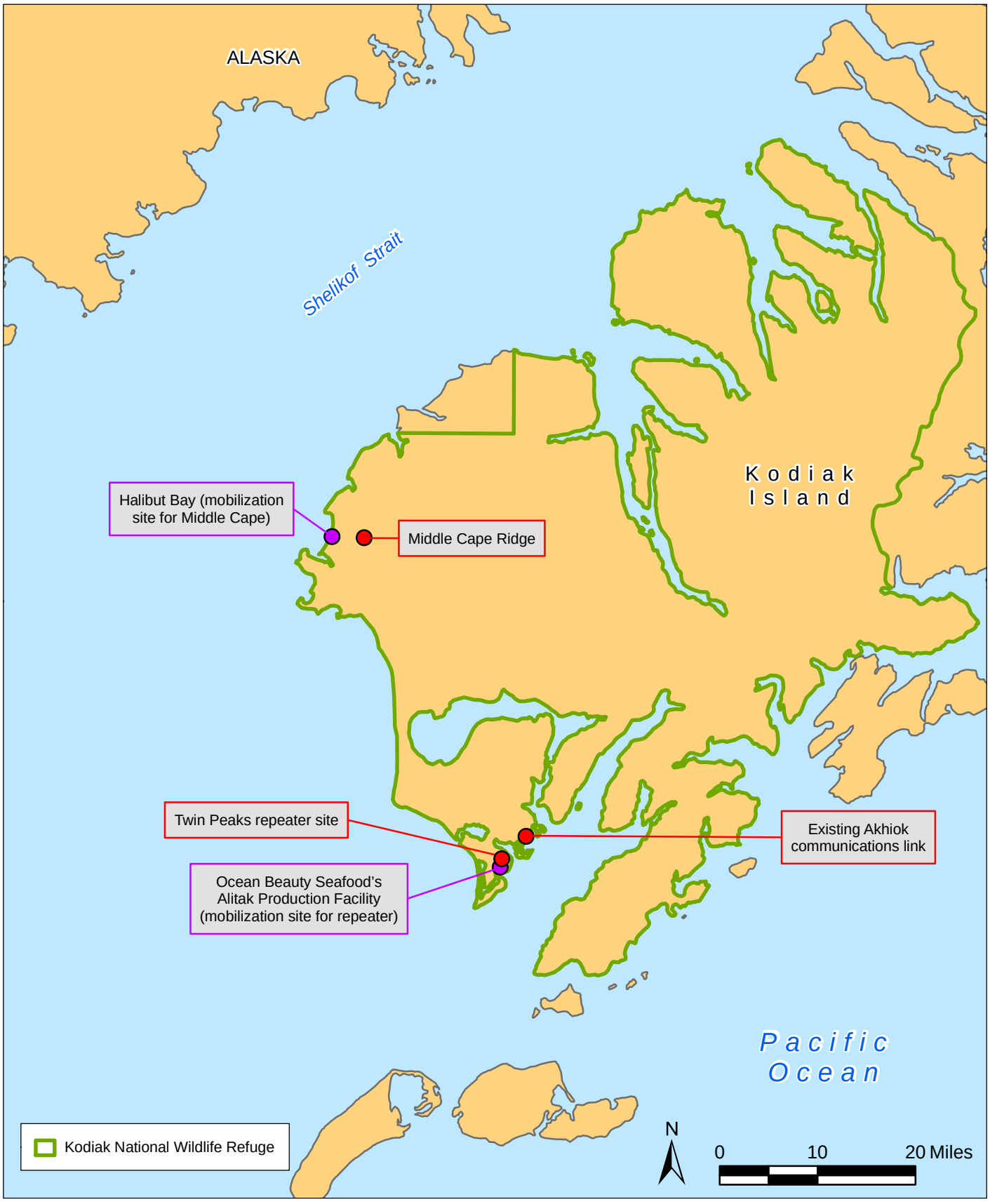

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Figure 2-3. Proposed locations for Rescue 21 communications and mobilization sites, Kodiak Island, Alaska

Prepared by MTY 10/09/09, revised CEH 02/22/10, Map #3985, W:\Projects\06-60-01 US Coast Guard\Data\GIS\KodiakKodiak_Island

2.2.1 Middle Cape site

The Middle Cape site is shown in Figures 2-4 and 2-5. Plans and drawings for the proposed construction are included as Appendix C. A typical communications site is shown in Figure 2-6. Elements proposed for the Middle Cape site are described below:

- **Communication Tower –** An unlighted and unpainted 60-ft, self-supporting, galvanized steel lattice tower on single-leg foundations with a base 10 ft on each side would be built. A steel ladder would be positioned inside the structure. The tower would provide support for six USCG VHF antennas each 5 ft tall and 2.75 inches in diameter (including DSC and National Weather Service broadcasts), one UHF antenna 4 ft tall and 2.75 inches in diameter, and one microwave dish 8 ft in diameter; the microwave dish would be mounted about 35 ft above the ground. The tower would include lightning protection, an ice shield, and an ice bridge connecting the tower to the communication hut. A grounding loop with 5 to 10 grounding rods would be installed around the tower and structures.
- **Communication Shelter –** A fiberglass shelter 8 ft by 10 ft by 8 ft tall would house the electronics equipment required to transmit and receive signals, and transfer these signals between the site and the USCG control center. The hut foundation would consist of four concrete pedestals, each 12 to 18 inches in diameter, anchored to bedrock. The floor of the hut would vary from approximately 1 to 3 ft above the natural ground line.
- **Generator Shelter –** A metal shelter 10 ft by 16 ft by 8 ft tall with an open, attached 4-ft porch extending from each end for an approximate total length of 24 ft would house two generators that run alternately as required, and two sets of battery packs for power to the communication hut and its electronic equipment. Batteries would be sealed, non-spilling, absorbed glass mat (AGM) type. The generator hut foundation would consist of six to eight concrete pedestals, each 12 to 18 inches in diameter, anchored to bedrock. The floor of the hut would vary from approximately 1 to 3 ft above the natural ground line.
- **Solar Arrays –** A projected 3-kW solar array with an approximate footprint of 384 square feet (sf) would be installed. The solar array would provide the majority of the site power during the summer months, and supplemental power during the spring and fall. The foundation for the array would consist of approximately 10 concrete pedestals, each 16 inches in diameter, anchored to bedrock.
- **Propane Tanks –** Ten 500-gallon, or five 1,000-gallon propane tanks would be installed to provide fuel for the generators. The approximate footprint for the propane tanks is 275 to 310 sf. The foundations for the tanks would consist of 8

to 16 concrete pedestals, each 16 inches in diameter, anchored to bedrock and treated lumber cribbing.

- **Refueling Pad –** A refueling pad 10 ft by 10 ft would be installed near the propane tanks to provide a level and stable surface on which transfer tanks can be set during refueling operations. The pad would be made from pressure-treated lumber with foundations consisting of concrete pedestals anchored to bedrock.
- **Wind Generator Tower –** A 20-ft, self-supporting lattice tower to support a vertical axis wind generator may be installed as an alternate power source to recharge the batteries in the generator hut and to reduce generator run time and propane use.
- **Co-location –** The tower would be designed to accommodate future co-location of communications facilities by the USCG or other agencies. Specific proposals for other facilities have not been developed at this time.

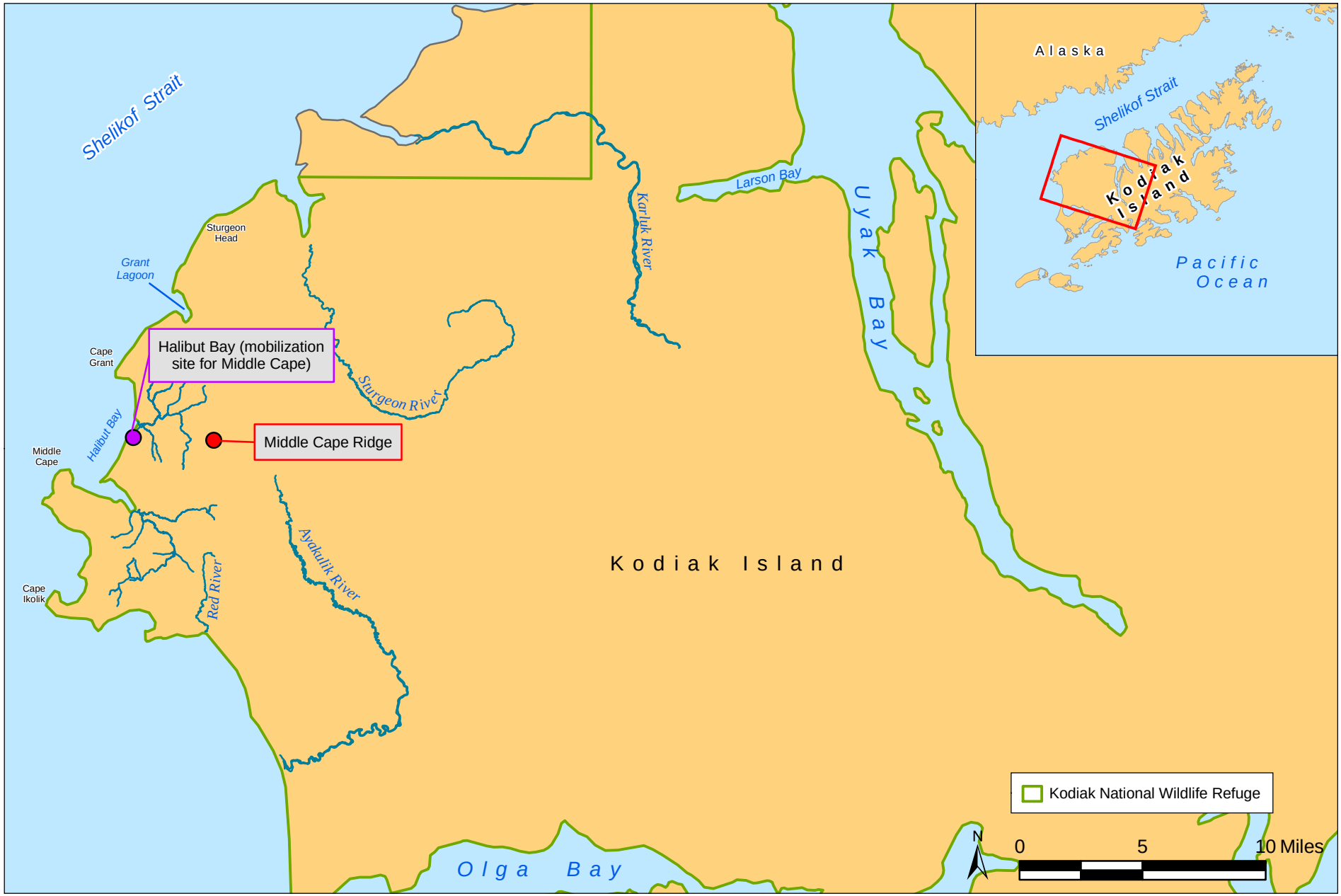

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Figure 2-4. Proposed locations for Rescue 21 Middle Cape facility, Kodiak Island, Alaska

Figure 2-5.Photo of Middle Cape site

Figure 2-6.Photo of a typical communications site

Generally, the Middle Cape site would be accessed by the USCG or its contractors twice each year for preventive maintenance and operational checks. The propane tanks will be designed to be refueled once every 2 years, depending on the effectiveness of solar and/or wind recharge of batteries. Refueling would occur during the summer, within predetermined work windows to take advantage of good weather. Portable tanks would be sling-loaded by helicopter and fuel would be transferred to the permanent tanks. The USCG expects to leave the generator hut doors unlocked year-round for emergency access by people in distress.

It is expected that a camp for four to five construction workers will be established at the proposed Middle Cape site, although the choice is up to the contractor, who may choose to house construction workers at another site, such as Halibut Bay (see Section 2.2.2), and helicopter them to the site daily. The area of an onsite construction camp is likely to be 0.25 acre or less and would consist of a tent 10 ft by 20 ft on a temporary wood platform for sleeping, cooking, and personal item storage. A portable toilet would be placed at the site, with contents flown out by helicopter. Multiple smaller tents may be used dependent on conditions at the site (wind, fog) and safety concerns. Temporary protective measures against bear intrusion may be needed.

Mobilization and construction activities would be of short-term duration. Foundations would be installed over a 1-week period, followed by a break to allow concrete to cure. Subsequent completion of facilities would take approximately 1 week.

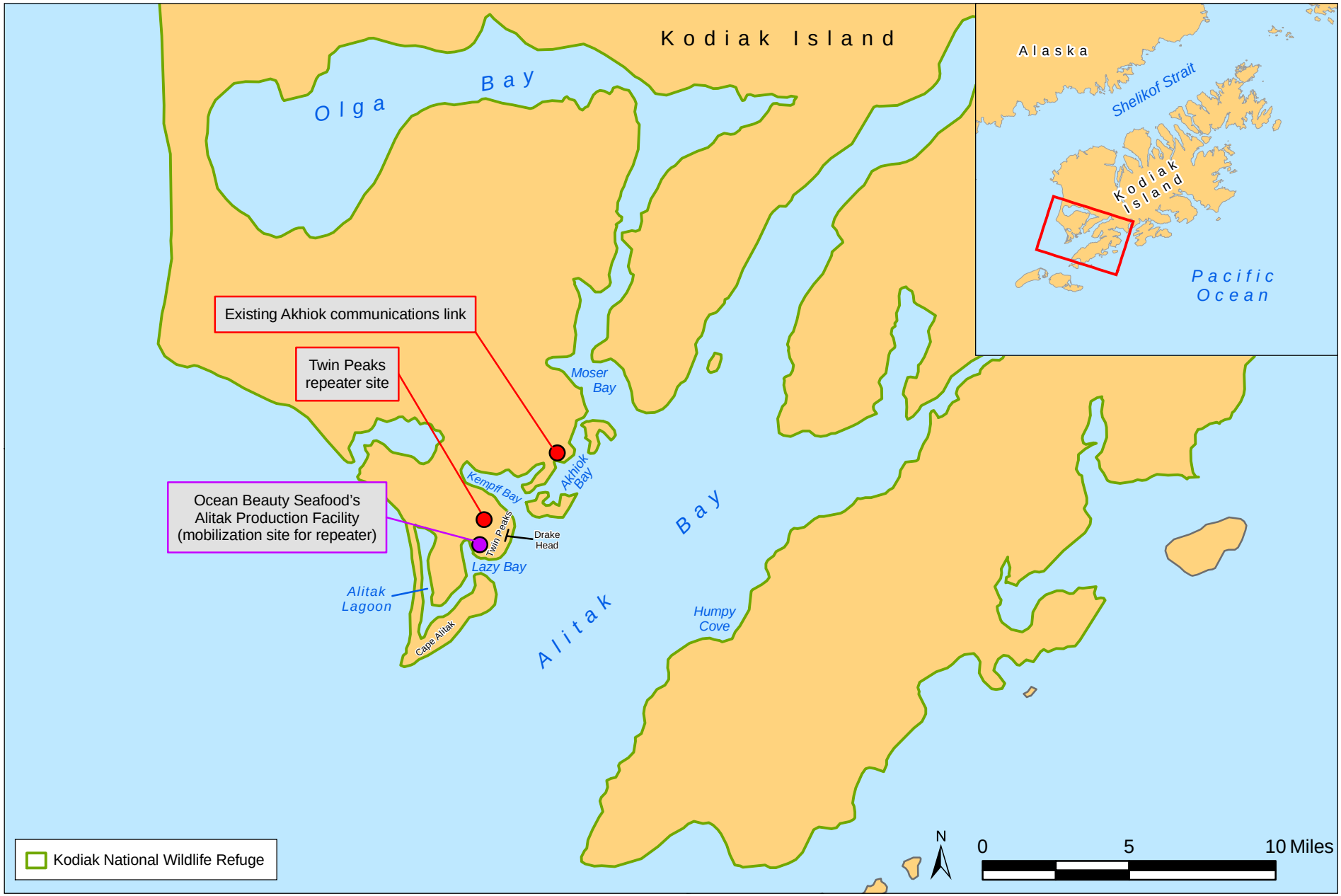
2.2.2 Middle Cape site staging area (Halibut Bay)

A temporary staging area would be necessary during construction. Materials would be transported by water to a beach near Middle Cape and then by helicopter to the top of the ridge. While a final location would be identified in coordination with the contractor, USCG, and the USFWS, the most likely staging area site is in Halibut Bay (Figure 2-7). Materials would be transported by landing craft from Kodiak to Halibut Bay and unloaded using a beach-tired forklift to just above high water line. A helicopter would then sling all materials up to the site on Middle Cape ridge. Slinging is typically completed in 1 or 2 days.

Figure 2-7.Photo of Halibut Bay

To provide microwave communication between the site on Middle Cape and the existing facility in northeast Akhiok, an additional relay tower would be installed west of Kempff Bay. The location of the repeater site is shown on Figure 2-8. The tower would have the following features:

- **Communication Tower –** An unlighted and unpainted 20-ft, self-supporting, triangular, galvanized steel lattice tower on single-leg foundations with a base 8 ft on each side. It would support two 8-ft-diameter microwave dish antennas. The tower would also accommodate a vertical axis wind generator.
- **Equipment Shelter –** A fiberglass shelter 6 ft by 8 ft by 8 ft tall would house the electronics equipment and batteries to power the communication hut and its electronic equipment. Batteries would be sealed, non-spilling AGM type. The hut foundation would consist of four concrete pedestals, each 12 to 18 inches in diameter, anchored to bedrock. The floor of the hut would vary from approximately 1 to 3 ft above the natural ground line.
- **Solar Arrays –** A projected 3-kW array with an approximate footprint of 384 sf would be installed. The foundation for the array would consist of approximately 10 concrete pedestals, each 16 inches in diameter, anchored to bedrock.
- **Wind Generator Tower –** A 20-ft, self-supporting lattice tower (communication tower mentioned above) to support a vertical axis wind generator would be installed. The generator would provide an alternate power source to recharge the batteries in the generator hut. No propane-powered generation would be necessary at the site.
- **Helicopter Landing Area –** Helicopters would land at a flat area about 100 ft south of the solar array.



Wind Ward LLC environmental

Figure 2-8. Proposed locations for Rescue 21 Twin Peaks facility, Kodiak Island, Alaska

Prepared by MTY 01/22/10, CEH 02/23/10, Map #4049, W:\Projects\05-69-01 US Coast Guard\Data\GIS\Kodiak\Kodiak_Island

It is expected that a temporary camp for construction workers will be established at the proposed repeater site or at the staging area at Ocean Beauty Seafood's Alitak production facility (Alitak production facility) (see Figure 2-8 and Section 2.2.4). The final location of the camp would be determined by the contractor. If a construction camp is established at the repeater site, it would be as described above for the Middle Cape camp (Section 2.2.1).

Construction of the repeater site would require about two 1-week periods.

2.2.4 Twin Peaks repeater site staging area (Alitak production facility)

Materials for the repeated site would be carried by landing craft to the temporary staging area at the Alitak production facility and placed on the existing dock, or just above high tide on the beach near the dock. Materials and personnel would be transported to the repeater site by helicopter.

2.2.5 Akhiok Village communications link

To provide microwave communication between the site on Middle Cape and central USCG communications facilities, an existing 20-ft tower near Akhiok would be modified by the installation of one additional 8-ft-diameter microwave radio dish to communicate with the repeater site. Electronic equipment would be located in the existing equipment building. Communications would take place over commercial circuits. The existing facility is shown in Figure 2-9.

2.3 ALTERNATIVE B DESCRIPTION (THE NO ACTION ALTERNATIVE)

As required by the Council on Environmental Quality, a "No Action" alternative is evaluated. Under the No Action Alternative, the NDRS would not be modernized. The system would continue to operate with the existing network of analog transceivers located at existing tower sites. No new communications equipment would be installed and no new antenna tower sites would be constructed on undeveloped sites.

The No Action Alternative would not satisfy the need of the USCG for an efficient, modern, more technologically advanced NDRS. Existing NDRS operational deficiencies would not be corrected, leaving the USCG without a reliable means of meeting its multi-mission requirements. Equipment non-availability, existing coverage gaps, and inadequate channel capacity could contribute to degraded command and control and to unanswered calls for assistance. Maintenance costs would continue to increase. Eventually the system could experience frequent and widespread failure. The system's inability to determine the location of distressed vessels or hoax callers could result in lost lives and wasted resources.

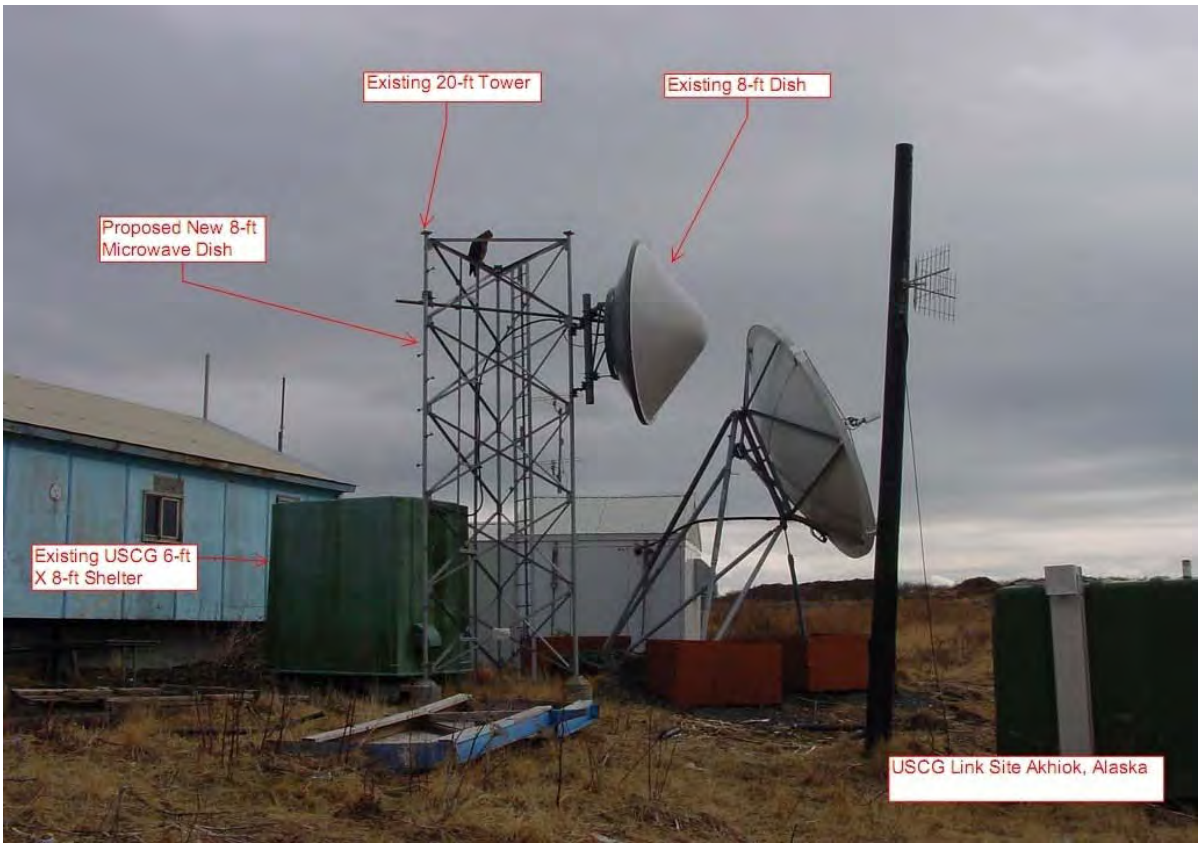


Figure 2-9. Akhiok Village communications link site

The No Action Alternative also would fail to satisfy the need for improved command and control operations for USCG operations, including acting as "first responder" in life-threatening situations. The current communications "dead zones" within southwestern Kodiak would remain. Communications would rely on transmission transfers from a boater in trouble through other boaters to the existing communications facilities in the Kodiak area. Delays in search and rescue response time would persist.

Although the No Action Alternative is not a reasonable alternative, its analysis is required by NEPA because it provides a baseline for decision-makers and the public. This baseline allows the environmental effects of the action alternatives to be compared with those of the No Action Alternative.

2.4 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

As part of project scoping, several alternative site locations identified were ultimately dismissed from further consideration because they did not meet the project objectives. These alternative sites are named below with the reason for rejection; greater detail is available in Appendix D.

- Cape Unalishagvak and Cape Kilokak – Difficulties with microwave connectivity due to long distances from existing communications facilities
- Karluk area – Very poor coverage in the required area of southwest Kodiak
- Cape Grant area –Lack of adequate space for construction, marginal VHF coverage, need for multiple repeater sites
- Middle Cape and Cape Ikolik peaks – Lack of adequate space for construction

2.5 IMPACT SUMMARY MATRIX

A summary of the impacts of the alternatives is presented in Table 2-1.

Table 2-1. Impact summary matrix

AFFECTED ENVIRONMENT	IMPACTS	
	PROPOSED ALTERNATIVE	NO ACTION ALTERNATIVE
Land use	There would be no adverse impacts on land use at the Middle Cape site and construction may improve emergency communications for local subsistence users. There would be no adverse impacts at the Twin Peaks repeater site.	There would be no impact to land use in the area.
Wilderness	There would be no formal effect on the current wilderness status of the Middle Cape site but the introduction of manmade features could impact potential wilderness designation. Because of the small scale of these features, the impacts would be minor. The Twin Peaks repeater site is not eligible for wilderness designation.	There would be no impact to wilderness.
Recreation use	Recreation use would not be adversely impacted at the Middle Cape site. The facility may enhance recreation use by providing an emergency shelter and emergency communications. There would be no impact to recreation use at the Twin Peaks repeater site.	There would be no impact to recreation use.
Visual and aesthetics	Impacts to visual resources would be minor because the facility would not attract the attention of observers at the Middle Cape site. There would be no impact to visual resources and aesthetics at the Twin Peaks repeater site.	There would be no impact to visual and aesthetics.
Air quality	Helicopters would be the only source of air emissions at the Middle Cape and Twin Peaks sites. Helicopter use would be infrequent and would have a negligible impact on air quality in the areas.	There would be no impact to air quality.
Noise	Construction activities would raise noise levels in the area but these activities would be temporary and the effects minor. Access by helicopter for maintenance would be infrequent, with negligible impacts on noise.	There would be no impact to noise in the area.

Affected Environment	Impacts	
	Proposed Alternative	No Action Alternative
Geology and soils	No impacts to the geology or soils are expected at the Middle Cape and Twin Peaks sites because of the small scale of the project. Sands at Halibut Bay may be disturbed, but this impact would be temporary and minor. The Akhiok Village link site would not be impacted because the radio dishes would be installed on the existing tower.	There would be no impact to geology and soils.
Floodplains	There are no floodplains at the Middle Cape and Twin Peaks sites and therefore no impacts. Impacts to the floodplain near the Halibut Bay staging area, if any, would be temporary and negligible.	There would be no impact to floodplains.
Water resources and water quality	There are no water resources at the Middle Cape and Twin Peaks sites and therefore no impacts. Impacts to coastal waters at the staging areas, if any, would be temporary and minor.	There would be no impact to water quality or water resources.
Wetlands and vegetation	No impacts to the wetlands and vegetation are expected at the Middle Cape and Twin Peaks sites because of the small scale of the project and the absence of designated wetlands at these sites. No impacts would occur at the staging areas. The Akhiok Village link site would not be impacted because the microwave dish would be installed on the existing tower.	There would be no impact to wetlands and vegetation.
Coastal zone management plans	The proposed communications facilities support the Alaska and Kodiak Island coastal management plans and would have a positive impact.	Without new communications facilities, there would still be a need for additional emergency communications facilities.
Fish and wildlife	Fish and marine mammal species would not be impacted at the Middle Cape and Twin Peaks sites. No impacts are expected for land mammals and birds at the communications sites. Impacts to fish and wildlife at the staging areas would be temporary and negligible.	There would be no impact to fish and wildlife.
Threatened and endangered species	Impacts to threatened and endangered marine species and waterfowl at the staging areas would be temporary and negligible. Impacts to birds at the Middle Cape and Twin Peaks sites are expected to be minor.	There would be no impact to threatened or endangered species.
Historical, archaeological, and cultural resources	The communications sites would not have adverse impacts on historical, archaeological, or cultural resources. It is possible that cultural resources may be impacted at the staging areas but this impact would be temporary and work would be stopped if cultural resources were encountered.	There would be no impact to historical, archaeological, or cultural resources.
Socioeconomics	Adverse impacts to socioeconomics are not expected. Enhanced communications may indirectly increase hunting and fishing, which is considered a positive impact.	There would be no impact to socioeconomics.

Affected Environment	Impacts	
	Proposed Alternative	No Action Alternative
Environmental justice	Adverse impacts to minority populations are not expected. Enhanced communications may indirectly increase hunting and fishing, which may positively impact Alaska Native populations.	There would be no impact to environmental justice.
Hazardous materials and waste management	Waste generated during construction will not have adverse impacts because all waste would be removed following construction. Hazardous materials stored on the site for operation at the facilities would be managed so as to preclude adverse impacts.	There would be no impact to hazardous materials or waste management.
Public health and safety	The communications facilities will not have adverse impacts on the health of the surrounding community. The reduction in coverage gaps for emergency communications would increase public safety in the area.	There would be no impact to public health. Public safety might be negatively impacted because of the gap in emergency communications.
Transportation	No impacts to transportation are expected.	There would be no impact to transportation.
Cumulative impacts	No adverse cumulative impacts have been identified from the proposed communications sites.	There would be no cumulative impact.

3 Affected Environment

The discussion of the affected environment includes a description of the existing conditions onsite that might be affected by the proposal. Existing conditions in the vicinity of the sites are included.

3.1 Land Use

The Middle Cape site is in the southwest portion of Kodiak Island (Figures 2-2 and 2-4). It is about 18 miles from the communities of Karluk and Larsen Bay to the northeast and about 35 miles from Akhiok to the southeast.

The site lies within Kodiak National Wildlife Refuge. Inholdings of Alaska Native lands are found on Halibut Bay about 3 miles west of the site, at Middle Cape 3 to 5 miles east of the site, and at Grant Lagoon about 6 miles north of the site. While there is no permanent habitation on the Native land inholdings, cabins and other facilities for seasonal use are present. At Ayakulik, about 12 miles to the south, commercial recreational facilities at the mouth of the Ayakulik River are owned by the Akhiok-Kaguyak Native Corporation. Numerous seasonal fishing and hunting camps are present along the lower 11 miles of the Ayakulik River.

The Middle Cape site is undisturbed, with no evidence of human alteration by either traditional Native or modern technology except a US Coast and Geodetic Survey marker at the peak. There are no roads in the vicinity and no evidence of trails.

When KNWR was established in 1941, there was little public use on refuge lands. The population of Kodiak Island has increased substantially from about 2,000 in 1941 to

about 13,000 at present, with 6,300 residing in the City of Kodiak. Recreation use has increased from a negligible level to over 8,000 recreation use-days per year at present (USFWS 2006).

The primary use of lands in the vicinity of the Middle Cape site is subsistence by local residents. Subsistence uses are defined in Section 803 of ANILCA as:

> *the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing; byproducts of fish and wildlife resources taken for personal or family consumption, for barter, or sharing for personal or family consumption; and for customary trade*.

ANILCA recognizes that continued opportunity for subsistence uses of public lands is critical to the physical, economic, traditional, social, and cultural existence of rural Native and non-Native residents of Alaska. In recognition of multiple threats to subsistence lifestyles, ANILCA established a preference for subsistence users, stating that the taking of fish and wildlife on public lands for non-wasteful subsistence use is given priority over other consumptive uses. In times of scarcity, recreation use is limited first (USFWS 2006).

The primary population that uses the area for subsistence is the Alaska Native population related to the villages to the north. Karluk has an estimated current population of 23; Larson Bay has an estimated population of 97 (KIB 2008). The 2000 census population of the entire northwest portion of the island west of Uyak Bay was about 400 (US Census Bureau 2002). Summer populations are likely to be higher, as a number of dwellings are seasonal. Estimated subsistence use is about 83% water-related species, of which 71% is salmon. About 11% of the subsistence take is related to land mammals (USFWS 2006). It is unlikely, however, that subsistence use takes place at the proposed site because it is inaccessible and because lowland areas closer to the coast are likely to have greater and more accessible populations of harvestable resources.

The Twin Peaks repeater site is in the southwest portion of Kodiak Island, about 3 miles west of Akhiok (Figure 2-8). A cannery operated by Ocean Beauty Seafood on Lazy Bay about a mile to the south employs up to 200 seasonal workers (Knebel 2009). The repeater site is owned by the Akhiok-Kaguyak Native Corporation, as is most of the surrounding land on the north side of Alitak Bay. Kodiak National Wildlife Refuge includes a strip along Alitak Lagoon about a mile west of the site.

The repeater site is undisturbed, with no evidence of human alteration by either traditional Alaska Native or modern technology. There are no roads in the vicinity. The primary use of lands in the vicinity is subsistence by local residents, most likely the Alaska Native population of Akhiok, with a current estimated population of 41 (KIB 2008). The 2000 census population of the entire Alitak Bay area was about 70. Estimated subsistence use is about 90% water-related species, of which 62% is salmon.

About 10% of the subsistence take is related to land mammals (USFWS 2006). It is likely that some subsistence use of land mammals takes place at or near the proposed site, given its accessibility to the village and the likely availability of animals, including feral reindeer descended from those raised at Akhiok between the 1920s and 1960s (USFWS 2009b).

The Twin Peaks repeater site is designated for conservation use in the Kodiak Island Borough (KIB) comprehensive plan and zoning code (KIB 2008).

The existing USCG communications link site at Akhiok is in the east portion of the community, in an area designated in the comprehensive plan for mixed use, including both residential and commercial uses (KIB 2008).

3.2 WILDERNESS

There are no designated wilderness areas within KNWR. Section 304(g) of ANILCA, however, requires the refuge to identify and describe certain values of KNWR, including wilderness values. KNWR prepared a recommendation in 1987 that approximately 1.08 million acres of the refuge be designated as part of the National Wilderness Preservation System. This recommendation is retained in the current refuge Comprehensive Conservation Plan (USFWS 2006). The designation as wilderness can occur only by Congressional action, which has not taken place. Much of the western portion of KNWR was recommended for wilderness designation, as indicated in Figure 3-1.

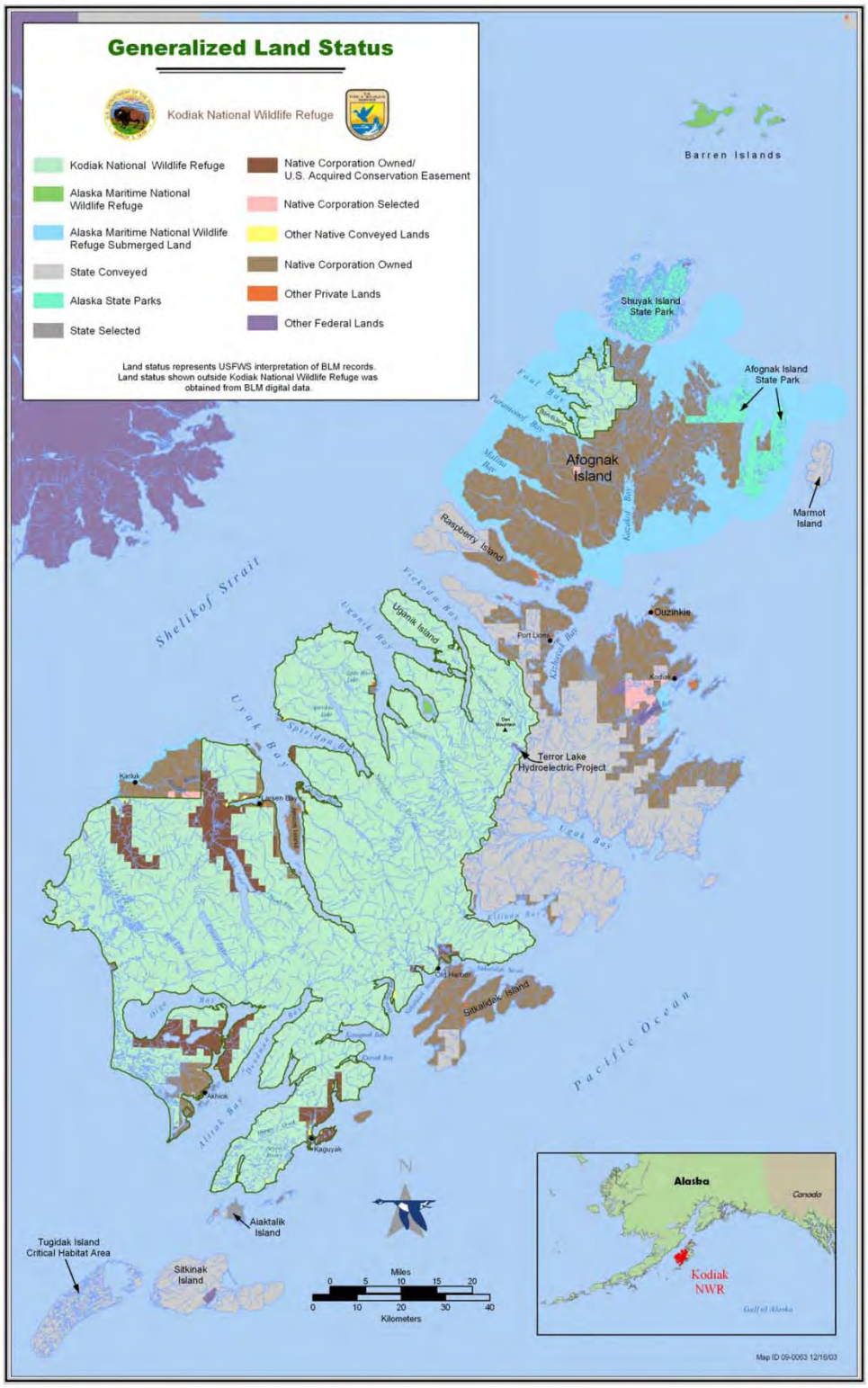


Figure 3-1.Land status at KNWR

Source: (USFWS 2006)

The Wilderness Act of 1964 (PL 88-577) allows for the establishment of wilderness on federally owned lands designated by Congress. Areas designated as wilderness are to be administered in such a manner as to leave the lands undisturbed for future public use and enjoyment as wilderness, and to protect their wilderness character.

The fundamental attributes of the wilderness resource, as described in the Wilderness Act, are fourfold:

- Size
- Naturalness
- Wildness ("untrammeledness")
- Opportunities for solitude and unconfined types of recreation

In addition, wilderness values may be enhanced by special or unique biophysical or cultural features (e.g., wildlife concentrations, rare or dramatic landforms, cultural sites).

Section 1310(b) of ANILCA allows for new air and water navigation aids in KWNR after consultation with the USFWS by the federal department or agency undertaking their establishment, operation, or maintenance, and in accordance with mutually-agreed-to terms and conditions.

The proposed Middle Cape site is on the edge of the area recommended for wilderness designation. The site is largely natural in character, with an absence of human activities and artifacts, except for a survey marker. The Twin Peaks repeater site and existing Akhiok communications link facility are not designated or eligible for wilderness status.

3.3 RECREATION USE

No existing recreational use of the Middle Cape site has been identified. There are no roads in the vicinity; access is by helicopter only. The potential for recreational use is substantially limited by the remote location, the lack of access, and the apparent lack of recreational or other amenities. The ridge does not contain characteristics consistent with a mountain climbing destination. The area is not likely to be a destination for hunting; game animal use of the area is limited because of lack of forage. Game animals use areas at lower elevations rather than travel through the site, which is located on one of the highest ridges in the area.

Recreational use in the broader vicinity of the Middle Cape site includes hunting and fishing. Ocean fishing takes place in the Shelikof Strait and Halibut Bay. The KNWR Comprehensive Conservation Plan indicates that seasonal bear-viewing, recreational fishing, wildlife observation, and wildlife photography opportunities exist on portions of the Ayakulik River (USFWS 2006). Located to the south and east of the site, the Ayakulik River is the largest river system on Kodiak Island and provides fishing and

hunting opportunities. Services are available from the Alaska Ayakulik Adventures camp at the mouth the river operated by Ayakulik Inc., the Alaskan Native Village Corporation (Ayakulik 2009).,A variety of private guide services is also available. Sport fisheries are generally concentrated in the 11.5-mile river section between the confluence of the Ayakulik and Red rivers (Bare Creek) and the Ayakulik Lagoon. In recent years, concerns about overcrowding and other perceived problems during the peak of the king salmon season led to voluntary camping closure zones between June 1 and July 7 near seven of the river's more popular fishing areas (ADF&G 2009c). Recreational use of the river occurs about 10 miles from the Middle Cape site.

No existing recreational use has been identified at the Twin Peaks repeater site. It is about 1 mile from the coast at Kempff Bay to the north and a similar distance from Lazy Bay to the south. There are no roads in the vicinity. Informal trails in the area are used by local residents, particularly in relation to grazing of wildlife, including the feral reindeer herd maintained by residents of Akhiok. There may be occasional informal recreational ascents of the Twin Peaks to the southeast of the site by local residents or by workers of the cannery at Lazy Bay. The potential for recreational use at the site is substantially limited by its remote location, the lack of access, and the apparent lack of recreational amenities or other features. The area is not a destination for recreational hunting, although the area may be used for subsistence hunting.

Recreational use in the broader vicinity of the repeater site includes hunting and fishing. Ocean fishing takes place in the Alitak Bay and Shelikof Strait. Olga Bay, a destination for fishing, hunting, and sightseeing about 10 miles north of the repeater site, is partially within KNWR and partially bounded by Native Corporation land. .

Akhiok has a culture center but has no other formal parks, trails, or other recreational facilities (KIB 2008).

3.4 VISUAL AND AESTHETICS

This section addresses the visual character of the project site and surrounding area, including viewer groups, views, and existing sources of light and glare. The assessment of visual quality is subjective, as the person perceiving the visual environment brings personal and cultural frames of reference to the discernment and evaluation of visual information. There is, however, broad agreement in federal, state, and local regulations, as well as research, which establishes a general public consensus of what constitutes a desirable visual environment.

There are three critical parameters of the aesthetic experience:

- Visual character
- Visual quality
- Viewer response

Visual character refers to the relationships between elements of the visual environment, including the position of an individual element; apparent scale or size relationships; the number, variety, and intermixing of elements in a view; and the maintenance of visual relationships (Blair 1988). These parameters allow consideration of a variety of visual elements, such as the seven key factors identified in the Bureau of Land Management (BLM) visual resource management system: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications (BLM 1980).

Visual quality refers to the value of the visual experience to the public. Studies of the American public and across cultures demonstrate strong agreement about preferred qualities of the visual experience (Jacques 1980; Kaplan 1985; Real et al. 2000). Elements of visual quality include the vividness or distinctive and memorable visual patterns in the landscape, integrity of visual patterns whether natural or built, and the extent to which the landscape is free from encroaching elements. Visual coherence and compositional harmony define the unity of the landscape considered as a whole. It refers to the fit between elements of the landscape but does not connote uniformity in design or character (Blair 1988).

Potential visual impacts also must consider interference with visibility due to weather conditions. The westerly coast of Kodiak Island is subject to frequent fog and low-lying cloud cover caused by the confluence of cold Arctic air with the warmer waters of the nearby Japanese Current. These conditions often obscure visibility. Although data are not available for western Kodiak Island, the conditions in the City of Kodiak may be regarded as a substitute for general conditions. Throughout the year, cloud covers an average of 70% of the city sky and the weather is completely overcast 50% of the time (ENRI 1995).

The Middle Cape site is visible from the west by boats in Halibut Bay. Visibility of the site from the land surface is constrained by topographic features. The site is visible from the lowlands along the northerly portion of Halibut Bay; however a smaller ridge about 1,000 ft in height partially blocks direct line-of-sight views from the southerly portion of Halibut Bay and low-elevation portions of Middle Cape. The site is visible from the east from portions of the northwest-to-southeast ridge of peaks that extends from Sturgeon Head to the east end of Olga Bay about 5 miles to the east. The land area from which the site is visible covers about 50 square miles, located largely to the east. Most of the viewshed consists of a wetland complex serving as the headwaters of the Ayakulik River. Because this area lies outside the part of the river that receives extensive recreational use, the viewing population is probably very small.

The Middle Cape viewshed also extends several miles to sea. The site as seen from Halibut Bay is not distinguished by substantially greater height, prominence, or vividness. A slightly higher element in a series of ridges that rise from Shelikof Strait, the site is one element of an integrated pattern of vegetated ridges extending to the horizon. The most vivid elements in the vicinity, as seen from the ocean or shore, are the ridges that rise directly and steeply from the ocean to an elevation of 1,000 ft or

more at Cape Grant to the north, Middle Cape to the east, and Cape Ikolik to the south. The Middle Cape site is not a vivid visual element.

The viewing population is most likely to include persons on vessels in Halibut Bay and Shelikof Strait, up to a distance of several miles offshore, and persons in the lowlands along Halibut Bay. The lowland viewing population in Halibut Bay is likely to be engaged in subsistence gathering of shellfish and native plants, subsistence hunting, recreational fishing, recreational hunting, or wildlife viewing.

The Twin Peaks repeater site is located on the inland portion of Drake Head on the north side of Alitak Bay between Kempff Bay to the north and Lazy Bay to the south. The most vivid element of Drake Head is the Twin Peaks, which rise abruptly from the water to an elevation of about 1,400 ft. The Twin Peaks are the most vivid element of the relatively level coastal plain that extends from Olga Bay to Atiak Bay. They are more visually dramatic than ridges of similar height northeast of Akhiok because they are isolated and rise uninterrupted from the bay without intermediary foothills. The Twin Peaks are visible from the southerly portion of Alitak Bay and are the most vivid visual element available to most residents of Akhiok. The proposed repeater site is a less prominent part of Drake Head than the Twin Peaks to the south. The peaks are the likely focus of views, rather than the lower-elevation repeater site. The repeater site appearance is not distinguished by topographic or other features and is consistent with the overall character of ridges covered in low-lying vegetation that frame Alitak Bay.

The viewing population in the repeater site area consists of persons on vessels in the Pacific Ocean and Alitak Bay, and the residents of Alitak. The repeater site is located on the northeasterly side of the Twin Peaks away from the bay and is on a ridge at about one-half the elevation of the peaks. It is visible from the northeast and north. Views from portions of Alitak Bay to the south and Lazy Bay, including the cannery, are blocked by the Twin Peaks.

The existing USCG communications facility in Akhiok consists of a 20-ft tower and several equipment buildings; it is next to the commercial satellite link that provides phone and other communications services to the village and other nearby users. The site is at an elevation of about 30 ft above mean sea level (msl) and is about 0.25 mile from Akhiok Bay. The site is visible only from public streets and by nearby residents. The facilities at the site are similar in character to other buildings in the village, as indicated by photo libraries of the community (ADCRA 2009). The existing tower is somewhat higher than most structures but is not visually prominent. The existing dish antennas and satellite dishes on the site are not visually prominent as they are mounted close to the ground.

3.5 AIR QUALITY

The air quality in western Kodiak Island is classified as unimpaired, with no major stationary or mobile sources of air emissions to adversely affect air quality. The major natural source of air emissions is wind-blown volcanic dust. The major human sources of emissions are space heating, vessels, and aircraft. Given the minimal industrial activity and overall good air quality in the area, the Alaska Department of Environmental Conservation, Division of Air and Water Quality does not maintain air monitoring activities on the island (Lytle 1995).

As an area in attainment with the National Ambient Air Quality Standards (NAAQS), Kodiak Island is categorized as a Class II area. Air quality control regions are categorized as Class I, II, or III to indicate the permissible degree of air quality deterioration before failing to meet NAAQS. If portions of the wildlife refuge were designated wilderness, Class I standards would apply (EPA 2008a).

The dispersion of air pollutants on Kodiak Island is based on factors such as atmospheric stability, wind speed, and surface roughness. Average wind speeds on the island are about 18 mph with predominant wind direction from the northwest (Vaught 2006). Western Kodiak Island has varied topography with considerable ranges in elevation. Atmospheric conditions would generally be classified as neutral (D stability) for the dispersion of air pollutants. D stability occurs during periods of high winds and overcast skies, which are common on Kodiak Island (EPA 2008a).

3.6 NOISE

Background information on noise terminology and descriptors and a regulatory overview is provided in Appendix E.

The main sources of noise at the Middle Cape and Twin Peaks sites are natural. Generally, sound levels in areas without human influence are considered to be in the range of 20 to 30 dBA in calm weather. A number of natural phenomena can, however, produce substantially higher noise levels. The most pervasive source of natural sound is the wind. Wind through foliage or over bare surfaces generates noise levels that relate to the speed of the wind and, to a lesser degree, the extent to which topography or other features channel winds. The noise associated with winds on level ground has been measured at about 35 to 45 dBA at speeds of 5 to 10 mph, and at 55 to 65 dBA at speeds of 20 to 30 mph (Bolin 2006; Illingworth and Rodkin 2006).

The vocalizations of birds, amphibians, and other animals are generally understood to be features of the natural soundscape that are at relatively low ambient levels. However, higher sound levels can be produced intermittently by mating calls of birds and animals or seabird colonies, where levels in excess of 55 dBA at a distance of 50 ft may be sustained during daytime hours (Feare et al. 2003).

The loudest potential source of noise in the area is likely to be airplane overflights, and in the case of Akhiok, landings at the village airstrip. A single-engine flyover 1,000 ft

above an observer may have a peak noise level of 80 dBA for a very short period, with a more extended period of lower noise levels when the airplane is at a greater distance (Schulten 1997). Noise from takeoffs at the runway near Akhiok is not likely to exceed peak levels of 55 dBA at residences because the runway is more than 0.25 mile from the village. Noise from seaplane takeoff may result from activity at the seaplane landing area on Lazy Bay near the Twin Peaks repeater site; however, topography provides an effective barrier between this source and the repeater site.

Generally, noise levels at the Middle Cape site and the Twin Peaks repeater site may be expected to be between 20 and 30 dBA in calm winds and up to 40 to 50 dBA in moderate to strong winds.

Noise levels near the existing 20-ft communications link tower in Akhiok are likely also to be in the 30 to 50 dBA range, due to the generally low level of human activity in the area.

3.7 GEOLOGY AND SOILS

The Middle Cape site and the Twin Peaks repeater site are located along two of Kodiak Island's many ridges. The Middle Cape site is at an elevation of 1,514 ft above msl and the Twin Peaks repeater site is at an elevation of 802 ft above msl. These ridges are typically composed of mafic or ultramafic rocks, with a typical surface of exposed rock or low-growing vegetation.

A site survey in August 2008 found that the soil depth was generally less than 2 inches at the Middle Cape site in the areas where there was not exposed rock. The survey also identified the surface as 70% shale and fractured rock, 20% scree and talus rock, and 10% vegetation (SAGE 2008a). Soils in some vegetated areas ranged between 6 and 8 inches deep (SAGE 2008a).

The geology and soils at the Twin Peaks repeater site are primarily fractured rock covered with a 6-inch layer of vegetation (SAGE 2008b). A site survey in August 2008 found that the site is 20% shale rock outcroppings and 40% scree and talus rock; the remainder was vegetation. The soil at the site was a maximum of 6 inches deep (SAGE 2008b). Although soils and rock were not characterized during the 2008 site visit, rocks on the Kodiak Island ridges are typically serpentinite, banded wherlite, and serpentine dunite (Parker and Studebaker 2008). Soils in the Twin Peaks area tend to be rich in iron and magnesium (Parker and Studebaker 2008).

The geology and soils at the staging areas are either sand (Halibut Bay) or disturbed soil and gravel (Alitak production facility). Disturbed soil is also present at the Akhiok communications link site.

3.8 FLOODPLAINS

Both the Middle Cape and Twin Peaks sites are at the top of ridges and therefore not within a floodplain. Several rivers drain into Halibut Bay and a creek discharges to the

north of the bay. One of the potential staging areas at Halibut Bay is located near the mouth of the bay and the other is located near the mouth of the creek in north Halibut Bay. The latter location could be considered a floodplain. The Alitak production facility staging area is located at the cannery facility and is not within any floodplains.

3.9 WATER RESOURCES AND WATER QUALITY

There are no streams, rivers, lakes, or water bodies near the Middle Cape site or Twin Peaks repeater site (SAGE 2008a, b). Akhiok Bay is several hundred yards from the existing Akhiok communications facility.

Both the Halibut Bay and Alitak production facility staging areas are located along a coastal beach of Kodiak Island. The Halibut Bay staging area is located on the southwest end of Kodiak Island, facing the Shelikof Strait. One of the potential staging areas is located near the mouth of several rivers that drain into Halibut Bay. The other proposed Halibut Bay location is near the mouth of a creek to the north in the bay. The Alitak production facility staging area is located near the southern tip of Kodiak Island in Lazy Bay, a small bay near the outer edge of the much larger Alitak Bay.

3.10 WETLANDS AND VEGETATION

The Middle Cape and the Twin Peaks sites are located along sparsely vegetated ridgelines. No wetlands are present at either site.

The Middle Cape site is primarily exposed rock with small patches of low vegetation. A survey at the Middle Cape site in August 2008 found small clumps of tundra vegetation (Figure 3-2) as well as plants (e.g., low-growing berries) and grasses growing in rock fractures (SAGE 2008a). No trees are present at the site (SAGE 2008a). One plant species (*Chrysosplenium wrightii*) observed in close proximity to the Middle Cape site (Pyle 2009b) has been found to be restricted to mafic and ultramafic areas on Kodiak Island (Parker and Studebaker 2008).

The repeater site has more vegetation than the Middle Cape site but the vegetation is limited to low-growing species. A site survey at the repeater site in August 2008 found abundant tundra vegetation (approximately 40% vegetation coverage). Patches of plants and grass were also noted (SAGE 2008b). The vegetation layer was estimated to be no more than 6 inches thick. No trees are present at the site (SAGE 2008b). The vegetation observed consisted of low-growing berry plants, grasses, and boggy tundra vegetation (SAGE 2008b).

The dominant plant species at the Halibut Bay staging area is American beachgrass (*Ammophila breviligulata*). No wetlands are present at either of the potential beach staging areas. There are no wetlands or vegetation present at the Alitak production facility staging area. The existing Akhiok communications link site is located in a disturbed area surrounded by grasses and small shrubs.

Figure 3-2.Typical vegetation near the Twin Peaks repeater site

3.11 COASTAL ZONE MANAGEMENT PLANS

Section 307(c) of the Coastal Zone Management Act of 1972, as amended (PL 92-583), requires that "each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved State coastal management programs."

The Alaska Coastal Management Act of 1977 (ACMA), as amended, and the Alaska Coastal Management Program (ACMP) set forth general policies to be used for the review of projects. The Kodiak Island Borough Coastal Management Plan (KIBCMP) was updated in July 2007.

The coastal zone boundaries of the KIBCMP include the areas within the 1,000-ft contour and a 1-mile corridor on either side of anadromous fish streams (KIB 2007). The Middle Cape site is at an elevation of about 1,500 ft and therefore is outside of CZM jurisdiction. The Halibut Bay staging area, however, falls within CZM jurisdiction. The existing communications facility in Akhiok falls within CZM jurisdiction because it is within 1 mile of Lazy Bay and below an elevation of 1,000 ft. The policy of the USCG is to apply consistency requirements of the CZMA for activities on excluded lands that impact coastal zone resources outside designated wilderness (USCG 2002). Background information on the ACMP and the KIB CMP is provided in Appendix E.

3.12 FISH AND WILDLIFE

As of 2004, 284 species of fish and wildlife have been recorded on Kodiak National Wildlife Refuge and adjacent areas: 12 freshwater and anadromous fish species, 242 bird species, and 30 mammal species (USFWS 2006).

3.12.1 Fish

Both freshwater and anadromous species, including five species of Pacific salmon, use the waters of Kodiak Island as spawning and rearing habitats. Of the 117 streams in KNWR, many support more than one species of salmon. Freshwater salmon habitats in KNWR are considered to be some of most productive within the Alaska Department of Fish & Game (ADF&G) Kodiak Management Area (USFWS 2006). Five species of Pacific salmon are native to KNWR streams: Chinook, sockeye, pink, chum, and coho. In addition, resident rainbow trout, Dolly Varden, steelhead, and Arctic char are found in KNWR (USFWS 2008a). Anadromous species start returning to KNWR in April and some spawn in the freshwater systems through November. The abundance of salmon in these waters supports high concentrations of brown bears, bald eagles, and other wildlife. In addition, the waters of Kodiak provide the opportunity for subsistence, commercial, and recreation activities. Other freshwater fish species present in KNWR include sculpin and stickleback. Fish are likely to be present in the summer when construction activities would take place, although no in-water work is proposed.

3.12.2 Marine mammals

Nine marine mammal species are found in the waters surrounding KNWR, including whales, sea otters, and seals. Fin, humpback, sei, and North Pacific right whales; sea otters; and Steller sea lions are also discussed in Section 3.13 (threatened and endangered species).

Most of the major bays around KNWR support residential colonies of harbor seal year-round. Seals use parts of lagoon and estuarine habitats on a seasonal basis, as well. Gray whales are known to pass though the waters near KNWR in the spring and summer on the way to their wintering grounds in Mexico (ADF&G 2009d). These marine mammals are likely to be present in the summer when construction activities would take place, although no in-water work is proposed.

3.12.3 Land mammals

Native Land Mammals

Only six species of land mammals are native to Kodiak Island: Kodiak bear, red fox, river otter, short-tailed weasel, tundra vole, and little brown bat (USFWS 2008b).

Kodiak bears are a subspecies of the brown or grizzly bear (*Ursus arctos middendorffi*). Their populations are healthy and productive (ADF&G 2009b) with an estimated 3,000

bears living within the KNWR boundaries (USFWS 2009a). Kodiak bears den around November and emerge in spring to begin foraging for food (grasses, roots, berries, carrion, and salmon are the most important) (ADF&G 2009b). During a brief period between late June and early August, bears also congregate in alpine areas in the central and northern portions of KNWR. There they feed primarily on nutrient-rich sedges and forbs newly emerged after the snow melts (ADF&G 2002). Because Kodiak bears can cover a lot of ground, it is possible that they would come in contact with equipment at the proposed facility sites, despite the virtual absence of attractive habitat or food sources.

River otters can be found throughout KNWR in suitable habitat, including coastal areas around Olga Bay on the southern and eastern sides of Kodiak Island. Areas with good access near saltwater bays have the greatest reported abundance. River otters are most susceptible to trapping pressure in KNWR because of their highly sought-after pelts (USFWS 2006). River otters are unlikely to enter the facility sites because there is no nearby standing water.

The red fox is common throughout KNWR. It prefers broken country, extensive lowland marshes, and crisscrossed hills and draws (ADF&G 2009d). Observations in the field and reports indicate stable fox populations (USFWS 2006). Red fox is sought on Kodiak Island for its durable pelts and may be taken by both trap and gun. Because red fox can cover a lot of ground, it is possible that individual foxes would come in contact with the facility sites, despite the virtual absence of attractive habitat or food sources. Red fox tracks were observed at the Middle Cape site during a visit in October 2009.

The little brown bat has a wide distribution, ranging from Alaska to Quebec and into central Mexico. They are known to hibernate in southeast Alaska where they prefer to roost in small colonies in abandoned buildings, old mine tunnels, caves, and forests; the bats have been found on Kodiak Island in the winter (ADF&G 2009d). Preferred habitat of the little brown bat is not found at or near any of the facility sites, and they are not expected to be present during or after construction activities.

Non-Native Land Mammals

Between the 1920s and 1960s, several species of non-native mammals were introduced on Kodiak Island to increase subsistence and recreational opportunities in the archipelago. Seven species have established, spread, and now commonly occur in KNWR (Sitka black-tailed deer, mountain goat, Roosevelt elk, reindeer, beaver, red squirrel, and snowshoe hare). An eighth species, pine marten, is found only on the Afognak Island portion of the KNWR.

Sitka black-tailed deer are found primarily at low elevations in KNWR during the fall, winter, and spring and at higher-elevation subalpine areas during midsummer and early fall. The highest densities of deer occur in grassy or bushy vegetation where food is abundant and cover is found, although they can be found seasonally in virtually all

habitats (USFWS 2006). The reindeer herd is estimated to number around 200 to 400 animals and is typically found in heathland, muskeg, and grasslands on southwestern Kodiak Island. Elk are occasionally sighted on Kodiak Island; however no wild herds have become established (USFWS 2006). Mountain goats within KNWR inhabit virtually all available mountain habitats on the island. The population in the southern half of KNWR is increasing.

Populations of deer, elk, mountain goat, and snowshoe hare are valued by sport and subsistence hunters. Some of these species pose a management concern because of their potential to influence the quality of native fish and wildlife habitats (USFWS 2008b).

3.12.4 Birds

Abundant bird habitat is provided by KNWR's coastline, including cliffs, inlets, and bays; interior valleys; and alpine and tundra areas. A total of 242 bird species have been observed on the Kodiak Archipelago, with more than 160 species recorded in KNWR (USFWS 2006). Sea ducks and other seabirds winter along the coastline of KNWR in bays and estuaries at estimated populations of 150,000 to 200,000 ducks, giving Kodiak the greatest diversity of wintering birds in Alaska (USFWS 2006). During the summer, KNWR provides nesting habitat for more than 100 nesting species, many of which are year-round residents (MacIntosh 1998). One of the most prominent nesting species is the bald eagle, with about 450 nesting pairs using KNWR, and 2,500 to 3,000 bald eagles wintering there. Nests are usually built close to water and in old-growth timber or cottonwood trees (ADF&G 2009d). The short-tailed albatross, Steller's eider, Kittlitz's murrelet, and yellow-billed loon are discussed in Section 3.14 (threatened and endangered species).

Summer nesting birds may be present during planned construction activities but there is littlenesting habitat at the proposed facility sites.

3.13 THREATENED AND ENDANGERED SPECIES

Several threatened and endangered species may be present in or in the vicinity of KNWR (Table 3-1).

Table 3-1. Threatened and endangered species potentially present in or in the vicinity of KNWR

SPECIES	STATUS	JURISDICTION
Fin whale	endangered	NOAA (NMFS 2009b)
Blue whale	endangered	NOAA (NMFS 2009b)
Sperm whale	endangered	NOAA (NMFS 2009b)
Humpback whale	endangered	NOAA (NMFS 2009b)
Sei whale	endangered	NOAA (NMFS 2009b)

SPECIES	STATUS	JURISDICTION
North Pacific right whale	endangered	NOAA (NMFS 2009b)
Steller sea lions	endangered (Western distinct population segment)	NOAA (NMFS 2009b)
Northern sea otter	threatened (Southwest Alaska distinct population segment)	USFWS (Enriquez 2009)
Albatross, short-tailed	endangered	USFWS (Enriquez 2009)
Steller's eider	threatened	USFWS (Enriquez 2009)
Kittlitz's murrelet	candidate species	USFWS (Enriquez 2009)
Yellow-billed loon	candidate species	USFWS (Enriquez 2009)
Arctic peregrine falcon	Alaska species of concern	ADF&G (2008)
Snake River fall Chinook	threatened and Alaska species of concern	NOAA (NMFS 2009b) and ADF&G (2008)
Snake River spring/summer Chinook	threatened	NOAA (NMFS 2009b)
Puget Sound Chinook	threatened	NOAA (NMFS 2009b)
Upper Columbia River spring Chinook	endangered	NOAA (NMFS 2009b)
Lower Columbia River Chinook	threatened	NOAA (NMFS 2009b)
Upper Columbia River steelhead	endangered	NOAA (NMFS 2009b)
Upper Willamette River steelhead	threatened	NOAA (NMFS 2009b)
Middle and Lower Columbia River steelhead	threatened	NOAA (NMFS 2009b)
Snake River basin steelhead	threatened	NOAA (NMFS 2009b)

ADF&G – Alaska Department of Fish & Game
NOAA – National Ocean and Atmospheric Administration
USFWS – US Fish and Wildlife Service

Endangered humpback, sei, fin, blue, sperm, and North Pacific right whales, all added to the endangered species list in 1970, are known to occur in marine waters off KNWR. All but sperm whales follow a similar migration pattern, summering in temperate and polar waters for feeding, and wintering in subtropical to tropical waters for mating and calving (American Cetacean Society 2009; World Wildlife Fund 2009). Within the North Pacific (Alaska) stock of sperm whales, males are thought to move north in the summer to feed in deep waters in the Gulf of Alaska, Bering Sea, and waters around the Aleutian Islands (NMFS 2009d). When in Alaska, humpback whales tend to concentrate in several specific areas including southeast Alaska, Prince William Sound, the area near Kodiak and the Barren Islands, the area between the Semidi and Shumagin Islands, and the eastern Aleutian Islands and southern Bering Sea (ADF&G 2009d). Humpback whales in southeast Alaska are part of the central North Pacific stock (Gabriele and Neilson 2009). The North Pacific right whale has designated critical habitat area in the Gulf of Alaska just southeast of Kodiak Island (NMFS 2009c).

In 1990, Steller sea lions (western distinct population segment) were classified as endangered under the Endangered Species Act. Several known Steller sea lion

haulouts are located along KNWR's coastline. Designated critical habitat area for Steller sea lions includes KNWR (NMFS 2009a).

In 2005, the southwestern Alaska population of the northern sea otter was listed as a threatened species under the Endangered Species Act. Today, sea otters occur primarily around Shuyak, Afognak, and Raspberry islands and near northern and western portions of Kodiak Island. Large numbers of otters use Paramanof and Foul bays adjacent to the Afognak Island unit of KNWR. Surveys have shown that sea otters have reoccupied portions of their former range along the northwestern side of Kodiak Island as far south as Uyak Bay. Approximately 200 sea otters have been observed in each major bay in this area (USFWS 2006). Critical habitat has been designated for the southwestern Alaska population of the northern sea otter; of the five discrete units considered important to the recovery of the northern sea otter, one includes Kodiak (USFWS 2009c).

It is very likely that marine mammals would be present during the time construction activities are planned.

Endangered short-tailed albatross are occasionally observed in offshore marine waters adjacent to KNWR (USFWS 2006). Steller's eider, a federally threatened sea duck, is commonly found wintering in nearshore coastal waters adjacent to KNWR (USFWS 2006). The yellow-billed loon is identified as a candidate species for protection under the Endangered Species Act. Wintering in the nearshore waters around Kodiak Island though Prince William Sound and throughout southeast Alaska (Alaska Natural Heritage Program 2005), the yellow-billed loon is not expected to be present during construction activities at any of the sites.

Kittlitz's murrelet, a small seabird that breeds along the coastline and nests at very low densities in the high alpine regions of KNWR, is identified as a candidate species for protection under the Endangered Species Act. The Kittlitz's murrelet nesting season normally extends from May to July, but late fledging occurs into mid-August (USCG 2009). Kittlitz's murrelets have been found to use the airspace near the Middle Cape site, and nesting has been documented on ridges adjacent to the Middle Cape site. Habitat sampling indicated potentially suitable, but not optimum, nesting habitat near the site; no nests were found during a brief nest search (Lawonn 2009).

The Arctic peregrine falcon is an Alaska species of concern. The Arctic peregrine falcon nests in the treeless tundra areas of Alaska, Canada, and Greenland, and migrates south through Canada and the United States. They spend the winter in warmer climates from the southern United States to southern Argentina and Chile. Arctic peregrine falcons are found nesting mostly along rivers in northern and western Alaska (ADF&G 2009a).

Snake River fall Chinook salmon is an Alaska species of concern. Spawning habitat of Snake River fall Chinook salmon is in the Snake River of Idaho and Oregon below Hells Canyon Dam and in the lower reaches of several big rivers. Spawning occurs from October through November and fry emerge from March through April. Downstream migration generally begins within several weeks of hatching. The fish spend 3 years at sea prior to returning to their birth streams. During this time, some of them range into Alaska waters (ADF&G 2009a).

Additionally, several other listed stocks of Pacific salmon may occur within Alaska's waters. These include Snake River spring/summer Chinook salmon (threatened), Puget Sound Chinook (threatened), Upper Columbia River spring Chinook (endangered), Lower Columbia River Chinook (threatened), Upper Columbia River steelhead (endangered), Upper Willamette River steelhead (threatened), Middle and Lower Columbia River steelhead (threatened), and Snake River basin steelhead (threatened) (NMFS 2009b).

3.14 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Background information on the applicable statues and polices is provided in Appendix E.

The western portion of Kodiak Island has been characterized by an Alaska Native history of subsistence hunting and gathering of the Yupik Eskimo culture. By at least 7,000 years before the present (BP), maritime hunters were living on Kodiak Island, the adjacent Alaska Peninsula, and probably throughout the Pacific area. The predominant culture prior to about 4,500 years BP, called the Ocean Bay I tradition, was characterized by ground-slate tool technology. The Kachemak tradition, from about 4,500 to 1,500 years BP, was characterized by sedentary living sites marked by middens. These middens include hearths and storage pits for both ground and chipped stone tools, bone points and harpoons, and fishing equipment as well as personal ornaments. By 1500 AD, the Koniag culture was well-established on Kodiak. This population probably spoke Pacific dialects of Yupik Eskimo speech, reflecting Bering Eskimo influence, but also reflecting local development and influences from many other directions (NPS 2004).

The Koniags lived in sod houses in their permanent winter villages. In summer, they moved to temporary fish camps. They hunted sea mammals such as whales, seals, sea lions, and sea otters. The primary dietary stable was salmon, which was dried for use in the winter. Hunting was done with harpoons and clubs, and fish were speared, gaffed, harpooned, or hooked. Salmon were caught in weirs built across rivers.

Russian influence occurred soon after Vitus Bering's first contact in 1741. Russian hunters and merchants established a colonial presence based on trade in the furs of sea otters that were sold to a Chinese Russian market. In 1784, a Russian settlement was established on Kodiak Island at Three Saints Bay, near the present-day village of Old

Harbor. The local population was used as laborers in the sea otter hunting industry. Alutiiq men were organized into work groups and forced to hunt at sea in large fleets of bidarkas, while women, old men, and children were made to work on shore. By the end of the Russian colony in 1867, the pre-contact population of perhaps 8,000 on Kodiak Island had dwindled to around 2,000. In 1793, the Russians moved the capital of their colony from Three Saints Bay to the northern part of Kodiak at Pavlov Harbor ("Paul Harbor"), at the site of today's city of Kodiak. In 1808, the capital was moved to Sitka.

The Russian Orthodox clergy arrived in Kodiak in 1794 to convert Alaska Natives to Christianity. They began to perform baptisms and marriages, and soon afterwards established a school and orphanage near Kodiak. One of the original eight monks, Father Herman, was canonized by the Orthodox Church in 1971. Highly revered among Alutiiq Orthodox people, this saint is credited with performing miracles such as healing the sick and turning back a tsunami. Among the Alutiiq people, the Orthodox Church is the most lasting remnant of the Russian colony in Alaska, and is a central feature of social life in almost every village.

No cultural artifacts of either Alaska Native or historic periods were observed in preliminary surveys of the Middle Cape site during the site selection process. There is a very low probability that cultural resources of Alaska Native origin will be encountered on the site. The site is far removed from the normal locations of economic activity of the Yupik Eskimo culture. The primary economic base of the culture was oriented to marine fish, mammals, and shellfish. Although inland hunting and gathering was a component of the lifestyle, the communications facility sites are distant from the seacoast or rivers that would have normally provided access to inland areas and the site elevations contribute to very low productivity for animals and plants.

Local archaeological resources in the vicinity of the Twin Peaks repeater site include three clusters of petroglyphs pecked into beach boulders located at Cape Alitak, at the southernmost tip of Kodiak Island. Archaeologists have hypothesized that the petroglyphs were carved by Alutiiq whale hunters. The south coast of Kodiak Island had special whaling villages, one of them near Cape Alitak at Sitkalidak, Ocean Bay. The whale hunters formed a small, hereditary socioeconomic group of high-prestige rich men who jealously guarded their secrets. Among the fragmentary data on record regarding ceremonial observances connected with Kodiak whale hunting, "there is no specific reference to whalers making petroglyphs, but rock paintings were made by hunters, and among these probably were those specialists who pursued the whale" (Heizer 1947). These glyphs have come to symbolize an "Alutiiq" or "Native identity" for local Alaska Natives (Mason 1996).

Historic resources in the vicinity include the Orthodox Church in Akhiok—Protection of the Theotokos Chapel—which was built in 1926 (Davis 1979) and is likely eligible, along with its cemetery, for the National Register of Historic Places. An Air Warning

Station was established on Lazy Bay during World War II about a mile from the Twin Peaks repeater site. This facility was destroyed by fire in 1943 (USFWS 2006). A few remains of an antenna are reported on North Twin Peak about a mile west of the repeater site (Pyle 2009a).

3.15 SOCIOECONOMICS

There is no human habitation at the Middle Cape site or in the immediate vicinity. The closest human habitation is on Alaska Native land holdings on Halibut Bay and Middle Cape. Human activity includes seasonal use facilities (e.g., cabins) for fishing, hunting, and gathering.

The closest permanent settlements are the communities of Karluk and Larson Bay to the north on the Karluk River and Uyak Bay, respectively. The Middle Cape site is within the traditional subsistence area of these communities.

Karluk is an Alutiiq village at the mouth of the Karluk River. Alaska Natives have populated the Karluk River for more than 7,000 years, and there are a large number of archaeological sites in the area. The first permanent community at Karluk was established in 1786 as a Russian trading post. Many tanneries, salteries, and canneries were established between 1790 and 1850. By 1900, the Karluk River was considered the greatest salmon stream in the world, and the town was home to the world's largest cannery. Many canneries were forced to close in the late 1930s because of overfishing. There are currently no canneries on the Karluk River. The community traditionally was split across two sites, one on either side of the spit at the entrance to the lagoon. "Old" Karluk lies on the northern side, with "new" Karluk on the southern side. The village council relocated the community to its present site after a severe storm in January 1978. New Karluk is the residential core of the community, and is home to all but three or four families (KIB 2006).

The Karluk Census Designated Place had a 2000 population of 27, with an average age of 30 and 7% of the population aged 65 and older. All but one member of the community was Native American or Alaska Native. One-third of households were married couples, one-third were female households with no husband present, and 22% were households with single persons 65 and older living alone. Owner-occupied housing units were 66% of occupied units, with 33% rental. There were 15 unoccupied housing units, of which 11 were seasonal, indicating that the population likely almost doubles in the summer with seasonal residents who likely come back to the village to fish and hunt. High school graduates included 78% of the population. Median family income in 2000 was $19,167 and mean income of households with earnings was $30,090. There were no households or individuals below the poverty line (US Census Bureau 2002).

Karluk's current population of 38 includes 23 residents of age 16 years and older. Of these, 15 are members of the workforce. Five resident workers are employed in the

private sector, with 10 employed by local government. According to the Alaska Department of Labor and Workforce Development (ADL), there are no current unemployment claimants (ADL 2009).

The primary non-governmental economic activity is sport fishing and hunting. There are six lodges in Karluk, which provide some seasonal employment for fishing and hunting guides. Most residents also rely heavily on subsistence hunting and fishing to supplement their diets. Most of the available fish and wildlife species are harvested, including shellfish, finfish, waterfowl, small and big game, and marine mammals (KIB 2006). It is unlikely, however, that local residents use the Middle Cape site because of its distance from the seacoast and the availability of more accessible and more productive lowland sites.

The City of Larsen Bay is located on Larsen Bay, an inlet of Uyak Bay, 17 miles east of Karluk. The area is believed to have been inhabited for at least 2,000 years. A cannery in the city processes frozen halibut year-round. Larsen Bay had a 2000 population of 115, with an median age of 29 and 10% of the population aged 65 and older. Eighty percent of the population was Native American or Alaska Native. Forty-five percent of households were married couples, with 12% female households with no husband present and 27% households with single persons. Owner-occupied housing units were 80% of occupied units. There were 30 unoccupied housing units, of which 28 were seasonal, indicating that the population likely increases in the summer with seasonal residents who likely come back to the community for seasonal employment or to fish and hunt. High school graduates included 80% of the population. Median family income in 2000 was $40,833 and mean income of households with earnings was $46,075. Fifteen percent of households and 16% of individuals were below the poverty line (US Census Bureau 2002).

Larsen Bay's current population of 67 includes 57 residents of age 16 years and older. Of these, 39 are members of the workforce. Fifty-four percent of resident workers are employed in the private sector, with 46% employed by local government. Twenty-two percent of the workforce are unemployment claimants and 12% of persons over 16 are not part of the workforce (ADL 2009). According to a survey of employment and jobs held by local residents, there were 222 employment positions in the community, but only 12 of those were full-time. Thirteen of the jobs were part-time, and 187 were seasonal. Only 11 jobs in the community included some form of benefits. The majority of seasonal positions (160) are associated with the Icicle Seafood cannery. Many of those jobs are typically held by non-resident workers (KIB 2006).

Subsistence hunting and fishing are important to many residents, as indicated by estimates of wild food harvest per household, which is similar to that of other Alaska Native communities on the island (USFWS 2006). It is unlikely, however, that local residents use the Middle Cape site because of its distance from the seacoast and the availability of more accessible and more productive lowland sites.

The village of Akhiok is situated on the southwest end of Kodiak Island on the west side of Alitak Bay between Kempff Bay and Moser Bay. The original village of Akhiok was a sea otter hunting settlement located near Humpy Cove. Called Kashukugniut, it was occupied by the Russians in the early 19th century. In 1881, residents from the old village relocated to the present site. Following the 1964 earthquake and the tsunami that destroyed the village of Kaguyak at the mouth of the Kaguyak River, families were relocated to Akhiok.

The 2000 population of Akhiok was 80, with a median age of 24 and 5% of the population aged 65 and older. Native Americans or Alaska Natives constituted 93% of the population with five non-Native residents. Thirty-six percent of households consisted of married couples, with 36% of households female with no husband present and 32% single-person households. All housing units were owner occupied. There were nine unoccupied housing units of which two were seasonal, indicating that there are few seasonal residents. High school graduates included 74% of the population. Median family income in 2000 was $33,428 and mean income of households with earnings was $28,125. One household and nine individuals were below the poverty line (US Census Bureau 2002).

Akhiok's current population of 48 includes 40 residents age 16 years and older. Of these, 32 are members of the workforce. Sixty-six percent of resident workers are employed in the private sector, with 34% employed by local government. Unemployment claimants are 18% of the population over age 16 (ADL 2009). The Ocean Beauty cannery generally employs five to seven local residents seasonally (Knebel 2009).

Akhiok's economy is based on a mixture of public sector employment, commercial fishing, subsistence harvest activities, and some commercial tourism focused on sport fishing and hunting. In recent years, commercial fishing activities have been adversely affected by a number of factors, including limited entry and individual fishing quotas, the Exxon Valdez oil spill of 1989, and a decline in fish prices. The community has one lodge that provides some employment opportunities for local resident fishing and hunting guides. In January 2003, Akhiok-Kaguyak, Inc. sold a portion of its $36 million Exxon Valdez oil spill settlement trust fund and dispersed $200,000 to each shareholder, with reportedly mixed results (KIB 2008).

Akhiok's community life centers in large part around its Orthodox Church, Protection of the Theotokos. The community initiated "Alutiiq Week" in 1991 as a week of workshops, celebration, and community gatherings focused on the continuance of Alutiiq culture. This week-long event has become a cornerstone for teaching skills such as carving to young people. Akhiok has a strong Alutiiq Dance Group that has performed in Akhiok, Kodiak, and Anchorage. Akhiok also has an annual summer "Spirit Camp" for community residents and has hosted the Kodiak Area Native Association's regional Spirit Camp (KIB 2008).

It is likely that the Twin Peaks repeater site is used to some extent for subsistence hunting of species such as the Sitka black-tailed deer and feral reindeer.

3.16 ENVIRONMENTAL JUSTICE

Background information on applicable statues and polices is provided in Appendix E.

Demographic information from the 2000 US Census and the Alaska Department of Labor and Workforce Development (ADL 2009) are reported in Section 3.15. Minority populations predominate in the area, but low-income populations are limited, as summarized in Table 3-2.

Table 3-2. Demographic characteristics

	KARLUK		LARSEN BAY		AKHIOK	
DEMOGRAPHIC CHARACTERISTIC	2000 CENSUS	2009 ADL	2000 CENSUS	2009 ADL	2000 CENSUS	2009 ADL
Population	27	38	115	67	80	48
Non-white (number)	27	na	90	na	75	na
Non-white (percent)	100%	na	78	na	94	na
Age > 16 (number)	21	23	60	57	57	40
Age > 16 (percent)	78%	60%	52%	85%	71%	83%
Age > 65 (number)	2	na	11	na	4	na
Age > 65 (percent)	7%	na	10%	na	5%	na
Born outside the United States	0	na	2	na	7	na
Median household income	$19,167	na	$40,833	na	$33,428	na
Income below poverty level (number)	0	na	18	na	9	na
Income below poverty level (percent)	0%	na	16%	na	11%	na
Unemployed (number)	0	0	4	11	5	7
Unemployed (percent of population > 16)	0%	0%	6%	19%	6%	18%
Tenure, in years (owners)	6	na	32	na	23	na
Tenure, in years (renters)	3	na	8	na	2	na

Note: All table data are from the 2000 US Census and Alaska Department of Labor and Workforce Development (2009).

ADL – Alaska Department of Labor and Workforce Development na – not available

3.17 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

The site survey for Middle Cape did not reveal any hazardous materials at the site (SAGE 2008a), nor was any foreign debris observed at the Twin Peaks repeater site during a site visit in August 2008 (SAGE 2008b). No hazardous materials are present at the proposed Halibut Bay staging areas. The Twin Peaks repeater site, once built, will have only AGM batteries. Batteries, diesel fuel, and lube oil for the existing emergency generator are present at the existing communications link facility in Akhiok.

There may be old batteries from a previous communications site on the top of South Twin Peaks. Up to 5,000 pounds of anhydrous ammonia may be present in the Alitak production facility (ADEC 2009), but these materials are not associated with this project.

3.18 PUBLIC HEALTH AND SAFETY

There are no current public health resources or issues related to any of the communications sites. There are no current public uses at the Middle Cape or Twin Peaks sites. The Akhiok existing communications link facilities generate no waste or other materials of concern to public safety. Akhiok's existing public health issues are associated with onsite sewage disposal and not with the existing communications site (KIB 2006).

Public safety issues relate to the current gap between the coverage areas of nearby existing VHF communications sites in the Shelikof Strait. This area is informally known in the USCG as the Kodiak Triangle because vessels in the area disappear from radio contact. The Shelikof Strait is a major maritime route used by commercial freight, oil tanker vessels, barges, fishing vessels, and recreational vessels traveling between Anchorage and the Aleutian Islands. The lack of adequate communications facilities in this area constitutes a potential public safety problem for vessels in distress.

One issue for the general public concerns the placement of the microwave dishes and their associated radio frequency (RF) environment, referring to the presence of electromagnetic (EM) radiation emitted by radio waves and microwaves in the human and biological environment. Adverse biological effects associated with RF energy are typically related to a "thermal" effect, where the EM radiation emitted by an RF antenna passes through and rapidly heats biological tissue, similar to the way in which a microwave oven cooks food. The Health Physics Society indicates that numerous studies have shown environmental levels of RF energy routinely encountered by the general public to be typically far below levels necessary to produce substantial heating and increased body temperature; levels associated with such effects generally occur in workplace environments near high-powered RF sources used for molding plastics or processing food products (Classic 2009).

The Federal Communications Commission (FCC) is responsible for licensing frequencies and ensuring that the approved uses do not interfere with television or radio broadcasts or substantially affect the natural or human environment. The FCC adopted recognized safety guidelines for evaluating RF exposure in 1996, incorporating the American National Standards Institute guidelines to evaluate exposure due to RF transmitters, the Institute of Electrical and Electronics Engineers standard, and the National Council of Radiation Protection and Measurements exposure guidelines. There are two tiers or exposure limits: occupational or "controlled," and general or "uncontrolled." Operational exposure occurs when

persons are exposed to RF fields as a part of their employment, having been made fully aware of the potential exposure and capable of exercising control over their exposure. Uncontrolled exposure occurs when the general public is exposed or when persons employed are not made fully aware of the potential for exposure or cannot exercise control over their exposure (FCC 1999).

3.19 TRANSPORTATION

Transportation to the Middle Cape site vicinity occurs entirely by private vessel or aircraft. Transportation to the nearby communities of Karluk and Larsen Bay is possible by private vessel, private aircraft, and Island Air Service, which provides federally subsidized essential air service to the community airports (KIB 2008).

The Village of Akhiok is served by private vessels, private aircraft, and Island Air Service. A seaplane base at Lazy Bay serves the Ocean Beauty cannery. There is no operational dock at Akhiok. Transportation service to the village is provided largely by chartered vessel. Lazy Bay Transport provides service via a landing craft with 40-ton capacity; it lands at the beach approximately every 6 weeks from April to October (Rogers 2009). The cannery is served by company-owned and chartered vessels, with chartered seaplane service several times a week in summer (Knebel 2009).

4 Environmental Consequences

The potential effects of the proposed action and No Action Alternative on each of the resource areas described in Section 3 are summarized below.

The analyses and conclusions presented in this section are based upon the professional knowledge of the analysts; their review of existing plans, research, or industry literature; and measurable parameters (or comparability with similar activities) associated with the subject matter. Some speculation is provided about the numbers of human or wildlife individuals that may be present in the vicinity of the facilities. Conclusions, such as whether an effect or impact is negligible, minimal, or substantial, are based upon the analyst's judgment of the magnitude of the change in the surrounding environment without the facility or with the facility, and the duration of an activity.

4.1 LAND USE

4.1.1 Alternative A (The Proposed Action)

The proposed communications facility would add structures at the Middle Cape site. It would not change the overall character of the site or its function as part of the Kodiak National Wildlife Refuge. It would have no effect on nearby inholdings of Alaska Native lands or local residents' use of the area for subsistence.

The availability of emergency communications facilities may facilitate continued subsistence uses of water-related resources in the area by providing additional confidence that emergency response would be available should adverse weather conditions or equipment failure endanger persons. The project would not directly increase the amount of subsistence use in the area.

The construction of the Twin Peaks repeater site will not change continued use of the area for subsistence related to the availability of animals, including feral reindeer, nor would it change accessibility by local residents. Use of the site for a communications facility is allowed by Kodiak Island zoning (Dvorak 2010).

Addition of communications facilities at the existing Akhiok USCG communications link site will not change the site use or adjacent residential uses. It will not be noticed as a substantial change by most residents.

The facilities at all affected sites support the Kodiak Island Borough Comprehensive Plan goals, policies, and implementation actions. Specifically, the proposed action improves facilities for water transport of passengers and freight, and maintains coordination with the USCG and the Alaska District Army Corps of Engineers to ensure navigational safety in and around the Kodiak Archipelago (KIB 2008).

4.1.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to land use would occur.

4.2 WILDERNESS

4.2.1 Alternative A (The Proposed Action)

Because the sites are not congressionally designated as wilderness, construction of the communications facilities would have no formal effect on their status as a wilderness. The recommended designation for potential wilderness in the KNWR Comprehensive Conservation Plan warrants discussion of potential impacts on wilderness attributes.

The proposed action at the Middle Cape site would affect possible wilderness designation as follows:

- The criterion related to the size of the wilderness area would not be changed by the development of the communications site near Middle Cape. The area of potential wilderness designation would remain extensive.
- The naturalness of the area would be adversely affected by the introduction of built features to accommodate the communications facility. They would permanently change the appearance of the area of about 0.25 acre and temporarily change the character of the areas used for the construction camp and staging. The tower would not be lighted at night and therefore would not add a visible nighttime feature. The appearance of the facility would be observable from elsewhere within the potential wilderness area since it would be on a peak that could be observed with a viewshed of about 50 square miles. The tower and the equipment building would be generally distinguishable as manmade features up to a distance of about 5 miles, as discussed in Section 4.4. Fog and low clouds would limit visibility about 70% of the time. Because the peak on which the facility would be located is only one element of a number of vegetated ridges extending to the horizon and because the site is not the most vivid element, the change in the natural character of this very small area would not change the character of naturalness enjoyed by most observers.
- The wildness of the area in terms of the unrestricted operation of natural processes would be affected very little by the communications facility. There would be no roads or other permanent facilities outside of the area devoted to the tower and related facilities. There would be no barrier to the movement of animals or birds. The external manifestations of operation of the facility would be largely limited to noise (as discussed in Section 4.6), which generally would not be distinguishable from background outside the immediate vicinity of the facility.

- Opportunities for primitive recreation, including solitude, would be affected very little by the facility because the area is not likely to be used for recreation. The greatest intrusion into the solitude of the area would be helicopter visits twice a year for maintenance and once every year or two to recharge propane tanks. The most frequent intrusion into solitude would be noise produced by the onsite generator, which would occur for several hours every few days and be limited to a very localized area. It would not be generally noticeable at a distance greater than 0.25 mile. The impacts of the facility would not be discernible by persons engaging in recreational activities near the Ayakulik River to the southeast, which is the primary recreational resource in the area. In addition, in the high-sunlight summer season, the generator will be needed infrequently to recharge batteries; energy produced by the solar array will be sufficient. In the winter season, where low light levels limit solar gain and snow may limit wind generation, the generator would be used more often but recreational use would be much lower. Background noise from airplane overflights in the area during the high season (late spring, summer, and early autumn) poses a more substantial interruption of recreational users' solitude than does generator use during the winter.

Overall, the construction and operation of the proposed communication facility will have an adverse impact on the wilderness character of the area. However, since Section 1310 of ANILCA allows for this type of facility to be constructed and maintained in Conservation System Units, including designated wilderness areas, the proposed project would not likely affect the area's eligibility for designation as wilderness. The Twin Peaks repeater site and Akhiok communications link facility are not designated or eligible for wilderness status and are therefore not analyzed in this section.

4.2.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to wilderness would occur.

4.3 RECREATION USE

4.3.1 Alternative A (The Proposed Action)

The communications facility at the Middle Cape site would not affect any recreation potential at the site because there is no evidence or reasonable expectation of recreation use. If recreational ascent of the ridge occurred, the facility would not interrupt the presumed goal of outward views. It is the policy of the USCG to leave such facilities unlocked, allowing emergency use of the generator shelter by individuals, such as hunters, in distress. The temporary staging area on Halibut Bay and associated noise during slinging operations to the site may result in noise impacts

that disturb local wildlife, hunting, and sightseeing during the limited period of operation.

The facility would not adversely affect recreational ocean fishing in the Shelikof Strait and Halibut Bay. It may indirectly enhance recreation by providing more effective emergency communications, thereby increasing potential recreation users' confidence of rescue in case of mishap. The Ayakulik River is a considerable distance from the site, indicating very little, if any, impact to its use as a recreational resource.

The communications facility at the Twin Peaks repeater site would not change existing patterns of hunting and gathering use by local residents. The location of the solar- and wind-powered facility would not affect either animal use, as discussed in Section 4.12, or existing and planned human use.

The slight expansion of existing USCG communications link facility in Akhiok would have no effect on recreation demand or facilities.

4.3.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to recreational resources would occur.

4.4 VISUAL AND AESTHETICS

4.4.1 Alternative A (The Proposed Action)

As indicated in the environmental assessment for the NDRS Modernization Project (URS 2002), the criteria for determining the significance of a visual resource impact are based on BLM contrast criteria and objectives for visual resource classes of public lands, as follows:

- No impact would occur if there is no change in the existing environment.
- Negligible impact would occur if the level of change due to the proposed project is negligible and would generally be overlooked by an observer.
- Minimal impact would occur if the level of change is minimal and would not attract the attention of a casual observer. The change would likely be noticed only if pointed out by another observer.
- Significant impact would occur if the level of change is high, dominates the view, and demands attention of the casual observer. The change becomes the primary focus of the observer.

Weather conditions also affect potential visual impacts. The westerly coast of Kodiak Island is subject to frequent fog and low-lying cloud cover caused by the confluence of cold Arctic air with the warmer waters of the Japanese Current. These conditions often obscure visibility.

The Middle Cape site is visible from boats fishing or engaging in other activities on Halibut Bay. At a distance of 3 miles and an elevation of 1,500 ft, the 60-ft-high tower would be visible silhouetted against the sky on clear days as a very small feature. As the only vertical element in the landscape, it would contrast to some extent with other features. On the other hand, it would be a very small portion of any view of the series of ridges visible from Halibut Bay and would not be a visually prominent feature. Other equipment at the site would be too low on the top of the ridge to be distinguishable. The site is not visible to recreational users on the Ayakulik River to the southeast because several ridges 1,200 to 1,300 ft in height preclude a direct line of sight. A ridge between the site and the Sturgeon River to the northeast similarly interrupts the line of sight. Negligible impact would occur for observers on Shelikof Strait east of Halibut Bay, where visual impacts would generally be overlooked by an observer. For observers on Halibut Bay or closer to the site, the level of change would be minimal; the tower would not attract the attention of a casual observer and would be noticed only if pointed out by another observer.

The Twin Peaks repeater site is in the direct line of sight to the southwest from Akhiok and the local airstrip, as well as from Kempff Bay and portions of Alitak Bay east of the site. Views from the southeast and south are blocked by the Twin Peaks on Drake Head to the south of the site. The site is about 3 miles from Akhiok and 2.75 miles from the head of the runway at the airport. A view of the repeater site from the north end of the runway is provided in Figure 4-1. This view of the site is typical of those generally available from the vicinity of the village. The 20-ft tower would be visible to the extent it is silhouetted on a north-trending ridge. Its elevation (800 ft) is considerably below that of the Twin Peaks to the south (1,400 ft). The Twin Peaks tend to dominate the views from Akhiok and other areas to the northeast, and would draw viewers' attention away from the facility. Views from farther to the north would have the larger peaks as a background, and the tower would tend to blend into the varied terrain of the flanks of the peaks. The view of the communication tower, when visible, would not be a predominant element and may escape notice by many. The visual impacts of the repeater facility would be minimal. The facility would not represent a substantial level of change; it would not dominate any available view and would not attract the attention of most observers.

An additional 8-ft-diameter microwave radio dish on the existing communications link tower in Akhiok would not be noticed as a change in the visual environment, given its similarity to existing features. The population of viewers would be confined to only people in the immediate vicinity of the existing tower. Because the change from the existing view would generally be overlooked by an observer, this element would have a negligible impact.

Figure 4-1.View of Twin Peaks repeater site from Akhiok

4.4.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no visual impacts would occur.

4.5 AIR QUALITY

4.5.1 Alternative A (The Proposed Action)

The only sources of air emissions from the project would be the propane used to power the generator at the Middle Cape and Twin Peaks sites and infrequent helicopter trips. These very small contributions would have no detectable change on air quality. The nearly constant winds in the area would readily disperse any pollutants. Incremental emissions from the facility would be minimal compared to the burden from existing aircraft used for recreational access.

4.5.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no air impacts would occur.

4.6 NOISE

4.6.1 Alternative A (The Proposed Action)

The three potential sources of noise produced by the facility are, in order of magnitude, helicopter visits to the facility, the propane-powered generator, and the wind generator.

At the Middle Cape site, helicopter trips would occur during construction, for maintenance visits approximately twice a year, and for recharge of the propane tanks once every year or two. The noise produced by a typical helicopter is about 90 dBA at 300 ft (FAA 2004). The noise produced during construction would be of greatest duration during the slinging of equipment from the staging area at Halibut Bay to the tower site. Multiple trips would be required. In addition, workers would need to be ferried to and from the work camp for initial installation of foundations, placement of structures, and installation and testing of equipment. The noise impacts on potential receivers would be greatest at Halibut Bay, where recreational and subsistence use levels are highest. The noise levels expected during construction will be in approximately the same range as those due to existing use of float planes at Halibut Bay. The noise would occur most intensively over a period of only several days, then intermittently for several weeks. The noise levels are not likely to disrupt activities but may diminish the solitude value of the area.

Noise from construction of the tower and related facilities would involve portable gasoline-powered equipment, voices, and a variety of sounds associated with the construction camp. The sound levels would be higher than ambient natural levels, but would be temporary.

Operational noise would be produced primarily from the generator used to recharge batteries. A similar generator at the USCG Rescue 21 facility near Juneau created noise levels on the side opposite the exhaust vent of 76 dBA at a distance of 10 ft and 55 dBA at a distance of 50 ft. At the side adjacent to the exhaust vent, noise levels were 85 dBA at 10 ft and 57 dBA at 50 ft. Generator noise at the Middle Cape site is expected to attenuate to near background levels of 30 to 35 dBA at a distance of 500 to 550 ft.

Noise from a vertical axis wind generator is expected to be very low, in the range of 30 to 40 dBA. The major source of noise from wind turbines is the wind as it passes over moving turbine blades. The distance of the blades from the fulcrum of the wind generator proposed for this facility is only a few feet, resulting in little noise from wind. The noise from mechanical components is from moving parts and is very low (Windside 2009).

The character of human-induced noises varies from that of natural noise in frequency. Natural sounds produced by wind tend to be in the low-frequency range. Noise produced by insects, birds, and animals tends to be in higher frequencies, much of which is above the range of human hearing (Miller 2007). The engine noise from the propane-powered generator is dominated by low-frequency components, with a maximum in the range 50 to 100 Hz. High-frequency component sounds attenuate over shorter distances than low-frequency components, which tend to dominate at greater distances (Harrison et al. 1980).

It is possible but unlikely that recreational users will be present at the Middle Cape site during the twice-yearly maintenance visits and propane recharge periods, when

helicopter noise would be highest. Noise during construction is most likely to affect human receivers in the vicinity of Halibut Bay engaged in fishing, recreational, or subsistence use. These users may find the peak noise levels to be intrusive; such peaks would be produced during delivery of materials to the staging area by boat or helicopter and slinging of materials to the tower location by helicopter. Noise from slinging operations may be high enough to temporarily displace sensitive birds and animals from the immediate vicinity.

At the Twin Peaks repeater site, humans are more likely to be present during maintenance visits compared to the Middle Cape site, but the noise is likely to be perceived as less intrusive because of higher background levels from boat and airplane use in the vicinity. Noise from staging activities is not likely to be perceived as substantially greater than noise associated with cannery operation. Helicopter slinging to the site would produce short-term higher noise levels in the area; however, these levels would not be appreciably higher than existing noise levels produced by aircraft operating at the runway at Akhiok or the seaplane base at Lazy Bay.

The addition of a microwave dish and related equipment at the existing USCG communications link facility in northeast Akhiok would result in noise levels typical of construction. In a settled area, such noise levels can be expected to be similar to those from other construction and maintenance activities. The closest potential receivers are nearby residents, who are not likely to perceive the construction noise as an abnormal intrusion because it would not differ in magnitude or character from other human-produced noises in the vicinity.

4.6.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no noise impacts would occur.

4.7 GEOLOGY AND SOILS

4.7.1 Alternative A (The Proposed Action)

No impacts to the geology or soils are expected at the communications sites. The proposed communications facility at the Middle Cape site would occupy an area of approximately 1,400 sf and that at the repeater site would occupy an area of approximately 250 sf. The facility construction would disturb the thin layer of soil at each site, and portions of the structures would be anchored to the bedrock. Construction is not expected to change site soils or geology because the footprints of the facilities are very small relative to the surrounding areas. Once construction is complete and the facilities are in place, communications operations would not disturb the geology or soils at the sites. Each site would be accessed roughly twice a year for maintenance purposes, with most maintenance occurring on the refueling pad or

within the shelters. Therefore, long-term operations would not have an adverse impact to soils or geology at the sites.

Staging at Halibut Bay may involve offloading supplies onto the beach via a forklift with large soft tires. Beach sand may be displaced by the forklift but staging activities are not expected to change the beach sands. Staging activities at the Alitak production facility would not change the soils at that site because materials would be staged on disturbed areas (grass or gravel). The soil at the Akhiok link site would not be impacted because the microwave dish would be installed on the existing tower.

4.7.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to geological or soil resources would occur.

4.8 FLOODPLAINS

4.8.1 Alternative A (The Proposed Action)

There would be no impact to floodplains at the Middle Cape site, Twin Peaks repeater site, or the Alitak production facility staging area because none is located within a floodplain. If the Halibut Bay staging area lies within a floodplain, it is not expected to be adversely impacted because of the short time over which the staging area would be used and the small footprint of the staging activities relative to the size of the floodplain. The proposed action at the existing Akhiok communications link site would not impact any floodplain because the microwave dish would be installed on the existing tower.

4.8.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no floodplain-related impacts would occur.

4.9 WATER RESOURCES AND WATER QUALITY

4.9.1 Alternative A (The Proposed Action)

Because there is no standing water at or water body near the Middle Cape site or repeater site, water resources and water quality will not change at either location.

Both staging areas are located along coastal beaches of Kodiak Island. Barges may be stationed at the staging areas, but only temporarily and with no substantial change to water quality or water resources. It is possible that turbidity would increase during mobilization of the barge in shallow areas, but this increase is expected to be of very short duration. Supplies would be offloaded from barges using best management practices to prevent spills during the offloading process. Offloading at the staging areas will not substantially change the coastal waters.

The proposed action at the existing Akhiok communications link site would not impact any water resources because the radio dishes would be installed on the existing tower.

4.9.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to water resources would occur.

4.10 WETLANDS AND VEGETATION

4.10.1 Alternative A (The Proposed Action)

Wetlands do not exist at any of the sites, so there would be no impact to wetlands.

Vegetation at the Middle Cape and Twin Peaks sites would be disturbed by the construction. Substantial changes to vegetation at the sites are not expected because the footprints of the facilities are small relative to the surrounding areas. Disturbance would end when construction is completed and the facilities are in place. The communications sites would be accessed approximately twice a year for maintenance purposes. Therefore, long-term operations would not have adverse impact to vegetation at the sites. The staging at the Alitak production facility would be located on gravel or grass. Staging is not expected to change vegetation since it would occur at a pre-disturbed location. Rotor wash from the helicopter may disturb local vegetation at all sites, but this impact would be temporary and have negligible effect.

4.10.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to wetlands and vegetation would occur.

4.11 COASTAL ZONE MANAGEMENT PLANS

4.11.1 Alternative A (The Proposed Action)

The Alaska Coastal Management Plan and Kodiak Island Borough Coastal Management Plan identify a range of goals and policies that govern uses in coastal areas. The installation of navigation aids such as the proposed Middle Cape facilities directly support the major goals of the plans; the facilities would be developed and operated to comply with other goals and polices.

With respect to coastal development [11 AAC 112.200(a) and KIBCMP Goal 2E], the location of a network of emergency communications facilities as implemented in the Rescue 21 program supports uses dependent on a costal location by providing emergency communications facilities needed for the safe and reliable operation of such uses.

With respect to utility routes and facilities [11 AAC 112.240(a) and KIBCMP Goal 5A], the Middle Cape site and supporting facilities near and at Akhiok have been located where effective coverage of navigable waters can be achieved. Evaluation of alternative sites documented that no practical inland alternatives are available (Appendix D).

With respect to subsistence [11 AAC 112.270(a) and KIBCMP Goals 9A and 9B], the proposed communications facilities would not adversely change subsistence uses because of the low level of subsistence resources available at the Middle Cape and existing Akhiok communications sites and the lack of adverse impacts at the Twin Peaks repeater site. Current subsistence uses would continue with little or no change during operation of the facilities.

With respect to habitat [11 AAC 112.300(b)(1) and KIBCMP Goal 11A], the proposed communications facilities would not adversely change habitat because construction would not occur in high-productivity areas, the design and operation would not include features such as guy wires that would adversely affect birds, and only low levels of noise or other impacts would occur.

With respect to historic, prehistoric, and archaeological resources [11 AAC 112.320(a) and KIBCMP Goal 13A], the proposed communications facilities would be located away from the near-coast areas most likely to have prehistoric, archaeological, or historic resources. There is no evidence of cultural resources at any of the locations. If such resources were to be encountered during construction, work would cease until a conservation plan could be prepared, evaluated by appropriate parties, and implemented.

Overall, the proposed Middle Cape communications facilities support the Alaska and Kodiak Island coastal management plans by providing needed communications infrastructure and providing essential emergency communications that allows coastal-oriented uses to successfully operate in an environment where unanticipated circumstances or mishaps would otherwise result in loss of life or property.

4.11.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, necessary emergency communications facilities would not exist and there would be a gap in communications infrastructure. This alternative would not satisfy USCG's requirement to improve the safety of navigation and vessels and would not address the need for improved maritime distress and response communications coverage in the Shelikof Strait to the west and southwest of Kodiak Island.

4.12 FISH AND WILDLIFE

4.12.1 Alternative A (The Proposed Action)

Fish and marine mammal species potentially present in the waters around KNWR will not be affected by the construction activities because no in-water work is planned. Anadromous fish species and gray whales may be present around the staging areas in Halibut Bay or at the Alitak production facility, but the species will not be affected because barges at the staging areas would be present only temporarily and there would be no change in water quality.

Land mammals will be minimally affected at the Middle Cape or Twin Peaks repeater site because the footprints of the facilities are small relative to the surrounding areas. There will be negligible change to the overall habitat for these species. However, brown bears and red fox are attracted to the scent of food and garbage at such construction camps. Brown bears are known to investigate new items in their territories and may chew on various items such as hoses or cables, or they may damage such shelters that may contain "interesting" scents. Potentially harmful equipment, such as electrical cabling, will be reinforced to minimize potential adverse effects to animals, particularly bears. Construction workers can be trained in bear safety procedures prior to occupying the site. Measures such as bear-proof containers for food and garbage storage can be used to minimize food scents. Garbage will not be burned or buried. Electric fences may need to be employed around construction materials and the construction camp to prevent bears from damaging materials or the camp.

Water birds present around Halibut Bay or the Alitak production facility may be locally displaced by the planned work but barges would be present for a short time only. Construction and/or helicopter noise may disturb birds in or flying near these locations. Construction and helicopter noise and the presence of construction workers during nest initiation, incubation, or chick rearing could cause nest or chick abandonment at nests in close proximity to construction sites. Human presence at construction sites may also attract scavengers or nest predators such as ravens and red fox which, in turn, could increase nest predation in the area. Because of the specific placement of the sites, potential bird habitat would not be removed or disturbed over the long term. Towers could present a strike hazard to some birds flying low over the terrain from dusk until dawn or under foggy weather conditions. Risks to migrating birds would be minimal because the communications towers would not be lighted and therefore would not attract migrating birds toward the tower at night or during conditions of poor visibility. Furthermore, the towers would be well below the threshold height (500 ft) generally thought to pose the greatest risk to migrating birds.

4.12.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to fish and wildlife resources would occur.

4.13 THREATENED AND ENDANGERED SPECIES

4.13.1 Alternative A (The Proposed Action)

Threatened and endangered marine species would not be affected by the construction or presence of the tower and associated structures because the facilities would be built on land. Staging areas would be located along coastal beaches of Kodiak Island and barges would be used at staging locations to deliver and load supplies onto a helicopter. Barges at the staging areas would be present only temporarily and would not affect any marine species potentially present during the summer season (e.g., Steller sea lions, northern sea otter, nearby whales).

Short-tailed albatross and Steller's eider would not be adversely affected by construction activities or permanent facility structures because they are found primarily in nearby waters. The yellow-billed loon would also not be affected because it is not present during the summer, when construction activities would take place.

Construction and/or helicopter noise and activity may disturb Kittlitz's murrelets nesting or flying near these locations. Construction and helicopter noise and the presence of construction workers during nest initiation, incubation, or chick rearing could cause nest or chick abandonment at nests in close proximity to construction sites. Human presence at construction sites may also attract scavengers or nest predators such as ravens and red fox which, in turn, could increase nest predation in the area. Because of the specific placement of the sites, potential bird habitat would not be removed or disturbed over the long term. Towers could present a strike hazard to some birds flying low over the terrain from dusk until dawn or under foggy weather conditions.

Timing construction activities, especially the slinging of construction materials by helicopter, to avoid the most critical periods of nesting can eliminate potential effects on breeding/ nesting Kittlitz's murrelets.

4.13.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to threatened and endangered species would occur.

4.14 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

4.14.1 Alternative A (The Proposed Action)

The proposed facilities at the Middle Cape, Twin Peaks repeater, and existing Akhiok communications sites will not have an adverse impact on historical, archaeological, or cultural resources for the following reasons:

- The Middle Cape and Twin Peaks sites are distant from coastal and beach areas where settlements and subsistence hunting and gathering of the Yupik Eskimo culture are most likely to occur.
- No cultural resources or artifacts were observed during field visits to the sites.

Cultural resources are more likely to be found at the Halibut Bay staging site because it is in an area traditionally used by Alaska Natives for summer fishing, gathering, hunting, and associated settlements. However, construction materials will be temporarily placed of the surface, no excavation will take place, and the likelihood of disturbance of resources is very low.

The USFWS, in consultation with the Alutiiq Museum staff, has concluded by letter of October 22, 2009 that there are no historic properties present in the project area (Appendix F). The Alaska State Historic Preservation Officer concurred with the determination on November 24, 2009.

In accordance with USCG standard contract specifications, if cultural resources were to be encountered during construction, work would stop, and appropriate surveys and characterization of resources would be performed by qualified specialists. Alternatives would be evaluated in consultation with the State Historic Preservation Officer and affected stakeholders, including Alaska Natives, and the project would be modified to avoid such resources, or a program of conservation and preservation would be implemented.

4.14.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no impacts to historical, archaeological, or cultural resources would occur.

4.15 SOCIOECONOMICS

4.15.1 Alternative A (The Proposed Action)

The proposed facilities at the Middle Cape, Twin Peaks repeater, and existing Akhiok communications sites will not have an adverse or beneficial impact on the socioeconomic character of the affected communities for the following reasons:

- The Middle Cape site is distant from coastal and beach areas where subsistence hunting and gathering is most likely to occur.

- The Middle Cape site is physically very difficult to access, is likely to support very low populations of subsistence-related resources, and is likely to have had little past use, if any.
- Karluk and Larsen Bay, the communities most accustomed to using the Halibut Bay and Middle Cape sites, are closer to and make more intensive use of resources in the Karluk and Sturgeon rivers, and other locations closer to their communities. The Halibut Bay and Middle Cape areas are likely to function as peripheral hunting and gathering areas for a very small number of families.
- The Twin Peaks repeater site is removed from coastal and beach areas where subsistence hunting and gathering is most intensive. It is in an upland area that is reasonably accessible and where hunting is likely to occur. The proposed facility, however, is unlikely to adversely affect the patterns of animal use or the potential for subsistence use.
- The existing Akhiok communications link site would experience only minor modification through the addition of a microwave dish to the existing tower. There would be negligible impacts on the local community from this addition.

Additional analysis of the potential impact on subsistence use is provided in Appendix G.

Construction and operation of the facilities will provide few opportunities for employment by local residents. The type of contractor and personnel engaged in communications facility construction is likely to be specialized, with a skilled and experienced team engaged in several similar jobs in the region. The contractor is unlikely to hire locally except, perhaps, to supplement the construction team during staging and materials transport.

The provision of enhanced emergency communications facilities in the portion of the Shelikof Strait where there is a gap in communications may indirectly increase subsistence and commercial fishing, hunting, and gathering. In providing greater assurance of communications and emergency response following unanticipated conditions or mishaps, the new facilities could extend the period during which persons are willing to engage in these activities under marginal conditions.

4.15.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no socioeconomic impacts would occur.

4.16 ENVIRONMENTAL JUSTICE

4.16.1 Alternative A (The Proposed Action)

The proposed communications facilities at the Middle Cape, Twin Peaks repeater, and existing Akhiok communications link sites will not have disproportionately high and

adverse human health or environmental effects on minority populations and low-income populations. The majority of the affected communities in western Kodiak Island are Alaska Native and therefore a minority as defined in the Environmental Justice Executive Order 12898. A substantial portion of the population meets the criteria for low income, although few members live below the poverty level.

The proposed construction of the facility would not have a disproportionate effect on these populations for the following reasons:

- The Middle Cape site is distant from the communities of Karluk and Larsen Bay, whose residents are most accustomed to using the vicinity. The sites are likely to function as peripheral hunting and gathering areas for a limited number of families.
- Impacts on the coastal and beach areas at Halibut Bay where subsistence hunting and gathering is most likely to occur would be experienced only during construction staging, would be of limited duration, and would have negligible adverse impacts.
- The Middle Cape site is physically very difficult to access, is likely to support very low populations of subsistence-related resources, and is likely to have had little past use, if any. Continued operation of the site would have little or no adverse impacts on the minority or low-income communities.
- In the low-probability event of adverse impacts from equipment, including sealed batteries and propane, the humans most likely to be present are USCG personnel and contractors, not minority or low-income populations.
- The Twin Peaks repeater site is removed from coastal and beach areas where subsistence hunting and gathering is most intensive. The proposed facility will not adversely affect patterns of animal use or the potential for continued subsistence use.
- The addition of a microwave dish to the existing Akhiok communications link site would not introduce new equipment with the potential for health hazards. The recognized hazard to humans from direct exposure to microwave frequencies would be addressed by meeting FCC standards for maximum microwave radiation levels at and along the path of the transmission from the link site.

Indirect positive effects may accrue to minority and low-income populations engaged in subsistence and commercial fishing, hunting, and gathering. Enhanced communications could extend the period during which persons are willing to engage in such activities under marginal conditions because of the greater assurance of communications and emergency response following unanticipated conditions or mishaps. The potential savings in life and property resulting from improved communications may be considered a substantial and incalculable benefit.

4.16.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no environmental justice impacts would occur.

4.17 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

4.17.1 Alternative A (The Proposed Action)

There are no existing hazardous materials at the Middle Cape or Twin Peaks sites; however, hazardous materials and waste would be generated as part of construction and operation of the facilities. Excess materials and construction waste would be removed from the sites after construction was completed, and disposed of properly. Waste from the campsites (including waste from the portable toilet) would also be removed after construction was complete. Construction materials and waste would not impact the sites because they would be removed after the project is complete.

No additional hazardous materials would be generated at the Akhiok village link site.

Long-term operations at the communications sites would require storage of potentially hazardous materials, specifically batteries and propane. Batteries for the communications facilities would be stored in a shelter at the Middle Cape and Twin Peaks sites. The batteries would be sealed, non-spilling AGM type; impacts to the surrounding environment are not expected. Propane tanks would be stored on concrete pedestals anchored to bedrock and treated lumber cribbing. The tanks would not affect the surrounding environment. As part of general facility maintenance, propane tanks would be refueled once every 2 years. Best management techniques would be implemented to reduce the occurrence of spills. Maintenance of the generator could introduce oils or lubricants to the sites but these substances would be handled carefully and waste would be removed and disposed of properly. Long-term operations and maintenance at the communications sites would not involve any discharges to the surrounding environment.

The dock at the Alitak production facility may be used to offload supplies. The rest of the facility would not be used during the staging process.

4.17.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no hazardous material impacts would occur.

4.18 PUBLIC HEALTH AND SAFETY

4.18.1 Alternative A (The Proposed Action)

The installation of the proposed communications facilities at the Middle Cape and Twin Peaks sites creates potential public safety issues for persons who might be

exposed to battery fluids. This potential impact is addressed by specifying sealed, non-spilling AGM-type batteries that will not result in spills.

The expansion of the existing communications facility at Akhiok to accommodate an additional microwave dish would generate no waste or other materials of concern to public safety and would not contribute to onsite sewage disposal.

The installation of a microwave dish oriented to the repeater site to the southwest includes a potential public safety concern from exposure to electromagnetic radiation. The microwave dish will be installed approximately 15 ft above ground level, and will be directed upward towards the Twin Peaks repeater site. It would be very difficult for people to intercept the RF microwave path.

There is also some concern that signals from some RF devices could interfere with pacemakers or other implanted medical devices. However, it has never been demonstrated that signals from a microwave oven (and presumably microwave communications equipment) are strong enough to cause such interference (FCC 1999). Furthermore, electromagnetic shielding has been incorporated into the design of modern pacemakers to prevent RF signals from interfering with their electronic circuitry (FCC 1999).

Public safety concerns related to the current gap in coverage areas of nearby existing VHF communications sites in the Shelikof Strait would be lessened by the proposed system, which offers the following improvements:

- Reduced coverage gaps in the current VHF system, such as in the Shelikof Strait
- Increased channel capacity, which allows for simultaneous communications on channels (including VHF Channel 16)
- Provision of DSC capability that would quickly provide the vessel's name, exact location, nature of distress, and other vital information when used in conjunction with an integrated GPS receiver and properly registered Maritime Mobile Service Identity number
- Provision of digital recording communications for instant playback
- Reduced system "down time"
- Improved interoperability among the USCG and federal, state, and local communications systems

4.18.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, the gap in communications coverage and severe communications limitations in the area will not be addressed. The Shelikof Strait is a major maritime route used by commercial freight, oil tanker vessels, barges, fishing vessels, and recreational vessels traveling between Anchorage and the Aleutian Islands. A lack of communications in this area will negatively affect these vessels.

4.19 TRANSPORTATION

4.19.1 Alternative A (The Proposed Action)

No transportation impacts are anticipated as a result of construction and operation of the Middle Cape and Twin Peaks sites. Construction materials would be delivered to Halibut Bay (for the Middle Cape site) or to the Alitak production facility (for the repeater site) by vessel. Lazy Bay Transportation in Kodiak has confirmed that delivery to either staging area is practical using their existing equipment (Rogers 2009). Other carriers also may be employed at the option of the contractor. Alternatively, materials could be delivered by barge. Delivery by large transport helicopter is feasible but likely a more expensive and less desirable option for a contractor. Personnel are expected to arrive at the site directly by chartered helicopter or float plane. Alternatively, they may fly into Karluk, Larsen Bay, or Akhiok and be shuttled to the site by helicopter.

The minor amount of material to be delivered to the existing Akhiok Village site would not adversely impact the existing transportation infrastructure.

Transportation capacity on Kodiak Island and in the region is sufficient to provide service to the project sites without straining infrastructure or displacing other users.

4.19.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no modification of any of the sites would take place and no transportation impacts would occur.

4.20 CUMULATIVE IMPACTS

4.20.1 Alternative A (The Proposed Action)

NEPA requires an analysis of the incremental effects of an action that are considered cumulatively with those of other closely related recent past, present, planned, and reasonably foreseeable future actions. The contribution of a proposed action to the overall cumulative impacts in the region is of particular concern. It is the practice of the USCG to co-locate antennas and share infrastructure with other federal (such as USFWS) and state agencies whenever feasible. As such, it is anticipated that there would be some level of cumulative impacts at shared sites. However, because infrastructure would be shared, any future cumulative impacts of these federal projects would be minimal.

No additional substantial cumulative impacts from this or other activities in the vicinity of the communications sites have been identified by these analyses.

4.20.2 Alternative B (The No Action Alternative)

Under the No Action Alternative, no additional cumulative impacts would occur because there would be no co-location of other agencies' equipment at the sites.

5 Statement of Environmental Significance of the Proposed Action

Based on the analysis of impacts on specific elements of the environment, no significant adverse impacts on the natural or human environment have been identified for the proposed communications facilities at the Middle Cape site, the Twin Peaks repeater site, or the existing Akhiok communications link site.

6 Irreversible and Irretrievable Commitment of Resources

Irreversible or irretrievable commitments of resources would be made in construction—materials used to build the facility—and during operation—the use of propane to generate electricity and fuel for helicopter flights. No other irreversible or irretrievable commitments have been identified as a result of the analysis of potential environmental impacts.

7 Mitigation Measures (Not Already Proposed as a Project Design Feature)

Potential mitigation measures have been addressed for the following elements of the environment:

- For potential impacts related to unexpected encounter of cultural resources during construction, standard USCG contract specifications would provide for stopping work until appropriate surveys and characterization of resources could be performed by qualified specialists. Alternatives would be evaluated in consultation with the State Historic Preservation Officer and affected stakeholders, including Alaska Natives. The project would be modified to avoid such resources, or a program of conservation and preservation would be implemented.
- For potential health impacts of microwave transmission, particularly at the existing Akhiok communications link site, the facility would meet FCC standards for exposure to microwave transmission.
- Environmental effects of the construction, operation, and maintenance of these facilities could be monitored. Specific activities would vary with stage of the project. During construction, one could monitor for spills, measure noise, and cleanup effectiveness. During operation, generator run time and wind generator output could be tracked. During scheduled maintenance, notes could be recorded for animal damage, weather damage, general condition of the facilities, and general condition of the surrounding vegetation. Disturbed soil could be evaluated to check the success of revegetation efforts, the overall vigor of the re-established species, and the presence of invasive species.

- To preclude or minimize human/ bear interactions, construction workers can be educated about working in bear country and about bear safety prior to arriving on the site. Food and garbage will be kept in bear proof containers at the construction camp. Electric fencing to discourage bears from seeking food or garbage and from accessing tents or other sleeping quarters.
- During construction of the Middle Cape site, the following procedures can be implemented:
    1. Construction activities will not begin at the tower site prior to July 1. If construction activities are to begin prior to August 15 they will be preceded by a nest search conducted by qualified personnel of all nesting habitat above 1,000 feet in elevation within 0.25 miles of the tower site. If as a result of the nest search no active nests or nests with eggs or chicks are found, construction activities may begin. If active nests or nests with eggs or chicks are found within 0.25 miles of the tower site, construction may not begin until the chick(s) have fledged, the nest is abandoned, or the chick perishes.
    2. Helicopter flights to or from the Middle Cape site or Akhiok link site during the Kittlitz's murrelet nesting season (May 15 – August 15) may not arrive at the site prior to 90 minutes after sunrise and shall depart the site by 90 minutes prior to sunset.
    3. As allowed by weather conditions and safety considerations, helicopter flights should approach the Middle Cape site from the west, north, or northeast and avoid potential Kittlitz's murrelet nesting habitat on ridges to the south, southeast, and southwest.
    4. As allowed by weather conditions and safety considerations, helicopter flights should avoid close approach to the portions of Twin Peaks above 1,000 feet in elevation.
- During the operational phase of the communications system, periodic maintenance and refueling of sites will normally be conducted outside the Kittlitz's murrelet nesting season (May 15 – August 15). Emergency maintenance that must be performed during the Kittlitz's murrelet nesting season will require the Refuge Manager's approval.

8 Agencies Contacted

Several local and state agencies were consulted in the preparation of this document, as presented in Table 8-1.

Table 8-1. Agencies contacted for the preparation of this EA

AGENCY	SUBJECT	CONTACT INFORMATION
Alaska Division of Community and Regional Affairs	visual and aesthetics	http://www.dced.state.ak.us
Alaska Department of Fish & Game	fish and wildlife, threatened and endangered species, recreational use	http://www.adfg.state.ak.us
Alaska Department of Labor and Workforce Development	socioeconomics	http://www.labor.state.ak.us
Alaska Department of Transportation	socioeconomics	http://www.dot.state.ak.us
Alaska Natural Heritage Program	threatened and endangered species	http://aknhp.uaa.alaska.edu
American Cetacean Society	threatened and endangered species	http://www.acsonline.org
Federal Communications Commission	public health and safety	http://www.fcc.gov
Kodiak Island Borough	transportation, land use, recreation use, socioeconomics	http://www.kodiakak.us
Kodiak National Wildlife Refuge	wetlands and vegetation	Bill Pyle Supervisory Wildlife Biologist Kodiak National Wildlife Refuge 1390 Buskin River Road Kodiak, AK 99615 (907) 487-0228 Bill_Pyle@fws.gov
National Marine Fisheries Service	threatened and endangered species	http://www.nmfs.noaa.gov
National Park Service	threatened and endangered species, historical archaeological and cultural resources	http://www.nps.gov
Northern Prairie Wildlife Research Center (USGS)	fish and wildlife	http://www.npwrc.usgs.gov
US Bureau of Land Management	visual and aesthetics	http://www.blm.gov
US Environmental Protection Agency	air quality, environmental justice	http://www.epa.gov
US Fish and Wildlife Service	threatened and endangered species	Richard Enriquez Conservation Planning Assistance Biologist Juneau Fish and Wildlife Field Office Juneau, AK 99801-7100 (907) 780-1162 Richard_Enriquez@fws.gov
US Fish and Wildlife Service	fish and wildlife, threatened and endangered species, land use	http://kodiak.fws.gov, http://alaska.fws.gov
World Wildlife Fund	threatened and endangered species	http://www.panda.org

AK – Alaska
USGS – US Geological Service

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APPENDIX A. SF299: APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

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STANDARD FORM 299 (1/2006)
Prescribed by DOI/USDA/DOT
P.L. 96487 and Federal
Register Notice 5-22-95

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

FORM APPROVED
OMB NO. 1004-0189
Expires: November 30, 2008

FOR AGENCY USE ONLY

Application Number

Date filed

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

1. Name and address of applicant *(include zip code)*

USCG Rescue 21 Real Property
1301 Clay Street, Suite 700N
Oakland, CA 94612

2. Name, title, and address of authorized agent if different from Item 1 *(include zip code)*

Dan Slagle, Rescue 21 Alaska, 1301 Clay Street, Suite 700N, Oakland, CA 94612

3. TELEPHONE *(area code)*

Applicant **510 637-5480**

Authorized Agent **510 637-5429**

4. As applicant are you? *(check one)*

- a. ☐ Individual
- b. ☐ Corporation*
- c. ☐ Partnership/Association*
- d. ☐ State Government/State Agency
- e. ☐ Local Government
- f. ☑ Federal Agency

* *If checked, complete supplemental page*

5. Specify what application is for: *(check one)*

- a. ☑ New authorization
- b. ☐ Renewing existing authorization No.
- c. ☐ Amend existing authorization No.
- d. ☐ Assign existing authorization No.
- e. ☐ Existing use for which no authorization has been received*
- f. ☐ Other*

* *If checked provide details under Item 7*

6. If an individual, or partnership are you a citizen(s) of the United States? ☐ Yes ☐ No

7. Project description *[describe in detail]:* (a) Type of system or facility, *(e.g., canal, pipeline, road);* (b) related structures and facilities; (c) physical specifications *(length, width, grading, etc.);* (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction *(Attach additional sheets, if additional space is needed.)*

(a) USCG Rescue 21 communication site on "Ridge" hill top 6 miles east of Middle Cape, Kodiak AK.
(b) One communications tower, one communications shelter, one generator - power building, ten propane tanks, solar array, and propane refueling pad. Please see attached drawing.
(c) Proposed 60-ft tower (~ 10-ft base), 8-ft x 10-ft comms shelter, 10-ft x 14-ft gen building, ten 500 gallon propane tanks, 12-ft x 32-ft solar array, 10-ft x 10-ft propane refueling pad, small wind generator on self-supporting 20-ft. tower.
(d) 20+ years
(e) Un-manned continuous operation by microwave link.
(f) ~ 1/2 Acres.
(g) Estimate 90-days mid - late summer.
(h) Work crew(s) are expected to camp & work at site ~ one week at a time. Estimate 8 one week periods.
(i) Materials and supplies for site construction staged at Halibut Bay and then helicopted up to site.
(j) Routine maintenance visits twice a year (late spring & early fall)
(k) Propane refueling at 1 - 2 year intervals.

8. Attach a map covering area and show location of project proposal

9. State or local government approval: ☐ Attached ☐ Applied for ☑ Not required

10. Nonreturnable application fee. ☐ Attached ☑ Not required

11. Does project cross international boundary or affect international waterways? ☐ Yes ☑ No *(If "yes," indicate on map)*

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

U.S. Coast Guard Rescue 21 Program.
Federal funded program

(Continued on page 2)

13a. Describe other reasonable alternative routes and modes considered.

West side of Shelikof Strait considered but area is designated Wilderness.
Cape Grant, Middle Cape, Cape Ikolik, Anvil Mountain.
To provide effective VHF radio coverage, site must be in these areas. Only options are Wilderness or Refuge land.

b. Why were these alternatives not selected?

There are no known designated communication sites in the area that would provide required coverage.
West side of Shelikof Strait not surveyed due to Wilderness designation.
Cape Grant, Middle Cape, Cape Ikolik, and Anvil Mt very difficut & expensive to build, and very difficult to support.

c. Give explanation as to why it is necessary to cross Federal Lands

To provide Search And Rescue (SAR), Environmental Response (ER), and Law Enforcement (LE) communications southwest area of Kodiak Island. The USCG currently has minimal to no emergency communications capability within this area. This area has been nicknamed the "Kodiak Triangle" due to lack of emergency communications and mariner problems.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. *(Specify number, date, code, or name)*

Cape Gull SAR communications site within Katmai National Park. Lease DTCG-Z71117-07-RP-175P
Althorp Peak SAR communications site south of Cape Spencer on Forest Service land.
Robert Barron Peak SAR communications site west of Juneau on Forest Service land.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal *(construction, operation, and maintenance);* (b) estimated cost of next best alternative; and (c) expected public benefits.

USCG currently has minimal - no communications capability southwestern Kodiak for Search And Rescue, Enviornmental Response, and LE.
(a) Estimate $1.5M construction, estimate annual maintenance & operation of $70K
(b) Estimate much higher costs for all alternate locations. Alternate locations are either very difficult to build, or Wilderness area.
(c) Significant improvement for USCG response to Search And Rescue, and Enviornmental Response (spills).

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

Minimal to no negative effects on population in the area. There are no nearby populations, and Karluk is ~ 17 miles north.
Expect positive impacts for a large area from 24/7 emergency communications with USCG.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

(a) Minor impact on air quality when propane generators run about 6 hours every 4 days. (b)Very little human presence in this area., but facilities woudl be visible. (c) Very minimal. (d) No effect on any stream or waters. (e) Heli & other noise levels during construction and twice a year maintenance. Cycle charge propane generator to run ~ 6 hours every 4 days. (f) Concrete piers for equip, minimal vegetation at site.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

(a) No effect on fish and marine life. Expect short term minor effect to local wildlife. Unkown at this time on threatened and endangered species, NEPA process necessary. (b) No effect expected to marine mannals.

Analysis to be included in an Environmental Assessment.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 9601 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does **not** include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

Communication site will utilize a large bank of sealed Valve Regulated Lead Acid (VRLA) batteries. These batteries contain sulfuric acid absorbed in a glass mat within the sealed cases.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

U.S. Fish & Wildlife Service
Office of the Regional Director
1011 East Tudor Road
Anchorage, Alaska 99503

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant	Date
Daniel C. Slagle, USCG	17 August 2009

Title 18, U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 3)

APPENDIX B. SCOPING LETTER

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U.S. Department of Homeland Security

United States Coast Guard

U.S. Department of the Interior
Fish and Wildlife Service

Kodiak National Wildlife Refuge

October 22, 2009

Commanding Officer
USCG Rescue 21
Project Resident Office Alaska
100 Savikko Road
Douglas, Alaska 99824

Refuge Manager
Kodiak National Wildlife Refuge
1390 Buskin River Road
Kodiak, AK 99615

Dear Interested Parties:

The U.S. Coast Guard and the U.S. Fish and Wildlife Service are seeking your input on a proposal to permit, construct, operate and maintain search and rescue communication facilities in Middle Cape area of the Kodiak National Wildlife Refuge.

The U.S. Fish and Wildlife Service received a Right-of-Way application under ANILCA 1310(b) from the U.S. Coast Guard to site a new facility within the National Wildlife Refuge. The proposed site is located near the refuge's southwest coast in the vicinity of Halibut Bay. A proposed repeater site would be located on Twin Peaks just southwest of the Village of Akhiok on Koniag Corporation land.

Why is the Coast Guard Proposing New Facilities?

The U.S. Coast Guard has identified the need to modernize and replace its antiquated maritime search and rescue communications system in Alaska as part of a nationwide mandate. New locations and new equipment will fill existing coverage gaps in Very High Frequency (VHF-FM) marine communications used for Coast Guard operational missions, including search and rescue, maritime pollution prevention and response, maritime law enforcement, and homeland security. The system, known as "Rescue 21," is the maritime equivalent of a "911" communications system, enhancing maritime safety by helping to minimize the time that search and rescue teams spend looking for people in distress.

These facilities would provide improved day-to-day operational (command and control) capabilities for the Coast Guard.

What is the U.S. Coast Guard Proposing?

The proposed action is to install Coast Guard VHF-FM communication sites in the vicinity of Middle Cape, Kodiak National Wildlife Refuge, south-central Alaska. This facility would provide radio coverage for the Shelikof Strait region west of Kodiak Island, Alaska. A second facility would locate repeater equipment to connect the Middle Cape site to the existing earth station in the Village of Akhiok.

A typical communications facility for these areas would include two 12' long x 13' wide x 16' high solar arrays, a 10'x 16' generator hut, a 8' x 10' communication hut, an approximately 60' self-supporting tower, a wind generator and tower, a ten (10) 500 gal. propane tank array, and a 16' x 16' helicopter pad depending on terrain. A typical repeater site includes a 20-foot tower with microwave dishes, a vertical axis wind generator, a solar array, and a 6'x8' electronics hut.

Enclosed are maps displaying the proposed sites.

What Happens Next?

The U.S. Coast Guard and the U.S. Fish and Wildlife Service will conduct the required National Environmental Policy Act (NEPA) compliance measures to decide whether to issue the ROW permit and to authorize the construction, operation, and maintenance of those facilities. This Environmental Assessment (EA) will analyze the effects of construction, including the staging and mobilization of materials and construction forces, and the eventual operation and annual maintenance that would be performed.

The U.S. Coast Guard will prepare written project proposals and potential environmental effects in accord with the National Environmental Policy Act (40 CFR 1500-1508) and as required by USCG COMDTINST M16475.1D, and the U.S. Fish and Wildlife regulations and policies.

A preliminary review of communication coverage identified potential locations for remote fixed facilities. Options for staging materials and mobilizing construction forces will also be included in the EA analyses. The proposed facility was analyzed for reception from a 1-watt radio held 2 meters above the surface of the water.

Alternatives to the proposed action may be developed depending on issues identified during this initial "scoping" period. At this time, we would like to hear any comments, issues, and concerns you have that would help shape or further develop the project proposals.

We are contacting you so your concerns or ideas can be considered early in the development of the project proposals. Your comments will be most useful if they are received by November 20, 2009. However, comments will be accepted and reviewed up until the time the decisions on the projects are made.

Please send comments to William Freeland, Environmental Protection Specialist, U.S. Coast Rescue 21 PRO Alaska, 100 Savikko Rd., Douglas, AK 99824. Comments may be written, sent by e-mail (William.A.Freeland@uscg.mil), or faxed to this address at 907-463-2959 (Attention: Kodiak Middle Cape Rescue 21 Communication Facilities). Questions may be directed to William Freeland at 907-463-2955.

This is not the only opportunity you will have to comment on this project. When the EA has been prepared and distributed, you will have an opportunity to make further comments. If you

would like to be kept informed about this project, please complete and return the attached "Interest Response Form" and you will be placed on the mailing list.

Pursuant to 7 CFR Part 1, Subpart B, Section 1.27, all written submissions in response to this notice will be made available for public inspection, including the submitter's name and address, unless the submitter specifically requests confidentiality. If you wish to withhold your name or address from public review or from disclosure under the Freedom of Information Act, you must state this at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses submitted on official letterheads and from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Sincerely,

Joseph S. Calnan, Commander
Commanding Officer
US Coast Guard Rescue 21
Project Resident Office
Douglas, Alaska

Sincerely,

Gary Wheeler
Refuge Manager
Kodiak National Wildlife Refuge
Kodiak, Alaska

Enclosure

Wind Ward LLC environmental

N

0 20 Miles

Proposed locations for Rescue 21 communication and mobilization sites
Kodiak Island, Alaska

Prepared by Mike Yarnes, 10/09/09, Map #3985: W:\Projects\06-60-01 US Coast Guard\Data\GIS\Kodiak\Kodiak_Island

Interest Response Form

Please include me on the mailing list for

☐ **ENVIRONMENTAL ASSESSMENT FOR PROPOSED**

U. S. COAST GUARD COMMUNICATION SITES ON

MIDDLE CAPE RIDGE AND AT AKHIOK, KODIAK ISLAND, ALASKA

as described in the attached letter.

Complete this form and return to:

U.S. Coast Guard
Rescue 21 PRO Alaska
100 Savikko Rd.
Douglas, AK 99824

Please Print Clearly:

Name: _____

Street: _____

City, State, Zip Code: _____

e-mail address: _____

We are trying to save paper and conserve resources. Please respond if you wish to be kept informed and receive future mailings for this project. Please indicate if you would like a paper copy, CD, or can download website copy of notices, documents, and decision records.

☐ **Paper copy** ☐ **CD** ☐ **Download web content**

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APPENDIX C. PLANS AND DRAWINGS OF PROPOSED CONSTRUCTION

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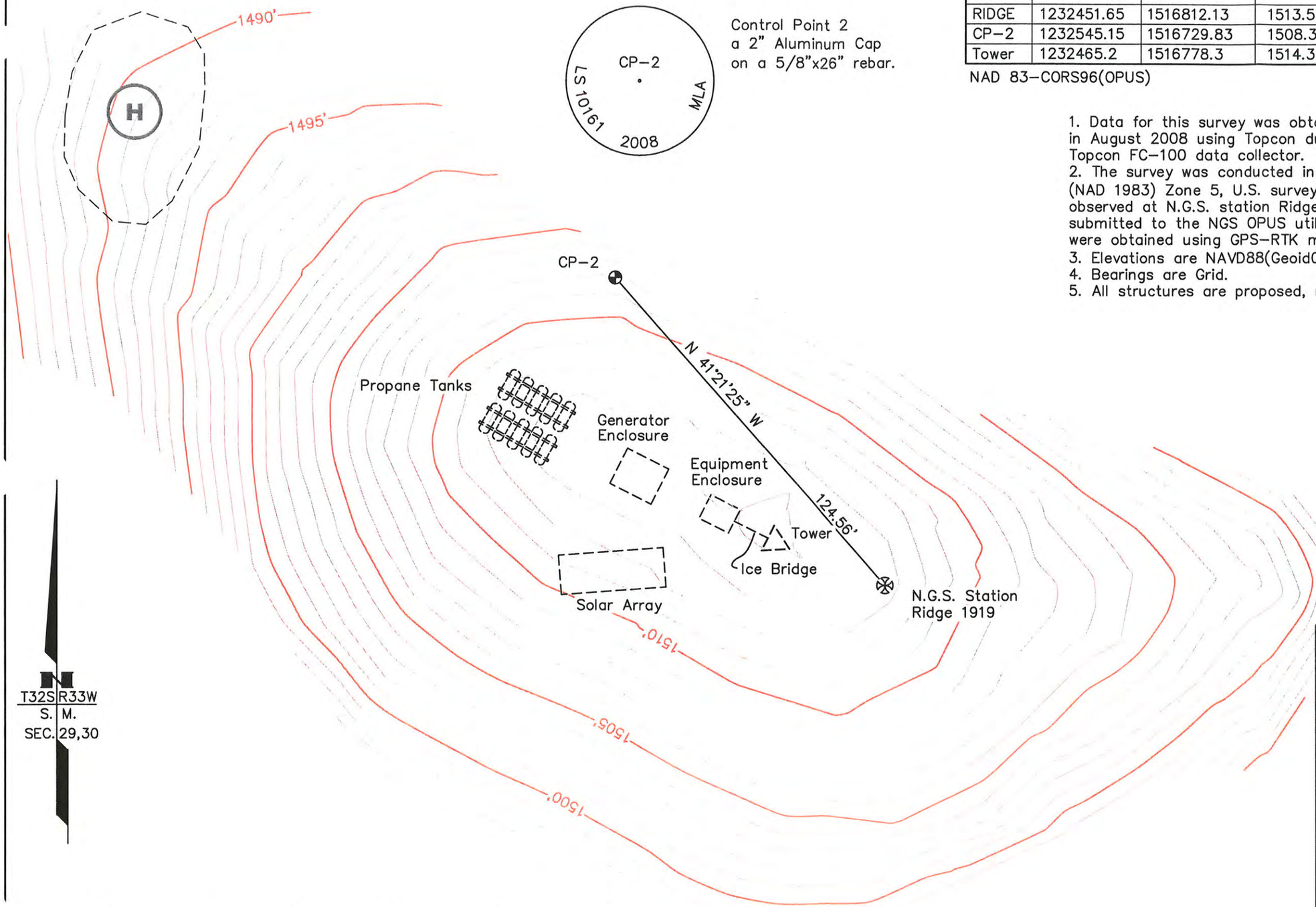
Point	Northing	Easting	Elev.	Lat. N	Long. W
RIDGE	1232451.65	1516812.13	1513.53	57°22'22.1476"	154°37'34.5974"
CP-2	1232545.15	1516729.83	1508.3	57°22'23.0613"	154°37'36.1142"
Tower	1232465.2	1516778.3	1514.3	57°22'22.28"	154°37'35.22"

NAD 83-CORS96(OPUS)

1. Data for this survey was obtained by McClintock Land Associates in August 2008 using Topcon dual frequency receivers and a Topcon FC-100 data collector.
2. The survey was conducted in Alaska State Plane coordinates (NAD 1983) Zone 5, U.S. survey feet. Two hour static sessions were observed at N.G.S. station Ridge 1919 and at CP-2. Data was submitted to the NGS OPUS utility. Topography and site plan data were obtained using GPS-RTK methods.
3. Elevations are NAVD88(Geoid06) provided by OPUS.
4. Bearings are Grid.
5. All structures are proposed, no facilities currently exist.



Middle Cape-Ridge

SAGE SYSTEMS TECHNOLOGIES
2702 Denali St
Suite 103
Anchorage, AK 99503

United States Coast Guard
Rescue 21 Alaska

100 Savikko Road, Mayflower Island, Douglas, AK 99824-5500

McCLINTOCK LAND ASSOCIATES
11940 Business Blvd
Suite 205
Eagle River, AK 99577

Scale 1"=30' | Sheet 1 of 1

APPENDIX D. ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

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Appendix D. Alternatives Considered but Not Analyzed in Detail

Multiple locations were considered that might partially achieve the goal of the USCG to provide communication for the southwestern Kodiak Island coverage gap area. Locations on both sides of the Shelikof Strait were considered.

The USCG Rescue 21 Project must use several criteria when choosing locations to meet communication needs in a particular area. These include the modeled area of VHF coverage, the proximity to the southwestern Kodiak area, the reliability of communications with mariners (in particular, mariners trying to use a 1-watt handheld radio held 2 meters above the water), the accessibility for maintenance, and the cost of construction and maintenance. One final criterion is the ability of the new equipment to "see," or link to an existing facility to transfer information to the U.S. Coast Guard command center.

A series of coverage plots and microwave link paths for different sites were analyzed in light of the purpose and need. These sites were dropped from further consideration, as described below

- Cape Unalishagvak and Cape Kilokak – These sites on the western side of the Shelikof Strait would provide acceptable VHF coverage, but be very problematic for microwave connectivity. Because there is no direct microwave path to Akhiok or other locations for commercial connectivity, two repeater links would be necessary, one of which would have to be sited on a mountain top in the Middle Cape or Cape Ikolik vicinity of the Kodiak National Wildlife Refuge. Direct microwave distances to the Akhiok area are approximately 75 and 85 miles, respectively, and are not feasible. Microwave dishes for a site on the western side of Shelikof Strait would require very large "space diversity" to compensate for fading. Space diversity requires the microwave dishes at either end of the link to be vertically separated by approximately 30 feet, which means a minimum tower height of 40 feet. Space diversity also requires a dual receiver microwave, which draws significantly more power than a typical solar-powered repeater. In turn, this power need would require a larger power system with fuel storage capabilities. Given the additional complexities and costs, the western side of the Shelikof Strait was dropped from future consideration.
- Karluk Area – Two areas near Karluk were visited during the summer 2008 surveys by helicopter: the Federal Aviation Administration remote communication outlet north of Karluk and the ridge line south of Karluk. Both locations have usable areas for a Rescue 21 communications site, but would provide very poor coverage in the required area of southwest Kodiak.

- Cape Grant Area – Three areas were considered in the immediate vicinity of Cape Grant. The peak of Cape Grant is not usable because it is a "peak" without a building area. Cape Grant "point" is a saddle area approximately 0.25 mile west of Cape Grant "peak," with a marginal flat area for a typical site. This location would require two microwave links to Akhiok for connectivity, provide marginal VHF coverage, and be difficult to support. Cape Grant "south" is a small hilltop south of Cape Grant that was eliminated because of its very poor VHF coverage and the requirement for two microwave repeaters.
- Middle Cape – The peak on Middle Cape was expected to be a primary candidate to provide coverage. A site survey during summer 2008 by helicopter clearly showed that the peak and ridge line are too sharp to support a Rescue 21 communications site.
- Cape Ikolik – The peak on Cape Ikolik was also surveyed during the summer of 2008 by helicopter. As was the case for the Middle Cape peak, Cape Ikolik's peak and ridge line are too sharp for a Rescue 21 communications site.
- Other locations – Two helicopter surveys were conducted during the summer of 2008 in the Middle Cape area between Karluk and Ayakulik. An extensive effort was made to visually check every mountain top and hilltop within approximately 5 miles of the coast to determine suitability for a potential Rescue 21 communications site. With the exception of the preferred candidate site Middle Cape "ridge", all locations were eliminated by unsuitability for building (sharp points or ridges), poor modeled VHF coverage, or the need for multiple microwave repeater links.

APPENDIX E. BACKGROUND MATERIAL FOR ANALYSIS OF NOISE, COASTAL ZONE, HISTORICAL AND CULTURAL RESOURCES, AND ENVIRONMENTAL JUSTICE

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Appendix E. Background material for Analysis of Noise, Coastal Zone, Historical and Cultural Resources, and Environmental Justice

Background material for the environmental assessment is provided in this appendix. Background material for noise is summarized in Section E1. Background information for coastal zones is summarized in Section E2. Background information for historical archaeological and cultural resources is summarized in Section E3 and background information for environmental justice is summarized in Section E4.

E1 Noise

E1.1 Noise terminology and descriptors

The decibel (dB) scale used to describe sound is a logarithmic scale that provides a convenient system for considering the large differences in audible sound intensities. When addressing the effects of noise on people, one must consider the "frequency response" of the human ear, or those sounds that people hear best. To address the frequency response, instruments that measure sounds are designed to "weight" measured sound levels based on emphasizing the frequencies people hear best and de-emphasizing those frequencies people do not hear as well. The frequency-weighting most often used to evaluate environmental noise is A-weighting, and measurements from instruments using this system are reported in "A-weighted decibels" or dBA. All sound levels in this evaluation are reported in dBA.

Many regulatory agencies use the equivalent sound level (Leq) to evaluate noise impacts and potential community response to noise. The Leq is the level of a constant sound that has the same sound energy as the actual fluctuating sound. As such, the Leq can be considered an energy-average sound level. When referring to sound levels, it is important to identify the time period being considered, with Leq(24), for example, being the equivalent sound level for a 24-hour period. The day-night sound level (Ldn) is similar to an Leq(24), except that the calculation involves adding 10 dBA to sound levels measured between 10 pm and 7 am to account for potential sleep interference.

E1.2 Regulatory overview

The proposed Kodiak Island communication facilities are located on both federal National Wildlife Refuge land and land owned by the Akhiok-Kaguyak Native Corporation, within the jurisdiction of the Kodiak Island Borough and the City of Akhiok.

The Noise Control Act was passed in 1972 in response to a congressional finding that unchecked noise presents a danger to the nation's health and welfare. "[T]he major sources of noise [pollution] include transportation vehicles and equipment,

machinery, appliances, and other products in commerce" (42 USC § 4901). The Noise Control Act directs federal agencies to comply with all regulations aimed at noise reduction but allows the President to exempt any activity or facility of the executive branch, including noise emission sources, if the paramount interest of the country would be served.

The US Coast Guard Commandant Instruction M16475.1D relates to implementation of NEPA and includes both procedures and policy for considering environmental impacts. In relation to noise, Chapter 2, Subsection D Special Areas of Consideration, Item 9.c directs consideration of conformity to adopted noise standards and compatibility, if appropriate, with different land uses (USCG 2000).

Neither the State of Alaska nor the Kodiak Island Borough has adopted noise standards. In the absence of specific USCG standards for noise compatible with different land uses, the following standards developed by other agencies are presented for reference only.

EPA has recommended that the Ldn and Leq should not exceed certain limits to protect public health and welfare, as indicated in Table E-1.

Table E-1. EPA recommended noise limits

Effect	Level	Area
Hearing	Leq (24) < 70 dBA	all areas
Outdoor activity interference and annoyance	Ldn < 55 dBA	outdoors in residential areas and farms where people spend varying amounts of time in which quiet is a basis for use
	Leq (24) < 55 dBA	outdoor areas where people spend limited time such as school yard playgrounds
Indoor activity interference and annoyance	Ldn < 45 dBA	indoor residential areas
	Leq (24) < 45 dBA	indoor areas with human activities such as schools

dBA – A-weighted decibel
EPA – US Environmental Protection Agency
Ldn – day-night sound level
Leq – equivalent sound level

These limits, however, address impacts on people. Potential impacts on other resources are addressed in the Fish and Wildlife sections.

E2 Coastal Zone Management Plans

The ACMP statute states that the purpose of the ACMP is to protect natural and scenic resources, foster wise development in the coastal area, and encourage coordinated planning and decision-making. Additionally, the objectives of the ACMP documented at AS 46.40.020 include the following purposes:

- The orderly, balanced utilization and protection of resources of the coastal area consistent with sound conservation and sustained yield principles

- The protection of historic, cultural, natural, and aesthetic values and natural systems or processes
- The full and fair evaluation of all demands on the land and water in the coastal area

The ACMP identifies 12 primary categories to be used in consistency evaluations. The following are the categories applicable to this project.

Section 11 AAC 112.200(a), which addresses coastal development, describes the management of coastal land and water uses in such a manner that those uses that are economically or physically dependent on a coastal location are given higher priority when compared to uses that do not economically or physically require a coastal location.

Section 11 AAC 112.240(a), which addresses utility routes and facilities, includes the general policy that utility routes and facilities must be sited inland from beaches and shorelines unless they are water-dependent or no practicable inland alternative exists.

Section 11 AAC 112.270(a), which addresses subsistence, provides that a project within a subsistence use area must avoid or minimize impacts to subsistence uses of coastal resources.

Section 11 AAC 112.300(b)(1), which addresses habitat, generally provides that offshore areas must be managed to avoid, minimize, or mitigate significant adverse impacts to competing uses such as commercial, recreational, or subsistence fishing, to the extent that those uses are determined to be in competition with the proposed use.

Section 11 AAC 112.320(a), which addresses historic, prehistoric, and archaeological resources, provides for designation of areas of the coastal zone that are important to the study, understanding, or illustration of national, state, or local history or prehistory, including natural processes. In addition, this section references AS 41.35.010, which declares that the policy of the state is to preserve and protect the historic, prehistoric, and archeological resources of Alaska from loss, desecration, and destruction so that the scientific, historic, and cultural heritage embodied in these resources may pass undiminished to future generations.

Several goals and policies of the KIB CMP are relevant to the proposed communications projects:

- **Goal 2E**: Strive for compatible use of coastal lands and waters among diverse land uses and activities through design consideration
- **Goal 5A**: Improve air and marine transportation between the City of Kodiak, KIB villages, and the rest of Alaska and maintain coordination with the USCG and the Alaska District Army Corps of Engineers to ensure navigational safety in and around the Kodiak Archipelago

- **Goal 9A**: Support KIB residents' use of local fish, game, and plant resources to meet nutritional, traditional, cultural, and spiritual needs
- **Goal 9B**: Ensure that land use and development decisions consider subsistence resources and activities
- **Goal 11A**: Protect coastal habitats and maintain fish and wildlife populations through management of lands and waters
- **Goal 13A**: Preserve cultural, ethnic, and historical values of the KIB and develop and implement siting and construction procedures to avoid damage to cultural and historical resources

E3 Historical, Archaeological, and Cultural Resources

National Environmental Policy Act of 1969 (42 USC 4321 et seq.) requires that federal agencies consider environmental impacts of major federal actions that significantly affect the quality of the human environment. As interpreted by the Council on Environmental Quality (CEQ), NEPA requires that "reasonably foreseeable" direct, indirect, and cumulative effects of a proposed action be considered in the decision-making process. The term "effects" includes "aesthetic, historic, cultural, economic, social, or health" effects. Implementing regulations can be found at 43 CFR Part 46 and 40 CFR Part 1500.

National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq.) is the primary authority used in complying with the nation's cultural resources protection objectives. Implementing regulations can be found at 36 CFR Part 64 and 36 CFR Part 800. The Section 102 technical report indicates steps that the project would take to comply with NHPA, including site assessments prior to construction and reporting and conservation of any resources uncovered during construction.

Antiquities Act of 1906 (16 USC 431 et seq.) protects historic and prehistoric ruins, monuments, or objects of antiquity located on lands owned or controlled by the US government. Implementing regulations can be found in 43 CFR Part 3.

Historic Sites Act of 1935 (16 USC 461 et seq.). This act declares it national policy to identify and preserve nationally significant "historic sites, buildings, objects and antiquities." It authorizes the National Historic Landmarks program and provides the foundation for the National Register of Historic Places authorized in the NHPA of 1966. Implementing regulations can be found in 36 CFR Part 65.

Archaeological and Historic Preservation Act of 1974 (16 USC 469 et seq.) provides for the preservation of historical and archaeological data that might otherwise be lost as the result of federal construction projects or federally licensed or assisted programs. The act provides that up to 1% of congressionally authorized funds for a project may be spent from appropriated project funds to recover, preserve, and protect archaeological and historical data. Implementing regulations can be found in 36 CFR Part 79.

Protection of Historic Properties (36 CFR Part 800) sets forth the process by which federal agencies account for the effects of their undertakings on historic properties eligible for the National Register of Historic Places. It outlines the procedures for federal agencies to meet these statutory responsibilities.

Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq.) applies in situations where certain Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony, are encountered. It provides a process to museums and federal agencies for return of such items to lineal descendants, culturally affiliated Indian tribes, and Native Hawaiian organizations. Implementing regulations can be found in 36 CFR Part 65 and 43 CFR Part 10.

Protection and Enhancement of the Cultural Environment (Executive Order 11593, May 6, 1971) directs federal agencies to protect and enhance cultural sites, including those non-federally owned, through inventory and evaluation.

Alaska Statutes 41.35.010. Declaration of Policy provides the policy of the state to preserve and protect the historic, prehistoric, and archeological resources of Alaska from loss, desecration, and destruction so that the scientific, historic, and cultural heritage embodied in these resources may pass undiminished to future generations. A variety of permit review processes are provided on state and private lands. This act provides for designation of monuments and historic sites, preservation of resources threatened by public construction, permits, enforcement and penalties. Implementing regulations can be found in 36 CFR Part 65 and 43 CFR Part 10 and provides for administration in Section 11 AAC 16.

E4 Environmental Justice

Environmental justice is defined as "fair treatment for all people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies"(EPA 2008b). In 1994, concern that low-income and minority populations were bearing a disproportionate share of adverse health and environmental consequences led President Clinton to issue Executive Order 12898, focusing federal agency attention on these issues. The Executive Order directs that "…each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (EPA 1994).

The Executive Order reinforces the requirements of Title VI of the Civil Rights Act by requiring assurance that no person on grounds of race, color, national origin, or gender is excluded from participation in, denied the benefits of, or in any other way subjected to discrimination under any program or activity receiving federal assistance. Title VI further prohibits actions that reflect intentional discrimination or that exhibit "adverse disparate impact." The concept of environmental justice is to ensure that

procedures are in place to identify disparate impacts, to avoid or minimize impacts where possible, and to mitigate any unavoidable disproportionately high and adverse impacts, including social and economic effects, on minority and low-income populations.

The CEQ recommends the following general principles be observed in addressing environmental justice issues:

- Agencies should consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action and, if so, whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes.
- Agencies should consider relevant public health data and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent that such information is reasonably available. Agencies should consider these multiple, or cumulative effects, even if certain effects are not within the control of or subject to the discretion of the agency proposing the action (CEQ 1997).

Minority is defined in the Environmental Justice Executive Order (12898) as a person who is one or more of the following:

- Black (a person having origins in any of the black racial groups of Africa)
- Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race)
- Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands)
- American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition)

APPENDIX F. CULTURAL RESOURCES

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KAR B2

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. Tudor Road
Anchorage, Alaska 99503-6199

IN REPLY REFER TO:

RECEIVED
OCT 27 2009
OHA

NWRS710-009

October 22, 2009

Judy Bittner, State Historic Preservation Officer
State Office of History and Archaeology
550 W. 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

No Historic Properties Affected
Alaska State Historic Preservation Officer
Date. 11-24-2009
File No.. 3930-1RFWS

Dear Ms. Bittner:

The US Coast Guard has applied for a Right of Way from the Fish and Wildlife Service to install upgraded communications equipment on the Kodiak National Wildlife Refuge. Enclosed find a description of the project, and an assessment of cultural resource impacts. In the past 10 years Alutiiq Museum staff has spent considerable time in this general area conducting archaeological surveys. According to available information, and in consultation with the museum staff, the area is of low probability for possessing significant cultural resources. In addition, the unit is designed to rest on the ground surface with a minimum of ground disturbance. Therefore we conclude that there are No Historic Properties present in the project area.

Please regard this report as consultation under Section 106 of the National Historic Preservation Act. If no response to this letter is received within 30 days, the Service will assume SHPO concurrence that the projects will have no effect on archaeological or historic resources.

If there are any questions please contact me at (907) 786-3399.

Sincerely,

Debra H Corbett

Regional Archaeologist

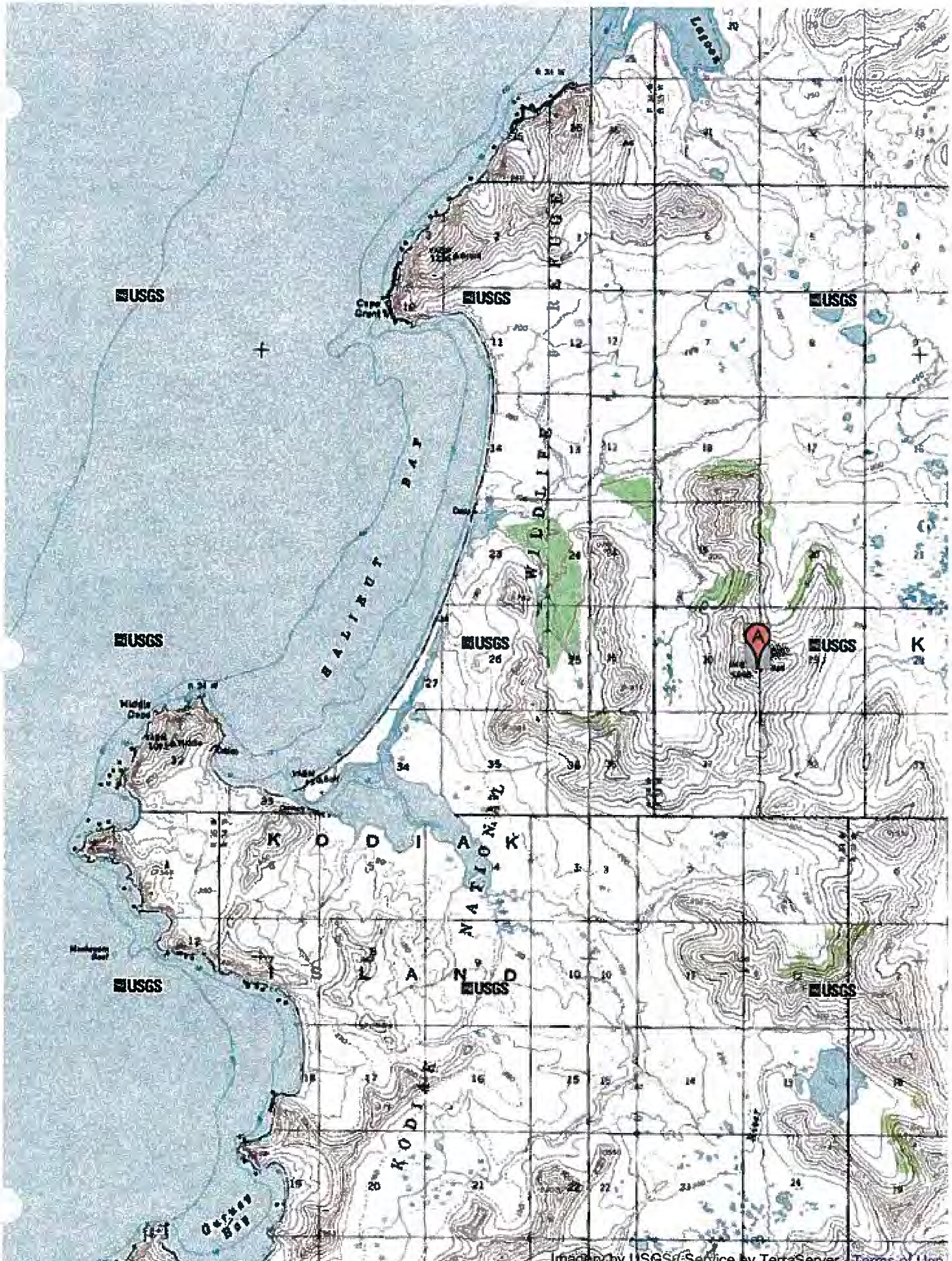
Enclosures

cc: Nick Parker, Parametrix, 8901 Adams Street, NE, Suite D, Albuquerque, NM 87113

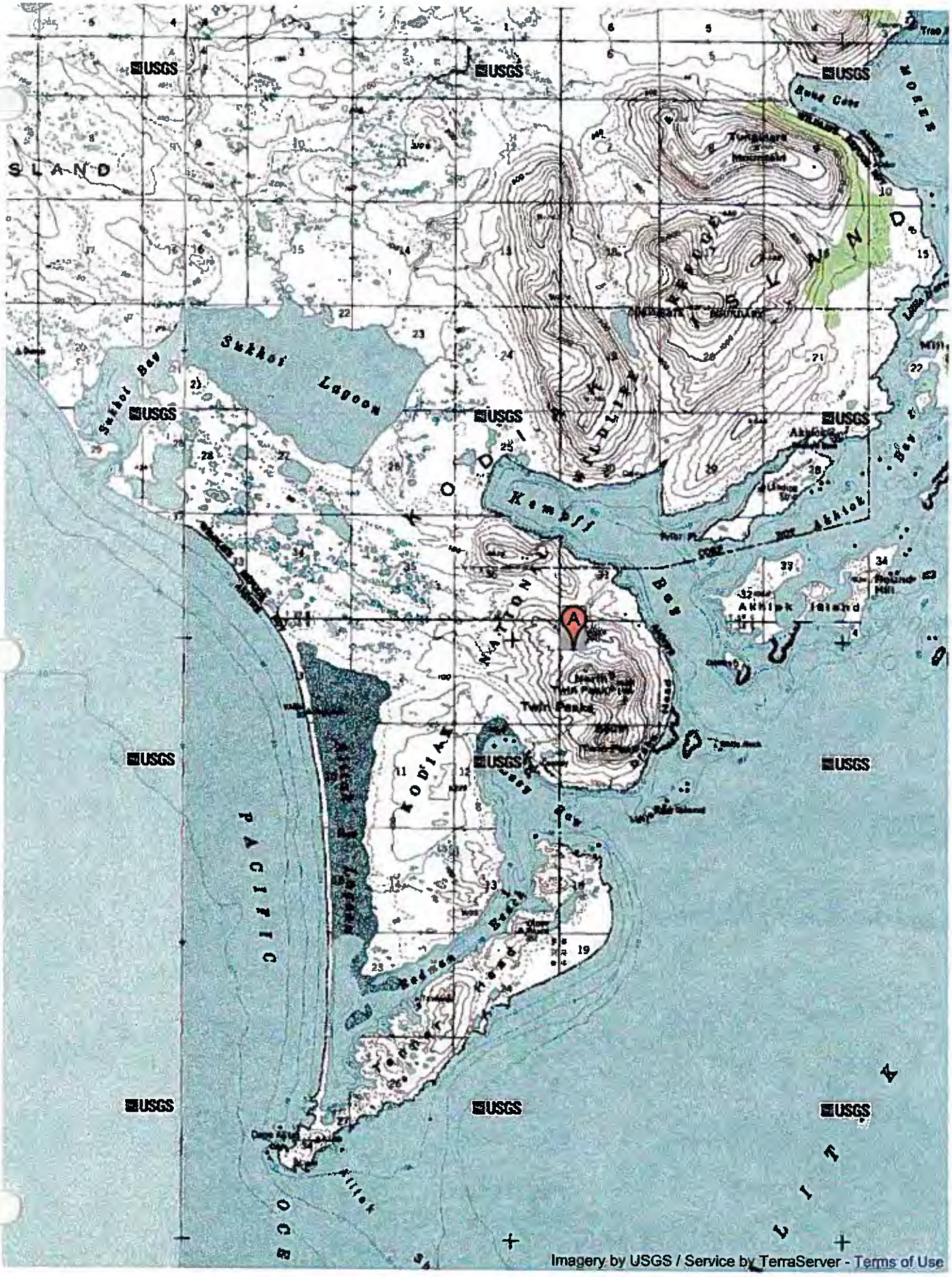
TAKE PRIDE IN AMERICA

Middle Cape "Ridge"

T32S; R33W; sec 29,30



Middle Cape Link 1




Project Area


Project Area

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APPENDIX G. SUBSISTENCE EVALUATION

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Appendix G. Subsistence Evaluation

In compliance with 16 USC Sec. 3120 (Title VIII, section 810 of the Alaska National Interest Lands Conservation Act), this section evaluates potential subsistence restrictions which could result from the proposed development and operation of US Coast Guard facilities at Middle Cape in the Kodiak National Wildlife Refuge.

This analysis does not evaluate state authorized subsistence use and activities on adjacent private, borough, or state lands.

THE EVALUATION PROCESS

16 USC Sec. 3120 (Section 810 of ANILCA) states:

(a) In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands… the head of the Federal agency … over such lands … shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency:

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 3115 of this title;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

(b) Environmental impact statement. If the Secretary is required to prepare an environmental impact statement pursuant to section 4332(2)(C) of title 42, he shall provide the notice and hearing and include the findings required by subsection (a) of this section as part of such environmental impact statement.

(c) State or Native Corporation land selections and conveyances. Nothing herein shall be construed to prohibit or impair the ability of the State or any Native Corporation to make land selections and receive land conveyances pursuant to

the Alaska Statehood Act or the Alaska Native Claims Settlement Act (43 USC 1601 et seq.).

(d) Management or disposal of lands. After compliance with the procedural requirements of this section and other applicable law, the head of the appropriate Federal agency may manage or dispose of public lands under his primary jurisdiction for any of those uses or purposes authorized by this

PROPOSED ACTION ON FEDERAL LANDS

Facilities proposed at the Middle Cape site in Sections 29 and 30 Township 32 South, Range 33 West affect an area not to exceed 0.5 acre and will include the following:

- **Communication Tower –** An unlighted and unpainted 60-ft, self-supporting, galvanized steel lattice tower on single-leg foundations with a base 10 ft on each side would be built. A steel ladder would be positioned inside the structure. The tower would provide support for six USCG VHF antennas each 5 ft tall and 2.75 inches in diameter (including DSC and National Weather Service broadcasts), one UHF antenna 4 ft tall and 2.75 inches in diameter, and one microwave dish 8 ft in diameter; the microwave dish would be mounted about 35 ft above the ground. The tower would include lightning protection, an ice shield, and an ice bridge connecting the tower to the communication hut. A grounding loop with 5 to 10 grounding rods would be installed around the tower and structures.
- **Communication Shelter –** A fiberglass shelter 8 ft by 10 ft by 8 ft tall would house the electronics equipment required to transmit and receive signals, and transfer these signals between the site and the USCG control center. The hut foundation would consist of four concrete pedestals, each 12 to 18 inches in diameter, anchored to bedrock. The floor of the hut would vary from approximately 1 to 3 ft above the natural ground line
- **Generator Shelter –** A metal shelter 10 ft by 16 ft by 8 ft tall with an open, attached 4-ft porch extending from each end for an approximate total length of 24 ft would house two generators that run alternately as required, and two sets of battery packs for power to the communication hut and its electronic equipment. Batteries would be sealed, non-spilling, absorbed glass mat type. The generator hut foundation would consist of six to eight concrete pedestals, each 12 to 18 inches in diameter, anchored to bedrock. The floor of the hut would vary from approximately 1 to 3 ft above the natural ground line
- **Solar Arrays –** A projected 3 kW solar array with an approximate footprint of 384 square feet (sf) would be installed. The solar array would provide the majority of the site power during the summer months, and supplemental power during the spring and fall. The foundation for the array would consist of

approximately 10 concrete pedestals, each 16 inches in diameter, anchored to bedrock.

- **Propane Tanks –** Ten 500-gallon, or five 1,000-gallon propane tanks would be installed to provide fuel for the generators. The approximate footprint for the propane tanks is 275 to 310 sf. The foundations for the tanks would consist of 8 to 16 concrete pedestals, each 16 inches in diameter, anchored to bedrock and treated lumber cribbing.
- **Refueling Pad –** A refueling pad 10 ft by 10 ft would be installed near the propane tanks to provide a level and stable surface on which transfer tanks can be set during refueling operations. The pad would be made from pressure-treated lumber with foundations consisting of concrete pedestals anchored to bedrock.
- **Wind Generator Tower –** A 20-ft, self-supporting lattice tower to support a vertical axis wind generator may be installed to provide an alternate power source to recharge the batteries in the generator hut, so as to reduce generator run time and propane use.
- **Co-location –** The tower would be designed to accommodate co-location of other USCG or other agency communication facilities in the future. Specific proposals for other facilities have not been developed at this time.

Generally, the site would be accessed by the USCG or its contractors twice each year for preventive maintenance and to ensure the systems are operating as designed. The propane tanks will be designed to be refueled once every 2 years, depending on the effectiveness of solar and/or wind recharge of batteries. Refueling would occur during the summer, within predetermined work windows to take advantage of good weather, by sling-loading portable tanks by helicopter and transferring fuel to the permanent tanks.

It is expected that a camp for four to five construction workers will be established at the proposed Middle Cape site, although the choice is up to the contractor, who may choose to house construction workers at another site, such as Halibut Bay, and helicopter them to the site daily. The area of an onsite construction camp is likely to be 0.25 acre or less and typically consist of a tent 10 ft by 20 ft on a temporary wood platform used for sleeping, cooking, and personal item storage. A portable toilet would be placed at the site, with contents flown out by helicopter. Multiple smaller tents may be used dependent on conditions at the site (wind, fog) and safety concerns. Temporary protective measures against bear intrusion may have to be set up at the camp.

Mobilization and construction activities would be of short-term duration. Foundations would be installed over a 1-week period, followed by a break to allow concrete to cure. Subsequent completion of facilities would take approximately 1 week.

A temporary staging area would be necessary so that materials for the construction of the site at the top of the Middle Cape ridge can be transported by water to a beach near Middle Cape and then by helicopter to the top of the ridge. While a final location would be identified in coordination with the contractor, USCG, and the USFWS, the most likely staging area site is in Halibut Bay (Figure 2-7). Materials would be transported by landing craft from Kodiak to Halibut Bay and unloaded using a beach-tired forklift to just above high water line. A helicopter would then sling all materials up to the site on Middle Cape ridge. Slinging is typically completed in 1 or 2 days.

Facilities proposed at the Twin Peak Repeater Site southeast of the Village of Akhoik in Sections 6 Township 38 South, Range 31 West affect an area not to exceed 0.5 acre and will include the following:

- **Communication Tower –** An unlighted and unpainted 20-ft, self-supporting, triangular, galvanized steel lattice tower on single-leg foundations with a base 8 ft on each side. It would support two 8-ft-diameter microwave dish antennas. The tower would also accommodate a vertical axis wind generator.
- **Equipment Shelter –** A fiberglass shelter 6 ft by 8 ft by 8 ft tall would house the electronics equipment and batteries to power the communication hut and its electronic equipment. Batteries would be sealed, non-spilling AGM type. The hut foundation would consist of four concrete pedestals, each 12 to 18 inches in diameter, anchored to bedrock. The floor of the hut would vary from approximately 1 to 3 ft above the natural ground line.
- **Solar Arrays –** A projected 3-kW array with an approximate footprint of 384 sf would be installed. The foundation for the array would consist of approximately 10 concrete pedestals, each 16 inches in diameter, anchored to bedrock.
- **Wind Generator Tower –** A 20-ft, self-supporting lattice tower (the communication tower noted above) to support a vertical axis wind generator would be installed. The generator would provide an alternate power source to recharge the batteries in the generator hut. No propane-powered generation would be necessary at the site.
- **Helicopter Landing Area –** Helicopters would land at a flat area about 100 ft south of the solar array.

It is expected that a temporary camp for construction workers will be established at the proposed repeater site or at the staging area at the Alitak production facility (see Figure 2-7 and Section 2.2.4). The final location of the camp would be determined by the contractor. If a construction camp is established at the repeater site, it would be as described above for the Middle Cape camp (Section 2.2.1).

Construction of the repeater site would require about two 1-week periods.

AFFECTED ENVIRONMENT

Subsistence uses, as defined by 16 USC Sec. 3113 (ANILCA, Section 810) means

> *The customary and traditional use by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.*

The primary population using the Middle Cape area for subsistence is likely to be the Alaska Native population from villages to the north. Karluk has a current population of 38; Larson Bay has a population of 67. The 2000 census population of the entire northwest portion of the island west of Uyak Bay was about 400 (Census 2000). Summer populations are likely to be higher, as a number of dwellings are seasonal. Estimated subsistence use is about 83% water-related species, of which 71% is salmon. About 11% of the subsistence take is related to land mammals. It is unlikely, however, that subsistence use takes place at the proposed site because it is inaccessible and lowland areas closer to the coast are likely to have greater and more accessible populations of harvestable resources.

The population using the Twin Peaks repeater site area for subsistence is likely to be Alaska Native residents of the Village of Akhoik. The primary use of the land in the area is likely to subsistence by local residents. The site is accessible by boat and walking. The current estimated population of Akhiok, is 41 (KIB 2008). The 2000 census population of the entire Alitak Bay area was about 70. Estimated subsistence use is about 90% water-related species, of which 62% is salmon. About 10% of the subsistence take is related to land mammals (USFWS 2006). It is likely that some subsistence use of land mammals takes place at or near the proposed site, given its accessibility to the village and the likely availability of animals, including feral reindeer descended from those raised at Akhiok between the 1920s and 1960s (USFWS 2009b).

SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impacts on existing subsistence activities for the proposed action, two evaluation criteria were analyzed:

- The potential to reduce important subsistence fish and wildlife populations by reductions in number, redistribution of subsistence resources, or habitat losses
- The effect the action might have on subsistence angler or hunter access

The potential to reduce populations

With respect to reduction in numbers, the proposed action will not reduce wildlife species in the affected area at either Middle Cape or the Twin Peaks repeater site. Any wildlife population redistribution would be so small that no change would occur to the ongoing regional subsistence pattern. Natural cycles would continue. The

proposed action will not redistribute, displace, or stress subsistence wildlife resources. In addition, the proposed action will not cause the loss of beneficial or critical habitat for subsistence species such as salmon, large mammals including deer and feral reindeer, furbearers, and waterfowl. The proposed action will not manipulate subsistence habitats or result in development of a scale that would have any measurable impacts on subsistence resources.

Restriction of access

The proposed action will not change current access to the area or current subsistence use patterns. It is unlikely that substantial use occurs at the high-altitude antenna site at Middle Cape. The proposed communication facility will add structures at the site. It will have no effect on nearby inholdings of Alaska Native lands or access to the area for subsistence uses. At the Twin Peaks site, the area is relatively easy to access by boat and by a walk of about a mile uphill from a landing site, however, the presence of the communication facility will not change access.

The availability of emergency communication facilities may facilitate continued subsistence uses of water-related resources in area by providing additional confidence that emergency response will be available during adverse circumstances, although it is unlikely to increase the amount of subsistence use in the area.

ALTERNATIVES CONSIDERED

A number of alternative sites were identified by the Coast Guard but ultimately dismissed from further consideration because they did not meet the project objectives. These alternate sites are summarized below and in greater detail in Appendix E of the Environmental Assessment.

- Cape Unalishagvak and Cape Kilokak – difficulties with microwave connectivity due to long distances from existing communication facilities
- Karluk area – very poor coverage in the required area of southwest Kodiak
- Cape Grant area – lack of adequate space for construction, marginal VHF coverage, would require multiple repeater sites
- Middle Cape and Cape Ikolik peaks – lack of adequate space for construction

FINDINGS

This analysis concludes that the proposed action would not result in a restriction of subsistence uses.