

Nome, Alaska, Wind Turbine Demonstration Project
Final Environmental Assessment and
Finding of No Significant Impact

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Finding of No Significant Impact

FINDING OF NO SIGNIFICANT IMPACT

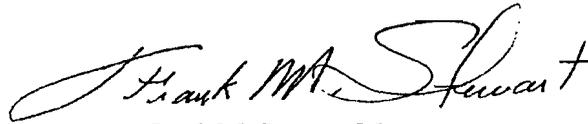
SUMMARY

The U.S. Department of Energy (DOE) has prepared this Environmental Assessment (EA) to provide DOE and other public agency decision makers with the environmental documentation required to take informed discretionary action on the proposed Nome, Alaska, Wind Turbine Demonstration Project (DOE/EA-1280). The EA assesses the potential environmental impacts and cumulative impacts that would result from the installation and operation of wind turbines in Nome, Alaska. DOE's role in the proposed action would be limited to providing funding assistance for a portion of the construction and demonstration of wind energy technology in the challenging arctic environment. Although DOE would review project activities, DOE would have no responsibilities for construction supervision or facility operations. Further, DOE would have no responsibilities for the day-to-day management of the facility once it becomes operational. The Nome Joint Utility System would have sole responsibility for construction and operations.

FINDING

Based on the information in the EA, which analyzes the relevant environmental issues, DOE finds that no significant impact would result from implementing the proposed action to build and operate up to two wind turbines on Anvil Mountain, Nome, Alaska. The proposed action does not constitute a major Federal action significantly affecting the quality of the human or physical environment within the meaning of the National Environmental Policy Act, therefore, implementation of the proposed action does not require the preparation of an environmental impact statement.

Issued in Golden, Colorado, this 8th day of November, 2000.



Frank M. Stewart, Manager
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Final Environmental Assessment

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ACRONYMS AND ABBREVIATIONS

CEQ	Council on Environmental Quality
dB	decibel
DEW	Distant Early Warning
DOE	U.S. Department of Energy
EA	environmental assessment
FAA	Federal Aviation Administration
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
IEA	International Energy Agency
kW	kilowatt
MOU	Memorandum of Understanding
mph	miles per hour
NEPA	National Environmental Policy Act of 1969
NWI	National Wetlands Inventory
PCB	polychlorinated biphenyl
SHPO	State Historic Preservation Officer
WACS	White Alice Communication System

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) and the State of Alaska are proposing to jointly fund a project that is intended to demonstrate and evaluate the feasibility of wind turbine-generated power in the challenging Alaskan environment. Several sites in Naknek, Unalaska, and Nome, Alaska, underwent an initial evaluation to determine their potential suitability for the proposed wind turbine project. Through an iterative screening process involving Federal, State, and local agency input, one potentially acceptable site in the Nome area was selected for more detailed evaluation in this final environmental assessment (EA). The site being considered is located atop Anvil Mountain (Figure 1). The proposed site is approximately 6 to 8 kilometers (4 to 5 miles) north of the town of Nome, adjacent to a decommissioned U.S. Air Force radar station that was an element of the Alaska Communications System ("White Alice Communication System" [WACS]) and the Distant Early Warning (DEW) line.

The power generation levels of the proposed project are tied directly to site suitability and the availability of Federal, State, local, and nongovernmental funding. To evaluate the potential environmental impacts that could occur from the installation and operation of wind turbines at the site, a range of representative operating levels is evaluated in this final EA. It is currently estimated that the State or other non-Federal entities would provide sufficient cost share funding for 225 to 750 kilowatts (kW) of wind turbine-generated electrical power at the proposed site. Therefore, to ensure that the full range of foreseeable technical alternatives is assessed, one or two utility-scale turbines, with a generation capacity of 225 kW to 750 kW, are considered in this final EA.

This final EA has been prepared under DOE's regulations and guidelines for compliance with the National Environmental Policy Act (NEPA) of 1969. It is being distributed to interested members of the public, Federal, State, and local agencies, and potentially affected Tribal organizations for review and comment prior to any final decisions by DOE and the State on the proposed project.

1.1 National Environmental Policy Act and Related Procedures

The NEPA as amended (42 U.S.C. § 4321, *et seq*), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR 1021) require that DOE, as a Federal agency:

- Assess the environmental impacts of its proposed actions
- Identify any adverse environmental effects that cannot be avoided should the proposed action be implemented
- Evaluate alternatives to the proposed action, including a no action alternative
- Describe the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity
- Characterize any irreversible and irretrievable commitments of resources that would be involved should the proposed action be implemented

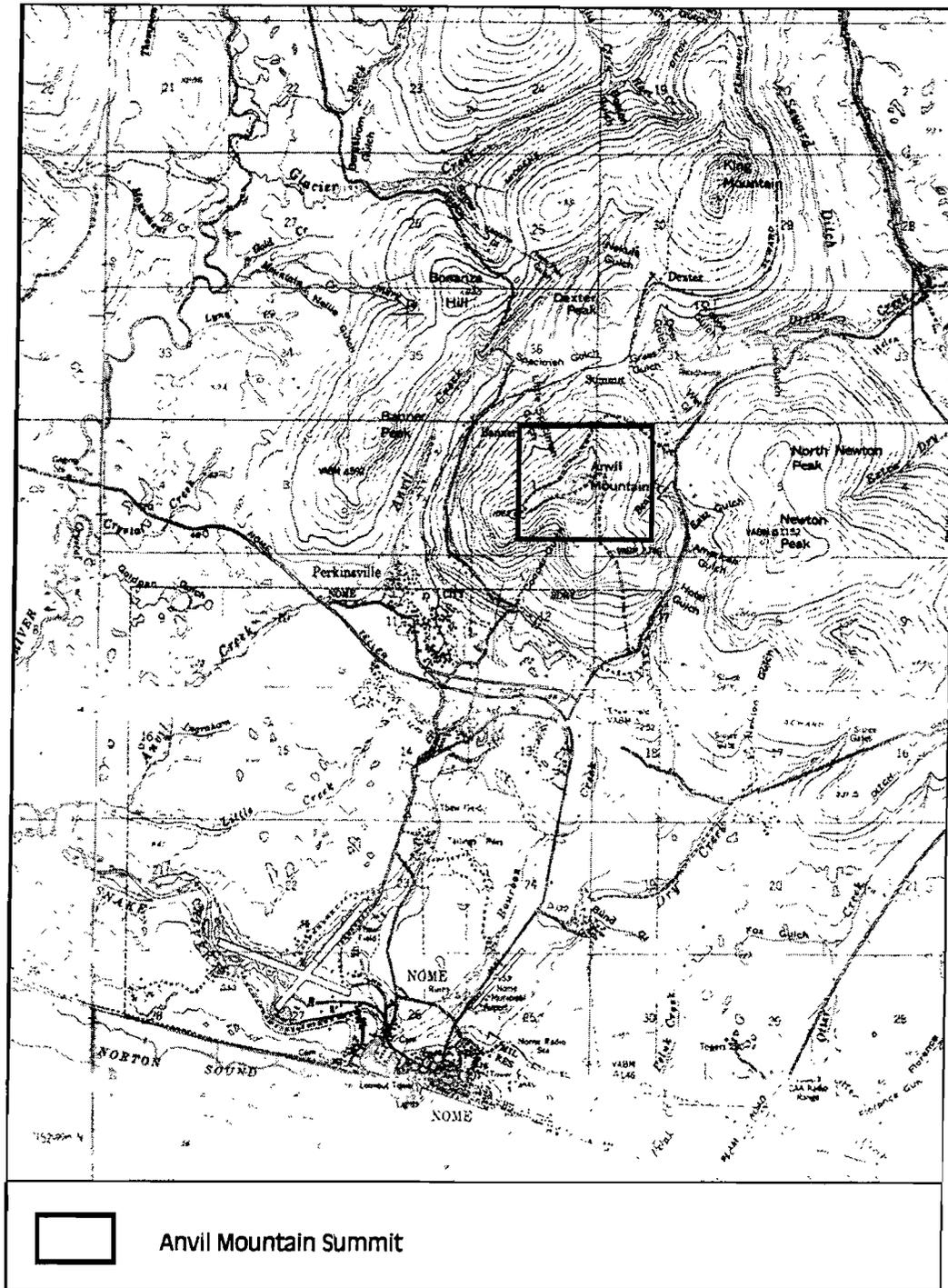


Figure 1. Proposed Anvil Mountain Site

These provisions must be addressed before a final decision is made to proceed with any proposed Federal action that could cause impacts to the human environment. This EA evaluated the potential individual and cumulative effects of the Proposed Action and the No Action Alternative on the physical, human, and natural environment. The EA is intended to (1) meet DOE's regulatory requirements under NEPA, and (2) provide DOE, the State of Alaska, and other agency decision-makers with the information they need to make informed decisions in connection with the proposed project.

1.2 Background

In fiscal year (FY) 1999, the DOE budget included funding for the demonstration of up to 100 kW of wind turbine power in Alaska. DOE and the State of Alaska began working together to identify viable sites for the Proposed Action. Critical to the initial site selection was an expectation that suitable wind resources would exist at a site. Optimum wind turbine performance is achieved between 28 and 30 miles per hour (mph). Regionally available data identified the west coast of Alaska and the Aleutian Islands as potentially viable from a wind resource perspective (DOE, 1986). Within these areas, several utilities were contacted to determine their capability to operate and maintain wind turbines and integrate wind turbine power into their existing generation system. Through interactions with these utilities, it became apparent that 100 kW of wind-generating capacity would be insufficient to generate the revenues needed to operate and maintain the wind turbine equipment. As a result of these interactions, the State of Alaska is identifying additional funding sources to develop commercial-scale wind turbine capacity between 225 kW and 750 kW.

Geographic considerations such as, but not limited to, topography, distance to the existing transmission grid, road access, and land availability were also considered because they would affect not only the potential environmental impacts of the Proposed Action but also the relative costs involved in its construction and operation. The combination of wind resources, utility capability, and geographic constraints led to the identification of multiple sites in Unalaska and Naknek. In the spring of 1999, these potential sites underwent additional site-specific characterization (Dames & Moore, 1999). Due to the potential for wind turbines to impact avian species, the U.S. Fish and Wildlife Service (FWS) also was contacted for its expertise regarding the potential occurrence of protected avian species at these sites.

As the layers of wind resource viability, utility capability, geographic constraints, and avian protection were compiled, many initially identified sites had to be dropped from further consideration because they were deemed no longer viable based on one or more siting criteria. In this initial screening, all sites in Naknek, and all but two sites in Unalaska, were deemed unacceptable either because available information suggested potentially significant environmental concerns, or because the available funding could not support the cost, in time and dollars, required for evaluating a site in more detail.

As a result of the initial elimination of sites, a potential site in Nome was added to the preliminary site-screening task. Site visits were made in October 1999 to view the proposed sites and to meet with local, Federal, and State agencies in Nome and Unalaska and with regional agency offices in Anchorage. Subsequent to the site visits, the formal scoping process prescribed under NEPA was initiated.

1.3 Scoping

Federal, State, and local agencies and Tribal organizations were sent scoping letters concerning the Proposed Action to assist DOE and the State in identifying potential issues that should be evaluated in this EA. Scoping notices also were sent to Nome and Unalaska libraries, newspapers, and television and radio stations to inform the public of the Proposed Action and solicit their input to the process. Appendix A contains the text of the scoping letter, the list of recipients, and the written comments received.

During the scoping period, DOE and the State spent several months working closely with various State and Federal agencies and local utilities to assess the sites for their technical, environmental, and economic viability. Extensive discussions with the FWS and its avian experts with site-specific knowledge led to a determination that the coastal Unalaska site would be unacceptable for wind turbine development at this time due to the potential for unacceptable impacts to numerous Federal and State protected avian species. An upland Unalaska site might have proven acceptable from an avian perspective; however, numerous physical limitations for the site were discovered during scoping. Snow depths over the site's access road exceeded 7.6 meters (25 feet) during the winter of 1999 – 2000. Estimated costs to extend the existing transmission lines to the site exceeded \$1 million. Finally, wind speed records at the Unalaska airport have recorded gusts greater than 190 mph, which would well exceed the design basis for most commercial wind turbines.

As a result of these site-specific limitations, both sites at Unalaska were eliminated from detailed evaluation in this EA, leaving only the Nome site on Anvil Mountain for detailed assessment and comparison to the No Action Alternative.

1.4 Purpose and Need

It is a mission of DOE to assist in advancing the development and commercialization of energy efficiency and renewable energy technologies such as wind-generated power (see the Energy Policy Act of 1992, § 2.1.1.1). To demonstrate a cost-effective and clean source of electricity that reduces diesel fuel dependence and air emissions, DOE and the State of Alaska propose to fund the implementation of commercial-scale wind turbine-produced electricity at Nome. Information gained through this demonstration would be used as a basis for gauging the benefits of replacing or supplementing diesel-generated power with wind power. Upon a determination of the acceptability of this project, DOE would provide its share of the total project costs to the Alaska Energy Authority, which in turn would secure the balance of necessary funding and subsequently contract with the Nome Joint Utility System for project construction and operations.

DOE and the State began a wind turbine program in Alaska by erecting three 50-kW wind turbines in Kotzebue in 1997. The purposes of this program were to (1) demonstrate the viability of wind turbine-generated power and the capabilities of commercially available wind turbines in extreme arctic conditions, and (2) evaluate turbine performance and reliability under a wide range of temperatures, precipitation events, and strong arctic winds. The proposed wind turbine project for Nome, if implemented, would provide similar information for larger 250-kW to 750-kW wind turbines, which are of greater commercial interest to existing utilities.

If successful, this project could lead to greater application of wind turbine-generated power to meet the electrical needs of rural Alaska.

1.5 Organization of this EA

The EA is structured in accordance with the standards set forth in DOE's NEPA implementing regulations and guidelines. Section 2.0 describes the Proposed Action and alternatives in sufficient detail to allow the reader an understanding of the actions that would take place during construction, operation, and decommissioning of the proposed wind turbine(s). It also identifies the specific location proposed for the wind turbine installation. Section 3.0 characterizes the existing environment at the proposed site from a biological, physical, cultural, and social perspective. Section 4.0 assesses the impacts that could occur should the Proposed Action be implemented. Section 5.0 describes the cumulative impacts that might occur from the Proposed Action when combined with other related activities. Section 6.0 addresses short-term uses of the environment and the effect on long-term productivity, and the irreversible and irretrievable commitment of resources should the Proposed Action be implemented.

2.0 PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action and the No Action Alternative. It characterizes the site location and describes both general and site-specific activities that would be required for the construction, operation, and decommissioning of up to two wind turbines under the Proposed Action. It also characterizes the No Action Alternative, as required under NEPA. Other alternatives considered but eliminated from further evaluation are discussed in Section 1.2, Background, and Section 1.3, Scoping.

2.1 Proposed Action

DOE and the State of Alaska are considering providing financial assistance for the acquisition, installation, and operation of one or two commercially available wind turbines at one site in Alaska, generating between 225 kW and 750 kW of power. The proposed project would reduce future consumption of petroleum-based fuels by harnessing wind energy as an additional source of power production. Because the proposed project would represent less than 10 percent of existing demand, existing diesel generators would continue to operate.

Because final funding allocations have not been determined at this time, a range in turbine size and capacity is evaluated in this EA. This allows the decision-makers a full understanding of the differences among the commercially available turbines that could meet the project's needs. The range of turbine capacities evaluated in this EA is as follows:

- One 225-kW turbine
- Two 225-kW turbines
- One 550-kW turbine
- One 225-kW turbine and one 550-kW turbine
- One 750-kW turbine

The physical dimensions of a representative range of turbine options are summarized in Table 1.

For the purposes of this action, the Nome site has been determined, through a screening process summarized in Section 1.2, to be potentially viable for wind turbine-generated power. The proposed wind turbine site lies atop Anvil Mountain, approximately 7.2 kilometers (4.5 miles) north of Nome (Figure 1). The site is between 300 and 335 meters (1,000 and 1,100 feet) above mean sea level. It is adjacent to four rectangular, concave antenna arrays that were part of a decommissioned U.S. Air Force radar station. The station was part of the Alaska Communications System (WACS) and the DEW line. A gravel road leads to the proposed site; gravel and a concrete pad lie between the antennas. The concrete pad is all that remains of the buildings that housed the supporting equipment for the WACS/DEW line system. The proposed

**Table 1. Nome, Alaska, Wind Turbine
Potential Options for 225 kW to 750 kW of Generating Capacity**

Specifications	Representative Turbines ^a		
	225 kW	550 kW	750 kW
Unit Capacity	225 kW	550 kW	750 kW
Number of Blades	3	3	3
Tower Type	Tubular	Tubular	Tubular
Hub Height	107 ft ^b	134 ft	164 ft
Rotor Diameter	95 ft	131 ft	164 ft
Total Height (tower and rotor)	154 ft	199 ft	246 ft
Per Unit Rotor Area Swept	7,115 ft ²	13,526 ft ²	21,135 ft ²
Number of Units for 225 kW	1	0	0
Rotor Area Swept	7,115 ft ²		
Approximate Linear Footprint ^c	95 ft		
Number of Units for 500 kW	2	1	0
Rotor Area Swept	14,230 ft ²	13,526 ft ²	
Approximate Linear Footprint	665 ft	131 ft	
Number of Units for 750 kW	1 225-kW and 1 550-kW		1
Rotor Area Swept	20,641 ft ²		21,135 ft ²
Approximate Linear Footprint	882 ft		150 ft

- a. Turbine dimensions are representative of commercially available wind turbines.
 b. Metric conversions: 1 foot = 0.3048 meter; 1 square foot = 0.0929 square meter.
 c. Rotor width × number of units + five rotor widths between each unit.

wind turbine site would be adjacent to the DEW line site on ground that is partially disturbed from previous activity. The ground is mostly exposed rock with some native tundra vegetation. The Sitnasuak Native Corporation currently owns the land.

2.2 Construction and Installation

Assuming a decision to proceed is reached, the State would initiate site preparation and begin turbine procurement during the summer of 2001, hoping to complete installation before the winter of 2001 – 2002. Site preparations would require less than 4,000 square meters (less than 1 acre), regardless of turbine option, and would entail a limited amount of grading to establish a level site for foundation installation and provide a working surface for crane installation of the turbine(s). Due to the surface exposure of bedrock at the site, a concrete pad or ring requiring 150 to 230 cubic meters (200 to 300 cubic yards) of concrete would be the most likely foundation structure. Site preparation would require one bulldozer and one loader. Installation of the turbine(s) could require one or two 165- to 225-ton cranes. The 225-kW and 550-kW turbines would require the smaller cranes, which are available locally; however, the 750-kW turbine models would likely require the larger crane, which is not currently available in Nome and would have to be brought in specifically for this project. Estimated construction and installation time would be 6 weeks and would require three to six workers. With the exception

of a job foreman experienced in wind turbine construction, the workers would be hired from the local work force.

The existing road between Nome and the Anvil Mountain site is gravel. Approximately 2 kilometers (1 to 1.5 miles) of the roadbed ascending Anvil Mountain may require some minor grading to support the movement of large cranes to the sites. The Nome Joint Utility System may be extending the existing transmission system further north through Hotel Gulch even if the proposed wind turbine project is not implemented (Figure 2). Even without the extension, the transmission systems would be accessible via transmission poles that currently come within 3 kilometers (2 miles) of the Anvil Mountain site. New transmission lines would cover the 3 kilometers (2 miles) between the proposed turbine site and existing transmission lines. The new lines would be constructed on 12-meter (38-foot) poles drilled into the ground at 76-meter (250-foot) intervals. Based on this spacing, it is estimated that 75 to 90 new poles would be required. A small amount of power would be supplied to the site for facility lighting, if needed, and to power de-icing features of the turbine(s).

The Anvil Mountain site is located approximately 7.2 kilometers (4.5 miles) from the Nome airport. Therefore, consultations were held with the Federal Aviation Administration (FAA) regarding the need for lighting on any of the turbines. In January 2000, the Nome Joint Utility System submitted a Notice of Proposed Construction (FAA Form 7460-1) to the FAA in accordance with the agency's regulations (14 CFR Part 77), and conservatively estimated that the maximum height of any wind turbine(s) placed on Anvil Mountain for the purpose and need of this project would not exceed 122 meters (400 feet). In February 2000, the FAA determined that at 122 meters (400 feet) above ground level and 468 meters (1,534 feet) above mean sea level, the proposed turbine(s) would

"...exceed obstruction standards but would not be a hazard to air navigation provided the following condition(s), if any, is (are) met: As a condition to this determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1J, Obstruction Marking and Lighting, Chapters 4, 5 (Red)." (Appendix B)

Should a decision be reached to proceed with the Proposed Action at the Anvil Mountain site, the turbine(s) would be marked and lighted in accordance with the FAA requirements of Circular 70/7460-1K, which took effect March 1, 2000.

2.3 Operations

Wind turbines are designed to convert rotational energy, resulting from wind energy on the rotor blades, into electricity through the use of a generator. Typical design features of today's commercially available wind turbines include wood-epoxy or fiberglass blades, redundant braking systems, the ability to rotate with the prevailing wind direction, and a design life of at least 20 years. All alternatives considered for this project would have a closed tubular tower to support the turbine and rotor.



Figure 2. Anvil Mountain Access

Operationally, the wind turbine(s) would be computer-controlled for optimum performance as well as for safety shutdown when wind speeds exceeded design operations. Typically, turbines start spinning (called the "cut-in speed") at approximately 16 kilometers per hour (km/hr) (10 mph), while the speed at which they shut down (the "cut-out speed") is between 81 and 113 km/hr (50 and 70 mph). Most turbine systems are designed to withstand hurricane-force winds.

Existing utility company technical staff would integrate wind turbine power with the power grid. Other than an annual gearbox inspection and oil filter replacement, wind turbines require little routine maintenance. Gearbox oil requires replacement only every 7 to 10 years. Depending on the turbine model, each oil change would require between 150 and 190 liters (40 and 50 gallons). Currently, Nome has a waste oil burner that could dispose of the waste oil.

Operational safety considerations include turbine destruction from excess winds and damage to the turbine or nearby facilities from icing conditions. Ongoing testing programs confirm the ability of turbine components, especially rotors, to meet or exceed manufacturer specifications. Any selected turbine would have design specifications that exceed the maximum anticipated wind speed for a selected site. Icing would not be a concern to either turbine operations or nearby facilities because all turbine models under consideration have anti-icing design features.

2.4 Decommissioning

The expected operating life for commercially available wind turbines is currently estimated to be 20 years. At the end of the useful operating life, the turbine(s) would be removed and recycled. All lubricating fluids would be nonhazardous wastes that could be disposed of in a waste oil burner. Concrete pads could be recycled or disposed of at a solid waste landfill.

2.5 No Action Alternative

Under the No Action Alternative, no Federal funding would be made available, and therefore, wind turbine capacity would not be added to the proposed Anvil Mountain site. No road upgrades would be required, and no new transmission lines would be added to the proposed site. Under the No Action Alternative, diesel power generation and related air emissions would continue at current rates. Potential reductions in diesel fuel consumption and air emissions would not occur.

3.0 AFFECTED ENVIRONMENT

The Maleiut, Kauweramiut, and Unalikmiut Eskimos originally inhabited Nome. Gold discoveries are recorded as far back as 1865, but it was a gold strike on Anvil Creek in 1898 that started a gold rush that expanded Nome's population to more than 20,000. Since the first strike, the gold fields have yielded more than \$136 million. Today, a few commercial operations and several individuals are actively seeking gold in the inland streambeds and the coastal beaches. As of 1999, Nome's population was 3,615. As the center of the Bering Strait/Seward Peninsula region, government services provide the majority of employment in Nome (DCED, 2000).

Consistent with CEQ and DOE NEPA guidance, this section characterizes only those elements of the environment at the site that are relevant to the assessment of impacts potentially occurring from the installation and operation of up to two wind turbines. For example, because the proposed wind turbine(s) would have no air releases or surface water discharges, this section does not attempt to characterize the current air quality in the area or existing stream flow, aquatic biology, or water quality. As stated in Section 1.4, Purpose and Need, information gained through this demonstration would be used as a basis for gauging the benefits of replacing or supplementing diesel-generated power with wind power. Those elements of the environment that could be affected by the Proposed Action are biota; noise; visual and aesthetic character; cultural, historic, and archaeological resources; and land use.

The proposed wind turbine site on top of Anvil Mountain is adjacent to the WACS, which was deactivated by the Air Force in 1979. Structures have been demolished and removed, and contaminated soils have been removed. However, four black concave antennas measuring approximately 18 meters (60 feet) wide and 24 meters (80 feet) tall, and 15 meters (50 feet) deep remain. The antennas serve as both a historic remnant of the Cold War and a navigational aid to local people who fish and hunt at sea (Air Force, 1996).

The mountaintop is generally disturbed ground from the White Alice site remediation with one large concrete pad remaining, which may be removed. Scattered around the mountaintop are various concrete footers and pipes; these served as anchor points or footers for structures that have been removed. Undisturbed areas are characterized by alpine tundra and exposed rock.

3.1 Biological Resources

The proposed site has a very thin mantle of soil covering bare rock. In undisturbed areas, grasses, sedges, forbs, lichens, mosses, and some low shrubs exist. Farther downslope from the proposed site is moist tundra consisting of low shrubs—mostly dwarf birch, willows, labrador tea, bog cranberry, lingonberry and bog blueberry, and cotton grass tussocks and sedges (Air Force, 1996). This lower-elevation habitat would be traversed by powerline poles placed every 50 to 60 meters (150 to 200 feet) to connect the site to the existing transmission grid located approximately 3 kilometers (2 miles) from the top of Anvil Mountain. No threatened or endangered plant species or critical habitats are known to exist in the area.

Using high-altitude aerial photography, the National Wetlands Inventory (NWI) has identified an area of wetlands on the south side of Anvil Mountain, approximately 2.4 kilometers

(1.5 miles) from the proposed wind turbines site (FWS, 1991). The existing access road passes through the approximate center of the wetland (Figure 3). Based on the aerial photographic interpretation, the wetland has been classified as a Palustrine System, which includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, and emergent mosses or lichens. The wetland is further classified by the NWI by two subsystems, Persistent Emergent and Broad-leaved Scrub-Shrub, and is characterized by a saturated water regime.

Nome lies on the southern edge of an area known as the Seward Peninsula. This area extends westward from the Alaskan mainland. The Seward Peninsula is bounded on the south by Norton Sound, on the north by Kotezebue Sound, and on the west by the Bering Sea. A diverse mammalian community exists on the Seward Peninsula, including grizzly and polar bears, gray wolf, caribou, domestic reindeer, musk ox, moose, red fox, arctic fox, muskrat, arctic ground squirrel, weasels, shrews, mice, voles, lemmings, arctic hare, river otter, beaver, wolverine, lynx, and porcupine (Interior, 1999). Three ecosystems exist on the Seward Peninsula: marine/estuarine, tundra, and boreal forest. This complexity supports a great diversity of avian species in the region. More than 170 avian species have been recorded in the region, with more than 100 species identified in the Nome area. Many species sighted during the brief spring and summer seasons in the Nome area are shorebirds or pelagic species (living in the open ocean); however, a variety of passerines (perching and song birds such as sparrows, swallows, robins, and warblers), grouse, ptarmigan, and raptors such as rough-legged hawks, golden eagles, short-eared owls, gyrfalcons, peregrine falcons, and snowy owls are known to occur in the inland tundra habitats (Interior, 1996). Appendix C provides a partial list of species identified by the Department of the Interior as occurring in the Bering Land Bridge National Preserve located north of Nome. Because the proposed site at Anvil Mountain is located approximately 7 kilometers (4.5 miles) inland, shorebirds, pelagic species, ducks, and other waterfowl have been excluded from Appendix C because they are unlikely to occur at the proposed project site.

Two avian species, the spectacled eider (*Somateria fischeri*) and Stellar's eider (*Polysticta stelleri*), are listed as threatened under the Endangered Species Act and are anticipated to occur in the Nome region. However, the FWS has determined that wind turbine operations at the Anvil Mountain site would not likely adversely affect these listed species (Appendix C). One additional avian species, the bristle-thighed curlew (*Numenius tahitiensis*), is a candidate species for listing under the Endangered Species Act and is known to occur in the Nome area. However, according to the FWS, this species is likely to be found farther inland than Anvil Mountain, and local observations of its movements have noted that the species uses valleys as opposed to mountaintops when moving inland (Wheeler, 1999).

3.2 Land Use

The proposed site is located on lands owned by the Sitnasuak Native Corporation (see Figure 2). Other than the remnants of the White Alice Station, there are no other facilities atop Anvil Mountain. The City of Nome's water supply is drawn from a shallow groundwater source at Moonlight Springs, located at the base of Anvil Mountain approximately 1.6 kilometers (1 mile) from the proposed site. The proximity of this water source was a principal factor in the Air Force's decision to remediate asbestos and polychlorinated biphenyl (PCB) contamination from the White Alice site (Air Force, 1996).

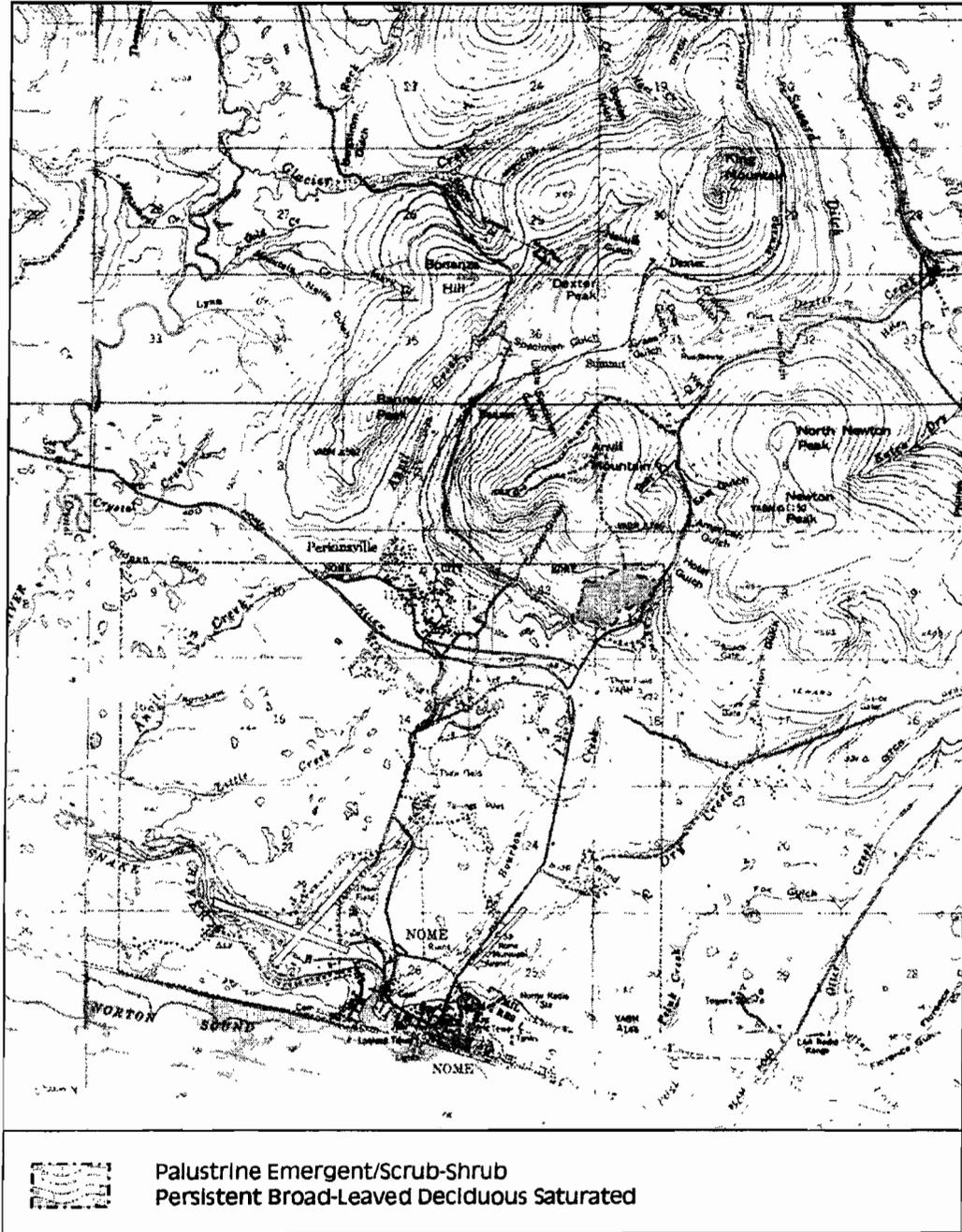


Figure 3. Anvil Mountain Wetlands

Below Anvil Mountain, 2 to 3 kilometers (1 to 2 miles) to the west, is a small placer gold mine working in the streambed. Farther to the north, a few scattered residences are found along the existing roadways. There are no residences or commercial facilities within a mile of the proposed Anvil Mountain site. In the area between the base of Anvil Mountain and Nome, there is little development other than numerous gravel quarries and the remnants of past gold dredging operations.

3.3 Meteorology

As recorded at the airport in the last 30 to 50 years of observation, Nome temperatures range from a high of 30°C (86°F) in July to a low of -47°C (-54°F) in January; temperatures average -3.2°C (26.2°F). Winds averaged 16.9 km/hr (10.5 mph) with a maximum sustained speed of 89 km/hr (55 mph) and a peak gust of 106 km/hr (66 mph). Total precipitation averages 38 centimeters (15 inches) per year, with the average annual snowfall around 140 centimeters (55 inches) (DOC, 1997).

The Wind Energy Resource Atlas of the United States rates areas around Nome as Wind Power Class of 3 to 7, depending upon location (DOE, 1986). Wind power classes are an analytical tool that combines wind speed and air density to measure the power of the prevailing winds for a given area. The higher the wind power class, the higher the wind power density and, therefore, the potential for wind turbine-generated power. Coastal areas immediately north of Nome are mapped as Wind Power Class 7, while adjacent inland areas are mapped as Wind Power Class 3. Areas farther inland are rated as Wind Power Class 2. The State of Alaska and the Nome Joint Utility System are currently operating a wind-monitoring system to determine the precise winds at the proposed Anvil Mountain site. This site-specific information will be available to decision-makers prior to any decisions to proceed at this site.

3.4 Cultural Resources

The Seward Peninsula was not covered during the Wisconsin glaciation; therefore, the prehistoric record of human activity in the region is considerable. Chipped stone implements such as microblades and harpoons have been found that date between 2,000 and 5,000 years ago. The historic record marks the existence of Inupiaq groups living on the Peninsula at the time of European exploration in the region. More recent records noted the surge of gold miners during 1898, which saw Nome's population swell to more than 20,000 in 1900. The Sitnasuak Native Corporation identified a cultural use of Anvil Mountain as a lookout for Native people to determine the location of ice during hunting activities in Norton Sound, but it noted that there was no known religious value for the site (Air Force, 1996).

A military presence in the area began during the gold rush years. The U.S. Air Force used Nome as a base during World War II and introduced the WACS in the 1950s. There are several historic structures in Nome and the surrounding area. The White Alice site atop Anvil Mountain has been reviewed and found to be eligible for the National Register of Historic Places. As a result of a Memorandum of Understanding (MOU) among the Alaskan Air Command, the Alaska State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation, the four antennas will remain on the site. The Air Force reviewed State and local records for other cultural resources that could be affected by their proposed demolition and found no cultural resources listed in the project area (Air Force, 1996).

3.5 Noise

Noise measurements were not available for the area; however, the area would be characterized as having a natural background level. There are no sensitive noise receptors such as residences, schools, and hospitals, or noise sources within a mile of the site.

3.6 Visual/Aesthetic Value

The view from atop Anvil Mountain provides a 360-degree perspective of ocean, coastal plain, alpine tundra, rolling foothills, and interior mountains for many miles. When viewed from Nome, the black concave billboard-like antennas are notable and are generally silhouetted against the skyline (Figures 4 and 5). This feature distinguishes Anvil Mountain from all other ridges immediately inland from Nome; some view the antennas as an asset to offshore navigation by local fishermen and sea mammal hunters (Air Force, 1996). The area around Anvil Mountain is characterized by gravel roads traversing most valley bottoms, scattered remnants of past gold-mining activities, gravel quarries, transmission lines, and widely spaced residential homes. Although most of the region is covered with native vegetation, the coastal plain between Anvil Mountain and Nome shows the effects of significant surface disturbance from past gold-mining operations in ponded quarries and mounded spoil piles.

3.7 Infrastructure

Well-maintained gravel roads exist to the base of Anvil Mountain and carry year-round traffic. From the well-maintained road, a narrow gravel road that is maintained in the winter extends up and over Anvil Mountain (see Figure 2). Approximately 2 to 3 kilometers (1 to 2 miles) of this road may require some minor widening and grading to accommodate the oversized cranes that could be needed to install the wind turbine(s). Transmission lines currently extend to within approximately 3 kilometers (2 miles) of the Anvil Mountain site and may be extended higher if current utility expansion plans are implemented. Assuming spacing of 76 meters (250 feet) between poles, it is conservatively estimated that 75 to 90 new poles would be required to extend power to the proposed Anvil Mountain site. No water, sewer, or gas lines extend to the top of Anvil Mountain, and none would be needed for the Proposed Action. The Nome Joint Utility System provides city water and sewer services to Nome residents and also supplies a peak demand of approximately 4,900 kW of diesel-generated electrical power.

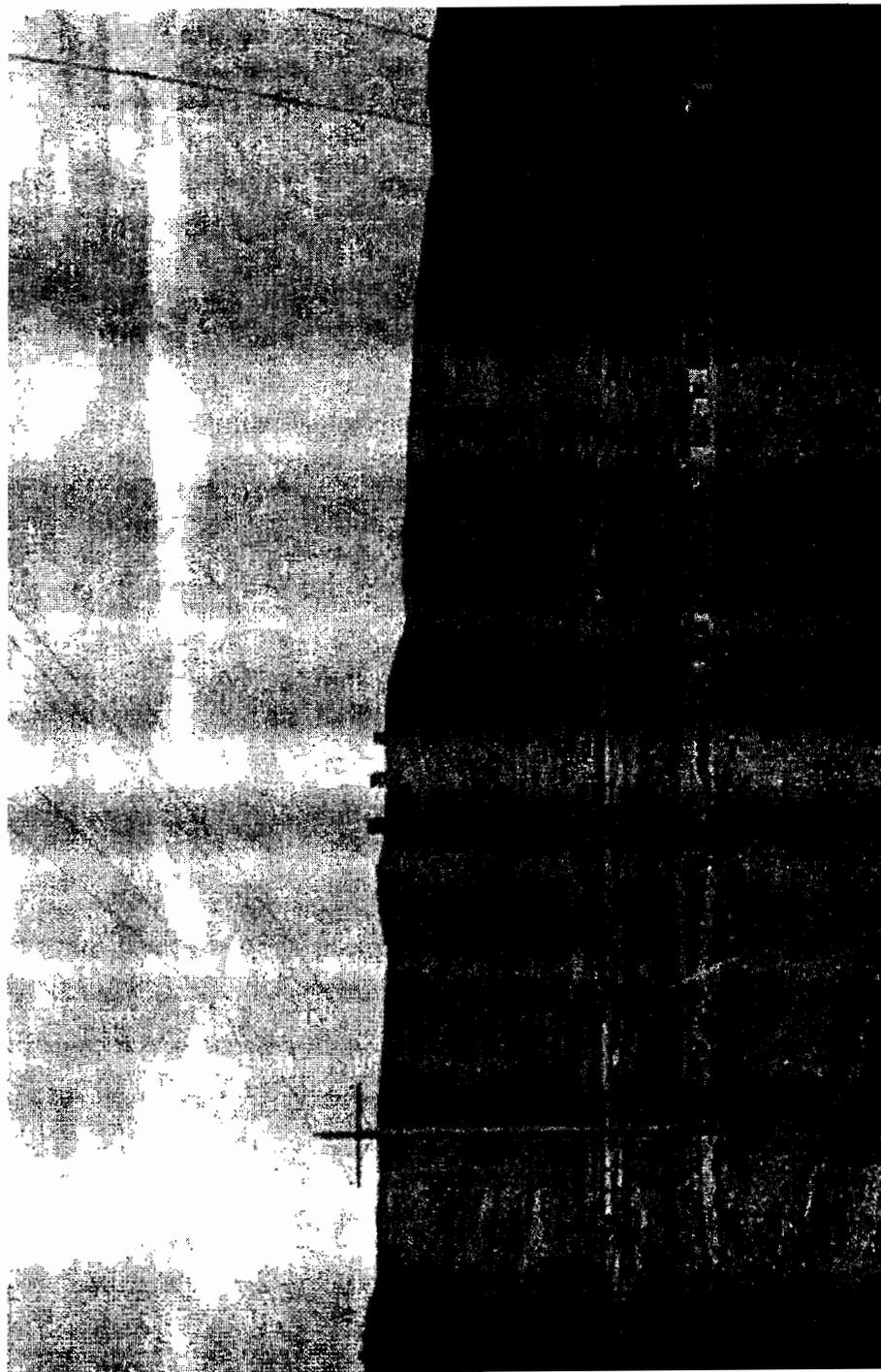


Figure 4. White Alice Antenna Arrays Atop Anvil Mountain



Figure 5. White Alice Antenna Arrays

4.0 ENVIRONMENTAL IMPACTS

Impacts from the Proposed Action are described in Section 4.1; impacts under the No Action Alternative are described in Section 4.2. Section 4.3 compares the impacts for the range of turbine power alternatives identified in Section 2.1.

4.1 Proposed Action

The impacts to the affected environment from the construction and operation of the wind turbine(s) atop Anvil Mountain are described in this section.

4.1.1 Biological Resources

The installation of the wind turbine(s) would use the existing road system for access to Anvil Mountain. Minor widening or grading of the road bed may be needed to facilitate oversized crane access. This action would disturb a few feet along the shoulders of the existing road, resulting in little or no loss of native vegetation. The installation of the turbine(s) atop Anvil Mountain could temporarily disturb up to 4,000 square meters (1 acre) of native vegetation and rock; however, the area of impact could be much smaller if construction can be accomplished within the area already disturbed by the operation and cleanup of the White Alice Station. The habitat that would be impacted is moist tundra dominated by mosses and lichen. This habitat type is not rare or unique in the area and is not critical habitat for any listed threatened or endangered species.

Transmission lines to the site would be installed, requiring approximately 3 kilometers (2 miles) installed on 75 to 90 new poles. Poles would be located immediately off the existing roadway; installation would disturb only the area required for each pole. Approximately six poles would be installed in the wetland area identified on the south side of Anvil Mountain. The local utility would apply for a permit to construct in a wetland from the Army Corps of Engineers, should a decision be reached to proceed with the Proposed Action. Based on construction authorization in 1999 from the Corps for extending transmission lines through the valley below Anvil Mountain (Appendix D), it is anticipated that Corps authorization would be granted for an extension to the proposed site.

Wind turbine operations would have the potential for avian impacts through habitat loss and collision with the turbine blades. Because very little habitat would be lost by construction of the proposed wind turbine, this impact is expected to be negligible. Any birds nesting in the area would likely be displaced by the proposed activities but would likely use adjacent habitats. Bird collisions have been documented at various wind turbine locations throughout the world but because of the location of the Anvil Mountain site, avian impacts are expected to be infrequent. As described in Section 3.1, the large populations of avian species in the Nome area are shorebirds and pelagic species that do not frequent the Anvil Mountain area. Local observation of the Bristle-thighed Curlew, a candidate species for listing under the Endangered Species Act, suggests movement patterns through valleys and not over mountaintops; therefore, no impacts to this species are anticipated (Wheeler, 1999). Raptors such as rough-legged hawks, golden eagles, short-eared owls, gyrfalcons, peregrine falcons, and snowy owls are known to occur in the inland tundra habitats of the Seward Peninsula and may be impacted through collisions with the wind turbine(s). However, as noted in Appendix C, raptors are relatively uncommon to rare

in the Seward Peninsula, and collisions with the wind turbine blades are anticipated to be unlikely.

Impacts to mammalian species would be minor due to the small habitat losses from construction activities required for the Proposed Action. Wind turbine operations would have little to no effect on mammalian species.

4.1.2 Land Use

The Proposed Action would convert less than 4,000 square meters (1 acre) of disturbed tundra habitat to use for the wind turbine(s). Extension of the existing transmission lines would not alter any existing land uses. Site access has been negotiated through a Land Use Permit from the Sitnasuak Native Corporation (Appendix E). Two wind monitoring towers have been installed on Anvil Mountain under a temporary permit granted to the Nome Joint Utility System by the Sitnasuak Native Corporation.

4.1.3 Air Quality

The Proposed Action would have no air emissions; therefore, there would be no direct negative impacts to air quality. Because the proposed power produced by the wind turbine(s) would replace existing diesel-generated power, there likely would be a direct reduction in diesel emissions. If the wind turbine power demonstration were successful, the Proposed Action could reduce or eliminate the air emissions from the generation of 250 to 750 kW of diesel power.

4.1.4 Cultural Resources

There are no known cultural or archaeological resources on the Anvil Mountain proposed site or along the route proposed for the transmission line extension. Based on the Air Force's experience when it remediated the Anvil Mountain site, it is not anticipated that construction for the Proposed Action would uncover any such resources. The proposed construction and operation of the wind turbine(s) would have no impact on the WACS antennas that remain on the site. These structures were found to be eligible for the National Register of Historic Places in an MOU among the Alaskan Air Command, the Alaska SHPO, and the Advisory Council on Historic Preservation (Air Force, 1996).

4.1.5 Noise

The remoteness of the Anvil Mountain site from any noise receptors virtually eliminates any potential impacts from noise generated during construction or operations. The nearest receptors are approximately 1.6 kilometers (1 mile) west of Anvil Mountain. Construction noise would be limited to noise generated from heavy equipment needed to prepare the site and install the turbine(s). Construction activity would be of short duration and would occur only during normal daytime working hours. The limited duration and equipment utilized for construction, combined with the distances to the nearest receptor, would preclude impacts from construction noise.

Operationally, wind turbines do generate aerodynamic noise from the movement of the rotor blades and the mechanical noise from the movement of the turbine. Noise is measured by a decibels (dB) scale that spans the range from the threshold of hearing, 0 dB(A), to the threshold

of pain, 140 dB(A). To account for the way humans perceive sound, the (A) scale in decibels, dB(A) is used. The (A) scale ignores those frequencies humans can't hear and emphasizes those that are most discernible. The dB(A) scale is logarithmic and not linear. For this project, the logarithmic scale means that installing two turbines instead of one would only increase the noise level by 3 dB over that noise generated by a single turbine. A 3-dB change is the smallest change most people can detect. In the 1970s, wind turbines of the size proposed for this project generated noise in the range of 95 to 115 dB(A) at the turbine (Gipe, 1995). Although improved rotor designs and slower operating speeds have resulted in lower noise levels from today's wind turbines, this range will be used to be conservative. Using a common noise propagation model developed by the International Energy Agency (IEA), 95 to 115 dB(A) from a turbine would be reduced to 45 dB(A) within 100 to 250 meters (330 to 820 feet) from the turbine site (Gipe, 1995). To put 45 dB(A) into perspective, the average home has a sound pressure level of 50 dB(A) and a light wind through a forest has a level of 55 dB(A). Since the nearest receptors would be more than 1.6 kilometers (1 mile) away, noise from the proposed wind turbine(s) would not be discernible above ambient background noise, regardless of whether one or two turbines were operated atop Anvil Mountain. Coincidentally, although much smaller in capacity than those proposed for this project, personal wind turbines are operated by several of the nearest residences to the Anvil Mountain site.

4.1.6 Visual/Aesthetic Impacts

The additional wind turbine(s) would be visible from Nome. In part, their visibility would depend upon the final color choice: the commercial standard of off-white or, to aid in preventing ice formation, black. The existing four White Alice antennas are painted black and are significantly more massive than the proposed wind turbine(s), which would be narrow linear structures. Therefore, the wind turbine(s) would not appreciably change the view of Anvil Mountain from other locations in the area. The addition of lights to the wind turbine(s) required by the FAA (red at night and perhaps white during daylight hours) would introduce a new visual effect to Anvil Mountain. Such lighting is not uncommon in the Nome area; numerous radio antennas are also sufficiently high to warrant FAA-required lighting. Some may view the addition of the wind turbine(s) as a negative visual impact, but others who have requested that the Air Force leave the White Alice antennas intact may view the wind turbines and the FAA-required lighting as aids to navigation for those who fish and hunt at sea (Air Force, 1996).

4.1.7 Infrastructure

The proposed wind turbine project would require no water, sewer, or natural gas. The project would require a minimal amount of power to maintain FAA lighting and perhaps to operate heating systems to prevent ice buildup. Construction and operation of the wind turbine(s) would be performed by local residents; therefore, no new services would be required for employees. If successful, the project could reduce the potential need to expand the existing power system and add more diesel generators.

4.2 No Action Alternative

Under the No Action Alternative, the wind turbine project would not occur at Nome. The minor loss of natural habitat under the Proposed Action would not occur. There would be no

increased potential for avian or visual/aesthetic impacts. A reduction in air emissions that could be a direct effect of the Proposed Action would not be realized under the No Action Alternative.

4.3 Comparative Assessment

To support agency decision-making regarding the project size, Table 2 compares anticipated impacts among the turbine options defined in Section 2.1. Table 2 shows that the only discernible differences among the power options identified for the Proposed Action are driven by the number of turbines. Two wind turbines would require a larger footprint than a single unit, whether two 250-kW turbines, or one 250- and one 500-kW turbine. As a result, there would be a slightly increased impact to biological resources and land use for the two-turbine options. Although avian impacts are anticipated to be small, intuitively there could be more impacts from either two turbines or from taller turbines. The state of scientific knowledge on avian impacts with wind turbines does not provide a more definitive conclusion regarding this potential impact area at this time.

Under no combination of turbine powers would there be direct negative impacts to air quality; however, if wind turbine operations were effective in this area, there likely would be a reduction in air emissions from diesel-generated power. Logically, the higher the turbine power choice for this Proposed Action, the higher the potential reduction in future emissions. This impact reduction would be relative to the power level and would not depend on the number of turbines.

Because cultural and archaeological resources are not known to occur on the proposed site, there is no potential for impacts under a one- or two-turbine operating scenario. Similarly, there would be no potential impact to the historic nature of the White Alice System atop Anvil Mountain.

There would be no noise impacts under any combination of turbine power and numbers. Visual or aesthetic impacts, whether regarded as negative or positive, would be slightly increased for power options involving two turbines. The existing infrastructure would be unaffected by any turbine power combinations. However, as was noted for air emissions, successful demonstration of wind turbine-generated power could reduce diesel demand and, therefore, alter the make-up of Nome's future power supply system.

Table 2. Comparative Impacts of Wind Turbine Power Alternatives

Impact Area	Wind Turbine Power Alternatives					No Action Alternative
	One 250-kW turbine	Two 250-kW turbines	One 500-kW turbine	One 250-kW and One 500-kW turbine	One 750-kW turbine	
Biological Resources	Less than 1 acre of habitat loss; slight potential for avian collisions	Less than 2 acres of habitat loss; slight potential for avian collisions	Less than 1 acre of habitat loss; slight potential for avian collisions	Less than 2 acres of habitat loss; slight potential for avian collisions	Less than 1 acre of habitat loss; slight potential for avian collisions	No habitat loss; the slight potential for avian collisions would not occur
Land Use	Less than 1 acre of natural habitat converted for wind turbine use	Less than 2 acres of natural habitat converted for wind turbine use	Less than 1 acre of natural habitat converted for wind turbine use	Less than 2 acres of natural habitat converted for wind turbine use	Less than 1 acre of natural habitat converted for wind turbine use	No change in land use
Air Quality	Likely reduction of diesel emissions	Likely reduction of diesel emissions	Likely reduction of diesel emissions	Likely reduction of diesel emissions	Likely reduction of diesel emissions	Maintains current diesel emissions
Cultural Resources	No direct effects	No direct effects	No direct effects	No direct effects	No direct effects	No impacts
Noise	No direct effects	No direct effects	No direct effects	No direct effects	No direct effects	No impacts
Visual/Aesthetic	Minor effect	Minor effect	Minor effect	Minor effect	Minor effect	No impacts
Infrastructure	No direct effect	No direct effect	No direct effect	No direct effect	No direct effect	Potential increase in diesel-generated power

5.0 CUMULATIVE IMPACTS

The proposed addition of one or two wind turbines to Anvil Mountain, as described in Section 2.1, would have a cumulative effect on visual/aesthetic impacts when viewed with the existing White Alice antenna arrays. For some viewers, the wind turbine(s) might be seen as an expanded negative impact on the existing ridgeline. For other viewers, the addition of wind turbines and associated lighting may be a positive supplement to the antenna arrays in aiding offshore navigation for winter hunting and summer fishing (Air Force, 1996). The additional transmission poles required to extend the current line to the top of Anvil Mountain would contribute additional cumulative visual impacts to the area when combined with the line extensions planned by the local utility. There are no other actions in the Anvil Mountain area that, when combined with the Proposed Action, would result in cumulative effects.

Should a decision be made to proceed with this demonstration project, and should wind-turbine generated power be successfully demonstrated in Nome, increased wind turbine use may be reasonably foreseeable in the future. However, such an event is beyond the scope of the action being proposed here; therefore, the cumulative consequences of additional turbines are not the responsibility of this EA but could be the subject of future NEPA documentation under Federal regulations or other permitting requirements under State regulations.

6.0 SHORT-TERM USES AND COMMITMENT OF RESOURCES

As identified in Section 1.1, NEPA requires Federal agencies to (1) describe the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity, and (2) characterize any irreversible and irretrievable commitments of resources that would be involved should the Proposed Action be implemented. The Proposed Action would commit less than 4,000 square meters (1 acre) of previously disturbed tundra atop Anvil Mountain to the production of 250 kW to 750 kW of wind-generated electrical power. As a result of this action, Nome's dependency on diesel power could be reduced, leading to a reduction in air emissions. Such a reduction, although not significant on a national or global scale, would contribute to the reduction in greenhouse gases and thus contribute to the enhancement of long-term productivity.

The Proposed Action could result in the irreversible commitment of small quantities of steel, fiberglass, and concrete upon decommissioning of the turbine(s). Due to Nome's remoteness, recycling of these materials would be unlikely; therefore, landfill disposal is likely, making the commitment irreversible.

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APPENDIX A – SCOPING



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

December 17, 1999

DISTRIBUTION LIST

SUBJECT: NOTICE OF SCOPING - ENVIRONMENTAL ASSESSMENT FOR PROPOSED WIND TURBINE PROJECT, NOME AND UNALASKA, ALASKA

The U.S. Department of Energy (DOE) and the State of Alaska are examining sites for the construction and operation of a proposed wind turbine project. The proposed project would generate between 225 and 750 kilowatts (kW) of electrical power. Nominal operating life of the turbine(s) would be approximately 20 years after which time they would be removed. Sites are currently being examined near the Alaskan communities of Unalaska and Nome. It is DOE's policy to integrate community and public concerns into its decision making process. Accordingly, prior to undertaking any action on the proposed project, DOE is soliciting public and agency inputs to aid in the identification of issues warranting more detailed evaluation in an Environmental Assessment (EA) prepared under the National Environmental Policy Act (NEPA).

During October of this year, representatives of DOE conducted site visits and met with representatives of Federal, State, and local agencies. Through the input of the U.S. Fish & Wildlife Service, the U.S. Corps of Engineers, and that of the local utilities, combined with the wind characteristics at each site, our list of potential sites for detailed characterization has been narrowed to:

- Unalaska - The sites under consideration are located south of town, off Captains Bay, in Pyramid Valley. Two sites are currently being considered in this area, one at the mouth of Pyramid Valley on the coastline, and the other within the valley 1/4 to 3/4 mile from the coast. Figure 1.
- Nome - One site is being considered in the Nome area. The proposed site is located atop Anvil Mountain, approximately four to five miles inland from Nome adjacent to a decommissioned U.S. Air Force radar station that was an element of the Alaska Communications System ("White Alice System") and the Distant Early Warning (DEW) line. Figure 2.

Construction at any of the proposed sites would involve installation of concrete footers placed on bedrock to support the wind turbine tower(s), and would disturb less than an acre. At the proposed Nome site approximately two miles of above ground transmission line would be required to connect with the existing electrical grid. At the Unalaska sites existing underground conduits would be utilized to connect to the electrical grid. The proposed sites are not within jurisdictional wetlands; therefore, the compliance requirements of 10 CFR Part 1022 pertaining to floodplains and wetlands are not implicated.

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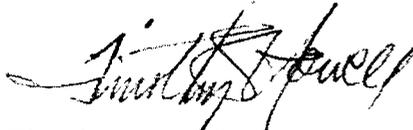
The size of the proposed action, with regard to kW capacity to be built, has yet to be finalized. Because the capacity decision will be based on available Federal, State and local funding, utility needs, and environmental impact considerations, a range in capacity will be evaluated in the EA to support decision-making. To assure an assessment of the full range of foreseeable technical alternatives, one or two utility scale turbines, with a generation of capacity of 225kW to 750kW, will be considered in the EA. The specifications for each turbine alternative at three operating levels are summarized on Table 1. Please note that the turbines dimensions identified are representative of commercially available turbines. Final turbine manufacturer selection would involve a formal competitive bidding process if a site is selected and a final decision to proceed is reached.

Please direct any comments, questions, or concerns you may have regarding this proposal to:

Ms. Joyce Beck, NEPA Document Manager, U.S. Department of Energy, Golden Field Office, 1617 Cole Boulevard, Golden Colorado 80401-3393; telephone number 1-800-644-6735; or to electronic mail address joyce_beck@nrel.gov.

The draft EA document will be provided to interested parties for review and comment upon its completion. Comments, questions, or concerns received by January 21, 2000 will be considered prior to DOE reaching a final decision regarding funding of the proposed project.

Sincerely,



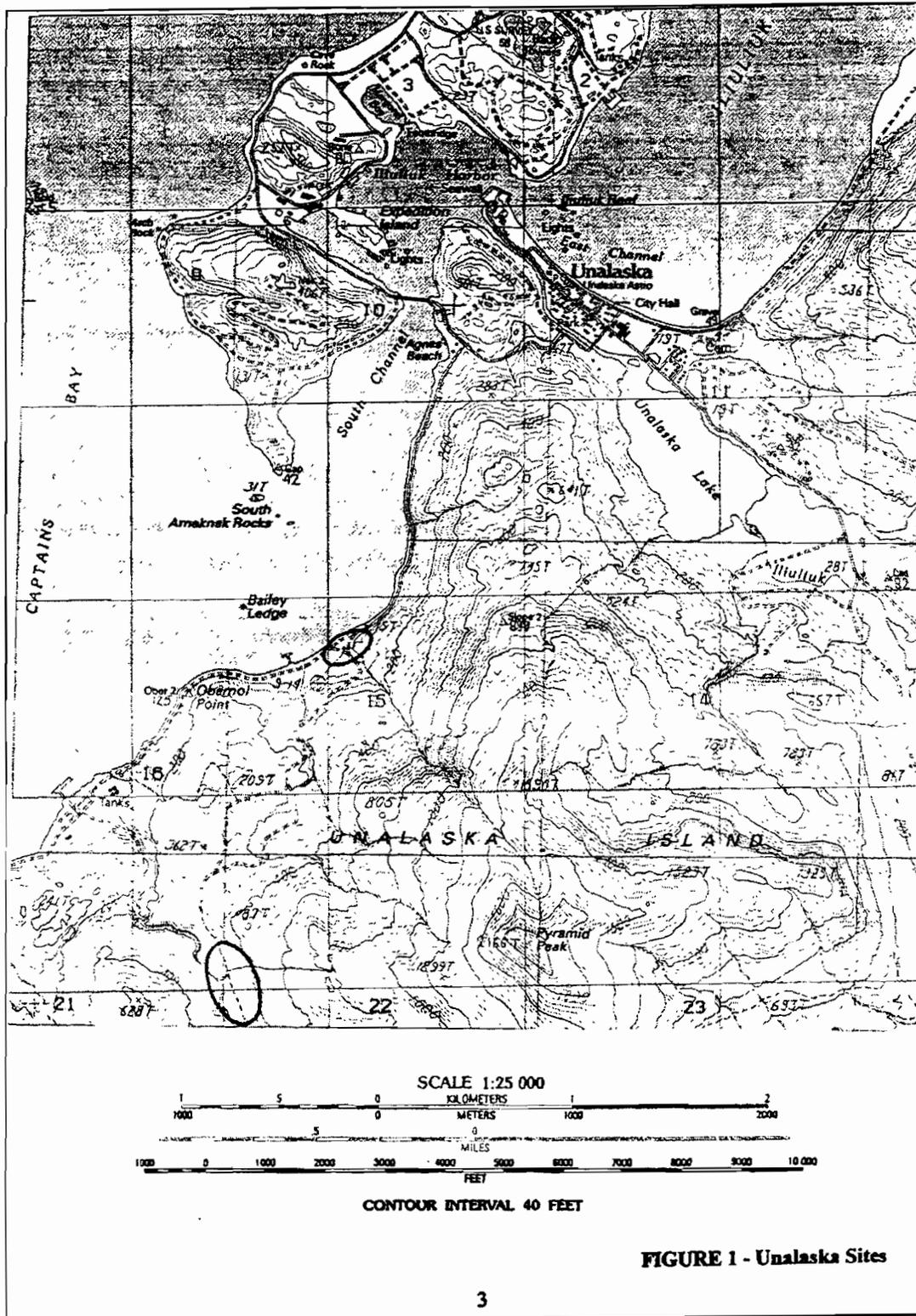
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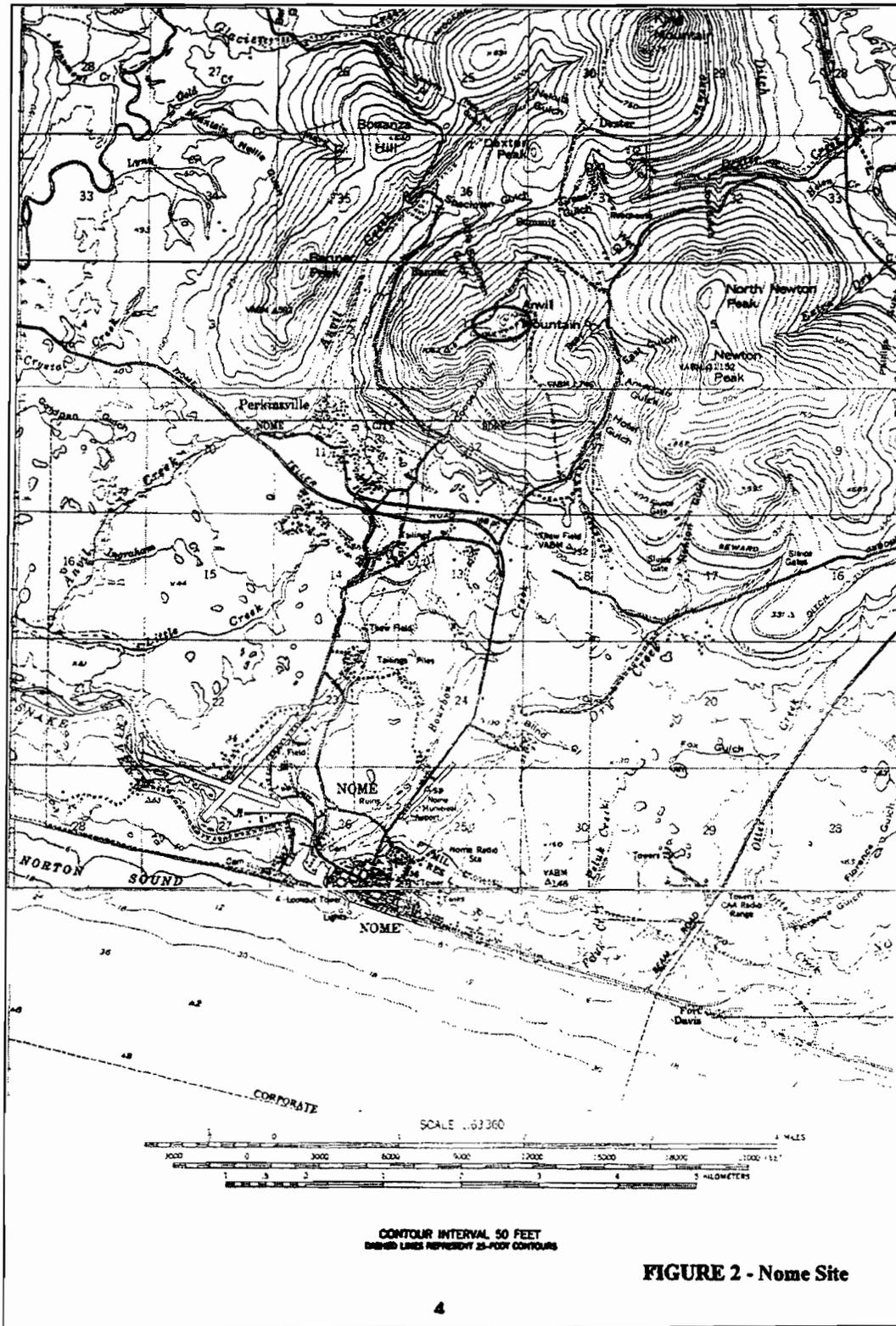
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Nome, Alaska, Wind Turbine Demonstration Project



Nome, Alaska, Wind Turbine Demonstration Project



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Karen Blue
City of Unalaska
Department of Public Works
P.O. Box 610
Unalaska, AK 99685-0610

Mike Golat, Director of Public Utilities
City of Unalaska
P.O. Box 610
Unalaska, AK 99685-0610

Nome, Alaska, Wind Turbine Demonstration Project

Scott Seabury, City Manager
City of Unalaska
P.O. box 610
Unalaska, AK 99685

Qawalingin Tribe of Unalaska
C/o Harriet Berikoff, President
205 west Broadway
P.O. Box 334
Unalaska, AK 99685

Ounalashka Corporation
400 Salmon Way
P.O. Box 149
Unalaska, AK 99685-0149

Jim Paulin, News Director
Unalaska Community Broadcasting
P.O. Box 181
Unalaska, AK 99685

University of Alaska – Fairbanks
Interior Aleutians Campus
P.O. Box 248
Unalaska, AK 99685

Unalaska Public Library
P.O. Box 1370
Unalaska, AK 99685

Mr. Willie R. Taylor, Director
Office of Environmental Policy and Compliance
U.S. Department of the Interior
1849 C Street, NW
Room 2340
Washington, DC 20240

Ms. Ann M. Hooker
Environmental Specialist/NEPA Liaison
Office of Energy and Environment
Federal Aviation Administration
U.S. Department of Transportation
AEE300 -- Room 902
800 Independence Avenue, SW
Washington, DC 20591

Mr. Daniel Kirshner
Senior Analyst
West Coast Office
Environmental Defense Fund, Inc.
5655 College Avenue
Suite 304
Oakland, CA 94618

Clean Water Action - CWA
23 Grant Avenue, 3rd Floor
San Francisco, CA 94108

U.S. Environmental Protection Agency
Attn: Office of Ecosystems and Communities
Region 10 Office
1200 Sixth Avenue
Seattle, WA 98101-9797

Irene Anderson
Land Manager
Sitnasuak Native Corporation
P. O. Box 905
Nome, AK 99762

Mr. Pat Poe, Regional Manager
AK Regional Office
Air Traffic Division, AAL-530
222 West 7th Avenue
Anchorage, AK 99513

Jack Schommer
AK Regional Office
Air Traffic Division, AAL-530
222 West 7th Avenue
Anchorage, AK 99513

Federal Aviation Administration
John Lovett
222 West 7th Avenue
Box 14, AAL-612D
Anchorage, AK 99513

Federal Aviation Administration
Matt Freeman
222 West 7th Avenue
Box 14, AAL-532
Anchorage, AK 99513



NSB

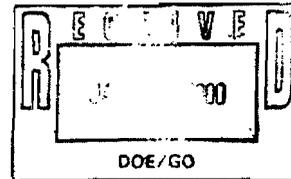
United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services Anchorage
605 West 4th Avenue, Room 62
Anchorage, Alaska 99501-2249



WAES

Ms Joyce Beck
NEPA Document Manager
U.S. Department of Energy
Golden Field Office
Golden, Colorado 80401



Dear Ms. Beck:

Thank you for your request for scoping information regarding the possible installation of wind turbines at Unalaska and Nome. We have provided previous comments on the potential for this project to affect threatened and endangered species. The purpose of this letter is to make you aware of relatively large concentrations of bald eagles at and near the Westward Seafood processing facility. This facility is on Captain's Bay in close proximity to Pyramid Creek.

Wintering bald eagles historically concentrated at the Unalaska landfill prior to its recent conversion to a baling operation. Since that time, the eagles still return to Unalaska during the winter, but have dispersed to less concentrated food sources. During a site visit to Captain's Bay January 10-14, 2000, between 50 and 75 bald eagles were consistently observed at Westward Seafoods.

We are concerned that a wind turbine located on the Captain's Bay coastline near Pyramid Creek would result in blade-strikes to wintering bald eagles and other birds. Bird use is substantially greater along the coast compared to inland sites, especially during the winter. For this reason we recommend that the turbine be located at the inland location where the risk of injury to birds is smaller than the coastal site. We would have serious concerns about locating the turbine on the coastline of Captain's Bay near Pyramid Creek.

Please telephone Mark Schroeder, Fish and Wildlife Biologist, at (907) 271-2797 if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ann G. Rappoport".
Ann G. Rappoport
Field Supervisor

cc: ADFG: W. Dolezal

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME
HABITAT AND RESTORATION DIVISION

P.O. BOX 25526
JUNEAU ALASKA 99802-5526
PHONE: (907) 465-4105/4125
FAX: (907) 465-4759

January 27, 2000

Mr. Timothy S. Howell
Acting NEPA Compliance Officer
Golden Field Office
U.S. Department of Energy
1617 Cole Boulevard
Golden, CO 80401-3393

Dear Mr. Howell:

The Alaska Department of Fish and Game (ADF&G) has briefly reviewed the U.S. Department of Energy's proposal to generate electrical power using wind turbines near Unalaska and Nome, Alaska. We did not identify any significant fish and wildlife issues related near Nome. Comments on the Unalaska site follows.

Two sites are identified as being under consideration near Unalaska. Figure 1 of the December 17, 1999 correspondence shows one site is located near the ocean about 0.5 miles east-northeast of Obermoi Point in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 15, T 73 S, R 118 W, Seward Meridian. This location is very near Westward Seafood's processing plant and associated housing complex. However, per a telephone conversation with Mr. Mike Golat, Director of Public Utilities for the City of Unalaska, the site is not found at this location. It is his understanding that the site under consideration is supposed to be about 0.5 miles southwest of Obermoi Point on the south side of the lower reach of Pyramid Creek in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 16, T 73 S, R 118 W, S.M. This site is very near the Crowley Maritime industrial complex. The second site is found at about the 250 foot elevation in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 21 and the SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 22, T 73 S, R 118 W, S.M. where the East Fork Pyramid Creek and Icy Creek merge to form the mainstem of Pyramid Creek. This site is very near the City of Unalaska water storage reservoir and water treatment facility.

Several species of fish and wildlife are found in the vicinity. Along the coast, avian species of particular concern include the spectacled eider (*Somateria fischeri*) and Steller's eider (*Polysticta stelleri*) both listed as threatened species on the endangered species list. In addition, other species of concern include emperor geese (*Chen cangica*) and bald eagles (*Haliaeetus eucocephalus*) that congregate in the area during the winter.

The lower reach (approximately 1,600 feet) of Pyramid Creek supports pink salmon (*Oncorhynchus gorbuscha*) and coho salmon (*Oncorhynchus kisutch*), as well as Dolly Varden (*Salvelinus malma*). Pink salmon are known to spawn in the stream and coho salmon rear in it.

Mr. Timothy Howell

2

January 27, 2000

Resident Dolly Varden are found above a barrier waterfall on the mainstem of Pyramid Creek. They are also found in both Icy Creek and the East Fork Pyramid Creek.

Any proposal for wind turbines along the coast and close to sea level raises concern for bird strike mortality. The site near Crowley Maritime complex is such a location. To prevent potential injury to threatened species and wintering waterfowl and bald eagles this site should be eliminated from consideration. The proposal for a site away from the coastline and at higher elevations raises fewer concerns for bird strike. However, development of upland sites including access and facilities construction must be accomplished in a manner that prevents short and long-term soil erosion and that maintains water quality in Icy Creek, East Fork Pyramid Creek, and Pyramid Creek.

We appreciate the opportunity to comment. Should you have any questions please contact Mr. Wayne Dolezal of my Anchorage staff, at (907) 267-2333.

Sincerely,



Ken Taylor
Director

cc: R. Morrison, ADF&G
M. Golat, City of Unalaska
G. Wheeler, USFWS
W. Dolezal, ADF&G
M. McLean, ADF&G

APPENDIX B – FAA CORRESPONDENCE

Nome, Alaska, Wind Turbine Demonstration Project

Federal Aviation Administration
Alaskan Region, AAL-530
222 West 7th Avenue, #14
Anchorage, AK 99513-7987

RECEIVED
AERONAUTICAL STUDY
No: 00-AAL-0023-OE

ISSUED DATE: 02/24/00

FEE \$ 5 2000

JOHN HANDELAND
NOME JOINT UTILITY SYSTEM
70 POWERPLANT DRIVE, P.O. BOX 70
NOME, ALASKA 99762

DIVISION OF ENERGY

** DETERMINATION OF NO HAZARD TO AIR NAVIGATION **

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Description: WIND TURBINE(S)

Location: NOME AK
Latitude: 64-33-49.24 NAD 83
Longitude: 165-22-27.37
Heights: 400 feet above ground level (AGL)
1534 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does exceed obstruction standards but would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

-As a condition to this determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1J, Obstruction Marking and Lighting, Chapters 4, 5 (Red),

-It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

— At least 10 days prior to start of construction
(7460-2, Part I)

X Within 5 days after construction reaches its greatest height
(7460-2, Part II)

-It is required that the FAA be notified at least 48 business hours prior to the temporary structure being erected and again when the structure is removed from the site. Notification should be made to this office during our core business hours (Monday through Friday, 9:00 am to 3:00 pm) via telephone at 907-271-5903. Notification is necessary so that aeronautical procedures can be temporarily modified to accommodate the structure.

This determination expires on 08/24/01 unless:

- (a) extended, revised or terminated by the issuing office or
- (b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case the determination expires on the date prescribed by the FCC for completion of construction or on the date the FCC denies the application.

Orig: David X
cc: Mary

Nome, Alaska, Wind Turbine Demonstration Project

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

-As a result of this structure being critical to flight safety, it is required that the FAA be kept apprised as to the status of this project. Failure to respond to periodic FAA inquiries could invalidate this determination.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, frequency(ies) or use of greater power will void this determination. Any future construction or alteration, including increase in heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

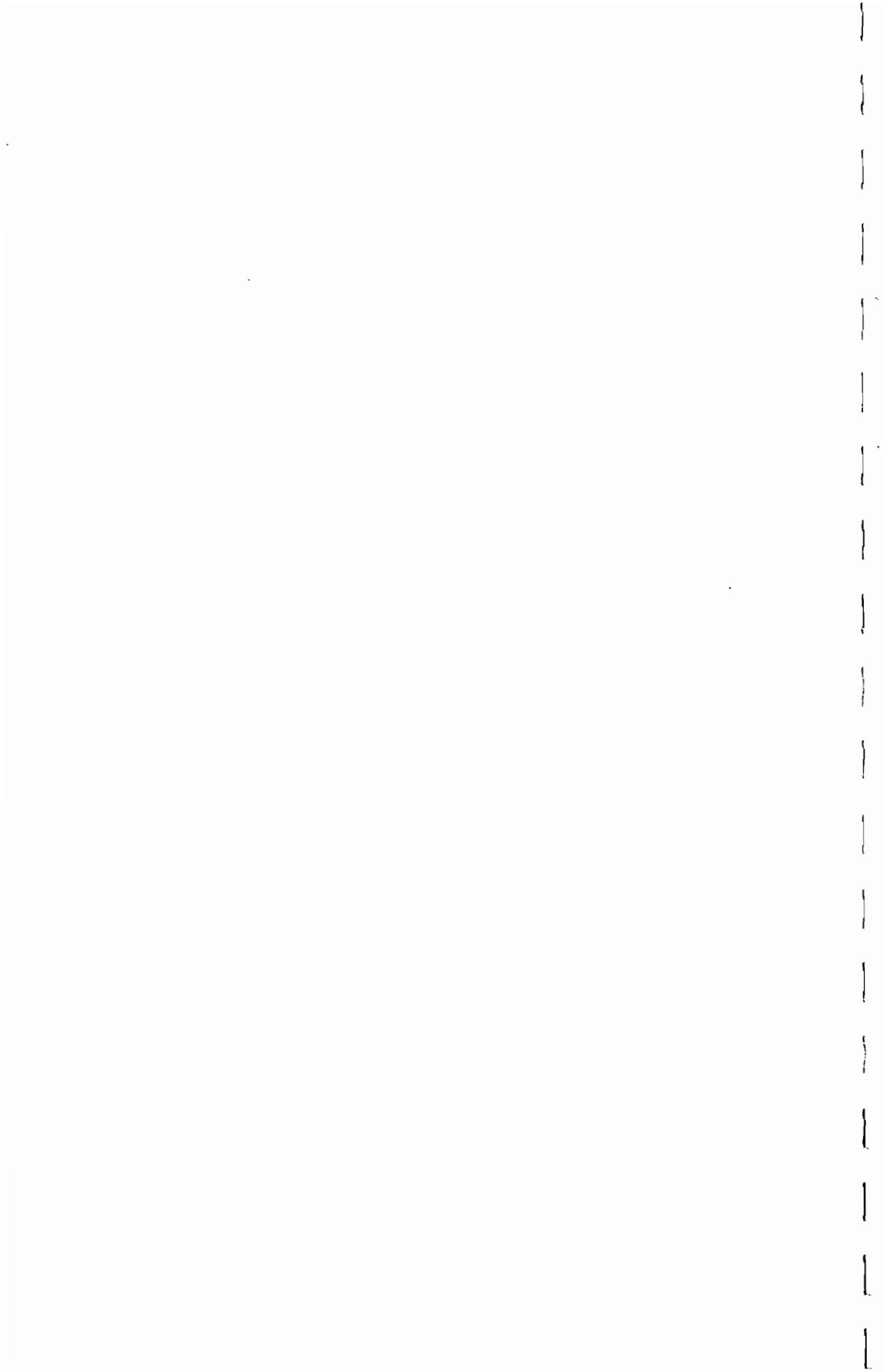
If we can be of further assistance, please contact our office at 907-271-5903. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 00-AAL-0023-OE.



John J. Schommer
Specialist, Operations Branch

(EBO)

7460-2 Attached



**APPENDIX C – BERING LAND BRIDGE NATIONAL PRESERVE BIRD CHECKLIST
AND FWS CORRESPONDENCE**

Nome, Alaska, Wind Turbine Demonstration Project

Bering Land Bridge National Preserve Bird Checklist

Common Name	June	July	August
Golden Eagle	U	U	U
Northern Harrier	U	U	U
Rough-legged Hawk	C	C	C
Osprey	R	R	R
American Kestrel	R	R	R
Merlin	R	R	R
Peregrine Falcon	U	U	U
Gyr Falcon	U	U	U
Spruce Grouse	R	R	R
Rock Ptarmigan	U	U	U
Willow Ptarmigan	C	U	U
Short-eared Owl	C	U	C
Great Horned Owl	R	R	R
Snowy Owl	R	R	U
Northern Hawk Owl	R	R	U
Horned Lark	U	U	U
Tree Swallow	A	A	A
Violet Green Swallow	R	R	R
Bank Swallow	C	C	C
Cliff Swallow	C	C	C
Gray Jay	R	R	R
Common Raven	A	A	A
Arctic Warbler	U	U	U
Ruby-crowned Kinglet	U	U	U
Black-capped Chickadee	C	U	C
Gray-cheeked Thrush	A	A	A
Varied Thrush	U	U	U
American Robin	A	A	A
Northern Wheatear	U	U	U
Bluethroat	U	U	U
Siberian Rubythroat	1	*	*
Northern Shrike	U	U	U
Northern Pipit	C	C	C
Red-throated Pipit	R	R	R
White Wagtail	R	R	R
Yellow Wagtail	A	A	A
American Dipper	R	R	R
Orange Crowned Warbler	U	U	U
Yellow Warbler	C	C	C
Yellow-rumped Warbler	U	U	U
Wilson's Warbler	C	C	C
Northern Waterthrush	C	C	C
Savannah Sparrow	C	C	C

Nome, Alaska, Wind Turbine Demonstration Project

Common Name	June	July	August
American Tree Sparrow	C	C	C
Dark-eyed Junco	R	R	R
White-crowned Sparrow	A	A	A
Golden-crowned Sparrow	C	C	C
Lincoln's Sparrow	R	R	R
Fox Sparrow	A	A	A
Lapland Longspur	A	A	A
Snow Bunting	R	*	R
McKay's Bunting	R	*	R
Rusty Blackbird	U	R	R
Common Redpoll	A	A	A
Hoary Redpoll	A	A	A

A – Abundant, normally present in numbers, and several should be seen most days.

C – Common, normally present, and should be seen most days with a little work.

U – Uncommon, normally present, but hard to find.

R – Rare, present most years, but hard to find.

1 – Species is an infrequent visitor to the Seward Peninsula, but can be found 3 to 6 years out of 10.

***** – Insufficient information available from the road system to estimate the chances of seeing this species.

Source: Interior, 1996.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services Anchorage
605 West 4th Avenue, Room 62
Anchorage, Alaska 99501-2249



WAES

Timothy S. Howell
Office of Chief Counsel
Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

SEP 6 1999

Dear Mr. Howell:

We received your letter requesting information on the potential presence of Federal threatened or endangered species, as well as migratory birds, at several potential project sites. The letter was received by us on August 12, 1999. As stated in your letter, the proposed project involves the construction and operation of an experimental fuel cell/wind turbine. The potential sites identified in your letter are Naknek, Unalaska, and Nome. We appreciated the early coordination on the part of the Department of Energy and its consultant with regards to this projects potential effects on natural resources. The following information is provided for use in planning the project. It should be considered as preliminary based upon our current knowledge, but without the benefit of having visited the sites or consulted with all species authorities.

Based on review of our information, the spectacled eider (*Somateria fischeri*) and Steller's eider (*Polysticta stelleri*), are the only two listed species anticipated to occur in the vicinity of the project sites. However, due to its location, the potential for construction and operation of the wind turbine to harm these species appears to be highest at Naknek - Site 1. The potential sites at Unalaska - Site 9 and Nome (Anvil Mountain) are located such that, upon initial review, operation of a wind turbine would not likely adversely affect these listed species.

As for other avian species, all of the sites pose some risk. The operation of the wind turbine at Naknek, especially during adverse climatic conditions (e.g., fog) could also impact several other species of ducks and geese. In addition, bald eagles, other raptors, and other migratory birds may also be harmed through its operation. Consequently, of the three sites evaluated, the potential for impacts to migratory birds appears to be greatest at this site.

The operation of the wind turbine at Unalaska - Site 9, because of its location, would appear least likely to impact ducks and geese, but still may harm raptors and passerines using the valley and associated ridge. The operation of a wind turbine at Nome, Anvil Mountain, poses risks to raptors, bristle-thighed curlew (*Numenius tahitiensis*), and other migratory birds. The potential impacts to bristle-thighed curlew are significant given this species' apparent decline.

Therefore, based on review of preliminary information, Unalaska - Site 9 would appear to constitute the least risk to migratory birds.

In regards to evaluating the potential differences in total area swept by the rotors and its ultimate affect on avian impacts, we recommend a completion of a thorough literature search. Based on a preliminary review of literature, Howell (1997), didn't detect a difference in bird strikes due to differences in the size of areas swept by a rotor, and that the number of units rather than the area swept by each unit appeared to be the more important factor affecting the number of bird strikes. It is important to note that he did record mortality of hawks, falcons, owls, ducks (mallard), herons (black-crowned night heron), dove, and various passerines during their study. In contrast, Winkleman (1985), didn't record any mortality due to the operation of medium-sized wind turbines in the Netherlands. Based on our review of these two papers, we think that a number of different species would ultimately be impacted.

We have enclosed the two referenced papers for your review and we look forward to further coordination on this issue. If you have any questions regarding this letter, please contact Art Davenport at (907) 271-2781 (Endangered Species) or Gary Wheeler at (907) 271-2780 (Habitat Conservation).

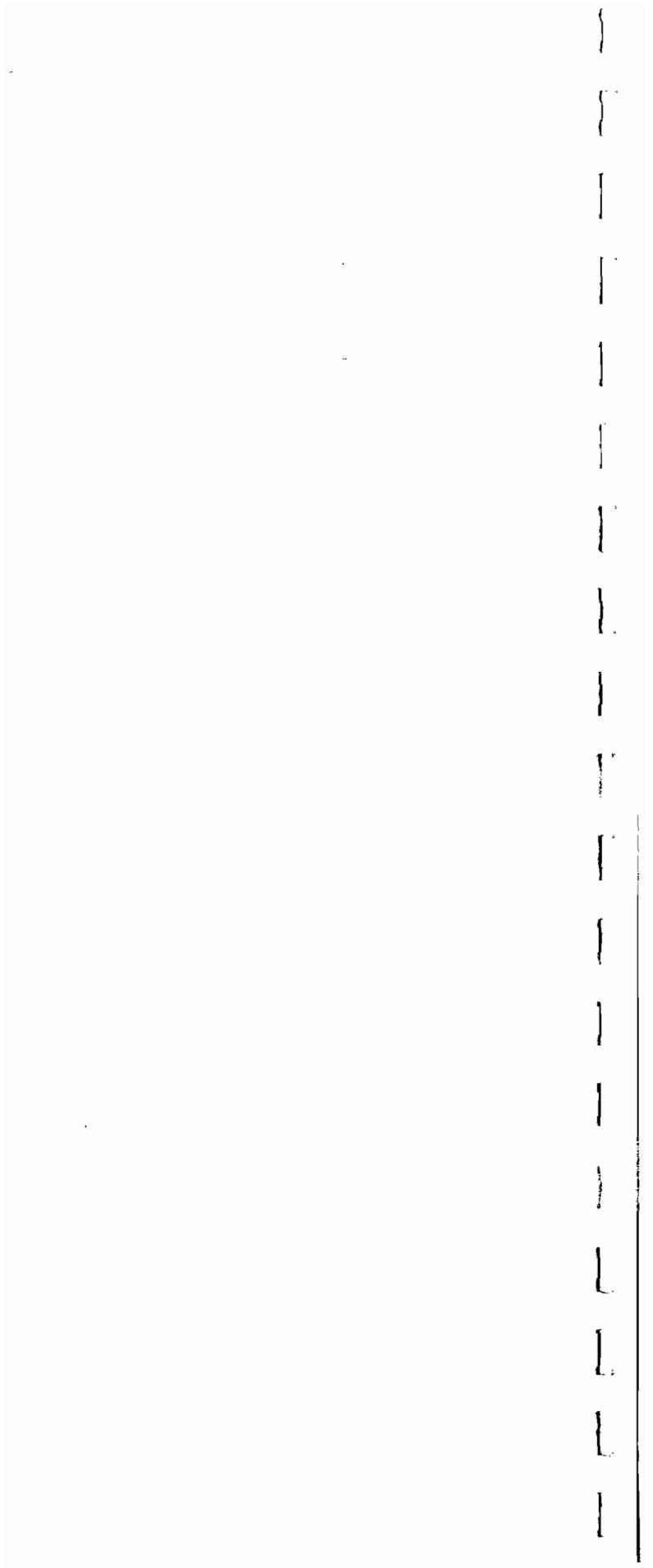
Sincerely,



Ann G. Rappoport
Field Supervisor

Enclosure

cc: David Lockard - DCRA Div. of Energy
ADFG- Wayne Dolezal
- Al Ott
Tom Anderson - Battelle Memorial Institute



APPENDIX D – WETLAND CONSULTATIONS



NOME JOINT UTILITY SYSTEM

P.O. Box 70 • Nome, Alaska 99762 • (907) 443-NJUS • Fax (907) 443-6336

August 26, 1999

Don Rice, Unit Coordinator
North Section – Regulatory Branch
U.S. ARMY CORPS OF ENGINEERS
P.O. Box 898
Anchorage, AK 99506

Dear Mr. Rice:

We are planning extension of our electrical grid in three different directions as indicated on the attached copy of the Nome area USGS quad map. All extensions are continuations of existing overhead electrical service lines mounted on poles.

Option one is a three and one-half mile extension of an existing line located at the intersection of the Center Creek Road with the Nome-Teller Highway near the Nome-Beltz High School complex within the Alaska DOT/PF right-of-way to the Snake River to serve the Snake River and Sunrise Subdivision community. The route begins in Township 11 South, Ranger 34 West, Kateel River Meridian, Section 11 and continues westward through Sections 10, 3, 4 and 5. This route is across permafrostal soils which are most likely wetlands.

Option two is a one and one-half mile extension of an existing line located near the intersection of the Dexter Road with the Nome-Teller Highway to Hotel Gulch on the west flank of Newton Peak for the purpose of serving the Panorama Bench, Morning Star and Dry Creek Subdivision community. The route begins in T 11 S, R 34 W, KRM, Sec. 13, continues north across Sec. 12 and into Sec. 7 of T 11 S, R 33 W, KRM. This route is across tailings and naturally thawed soils which are probably not wetlands.

Option three is an eleven mile extension of an existing line located at the Nome Municipal Landfill along the Beam Road and continuing within the AK DOT/PF right-of-way northward to the Nome River Bridge for the purpose of serving the Triple Creek, Osborn, Dexter and Banner Creek communities. The route begins in T 11 S, R 33 W, KRM, Sec. 21 and continues northward through Sec. 16, 15, 10, 9, 2, 3 and 4, and through T 10 S, R 33 W, KRM, Sec. 33, 28, 21, 20, 17, 8, 9 and 4. This route is over mostly naturally thawed soils with occasional discontinuous areas of permafrost. This route may cross intermitent wetlands.

Would you please determine whether you have jurisdiction over any excavation or filling we may do during placement of power poles along these three proposed routes. Would you also determine if our filling or excavation would be covered under

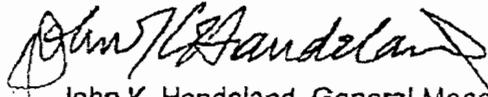
U.S. Army Corps of Engineers/Don Rice
August 26, 1999
Page 2

any existing nationwide permits or if we need to make individual applications for any of these lines.

The three proposed line extensions are for primary distribution and do not include secondary distribution systems to individual residents within any of the existing communities. We will address those situations in the future on an as-needed basis. It is anticipated that a wetlands permit may be needed in the Snake River and Sunrise Subdivisions at the end of proposed route number one. However, if electrical utility extensions there are also covered under a nationwide permit, we would like to be so informed.

All communications regarding wetlands jurisdictional determinations, permits and public notifications should be addressed to me as the contact person for the Utility. I can be reached directly at (907) 443-6302, should you require additional information or clarification.

Sincerely,


John K. Handeland, General Manager
NOME JOINT UTILITY SYSTEM

Enclosure: USGS quad map

Nome, Alaska, Wind Turbine Demonstration Project

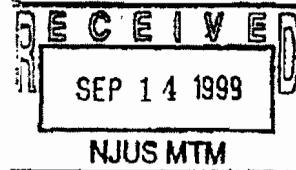


FORM 10
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

SEPTEMBER 10 1999

Regulatory Branch
North Section
9-991067



Mr. John K. Handland
General Manager
Nome Joint Utility System
Post Office Box 70
Nome, Alaska 99762-0070

Dear Mr. Handland:

Your request of August 26, 1999, for a Department of the Army (DA) jurisdictional determination to see if your project for the three proposed utility line extensions could fall under Nationwide Permit authorization near Nome, Alaska has been received. It has been assigned 9-991067, Snake River, which should be referred to in all future correspondence with this office.

We have determined that more information is essential before we can respond to your request. Please provide the following information:

a. Provide a typical plan view and cross section of your proposed line work; Nationwide Permit 12 does not cover foundation work—just utility line trenching, temporary stockpiling of material, and re-filling the trench with revegetation. Depending on how you plan doing any foundation work, another nationwide permit may authorize that work. If not, an individual permit may be required.

I also checked to see if your project might fall under General Permit 90-1M for the City of Nome. According to the map we received, none of the project would be in boundaries set up for the General Permit.

b. Was the original utility line work permitted?

c. From the name of your company, I am assuming that it is jointly owned. Jointly owned by whom?

I am returning a copy of your map that will show where the wetland areas are located. All three routes go through wetland areas. Please keep in mind, also, that any discharge of fill material below the ordinary high water mark of a waterbody will need authorization too.

The terms and conditions of NWP 12, which may authorize your proposed work, requires a notification to resource agencies within the State of Alaska. Upon receipt of the requested information, we will begin the notification process.

-2-

Enclosed is a copy of our Regulatory Program Applicant Information Pamphlet, including a permit application. This pamphlet is designed to assist you in applying for a permit and provides general information and guidance on how to complete the permit application.

Your prompt attention to this matter will expedite processing your request. If you have not provided the required information within 30 days of the date of this letter, we will close your file. Closure of your file at such time will not preclude you from re-opening the file at a later date should you wish to do so.

We appreciate your cooperation with the Corps of Engineers' Regulatory Program. Please refer to file number 9-991067, Snake River, in future correspondence or if you have any questions concerning this letter. If you have any questions, please contact me at the letterhead address, by telephone at (907) 753-2716, or toll free in Alaska at (800) 478-2712.

Sincerely,

Faye E. Heitz

Faye E. Heitz
Regulatory Specialist

Enclosure

Nome, Alaska, Wind Turbine Demonstration Project



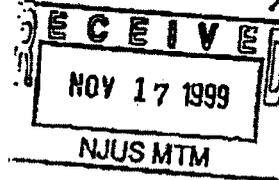
REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

NOVEMBER 10 1999

*Copy to BEUC M.
Randy R.
Benedict
Terry Wilson*

Regulatory Branch
North Section
D-991067



Mr. John K. Handoland
General Manager
Nome Joint Utility System
Post Office Box 70
Nome, Alaska 99762-0070

Dear Mr. Handoland:

This is in response to your letter of September 22, 1999, concerning your proposal to discharge approximately 440 cubic yards of native and imported fill material into approximately 0.03 acres of wetlands to construct three power lines in sections 11, 10, 3, 4, 5, 12, 13, T. 11 S., R. 34 W.; sections 21, 16, 15, 10, 9, 2, 3, 4, T. 11 S., R. 33 W.; and sections 33, 28, 21, 20, 17, 8, 9, and 4, T. 10 S., R. 33 W., Seward Meridian, in and near Nome, Alaska. We have determined that your project can be authorized under Nationwide Permit #12.

A Department of the Army nationwide permit (NWP) has been issued pursuant to the December 13, 1996, Federal Register, Final Notice of Issuance, Reissuance, and Modification of Nationwide Permits (61 FR 65874), which authorizes:

"12. Utility Line Discharges. Discharges of dredged or fill material associated with excavation, backfill or bedding for utility lines, including outfall and intake structures, provided there is no change in preconstruction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquefiable, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone and telegraph messages, and radio and television communication. The term "utility line" does not include activities which drain a water of the United States, such as drainage tile; however, it does apply to pipes conveying drainage from another area. This NWP authorizes mechanized landclearing necessary for the installation of utility lines, including overhead utility lines, provided the cleared area is kept to the minimum necessary and preconstruction contours are maintained. However, access roads, temporary or permanent, or foundations associated with overhead utility lines are not authorized by this NWP. Material resulting from trench excavation may be temporarily sidecast (up to three months) into waters of the United States, provided that the material is not placed in such a manner that it is dispersed by currents or other forces. The DE may extend the period of temporary side casting not to exceed a total of 180 days, where appropriate. The area of waters of the United States that is disturbed must be limited to the minimum necessary to construct the utility line. In wetlands, the top 6" to 12" of the trench should generally be backfilled with

-2-

topsoil from the trench. Excess material must be removed to upland areas immediately upon completion of construction. Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line. (See 33 CFR Part 322)."

Notification: The permittee must notify the district engineer in accordance with the "Notification" general condition, if any of the following criteria are met:

- a) Mechanized landclearing in a forested wetland;
- b) A Section 10 permit is required for the utility line;
- c) The utility line in waters of the United States exceeds 500 feet; or,
- d) The utility line is placed within a jurisdictional area (i.e., a water of the United States), and it runs parallel to a streambed that is within that jurisdictional area. (Sections 10 and 404)

We consider the notification of the district engineer for this proposal satisfied by the submission of your original letter dated September 22, 1999, and letter containing additional information dated October 26, 1999. Please note that the Corps of Engineers has completed General Condition 13, Notification, on your behalf.

The proposed work may be done under the authority of the above NWP provided it conforms to the general conditions shown on Enclosure 1 and to the regional condition(s), which have been established for various NWPs in Alaska, listed below.

Regional Conditions C, E and G apply to NWP #12.

Regional Condition C: A plan employing the techniques listed below shall be implemented to avoid or minimize disturbance to wetland vegetation and to re-establish such vegetation when disturbance cannot be avoided. Areas disturbed during project construction must be revegetated as soon as possible, preferably in the same growing season as the disturbance. Erosion protection shall be provided and remain in place until the soil is permanently stabilized.

Avoidance and minimization techniques may vary with site conditions and include, but are not limited to, the following:

- Planning construction access and scheduling work to avoid or minimize damage to wetland vegetation.

Operating equipment in bog or emergent wetlands on frozen ground to minimize destruction of the natural vegetative mat.

Using crane matting or suitable geotextile material to protect vegetation from damage by heavy equipment.

Revegetation techniques may vary with site conditions and include, but are not limited to the following:

- Seeding, planting, replacement of reserved ground cover, and/or fertilizing of re-contoured ground to promote re-establishment of natural plant communities. Species to be used for seeding and planting should follow this order of preference: 1) species native to the site; 2) species native to the area; 3) species native to the state; and 4) non-native species. Note: non-native species should be used only when the use of native species is not available.

In peat wetlands, systematically removing the natural vegetative mat (with root masses intact) prior to construction, storing it in a manner to retain viability (usually frozen or hydrated), then replacing it after re-contouring the ground following construction, with final contours within one foot of adjacent undisturbed vegetative cover after one growing season and one freeze/thaw cycle. For minor utility projects where no imported bedding or backfill material is used (e.g., "plowed in" cables or small utility lines installed with ditch-witches), simple restoration to pre-work contours and appropriate revegetation (see above) shall suffice.

Regional Condition E: Project limits of authorized sites shall be clearly identified in the field prior to clearing and construction to ensure that impacts to waters of the U.S. are avoided beyond project footprints (e.g., staking, flogging, silt fencing, use of buoys, existing footprint for maintenance activities, etc.).

Regional Condition G: For utility lines in peat soils, specific measures must be included in the project description to ensure that excavation will not disrupt the integrity of the subject wetland hydrology. Such measures might include horizontal ditch/trench blocks or vertical backfill blocks to address and minimize cut migration of groundwater, either as subsurface drainage from adjacent wetlands or to prevent utility line bedding from acting as a conduit channel for groundwater.

Attached with the general conditions on Enclosure 1 is a list of other required State, Federal, and local authorizations the State of Alaska would like to emphasize.

Please note General Condition 14 in Enclosure 1, which reads: "Every permittee who has received a nationwide permit verification from the Corps will submit a signed certification regarding the completed work and any required mitigation." Enclosure 2 is the form you need to send us once your project is complete.

This NWP verification will be valid for two years from the date of this letter, unless the NWP authorization is modified, reissued, or revoked.

-4-

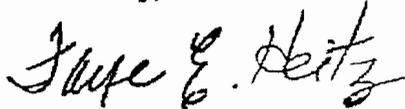
If catalogued anadromous fish streams are crossed with an all-track vehicle, an Alaska Department of Fish and Game Title 16 Permit needs to be applied for.

In an effort to determine the level of customer satisfaction with the services provided to you, the Regulatory Branch asks that you take a few moments to provide us with any constructive comments you feel are appropriate by filling out the enclosed questionnaire. Our interest is to see how we can continue to improve our service to you, our customer, and how best to achieve these improvements. Additional comments may be provided through the use of an oral exit interview, which is available to you upon request. Your efforts and interest in evaluating the regulatory program are much appreciated.

Nothing in this letter shall be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations that may affect this work.

Please contact me at the letterhead address, at (907) 753-2716, toll-free from within Alaska at (800) 478-2712, or by FAX at (907) 753-5567, if you have additional questions.

Sincerely,



Faye E. Heitz
Regulatory Specialist

Enclosures

Enclosure 1

NATIONWIDE PERMIT GENERAL CONDITIONS

The following general conditions must be followed in order for any authorization by a NWP to be valid:

1. **Navigation.** No activity may cause more than a minimal adverse effect on navigation.
2. **Proper maintenance.** Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.
3. **Erosion and siltation controls.** Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date.
4. **Aquatic life movements.** No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.
5. **Equipment.** Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
6. **Regional and case by case conditions.** The activity must comply with any regional conditions which may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its section 401 water quality certification.
7. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely effect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service.)
8. **Tribal rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
9. **Water quality certification.** In certain states, an individual Section 401 water quality certification must be obtained or waived (see 33 CFR 330.4(c)).
10. **Coastal zone management.** In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see Section 330.4(d)).
11. **Endangered Species.**
(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species. Non federal permittees shall notify the District

Engineer if any listed species or critical habitat might be affected or is in the vicinity of the project, and shall not begin work on the activity until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized.

(b) Authorization of an activity by a nationwide permit does not authorize the "take" of a threatened or endangered species as defined under the Federal Endangered Species Act. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species Act. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. Fish and Wildlife Service and National Marine Fisheries Service or their world wide web pages at <http://www.fws.gov/~r9endsp/endspp.html> and http://kingfish.spp.mnfs.gov/tmcintyr/prot_res.html#ES and Recovery, respectively.

12. Historic properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the DE has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)).

13. Notification. This general condition pertains to notification requirements for certain NWP's which, if needed for this verification, has already been completed and satisfied.

14. Compliance certification. Every permittee who has received a Nationwide permit verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include: a. A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions; b. A statement that any required mitigation was completed in accordance with the permit conditions; c. The signature of the permittee certifying the completion of the work and mitigation.

15. Multiple use of Nationwide permits. In any case where any NWP number 12 through 40 is combined with any other NWP number 12 through 40, as part of a single and complete project, the permittee must notify the District Engineer in accordance with paragraphs a, b, and c on the "Notification" General Condition number 13. Any NWP number 1 through 11 may be combined with any other NWP without notification to the Corps, unless notification is otherwise required by the terms of the NWPs. As provided at 33 CFR 330.6(c) two or more different NWPs can be combined to authorize a single and complete project. However, the same NWP cannot be used more than once for a single and complete project.

Nome, Alaska, Wind Turbine Demonstration Project

SECTION 404 ONLY CONDITIONS:

In addition to the General Conditions, the following conditions apply only to activities that involve the discharge of dredged or fill material into waters of the U.S., and must be followed in order for authorization by the NWP to be valid:

1. Water supply intakes. No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.
2. Shellfish production. No discharge of dredged or fill material may occur in areas of concentrated shellfish production, unless the discharge is directly related to a shellfish harvesting activity authorized by NWP 4.
3. Suitable material. No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.,) and material discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).
4. Mitigation. Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site (i.e., on-site), unless the District Engineer approves a compensation plan that the District Engineer determines is more beneficial to the environment than on-site minimization or avoidance measures.
5. Spawning areas. Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.
6. Obstruction of high flows. To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).
7. Adverse effects from impoundments. If the discharge creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.
8. Waterfowl breeding areas. Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.
9. Removal of temporary fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

OTHER REQUIRED STATE, FEDERAL, AND LOCAL AUTHORIZATIONS

As stated at 33 CFR 330.4(a): "It is important to remember that the nationwide permits (NWP's) only authorize activities from the perspective of the Corps of Engineers regulatory authorities and that other Federal, State, or local permits, approvals, or authorizations may also be required." Accordingly, 33 CFR 330(b)(2) specifies: "NWP's do not obviate the need to obtain other Federal, State, or local authorizations required by law." Although any and/or all of the NWP's may require other authorizations, the State of Alaska would like to emphasize the following potential requirements:

NWP's 1-23, 25-33, and 35-38: Work in a designated anadromous fish stream or other fish-bearing waters is subject to authorization from the Alaska Department of Fish and Game. Placement of cross-channel structure, drainage structures, or diversions in streams that contain either anadromous or resident fish is subject to authorization from the Alaska Department of Fish and Game.

NWP 6: Survey activities are subject to surface management regulations of the Alaska Department of Natural Resources and/or the Minerals Management Service and those mitigating measures pertaining to State and Federal oil and gas lease sales.

NWP's 1, 3, 6, 7, 11-15, 18-20, 25, 30, 31, 33, 35, and 36-38: Work in legislatively-designated State refuges, sanctuaries, or critical habitat areas is subject to authorization from the Alaska Department of Fish and Game.

NWP 7: The applicant must obtain a "Non-domestic Wastewater Discharge Plan Approval," or waiver of approval, from the Alaska Department of Environmental Conservation prior to construction of a stormwater outfall.

NWP 11: A small, seasonal dock may require a fish habitat permit from the Alaska Department of Fish and Game and/or a lease agreement from the Alaska Department of Natural Resources.

NWP 12: Timing, siting, road access, design, and construction methods of utility lines are subject to authorizations of Federal and State agencies with regulatory responsibility for such projects.

NWP's 13, 18, and 26: Placement of fill on State-owned land is subject to authorization from the State.

NWP's 3, 18, 19, 29, and 31: Many areas of the state are covered by Federal Emergency Management Agency (FEMA)-approved floodplain regulations, local land-use plans and regulations, and other ordinances and regulations related to development. These restrictions must be adhered to in the development of a residence on a fill permitted by a NWP.

All NWP's within the Kenai Peninsula Borough Coastal District: Dredging or filling within areas defined as floodplains by the Federal Emergency Management Agency (FEMA), and within the 50-foot setback from the Kenai River is subject to local regulations.

All NWP's involving the Kenai River and tributaries within the Kenai Peninsula Borough Coastal Districts: Kenai Peninsula Borough permits/approvals, as well as a fish habitat permit from the Alaska Department of Fish and Game and a park use permit from the Department of Natural Resources, may be necessary for your activity. Please contact the Kenai River Center at 260-4882.

All NWPs within the Matanuska-Susitna Coastal District: Within the 75-foot shoreline setback, all areas not occupied by allowed development must minimize disturbance of natural vegetation.

STATE POLICY REGARDING EROSION AND SILTATION CONTROLS

In addition to authorization requirements, activities authorized by Nationwide Permits must meet State water quality Standards. Nationwide Permit General Condition #3 provides for Erosion and Siltation Controls. In regard to those issues, the State of Alaska presents the following advisory information:

NWPs 3-7, 12-23, 25-27, 29-34, and 36-38: The Alaska Water Quality Standards, 18 AAC 70, establish strict limits on the amount of sediment and turbidity that may be introduced into fresh and marine waters, including wetlands. Because activities authorized by Section 404 Nationwide Permits usually involve excavation and/or placement of fill, there is considerable potential for the generation of sediment and turbidity. In concert with the requirements of Nationwide Permit General Condition 3, Erosion and Siltation Controls, the Alaska Department of Environmental Conservation policy is as follows.

Silt and sediment from excavation and fill activities should not enter wetlands or waterbodies outside the project footprint. Where practicable, fill material should be free from fine material that is subject to erosion and suspension. Excavation and fill activities should be conducted to prevent, minimize, and contain the erosion and suspension of fine material that could be carried off-site by surface runoff. If suspended material is evident outside the project footprint, appropriate control measures should be applied. These measures may include slope stabilization; filter fabric fences, straw bales, or other barriers; fiber matting; settling ponds; drainage control; trenches and water bars; waterproof covers over material piles and exposed soils; avoiding activity during heavy precipitation; revegetation; and other measures.

February 28, 1997

Enclosure 2



US Army Corps of Engineers
Alaska District

Permit Number: D-991067, Snake River

Name of Permittee: Nome Joint Utility System

Date of Issuance: NOVEMBER 10 1999.

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers
Alaska District
Regulatory Branch
Post Office Box 898
Anchorage, Alaska 99506-0898

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

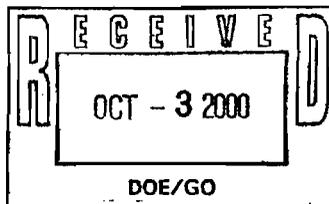
Date

APPENDIX E – COMMENTS ON DRAFT EA

Sitnasuak Native Corporation

Post Office Box 905 • Nome, Alaska 99762
(907) 443-2632 • Fax: (907) 443-3063

September 28, 2000



Steve Blazek,
Department of Energy
NEPA Compliance Officer
Golden Field Office
1617 Cole Blvd.
Golden, Colorado 80401

Dear Mr. Blazek:

The Sitnasuak Native Corporation's Land Committee reviewed the *Draft Nome, Alaska Wind Turbine Demonstration Project Environmental Assessment* (DOE/EA 1280). The document provided valuable information, primarily on land owned by this Corporation.

We support the wind turbine project as a alternate source of the diesel-generated power used locally. Our diesel is barged up the coast from California as we are located too far west to be able to access fuel from the Transalaska Pipeline. The Nome Joint Utility System has obtained a Land Use Permit from Sitnasuak for this pilot project.

Of interest to us, was the first paragraph in **Section 3.0, Affected Environment**. This is the first document that we have seen that said: "*The Maleiut, Kauweramiut, and Unalikmiut Eskimos originally inhabited Nome.*" Thank your for your recognition of our first people.

Respectfully,

A handwritten signature in black ink, appearing to read "Homer E. Hoogendorn".

Homer E. Hoogendorn
Chairman