UNITED STATES AIR FORCE
ELMENDORF AIR FORCE BASE, ALASKA

FINAL
ENVIRONMENTAL ASSESSMENT
EXPANSION OF THE ELMENDORF AFB GRAVEL PIT

3RD CIVIL ENGINEER SQUADRON
ENVIRONMENTAL FLIGHT

3 CES/CEVP
6326 ARCTIC WARRIOR DRIVE
ELMENDORF AFB, AK 99506

APRIL 2008

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA). Specific environmental resources associated with Elmendorf AFB with the potential for environmental consequences considered in this EA include noise, safety, air quality, physical resources, biological resources, cultural resources land use and transportation, socioeconomics, and environmental justice. Under the Proposed Action, there would be no change in noise contours or sound levels beyond those for currently scheduled aircraft. Mining operations would continue in the airfield accident potential zone, which is a permitted industrial action within this area. Combustion engine and fugitive dust emissions would produce localized, shortterm elevated air pollutant concentrations but would remain within confines of construction and operating permits. The expansion area does not contain wetlands or floodplains. Expansion would result in removal of trees and productive moose browse. Gravel pit reclamation would re-establish moose browse areas. Wildlife corridors along major roadways would be protected. The proposed expansion would not affect any environmental clean-up sites. Nine archeological sites lie within the proposed expansion area. As specified in the Integrated Cultural Resources Management Plan, State Historic Preservation Office consultation would be completed, and an archeological survey would be conducted of the proposed area. Future land uses would be affected since construction potential in the reclaimed area would be limited; however, the area is located within the accident potential zone, which places constraints upon land uses. There would be no effects on transportation. The proposal would not change long-term base employment or expenditures. In addition, the actions as proposed would not disproportionately impact minority and low-income populations or children. The Proposed Action would have an irreversible and irretrievable effect upon the gravel resource. Irreversible effects would result from the use of the gravel, which cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. Under the No Action Alternative, Elmendorf AFB would not expand the existing gravel pit. The results of the No Action Alternative include: no gravel available for construction and repair; no ability to implement the Elmendorf AFB General Plan; increased cost of construction; and degradation to mission capabilities and readiness.

15. SUBJECT TERMS

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FINDING OF NO SIGNIFICANT IMPACT

NAME OF PROPOSED ACTION. Expansion of the Elmendorf Air Force Base Gravel Pit

DESCRIPTION OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVES. The United States Air Force (Air Force) proposes to expand the existing Elmendorf Air Force Base (AFB) Gravel Pit to approximately 427 acres and to excavate approximately 3,000,000 cubic yards of material to support the Elmendorf AFB General Plan. Under the Proposed Action, the gravel pit would be expanded to the east by approximately 300 acres. Elmendorf AFB estimates that a sufficient quantity of useable gravel would be extracted under the Proposed Action to support the General Plan. Gravel pit expansion activities would include clearing and grubbing, construction and improvement of access routes, material extraction, gravel crushing, asphalt manufacture, and pit reclamation and re-vegetation.

The Proposed Action would provide gravel to support construction projects scheduled for Elmendorf AFB. These projects, a mixture of major military construction and routine maintenance and repair of the airfield and roads, are valued at an estimated $150 million annually.

The No Action Alternative would consist of Elmendorf AFB maintaining the present configuration of the gravel pit (127 acres). No further lateral expansion of the existing gravel pit would take place, and the existing pit would continue to be reclaimed. Taking no action could prevent implementation of the Elmendorf AFB General Plan and degrade the mission readiness of the base.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES. The Environmental Assessment (EA) addresses the potential environmental consequences from implementing the Proposed Action and includes the No Action Alternative. Through agency and public inputs, the following resource areas were identified for assessment of potential direct or indirect environmental consequences: noise, safety, air quality, physical resources, biological resources, cultural resources, land use and transportation, socioeconomics, and environmental justice. Potential cumulative effects for each relevant resource are also presented.

The EA demonstrates that the proposed expansion of the Elmendorf AFB gravel pit would not result in significant environmental impacts to any environmental resource area. Potential environmental consequences may be summarized as follows. Under the Proposed Action, there would be no change in noise contours or sound levels beyond those for currently scheduled aircraft. Mining operations would continue in the airfield accident potential zone, which is a permitted industrial action within this area. Combustion engine and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations but would remain within confines of construction and operating permits. The expansion area does not contain wetlands or floodplains. Expansion would result in removal of trees and productive moose browse. Gravel pit reclamation would re-establish moose browse areas. Wildlife corridors along major roadways would be protected. The proposed expansion would not affect any environmental clean-up sites. Nine archeological sites lie within the proposed expansion area. As specified in the Integrated Cultural Resources Management Plan, State Historic Preservation Office consultation would be completed, and an archeological survey would be conducted of the

zone, which places constraints upon land uses. There would be no effects on transportation. The proposal would not change long-term base employment or expenditures. In addition, the actions as proposed would not disproportionately impact minority and low-income populations or children.

The Proposed Action would have an irreversible and irretrievable effect upon the gravel resource. Irreversible effects would result from the use of the gravel, which cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action.

Under the No Action Alternative, Elmendorf AFB would not expand the existing gravel pit. The results of the No Action Alternative include: no gravel available for construction and repair; no ability to implement the Elmendorf AFB General Plan; increased cost of construction; and degradation to mission capabilities and readiness.

Based on the findings of the EA conducted in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and Air Force Instruction 32-7061, and after careful review of the potential impacts, I conclude the implementation of the Proposed Action would not result in significant impacts to the quality of the human or the natural environment. For these reasons, a finding of no significant impact is warranted, and an Environmental Impact Statement is not required for this action.

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18 Apr 08

RICHARD J. WALBERG
Colonel, USAF
3rd Wing Commander
Elmendorf Air Force Base, Alaska

Date

Cover Sheet

ENVIRONMENTAL ASSESSMENT FOR THE EXPANSION OF THE ELMENDORF AIR FORCE BASE GRAVEL PIT

a. *Responsible Agency*: United States Air Force (Air Force)

b. *Proposals and Actions*: The Air Force proposes to expand the existing Elmendorf Air Force Base (AFB) Gravel Pit to approximately 427 acres and to excavate approximately 3,000,000 cubic yards of material to support the Elmendorf AFB General Plan. Under the Proposed Action, the gravel pit would be expanded to the east by approximately 300 acres. Elmendorf AFB estimates that a sufficient quantity of useable gravel would be extracted under the Proposed Action to support the General Plan. Gravel pit expansion activities would include clearing and grubbing, construction and improvement of access routes, material extraction, gravel crushing, asphalt manufacture, and pit reclamation and re-vegetation.

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c. *For Additional Information*: 3rd Wing Public Affairs, Environmental Community Affairs Coordinator, 10480 22nd St., Ste. 118, Elmendorf AFB AK 99506. Telephone inquiries may be made to 907-552-5756.

d. *Designation*: Environmental Assessment

e. *Abstract*: This EA has been prepared in accordance with the National Environmental Policy Act (NEPA). Specific environmental resources associated with Elmendorf AFB with the potential for environmental consequences considered in this EA include noise, safety, air quality, physical resources, biological resources, cultural resources, land use and transportation, socioeconomics, and environmental justice.

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FINAL

ENVIRONMENTAL ASSESSMENT
EXPANSION OF THE ELMENDORF AFB GRAVEL PIT

Elmendorf Air Force Base, Alaska

Public comments on this Draft EA are requested pursuant to the National Environmental Policy Act, 42 USC 4321, *et seq*. All written comments received during the comment period will be made available to the pubic and considered during Final EA preparation. The provision of private address information with your comment is voluntary and will not be released for any other purpose unless required by law. However, this information is used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

April 2008

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ACRONYMS AND ABBREVIATIONS

3 WG	3rd Wing
176 WG	176th Wing
AATA	Anchorage Alaska Terminal Area
AFB	Air Force Base
AFI	Air Force Instruction
Air Force	United States Air Force
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
APZ	Accident Potential Zone
Army	United States Army
ARRC	Alaska Railroad Corporation
BASH	Bird-Aircraft Strike Hazard
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CZ	Clear Zone
dB	decibel
DoD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FY	Fiscal Year
GP3	General Permit 3
GP9	General Permit 9
HAZMART	Hazardous Materials Pharmacy
ICRMP	Integrated Cultural Resources Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
L_{dn}	Day-Night Average Sound Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Oceanic and Atmosphere Administration National Marine Fisheries Service
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
P.L.	Public Law
PACAF	Pacific Air Forces
Pb	lead
PM_{10}	particulate matter less than or equal to 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SBS	Styrene Butadiene Styrene
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SO_x	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
TPY	tons per year
TSDF	Treatment, Storage, and Disposal Facility
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
$\mu g/m^3$	micrograms per cubic meter
yd^3	cubic yards

Chapter 1

1.0 Introduction

Elmendorf Air Force Base (AFB) requires a cost-effective source of clean gravel to implement the Elmendorf AFB General Plan. The plan includes construction of new facilities, maintenance of existing facilities, and renovations (Air Force 2006b). The projects require various types of gravel for asphalt production, roads and parking lots, airfield paving, and general construction.

The Elmendorf AFB General Plan presents a picture of the character and structure of the installation and its present and future capability to support the Air Force mission. It is a comprehensive, long-range plan and decision tool for projecting land use, infrastructure development, and project siting. This General Plan, or 50-Year Plan, identifies opportunities for improving the mission capabilities, readiness, and environment of the base. Highlights include removing aircraft mission areas from the interior of the base and consolidating them to the north and east of the main runway; integrating new airframe beddowns, such as the C-17 and F-22A aircraft; siting industrial functions just south of the flightline; and, redeveloping the base interior as a contiguous community district. The General Plan will strengthen the land use relationships at Elmendorf AFB (Air Force 2006b).

This Environmental Assessment (EA) analyzes the potential environmental consequences associated with expanding the gravel extraction activities to meet the needs of the General Plan according to the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) Regulation of 1978, and 32 Code of Federal Regulations (CFR) Part 989, titled the Environmental Impact Analysis Process. 32 CFR Part 989 addresses the implementation of NEPA and directs Air Force officials to consider the environmental consequences of any proposal as part of the decision-making process. As prescribed by 40 CFR 1502.20 and 1502.21, to cut down on bulk and eliminate repetitive discussions of the same issues, this EA incorporates by reference the September 2007 EA, *Relocation of the Air National Guard 176th Wing to Elmendorf AFB, Alaska*.

1.1 Background

Elmendorf AFB, located to the north of the Municipality of Anchorage, is part of the Pacific Air Forces (PACAF), which is headquartered at Hickam AFB, Hawaii. Elmendorf AFB is the home of the Alaskan Command, 11th Air Force, Alaskan North American Air Defense region, 3rd Wing (3 WG), and the 176th Wing (176 WG). As depicted in Figure 1.1-1, Elmendorf AFB shares boundaries with Fort Richardson to the east, the Municipality of Anchorage to the south, and the Knik Arm of Cook Inlet to the west and north. Elmendorf AFB covers 13,455 acres, with the improved areas consisting of 3,713 acres.

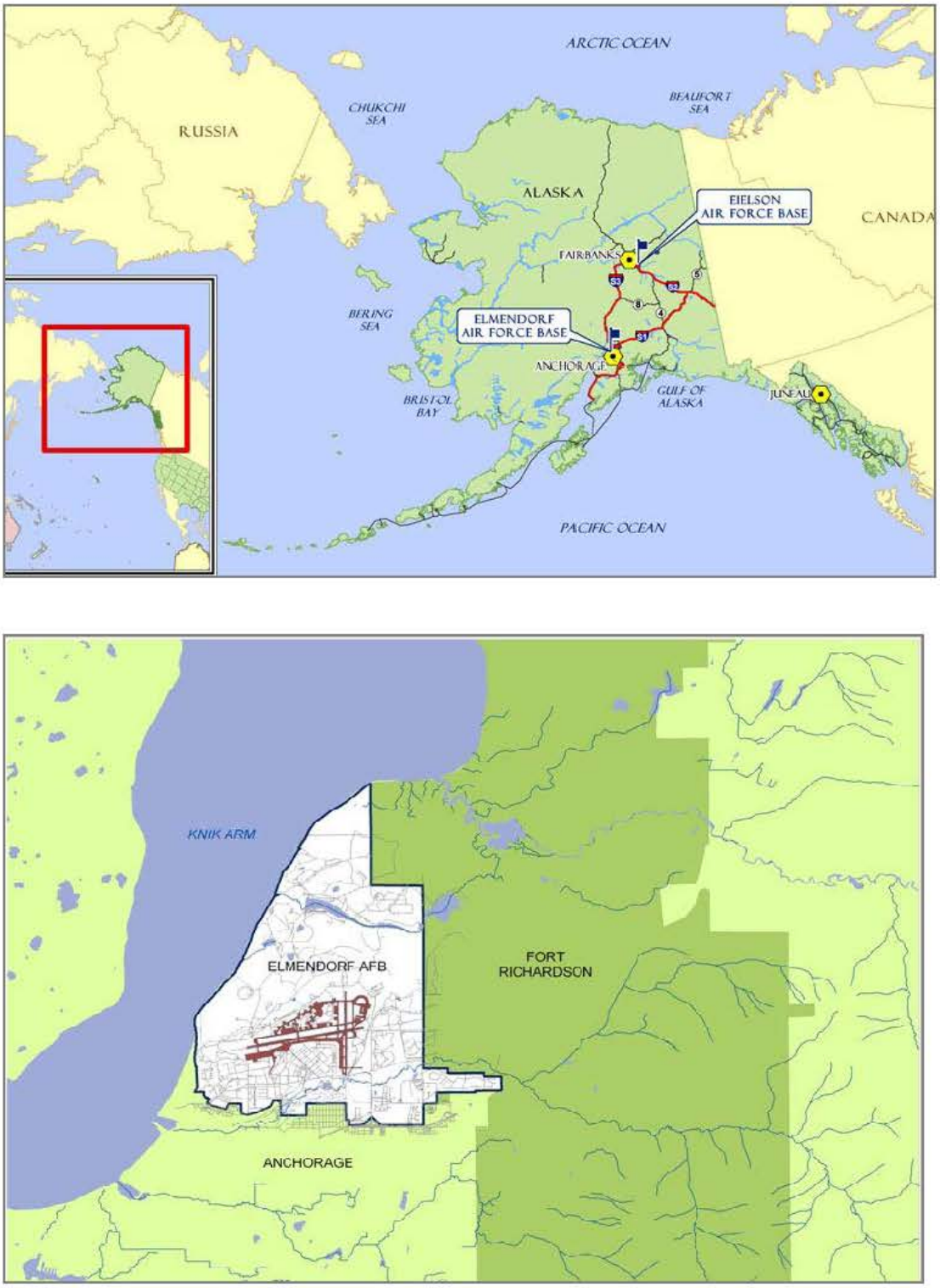

Figure 1.1-1 Regional Location of Elmendorf AFB, Alaska

Elmendorf AFB is located in the maritime climate zone of south-central Alaska, with moderate temperatures in both winter and summer. Mean annual precipitation is approximately 16 inches, with snowfall averaging around 80 inches per year. Summertime highs average in the low to mid-60s and wintertime lows average in the low to mid-single digits Fahrenheit. Prevailing winds in Anchorage are generally light and from the north to northeast during September through April and from the south to southwest from May to August.

The proposed expansion site as shown in Figure 1.1-2 would encompass approximately 300 additional acres of land within the Seward Meridian, Township 14 North, Range 3 West, Section 35, bringing the total acreage of the gravel pit area to approximately 427 acres. Of the approximately 127 existing acres, the pit itself occupies about 50 acres and the remaining 77 acres consist of roads, abandoned rail beds and cleared areas for storing sorted gravel. The additional 300 acres of the Proposed Action include two active rail beds, some one-lane trails, a fire training area, a remote-controlled aircraft recreation site, nine archeological sites, and a Marine Reserve facility, which would largely remain in their current conditions (Elmendorf AFB 2007).

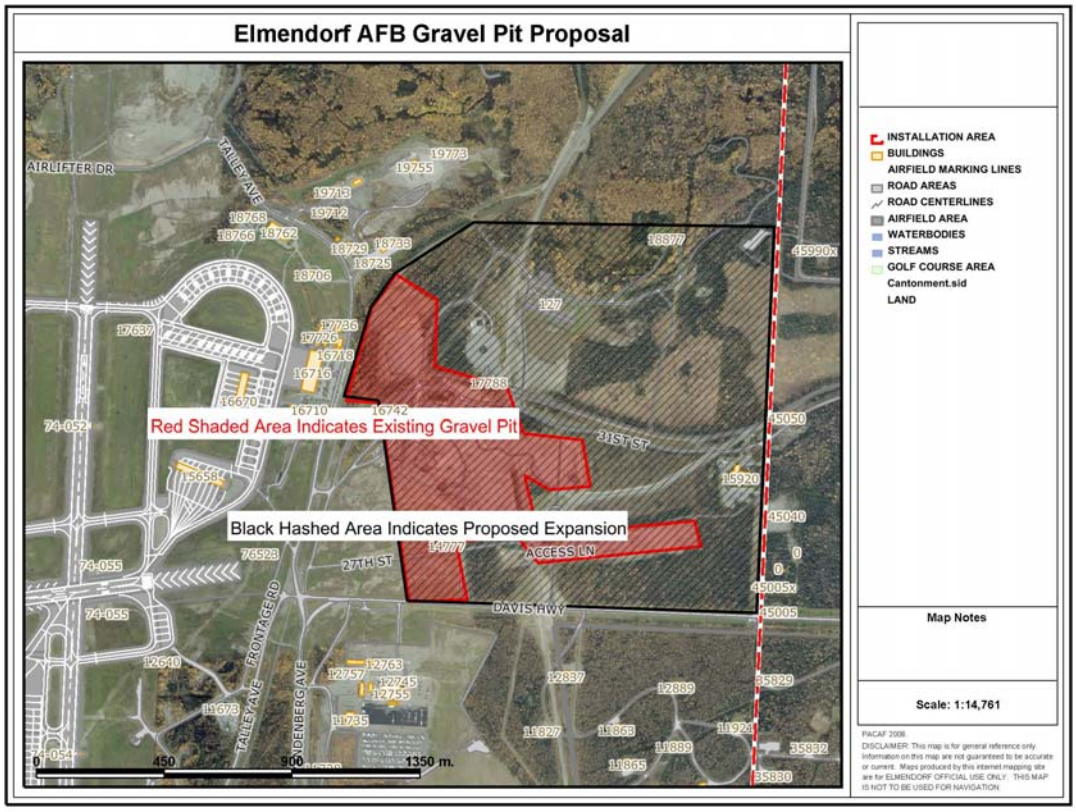

Figure 1.1-2 Proposed Elmendorf AFB Gravel Pit

The Bureau of Land Management (BLM) manages the vegetation and subsurface material within this tract. Per Executive Order (EO) 8102, land within BLM-managed

boundaries is under a withdrawal for a military reservation. BLM's role is to manage the vegetative and mineral resources if put to non-military uses.

1.2 Purpose and Need

The construction and maintenance projections of the General Plan will require more gravel than the existing gravel pit can produce. The expansion of the existing gravel pit would provide an estimated 3,000,000 cubic yard (yd^3) of gravel for ongoing Elmendorf AFB construction and maintenance projects. With the present 30 percent rejection rate, approximately 1,980,000 yd^3 of useable material would be excavated (Air Force 2005a).

To meet airfield paving requirements, Elmendorf AFB produces gravel with three fractured faces. A fractured face is defined as a face that exposes the interior of a gravel particle. A fractured or crushed fragment is defined as one having one or more fractured faces. Often pavement distress, such as rutting, stripping, surface pop-outs, and lack of adequate surface frictional resistance can be traced directly to improper aggregate selection and use (Kandal *et al.* 1997). Airfield aggregate gravel required for Elmendorf AFB projects is not readily available locally and typically requires special order. For the last 13 years, Elmendorf AFB has produced airfield and other grades of gravel at the existing gravel pit. The proposed use and expansion of the on-base gravel source would eliminate the need to purchase and haul gravel, reduce travel time between the source and the base, and eliminate in-processing time through the entry gate. These efficiencies would result in significant savings to the taxpayer. Because of its proximity to the projected construction projects, use of the expanded Elmendorf AFB gravel pit compared to purchase and delivery would also reduce community impacts, such as road wear and traffic congestion, as well as mobile-source air pollution in the Anchorage bowl.

Although other sources could modify their processes to supply gravel for Elmendorf AFB project needs, off-site gravel producers may not be able to produce the quantity of three fractured face gravel required at the time it is needed. Additionally, Elmendorf AFB gravel is relatively clean and uniform in size. This reduces the requirement for washing, to remove finer-grained materials, and screening, to remove large rocks that are not crushed. Some off-site sources would require the additional expense of washing, screening and handling.

Chapter 2

2.0 Description of Proposed Action and Alternatives

Elmendorf AFB proposes to expand the existing Elmendorf Gravel Pit to approximately 427 acres and to excavate approximately 3,000,000 yd^3 of material to support the 50-Year Plan. This chapter describes the Proposed Action and considers alternatives identified during proposal development.

In determining the feasibility of obtaining material for Elmendorf AFB, engineering specifications for material type and strength were considered, with the requirements for airfield material being the most stringent. Other aspects considered included the amount of fines and coarse material that would be rejected or washed out, the large quantities that would be required and the timeliness of availability, and the requirement for 90 percent double face fracture on material being produced for non-airfield uses.

Using these criteria, Elmendorf AFB has identified two action alternatives as potential options to be carried forward for analysis: 1) expansion of the existing gravel pit currently in use at Elmendorf AFB, and 2) commercial procurement. The Proposed Action is represented by Alternative 1 (expansion of the existing gravel pit). This preferred alternative was selected after reviewing Alternative 2 and the No Action Alternative.

2.1 Proposed Action (Alternative 1)

Under this alternative, the gravel pit would be expanded to the east by approximately 300 acres. Pit expansion would begin in early 2008. Based on current extraction rates and soil borings drilled during construction of the Marine Reserve Facility, Elmendorf AFB estimates that a sufficient quantity of useable gravel would be extracted under the Proposed Action to support the 50-Year Plan. Gravel pit expansion activities would include clearing and grubbing, construction and improvement of access routes, material extraction, gravel crushing, asphalt manufacture, and pit reclamation and re-vegetation. These activities are described briefly as follows:

Clearing and Grubbing. Hardwood and softwood trees, stumps, deadfall, shrubs, and the organic overburden layer to a depth of approximately two feet, would be removed. To the extent feasible, organic matter would be stockpiled on site and blended with reject material for use in later reclamation. A mechanical grinder would likely be used to reduce large timber debris. Timber management would be conducted under the direction of Elmendorf Forestry. Industry standard equipment, including brush cutters, D7 track-type tractors, excavators with appurtenances, loaders, and flat-bed trucks, would be used for all clearing and grubbing activities. Clearing and grubbing activities would be phased in accordance with construction sequencing, the Storm Water Pollution Prevention Plan (SWPPP) and considerations of habitat as required by state and federal law.

Construction and Improvement of Access Routes. Existing roadways and trails within the proposed expansion area would be improved. In some cases, access routes would be constructed. The gravel pit would be constructed in such a way that no storm

water would be allowed to run off site. If required, storm water catch basins would be constructed to capture and divert excess storm water.

Material Extraction. Borrow pit operations would consist of extracting select materials for screening and crushing. Equipment would likely include front end loaders, excavators, tractor-mounted bulldozers, water distributors, pump systems with generators, flood lights, dump trucks, and scrapers. Typical pit operations would include 5-cubic yard excavators or loaders, 30-cubic yard scrapers, and D7 track-type tractors. The size of the equipment would be determined by the responsible selected operations contractors. These contractors would be responsible for proper mining of the material source according to the developed and approved mining plan. The contractors would be responsible for developing and implementing all sediment and erosion control measures necessary, including a SWPPP.

Gravel Crushing. Extracted material would be transported to the crusher by end loader, backhoe, conveyor belt or shovel and dumped into the hopper. The material would pass through screens to sort useable material from cobbles (material greater than 75 millimeter in diameter) and fines (material 2 to 5 millimeters in diameter). The cobbles and fines are rejected and used for pipe bedding, back fill, and ballast or mixed with organic material for reclamation. The feeder would move useable material into the crusher. The crusher would break the gravel. The crushed gravel would pass through another set of screens, which would allow proper-sized gravel to pass. Screens would be adjusted to produce particles of differing sizes. Some types of gravel would require a mixture of particle sizes, and the screens would be adjusted to sort the material and mix it in the crusher. The finished products would be stockpiled, ready for use (Pit & Quarry 2002).

Asphalt Manufacture. Elmendorf AFB uses 3 percent styrene butadiene styrene (SBS) rubberized asphalt for all airfield pavement and major road pavements. SBS polymer is a cost effective asphalt mixture that improves cracking performance and reduces construction costs since surfaces require fewer repairs and replacements. The benefits obtained by the modification of asphalt with polymers include increased cohesion, adhesion, elastic recovery and reduced temperature sensitivity. The significant characteristics of polymer modified asphalts are high stability, tensile strength, stiffness and extended fatigue life, making the material a superb choice for airfield paving (Jain *et al.* 1992). Regular asphalt paving, typical of local methods, is rubberized asphalt produced from a crumb rubber mix. Crumb rubber is produced by mixing ground used tires with an asphalt product. Crumb rubber asphalt is smoother and quieter, as well as more durable and skid-resistance, than conventional asphalt. It is an ideal surface for vehicular traffic but not as suitable as SBS rubberized asphalt for airfields.

Pit Reclamation and Re-vegetation. Stockpiled reject material and organic material mixed with rootstock would be spread throughout the post-mined site to contours detailed in the reclamation specifications. For aesthetics, erosion control, and wildlife habitat, vegetative cover would be re-established as shrub habitat as described in 3rd Wing Instruction 91-212 and approved by Elmendorf Natural Resources. Reinvasions of natural species would be permitted. Water would be provided through the use of a water truck and sprayer hose during germination. The area would be

monitored after germination to ensure no non-native noxious weed invasion occurs and to determine necessity for further reseeding. The actual species mixtures, re-vegetation processes, and monitoring programs would be defined in a reclamation plan reviewed and approved by the Alaska Department of Natural Resources (ADNR). The plan also would be coordinated with the Airfield Manager. An airfield safety height restriction in the area to the west of the gravel pit, which applies to construction, would also apply to vegetation. The area would be reclaimed in a manner to provide buffer strips along adjacent roads. These buffers would be of sufficient width to provide visual screening of gravel extraction operations, mitigation of fugitive dust emissions, and travel corridors to wildlife. The plan would ensure drainage throughout the year, especially during break-up when subsurface ice could create ponds, thereby attracting birds and creating a flight hazard.

The area under consideration would extend eastward to the boundary of Fort Richardson. As shown in Figure 1.1-2, the land covered in the proposal currently serves several uses. The fire training facility is located within the confines of the proposed expansion, and several roads, trails and railroad beds bisect the area. Additionally, a Marine Reserve facility is located on the eastern edge of the area. The proposed expansion site includes a 25-acre moose browse plot cleared and managed as a mitigation effort following the Alaska Railroad Corporation (ARRC) realignment project in 2000. The National Wetlands Inventory does not indicate any wetlands in the area of the proposal (USFWS 1995).

2.2 Commercial Procurement (Alternative 2)

Under Alternative 2, Elmendorf AFB would obtain clean gravel from off-base sources. Potential commercial providers include known suppliers such as: AggPro; Central Paving Products; Denali Materials; Anchorage Sand and Gravel; and other independently owned and operated retail borrow sites. Non-commercial providers may include the Matanuska-Susitna Borough and various native landholdings under the Alaska Native Claims Settlement Act. ADNR has provided a list of approved borrow sites within approximately 70 miles of the military base that have rail or road access. Contract terms would specify that materials could be obtained only from appropriately permitted sources, must be contaminant free, and must meet minimum engineering specifications (APET 2006).

Alternative 2 activities would include gravel crushing, asphalt manufacturing, and pit reclamation and re-vegetation as described in Section 2.1. Additionally, this alternative would include gravel transport as described below.

Gravel Transport. Material from off-base sources would be transported by commercial rail or public road. The existing rail system passes through Elmendorf AFB. A track spur could be constructed to receive gravel from distant sources. The train cars would be scheduled to meet existing train schedules in advance of Elmendorf AFB needs. For comparison purposes, one train car can carry approximately 100 tons of material. Each cubic yard of gravel weighs approximately 1.9 tons. Transporting the estimated 285,000 tons required for Elmendorf AFB projects would require 2,850 train cars. Road transport would require haul trucks to enter through Post Road Gate, either

from the Post Road route or Whitney Road Route. A typical truck would carry about 25 tons. Approximately 11,400 round trips would be required to transport the required 285,000 tons. After reaching the Elmendorf AFB gravel pit, material would be off-loaded from the train cars or trucks and stored until needed for crushing.

2.3 No Action Alternative

The No Action Alternative would consist of Elmendorf AFB maintaining the present configuration of the gravel pit (127 acres). No further lateral expansion of the existing gravel pit would take place. The existing pit would continue to be reclaimed as described in Section 2.1 in the reclamation plan; reclamation would entail slope stabilization and re-vegetation of exposed surfaces. Taking no action could increase the cost of construction projects, prevent implementation of the Elmendorf AFB General Plan, and degrade the mission capabilities, readiness, and working environment of the base.

2.4 Environmental Impact Analysis Process

This EA has been prepared in accordance with NEPA (42 United States Code [USC] 4321-4347), CEQ Regulations (40 CFR § 1500-1508), and 32 CFR 989, *et seq*., *Environmental Impact Analysis Process* (Air Force Instruction [AFI] 32-7061). NEPA is the basic national requirement for identifying environmental consequences of federal decisions. NEPA ensures that environmental information is available to the public, agencies, and the decision-maker before decisions are made and before actions are taken.

The environmental analysis process, in compliance with NEPA guidance, includes public and agency review of the analysis of the Proposed Action and the No Action Alternative. This EA provides a full and fair discussion of potential consequences to the natural and human environment.

The Proposed Action has the potential to affect certain environmental resources. These potentially affected resources have been identified through communications with state and federal agencies and Alaska Natives and review of past environmental documentation. Specific resources with the potential for environmental consequences considered in this EA include noise, safety, air quality, physical resources, biological resources, cultural resources, land use and transportation, socioeconomics, and environmental justice.

2.5 Public and Agency Involvement

The Air Force initiated early public and agency involvement in the environmental analysis of the proposed expansion. The Air Force distributed Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) letters on October 26, 2007. These letters solicited public and agency input on the project through November 26, 2007, but no responses were received.

2.6 Regulatory Compliance

This EA has been prepared to satisfy the requirements of NEPA (Public Law [P.L.] 91-190, 42 USC 4321 *et seq*.) as amended in 1975 by P.L. 94-52 and P.L. 94-83. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. In addition, this document was prepared in accordance with Section 102 (2) of NEPA, regulations established by the CEQ (40 CFR 1500-1508), and AFI 32-7061 (i.e., 32 CFR Part 989).

Compliance with the Endangered Species Act (ESA) requires communication with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) in cases where a federal action could affect listed threatened or endangered species, species proposed for listing, or candidates for listing. The primary focus of this consultation is to request a determination of whether any of these species occur in the proposal area. If any of these species is present, a determination is made of any potential adverse effects on the species. Should no species protected by the ESA be affected by the Proposed Action, no additional action is required. Letters were sent to the NMFS and USFWS as well as state agencies, informing them of the proposal and requesting data regarding applicable protected species. A review of USFWS data revealed that there are no federally listed or proposed species and/or designated or proposed critical habitat within the action area of the proposed project. A copy of the Draft EA was sent to USFWS for review and comment on the proposed project.

The preservation of historic properties and Alaska Native cultural resources is coordinated by the State Historic Preservation Office (SHPO), as mandated by the National Historic Preservation Act (NHPA) and its implementing regulations. The Elmendorf AFB Integrated Cultural Resources Management Plan (ICRMP) indicates that nine archeological sites from the Cold-War era lie within the proposed expansion area. They consist of trenches associated with artillery emplacements, bunkers, foxholes, and a railroad spur. A copy of the Draft EA was sent to SHPO for review to ensure compliance with Section 106 of the National Register of Historic Places (NRHP). Additionally, informational letters were sent to Alaska Native communities which potentially could be affected by the proposal.

Federal lands are excluded from coastal zone boundaries. However, all uses and activities that directly affect the coastal area must be consistent to the maximum extent practical with the Alaska Coastal Management Program, and they are subject to the consistency provisions of Section 307 of the Coastal Zone Management Act of 1972, as amended (16 USC 1451 *et seq*.). The coastal zone managed by Elmendorf AFB includes 150 acres of shoreline and the land within 200 feet from the center line on either side of Ship Creek. The Proposed Action location is not within this coastal zone.

Elmendorf AFB is in attainment for all criteria pollutants and therefore an Air Conformity Review under the Clean Air Act (CAA) Amendments is not required as emissions for air pollutants are below the *de minimis* threshold. Currently, Elmendorf operates the gravel pit through contract. The contracting firm holds a general minor air permit (GP3 Permit) from the Alaska Department of Environmental Conservation

(ADEC) to operate the asphalt plant at Elmendorf AFB. Additionally, the contractor holds a nonmetallic mineral processing plant permit (GP9 Permit) for the gravel crusher.

Elmendorf AFB holds a material site reclamation plan approved by the ADNR for the current mining operation. A new application requesting an amendment to the existing plan would be submitted with an updated reclamation plan to ADNR. Elmendorf AFB would prepare the reclamation plan in accordance with Mining Reclamation Guidelines (Alaska Statute 27.19 and 11 Alaska Administrative Code 97). Expansion into the new area would be contingent upon approval of the amendment.

Elmendorf AFB holds an approved SWPPP with USEPA and ADEC. The gravel contract requires compliance with the Elmendorf AFB SWPPP and requires an additional site-specific SWPPP.

2.7 Environmental Comparison of the Proposed Action, Alternative Action and No Action Alternative

This Elmendorf AFB Gravel Pit Expansion EA analyzed noise, safety, air quality, physical resources, biological resources, cultural resources, land use, transportation, socioeconomics, and environmental justice. According to the analysis, implementing the Proposed Action would affect physical resources, biological resources, cultural resources, and land use. Implementing the Alternative Action would affect noise, physical resources, biological resources, transportation, socioeconomics, and environmental justice. The "No-Action" Alternative would affect noise, air quality, physical resources, biological resources, socioeconomics, and environmental justice. A summary of the potential impacts by resource category for the Proposed Action and alternatives is presented in Table 2.7-1.

Table 2.7-1. Summary of Potential Environmental Consequences
(Page 1 of 4)

	Proposed Action	*Alternative Action*	*No Action Alternative*
Noise	No impacts expected. Continued on-site noise associated with equipment and operations. Similar noise has occurred from the use of the area as a material source for the last 13 years and was included in recent noise modeling.	No significant impacts expected. Decreases in noise from stopping gravel extraction could be expected to be offset by gains in noise from increased transport trucks or trains. Changes in noise would not be expected to change noise contours.	No significant impacts expected. Decreases in noise from stopping gravel extraction would not be expected to change noise contours.
Safety	No impacts expected. Industrial actions are permitted within the airfield accident potential zone (APZ). Mining operations would	No impacts expected. Industrial actions are permitted within the airfield accident potential zone. Mining operations would continue to	No impacts expected. Industrial actions are permitted within the airfield accident potential zone. Reclamation and re-vegetation would

Table 2.7-1. Summary of Potential Environmental Consequences
(Page 2 of 4)

	Proposed Action	*Alternative Action*	*No Action Alternative*
	continue to operate under existing Site Safety Procedures.	operate under existing Site Safety Procedures.	continue to operate under existing Site Safety Procedures.
Air Quality	No impacts expected. Combustion engine and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality. All appropriate construction and operation permits would be obtained. No pollutants expected to exceed thresholds. Similar emissions have occurred from the use of the area as a material source for the last 13 years.	No impacts expected. Combustion engine and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality. All appropriate construction and operation permits would be obtained. No pollutants expected to exceed thresholds. Similar emissions have occurred from the use of the area as a material source for the last 13 years.	No significant impacts expected. Combustion engine and fugitive dust emissions may be reduced and may decrease localized, short-term elevated air pollutant concentrations.
Physical Resources (including hazardous materials and waste management)	No significant impacts expected. Not sited in wetlands or floodplains. Existing site-specific SWPPP would be amended as necessary. Generation of waste consistent with normal base activity. No environmental cleanup sites within proposed area. Would result in irreversible and irretrievable commitment of the gravel resource.	No significant impacts expected. Not sited in wetlands or floodplains. Existing site-specific SWPPP would be amended as necessary. Generation of waste consistent with normal base activity. No environmental cleanup sites within proposed area.	No significant impacts expected. Not sited in wetlands or floodplains. Existing site-specific SWPPP would be amended as necessary. Generation of waste consistent with normal base activity. No environmental cleanup sites within proposed area.
Biological Resources	No significant impact expected. Expansion would result in removal of productive, sustainable moose browse. Some previously undisturbed habitats would be affected. Temporary	No significant impact expected. Reclamation of existing gravel pit would continue. Existing moose browse would decrease through natural forest succession unless maintained; new areas	No significant impact expected. Reclamation of existing gravel pit would continue. Existing moose browse would decrease through natural forest succession unless maintained; new areas

Table 2.7-1. Summary of Potential Environmental Consequences
(Page 3 of 4)

	Proposed Action	*Alternative Action*	*No Action Alternative*
	(less than ten years) reduction in vegetative cover would occur in any given area during active operations. Wildlife corridors would be preserved and moose browse areas would increase through mining reclamation efforts; potential long-term (more than 20 years) positive impact to biological resources expected.	of moose browse would be developed through reclamation; potential long-term (within 10 years) positive impact to biological resources expected.	of moose browse would be developed through reclamation; potential long-term (within 10 years) positive impact to biological resources expected.
Cultural Resources	No significant impact expected. Known archeological sites exist within the proposed expansion area, and unknown subsurface archaeological resources may exist. As specified in the ICRMP, compliance with Section 106 of NRHP has been initiated and will be completed. ICRMP guidelines would be followed.	No impacts expected; cultural resources remain the same.	No impacts expected; cultural resources remain the same.
Land Use and Transportation	No significant impacts expected. Compatible with base planning and existing land uses.	No significant impacts expected. Some temporary gravel transport-related traffic congestion entering Post Road Gate or increases in trains would occur during construction season. Some improvements to roads and rail may be required to accommodate traffic increases.	No impacts expected. No change to land use.

Table 2.7-1. Summary of Potential Environmental Consequences
(Page 4 of 4)

Socioeconomics and Environmental Justice	No impacts expected. No long-term change in base employment or expenditures. Continued construction related to C-17, F-22, and 176th Wing beddowns and general base operations. No disproportionate impact to minority and low-income populations. No noticeable impact to children.	No significant impacts expected. No long-term change in base employment or expenditures. Some temporary increase in gravel hauling would occur during construction. Some construction projects may be eliminated to offset cost of purchasing and hauling gravel, resulting in fewer construction jobs. Disproportionate impact to minority and low-income populations through loss of blue-collar construction employment may be partially offset by increased hauling jobs. No noticeable impact to children.	No significant impacts expected. Long-term change in base employment or expenditures may occur. Disproportionate impact to minority and low-income populations would occur through loss of blue-collar employment. No data available to substantiate any impact to children.

Chapter 3 Affected Environment

3.0 Affected Environment

This chapter discusses the existing conditions of the affected environment under the Proposed Action. NEPA requires that the analysis address those areas and the components of the environment with the potential to be affected; locations and resources with no potential to be affected need not be analyzed. Each resource is described with a short definition, and the existing conditions are examined. The expected geographic scope of any potential consequences upon the resource is identified as the Region of Influence (ROI).

3.1 Noise

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. The noise may be intermittent or continuous, steady or impulsive, stationary or transient. Stationary sources are normally related to specific land uses, such as housing tracts or industrial plants. Transient noise sources move through the environment, either along predictable established paths, like highways or railroads, or randomly, like flying aircraft. The physical characteristics of noise include its intensity, frequency, and duration.

Existing Conditions

At an airfield, aircraft are the greatest contributors to noise, and baseline noise levels are modeled based on aircraft types, runway use patterns, engine power settings, altitude profiles, flight track locations, airspeed, and other factors. The most recent noise modeling conducted for Elmendorf AFB followed introduction of the F-22A and C-17 aircraft and the 176 WG from Kulis Air National Guard Base. This analysis most accurately represents baseline conditions projected for Elmendorf AFB and includes other non-aircraft noise, such as that associated with gravel extraction (Air Force 2007b).

The measure, or metric, that best describes noise from aircraft operations during a given period is the Day-Night Average Sound Levels (L_{dn}) metric. A Federal Interagency Committee on Urban Noise published guidelines relating L_{dn} to compatible land uses (FICUN 1980). In general, residential land uses normally are not compatible with outdoor L_{dn} above 65 decibels (dB), and, therefore, 65 dB is used as the acceptable benchmark noise level (Air Force 2007b). The ROI for noise consists of the area immediately surrounding Elmendorf AFB, as identified by the 65 dB L_{dn} contour, as shown in Figure 3.1-1.

3.2 Safety

This section addresses airfield zones, wildlife strike hazards, and ground safety as they relate to the existing gravel extraction. The ROI for this resource is defined as land within the Seward Meridian, Township 14 North, Range 3 West, Section 35.

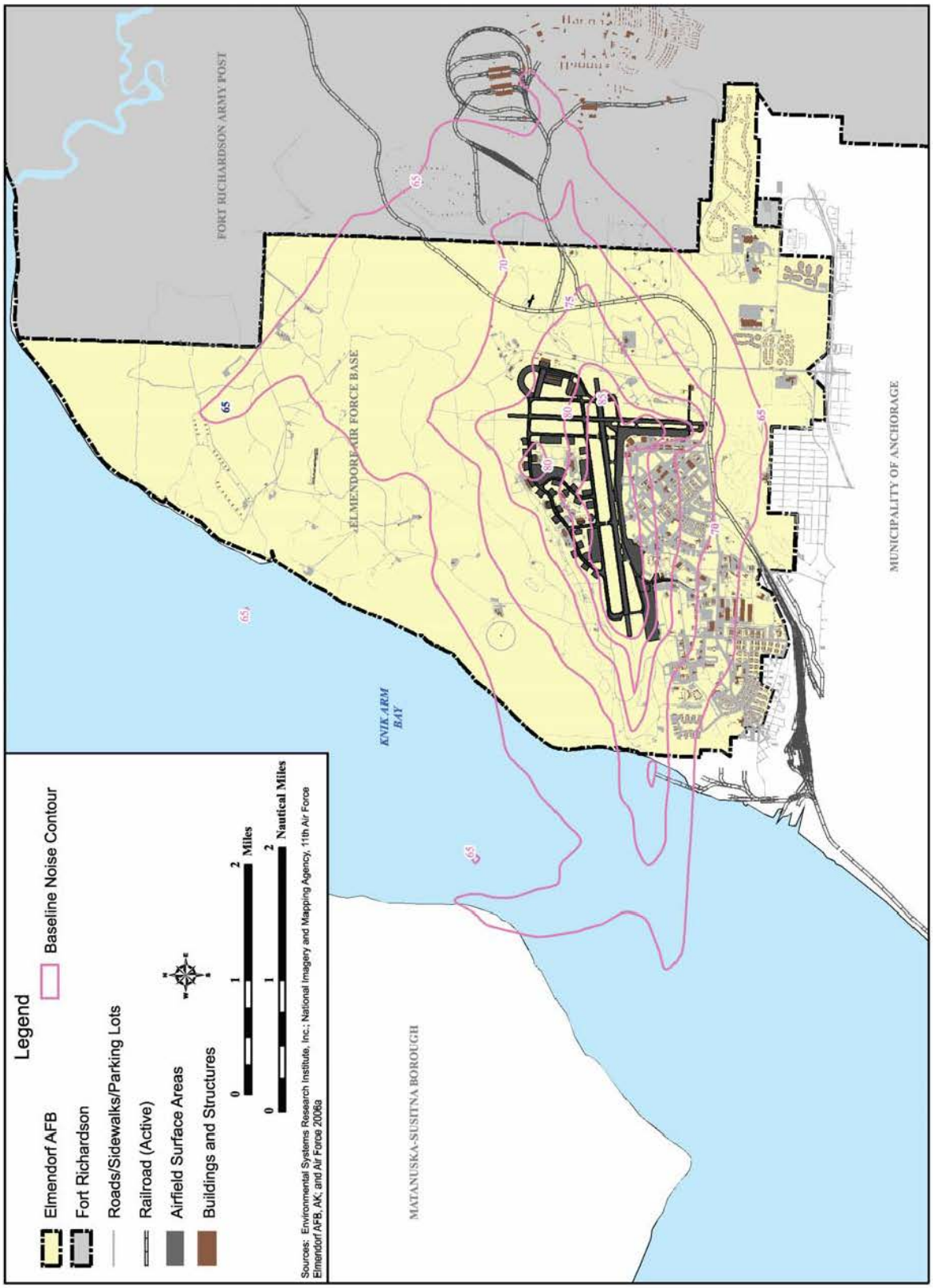

Figure 3.1-1. Baseline Noise Contours

Existing Conditions

Airfield zones are established around airfields to minimize the results of a potential accident involving aircraft operations. The Elmendorf AFB Clear Zones (CZs) and Accident Potential Zones (APZs), from the 2006 Base General Plan, are shown in Figure 3.2-1

The CZ is an area 3,000 feet wide by 3,000 feet long located at the immediate end of the runway. The accident potential in this area is so high that no building is allowed (U.S. Army Corps of Engineers [USACE] 2001). The existing Elmendorf AFB gravel pit lies immediately to the east of a Clear Zone.

APZ I is less critical than the CZ but still poses significant potential for accidents. This 3,000-foot wide by 5,000 foot-long area, located just beyond the CZ, has land use compatibility guidelines that allow a variety of industrial, manufacturing, transportation, communication, utilities, wholesale trade, open space and agricultural uses. An acceptable industrial activity, the existing Elmendorf AFB gravel pit, lies within APZ I.

APZ II is less critical than APZ I but still poses potential for accidents. APZ II is 3,000 feet wide and extends 7,000 feet beyond APZ I. The closest APZ II is northeast of the existing Elmendorf AFB gravel pit

Wildlife strike hazards constitute a safety concern because they can result in damage to aircraft or injury to aircrews or local human populations if an aircraft crashes. Migratory waterfowl (such as ducks, geese, and swans) and raptors (such as eagles and osprey) are the most hazardous birds to low-flying aircraft because of their size or their propensity to migrate in large flocks or to slowly soar while hunting. In Alaska, peak migration periods for waterfowl and raptors are from August to October and from April to May. The 3 WG has developed detailed procedures to monitor and react to heightened risk of bird-strikes (Elmendorf AFB 2003). When risk increases, limits are placed on low altitude flight and some types of training. The existing gravel pit is included in 3 WG monitoring. Birds may be attracted to the gravel pit as a source of grit. Birds ingest gravel and grit, which is retained in their gizzards, to aid in digestion and food grinding. Birds may also be attracted to water that collects in vacant gravel pits as silting provides for water retention.

Ground safety associated with gravel extraction is maintained through strict adherence to Occupational Safety and Health Administration (OSHA) standards. Gravel extraction is an inherently dangerous operation characterized by heavy equipment operating in a noisy and dusty environment. Frequent arrival and departure of haul trucks and aircraft operations overhead may further impair workers' senses. Additionally, the gravel pit itself may become unstable and susceptible to cave-ins or sloughing. The Elmendorf AFB gravel pit is a tightly-controlled operation. Under 3 WG direction, the operation contractor enforces a stringent site safety plan. To date, no ground safety incidents have been reported or noted during routine safety inspections.

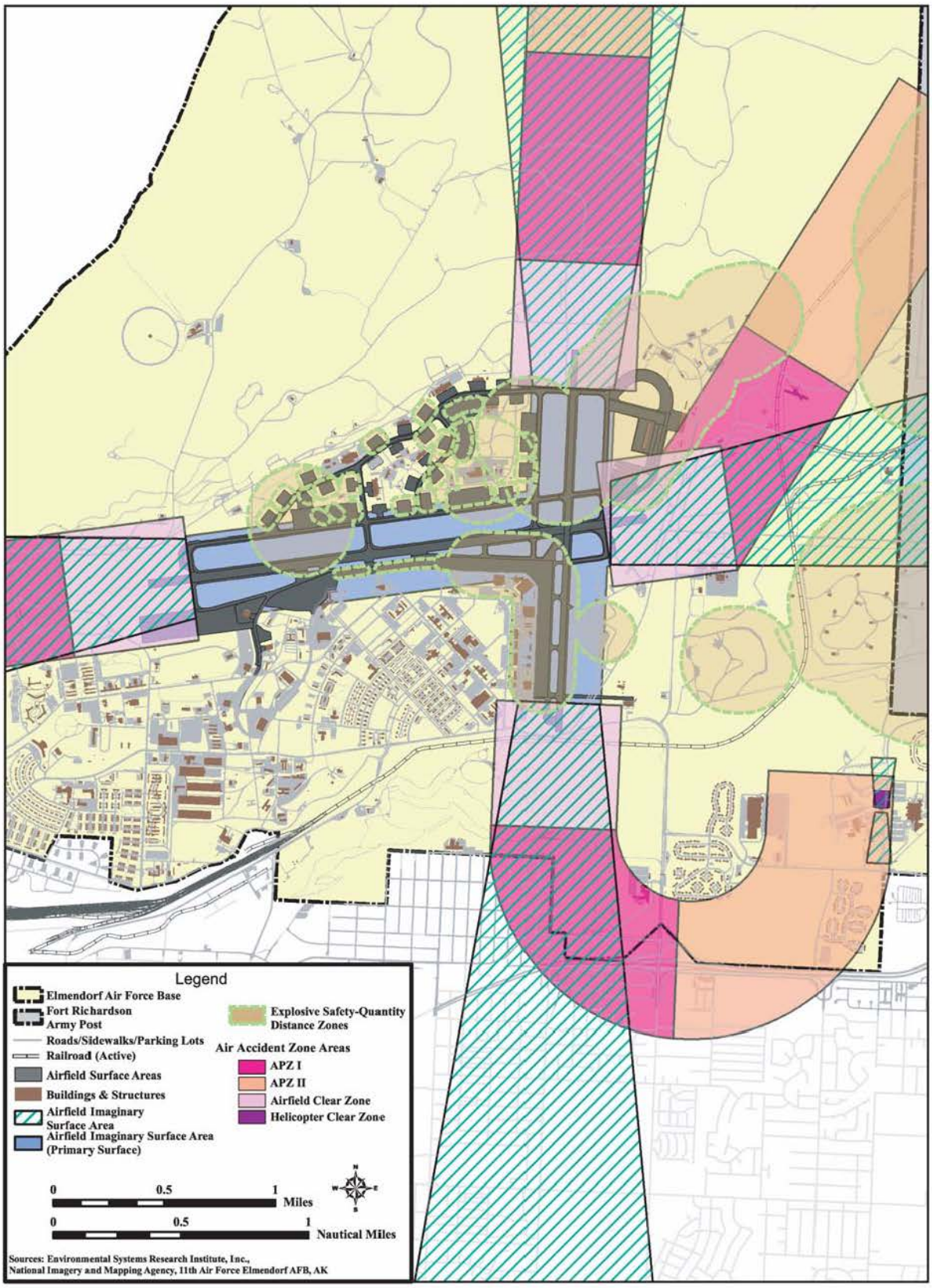

Figure 3.2-1. Elmendorf AFB Clear Zones and Accident Potential Zones

3.3 Air Quality

Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and state ambient air quality standards. Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the National Ambient Air Quality Standards (NAAQS), represent the maximum allowable atmospheric concentrations and were developed for six "criteria" pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), sulfur dioxide (SO_2), and lead (Pb). The NAAQS are defined in terms of concentration, expressed as parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Upon achieving attainment, areas are considered to be in maintenance status for a period of 10 or more years.

Under the CAA, state and local agencies may establish ambient air quality standards and regulations of their own, provided that these are at least as stringent as the federal requirements. The State of Alaska has air quality standards that are identical to the federal standards.

CAA Section 169A established the additional goal of prevention of further visibility impairment in Prevention of Significant Deterioration (PSD) Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM_{10} and SO_2 in the lower atmosphere.

In Alaska, ADEC has primary jurisdiction over air quality and stationary source emissions at Elmendorf AFB. Title V of the CAA Amendments of 1990 requires states to issue Federal Operating Permits for major stationary sources. A major stationary source in an attainment or maintenance area is a plant, base, or activity or some other facility that emits more than 100 tons per year (TPY) of any one criteria air pollutant, 10 TPY of a hazardous air pollutant, or 25 TPY of any combination of hazardous air pollutants.

Thresholds are lower for pollutants for which a region is in nonattainment status. The purpose of the permitting rule is to establish regulatory control over large, industrial activities and to monitor their impact upon air quality.

The ROI for air quality is Elmendorf AFB.

Existing Conditions

Elmendorf AFB is in attainment of NAAQS for all criteria pollutants. Elmendorf AFB is located adjacent to the northern boundary of the Anchorage CO maintenance area but requires all base-registered vehicles to conform to vehicle emissions program requirements.

No mandatory federal PSD Class I areas are located within the ROI. The nearest PSD Class I area is Denali National Park, which is 100 miles north-northwest of Elmendorf AFB.

Air emissions at Elmendorf AFB result from stationary and mobile sources. Stationary sources include boilers, emergency generators, and aircraft maintenance operations. Mobile sources include ground-based vehicles and aircraft. Elmendorf AFB is considered to be a major source of air emissions. For permitting purposes, Elmendorf AFB has been divided into nine different facilities based on their industrial classifications, rather than on their collective ownership and control by the Air Force. Only two facilities, the Elmendorf Hospital and the Elmendorf Flightline, have potential criteria pollutant emissions large enough to require federal Title V operating permits. The existing gravel pit operates under a General Permit 3 (GP3), asphalt plant general permit. GP3 permits are intended for 5 ton per hour industrial processes that require a control device to comply with state emissions. The Elmendorf AFB crusher operates under a General Permit 9 (GP9). Rock crushers may be included in GP3 permits, but those put into service after August 31, 1983 or those that crush gravel for operations other than asphalt production, also require GP9 permits. Both the GP3 and GP9 permits are held by the current gravel contractor.

Mobile source emissions have not been apportioned based on industrial classifications. A total of 41,340 aircraft operations occurred at Elmendorf AFB during 2005. These operations involved a total of 83 aircraft based at Elmendorf, plus a range of transient users.

3.4 Physical Resources

Physical resources consist of earth and water resources. Resources analysis looks at four elements: (1) earth resources, (2) water resources, (3) hazardous materials, and (4) and hazardous waste management. Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); OSHA; and the Emergency Planning and Community Right-to-Know Act. Hazardous materials have been defined in AFI 32-7086, *Hazardous Materials Management*, to include any substance with special characteristics that could harm people, plants, or animals. Hazardous waste is defined in the Resource Conservation and Recovery Act

(RCRA) as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that may pose a substantial hazard to human health or the environment. Waste may be classified as hazardous because of its toxicity, reactivity, ignitibility, or corrosivity. In addition, certain types of waste are "listed" or identified as hazardous in 40 CFR 263. The ROI for this resource is defined as land within the Seward Meridian, Township 14 North, Range 3 West, Section 35.

Existing Conditions

Earth Resources. Earth resources include the geology, soils, and topography of Elmendorf AFB. The most distinctive landform at Elmendorf AFB is the Elmendorf Moraine, a southwest-northeast trending terminal moraine. The moraine consists of horizontally and vertically discontinuous, unconsolidated glacial till with poorly sorted boulders, gravel, sand and silt deposits.

South of the Elmendorf Moraine lies the glacial outwash plain alluvium. The alluvium deposits were formed by a series of coalescing streams resulting from glacial melt water. Elevations range from 100 to 225 feet MSL. Relief is mostly flat and slopes gently to the south-southwest. Most of the developed areas on the base and the existing Elmendorf AFB gravel pit lie within the outwash plain. These outwash plain deposits generally consist of unconsolidated fine- to medium-grained, poorly sorted sand and gravel. However, the gravel seam currently in use produces gravel that is well-sorted (does not vary much in particle size) and clean (not coated with excessively fine material such as clay). It is typically well drained, high in strength, low in compressibility, non-frost susceptible (not as likely to be affected by seasonal freezing and thawing), and an excellent foundation material.

From the gravel source, Elmendorf AFB produces gravel for asphalt manufacture, sub-base material for the airfield, sub-base for roads and parking lots, and classified fill for building foundations. Classified fill is well-graded material consisting of sand, gravel, broken stone, or similar material containing not more than 60 percent by weight passing a No. 4 sieve. Material that is too large (cobble-sized) or too fine (pebble-sized) is rejected. The rejection rate for the Elmendorf AFB gravel is very low, approximately 30 percent. Since start-up in 1994, the gravel seam has produced only about one ton of cobble-sized material. Pebble-sized reject material is combined with rootstock for reclamation.

Water Resources. Water resources include surface and groundwater features located within the base as well as watershed areas affected by existing and potential runoff from the base, including floodplains.

Elmendorf AFB is divided into seven resource management units based on environmental, physical, and social features such as watersheds, topography, land use patterns, ownership, and roads. The Coastal Mudflats (Unit 7) contains approximately 150 acres of shoreline that are within the coastal zone boundary managed by Elmendorf AFB (Air Force 2004). The Proposed Action location is not within the coastal zone boundary managed by Elmendorf AFB.

The four major hydrologic systems at Elmendorf AFB, in order of decreasing size, are Ship Creek, Six-Mile Creek, EOD Creek, and the Cherry Hill Ditch. Ship Creek is the largest surface water drainage system on Elmendorf AFB. The Ship Creek headwaters are located within the Chugach State Park at an elevation of 5,100 feet. The stream flows west through the southern edge of Elmendorf AFB for approximately 4.2 miles and empties into the Knik Arm. Six-Mile Creek and EOD Creek are located north of the Elmendorf Moraine. Cherry Hill Ditch is the major storm water drainage system for the main base area south of the Elmendorf Moraine.

The base maintains compliance with its National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for protection of surface water by non-point source pollutants. Surface water is also protected by measures outlined in the Elmendorf AFB SWPPP, which has identified potential pollutant sources and relevant best management practices (BMPs) to reduce the potential for pollution of receiving waters (Air Force 2005d).

Two principal groundwater aquifers have been identified in the glacial outwash plain alluvium and on the Elmendorf Moraine. These aquifers include a shallow unconfined aquifer (shallow aquifer), and a deeper confined aquifer.

Hazardous Materials. The majority of hazardous materials used by Air Force and contractor personnel at Elmendorf AFB is controlled through an Air Force pollution prevention process called Hazardous Materials Pharmacy (HAZMART). This process provides centralized management of the procurement, handling, storage, and issuing of hazardous materials and turn-in, recovery, reuse, or recycling of hazardous materials. The HAZMART process includes review and approval by Air Force personnel to ensure users are aware of exposure and safety risks. Pollution prevention measures are likely to minimize chemical exposure to employees, reduce potential environmental impacts, and reduce costs for material purchasing and waste disposal.

Hazardous Waste Management. Elmendorf AFB is a large-quantity hazardous waste generator. Hazardous wastes are managed in accordance with the Elmendorf AFB OPlan 19-3. Hazardous wastes are initially stored at approximately 50 satellite accumulation areas. Satellite accumulation areas allow for the accumulation of up to 55 gallons of hazardous waste (or one quart of an acute hazardous waste) to be stored at or near the point of waste generation. Elmendorf has a USEPA Part B permit to operate a hazardous waste Treatment, Storage, and Disposal Facility (TSDF) on Elmendorf. This TSDF can store hazardous waste for up to one year and is located on 11735 Vandenberg Avenue. All hazardous waste generated on Elmendorf is shipped to other USEPA-permitted facilities in the continental U.S. for disposal. The base is identified by USEPA identification number AK8570028649. In FY2005, 56,568 pounds of hazardous waste were removed from Elmendorf AFB and disposed of in off-base permitted disposal facilities.

The Elmendorf AFB Spill Prevention Control and Countermeasures Plan (SPCC) is a written document that describes measures Elmendorf has taken to prevent, contain, and clean up oil spills. The term "oil" includes gasoline, diesel, heating oil, and solvents. The Elmendorf SPCC plan, which was approved by USEPA and ADEC, also

demonstrates that the base has put in place containment and other countermeasures that would prevent oil spills from reaching navigable waters.

No hazardous waste is produced by this operation. The current asphalt plant was purchased new in 2004 and utilizes a system that recirculates dust and gases back into the process. The system is cleaned annually and recurring maintenance is accomplished to maintain efficiencies. Exhaust is monitored to ensure USEPA compliance.

Environmental Cleanup. The Elmendorf Environmental Program includes two different cleanup programs, the Environmental Restoration Program (ERP) and the Compliance Program. The Department of Defense (DoD) developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites where releases occurred prior to 1984, as required by CERCLA. In August 1990, Elmendorf AFB was placed on the National Priorities List bringing it under the federal facility provisions of CERCLA Section 120. The Compliance sites include releases that occurred in or after 1984. Currently the Air Force has identified 85 ERP sites and 77 Compliance Program sites.

One closed CERCLA site, SS010, lies to the west of the existing gravel pit in the CZ (Air Force 2003a, Air Force 2007a). The site is approximately 5 acres in size and resulted from drum storage associated with the asphalt plant that operated in the 1940s and 1950s. Soils were treated for diesel range organics, jet fuel, xylene, and gasoline range organics. SS010 met cleanup goals and was formally closed in April 2006. The Proposed Action is not expected to have any effects on the site. No Compliance Program sites are in the vicinity of the Proposed Action.

3.5 Biological Resources

Biological resources are the plants and animals, and the habitats in which they occur. Plant and animal species within a defined area are linked by ecological processes to form natural communities. The existence and preservation of these resources are intrinsically valuable; they also provide aesthetic, recreational, and socioeconomic values. This section focuses on plant and animal species or vegetation types associated with Elmendorf AFB that typify or are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute. For purposes of the analysis, Elmendorf and neighboring biological resources will be organized into three major categories: (1) vegetation and habitat, including wetlands; (2) fish and wildlife; and (3) special-status species.

Federal laws and regulations that apply to biological resources include: Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, Clean Water Act, NEPA, Federal Land Policy and Management Act, ESA, Sikes Act, Marine Mammal Protection Act, state hunting regulations, and state laws protecting plants and nongame wildlife.

The ROI for biological resources is Elmendorf AFB and its immediate vicinity. Specifically, effects to biological resources will focus on the footprint for the proposed gravel pit construction activities and any potential for the Proposed Action to impact wildlife movement between Ship Creek and Six-Mile Creek.

Vegetation and habitat includes all existing terrestrial plant communities, but excludes discussion of special-status plants, which are discussed under special-status species below. The composition of plant species within a given area defines ecological communities and determines the types of wildlife that may be present.

Fish and Wildlife includes all vertebrate animals with the exception of special-status species, which are discussed separately. Typical vertebrate animals include fish, reptiles, amphibians, birds, and mammals. No reptiles are found in south-central Alaska. Birds are further grouped into passerines (songbirds), raptors, waterfowl, seabirds and shorebirds. Mammals are further subdivided into hoofed animals, whales, seals, large carnivores, bats, rodents and other small mammals. The attributes and quality of available habitats determine the composition, diversity, and abundance of wildlife. Each species has its own set of habitat requirements and interspecific interactions driving its observed distribution and abundance. Community structure is derived from the net effect of the diverse resource and habitat requirements of each species within a geographic setting. For this reason, an assessment of habitat types and area affected by the Proposed Action can serve as an overriding determinant in the assessment of impacts for wildlife populations.

Special-status Species are defined as those plant and animal species listed as threatened, endangered, candidate, or species of concern by the USFWS or the NFMS, as well as those species with special-status designations by the state of Alaska. The ESA protects federally listed threatened and endangered plant and animal species. Candidate species are species that USFWS is considering for listing as threatened or endangered but for which a proposed rule has not yet been developed. Candidates do not benefit from legal protection under the ESA. In some instances, candidate species may be emergency listed if USFWS determines that the species population is at risk due to a potential or imminent impact. The USFWS encourages federal agencies to consider candidate species in their planning process because they may be listed in the future and, more importantly, because current actions may prevent future listing. Species of concern are species for which data were inconclusive to support ESA protection at the time of the proposed listing. It is an informal designation, although USFWS recommends tracking of population trends and threats. The Alaska Department of Fish and Game (ADF&G) also maintains a list of endangered species and species of special concern.

Existing Conditions

Vegetation. Elmendorf AFB is situated across rolling upland plains near the head of Cook Inlet (Knik Arm) in south-central Alaska within the Coastal Trough Humid Taiga Province (Bailey 1995). The area is characterized by spruce-hardwood forests, bottomlands of spruce-poplar forests along major drainages, and dense stands of alder and willow along riparian corridors. Much of the area immediately surrounding the developed portion of the base is dominated by secondary growth poplar (aspen), birch, and alder. Vegetation in the gravel pit area includes primarily spruce, hardwood, poplar, and willow. Secondary growth within the proposed expansion area is highly productive, heavily used moose habitat, which has been managed by Elmendorf Natural Resources for optimum moose browse development through periodic cutting. The

productive life for moose browse in this type of vegetation is 10-20 years un-managed, but if re-cut at 10-year intervals, the productivity can be optimized for decades. The moose browse in this location is the most productive on base, providing 8,900 stems/acre utilized at 65-70 percent by moose during winter 2006 (Anderson *et al.* 2007). No wetlands occur within the ROI (USFWS 1995).

Fish and Wildlife. Elmendorf AFB supports a diverse array of wildlife species, including large and small mammals, raptors, waterfowl, and songbirds. One amphibian and ten fish species, including the five Pacific salmon species, occur at Elmendorf AFB (Air Force 2006A). Specific concerns for biological resources within the base environs ROI are habitat loss and fragmentation, especially within the Ship Creek/Six-Mile Creek corridor.

The Elmendorf AFB Integrated Natural Resources Management Plan identifies species of special interest on the installation. Key (or keystone) species are indicator species whose populations and health can be used as indications of overall ecosystem health. On Elmendorf AFB, moose (*Alces alces*) and snowshoe hare (*Lepus americanus*) are key species for terrestrial habitats in the boreal forest ecosystem (Air Force 2006a). Moose were uncommon in the Anchorage area before the 1940s. They increased in the late 1940s as brushy regrowth replaced mature forests cut or burned during the development of Anchorage and the Fort Richardson Military Reservation. Numbers increased considerably during the early 1950s, and by the late 1950s and early 1960s moose were abundant. The moose population has remained high during the past 4 decades (ADF&G 2003). Between 20 and 70 moose are estimated by ADF&G to live on Elmendorf AFB, depending on the time of year, as portions of the herd migrate off base in fall and winter.

To help reduce moose numbers on military lands, Fort Richardson held annual hunts. The normal permit hunts alone were not effective enough in reducing moose numbers, due to movement of the moose onto Elmendorf AFB lands during the hunting periods. At the request of the ADF&G, an archery hunt for moose was initiated on Elmendorf AFB in 1990. Annual harvest levels on Elmendorf AFB average 12 moose (Air Force 2006a).

Whereas the moose population is stable and indicates a healthy ecosystem, the Elmendorf 2006 INRMP states that locations of browse improvement projects should take into account efforts to draw moose away from potential conflict areas. Due to the frequency of moose wandering through the developed portion of the base, they present a threat to life and property of base personnel. Property damage also occurs as a result of moose-vehicle accidents. Prevention of future moose-human conflicts will focus on habitat improvement designed to draw moose from conflict areas (Air Force 2006a).

Moose habitat improvements have come about through timber sales, right-of-way clearing, landfill site reclamation, forest clearing, and, in recent years, mitigation measures. Moose generally favor early seral stages, with willow, aspen, birch, and cottonwood, in that order. Approximately 25 acres were enhanced through hydro-axing and tree-grinding equipment by the ARRC realignment project in 2000 (Air Force 2006a). The 2004 Phase II Private Sector Financed Military Family Housing project covered

approximately 344 acres within an area known as the antenna field between the cantonments of Elmendorf AFB and Fort Richardson. The antenna field habitat, bisected by Ship Creek, is crucial to the Fort Richardson/Elmendorf AFB moose population. Elmendorf AFB and Fort Richardson biologists, in coordination with Alaska Department of Fish and Game, identified over 300 acres of land that could be enhanced and managed as future moose habitat. The following figure indicates the antenna field Phase II project as a polygon with a dotted yellow border and the future moose habitat as yellow numbers (Air Force 2005b). The 25 acres enhanced through the ARRC project are located within the proposed gravel pit expansion area. Areas 2a and 2b shown in Figure 3.6 of the Phase II Private Sector Financed Military Family Housing area are to the east of the proposed area.

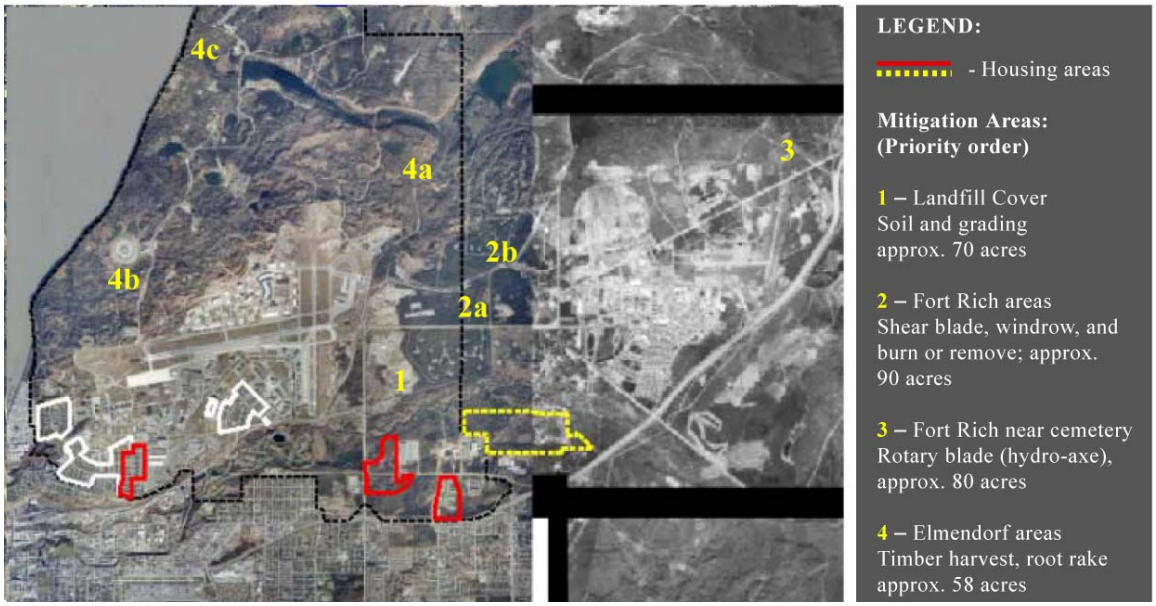

Figure 3-6. Moose Habitat Compensation for Phase II PSF Housing Area

Increased brown bear (*Ursus arctos*) sightings on Elmendorf AFB indicate that brown bear have become more common, likely due to increasing salmon runs in the area. The outwash plain east of the runway and in the area of the proposed gravel pit expansion, lies between the north Elmendorf Six-Mile Creek area and the Ship Creek riparian ecosystem and the associated underpass of the Glenn Highway. This area serves as an important corridor for wildlife. An ongoing brown bear study highlights the importance of the corridor for brown bear movement. Inadequate buffer widths may discourage use by wildlife, creating "dead-end" effects for wildlife moving down the Ship Creek riparian zone (Farley 2008).

In addition to moose and brown bear, black bear (*Ursus americanus*) and wolves (*Canis lupus*) are prevalent and use the same corridor for movement. These species have large home ranges which also include the neighboring Fort Richardson and Chugach State Park. Twelve to 24 black bear occur in summer, while 6 to 12 of these will spend the winter in dens on the base. Three to 6 brown bear inhabit Elmendorf AFB in summer. Two wolf packs roam the lands of Elmendorf AFB and Fort Richardson (Air Force

2006a). Coyote (*Canis latrans*) and red fox (*Vulpes vulpes*) are also common. Lynx (*Lynx canadensis*) also occur during cyclic peaks in south-central Alaska populations.

Elmendorf AFB also supports populations of small mammals including beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), porcupine (*Erethizon dorsatum*), red squirrel *(Tamiasciurus hudsonicus*), snowshoe hare, river otter (*Lutra canadensis*), short-tailed weasel (*Mustela erminea*), and mink (*M. vison*).

At least 112 bird species are known to occur or have the potential to occur at Elmendorf AFB (Air Force 2006a). Waterfowl and shorebirds use the base's ponds, bogs, wetlands, and coastal marshes in summer and on spring and fall migration. In upland forests are raptors, which include osprey (*Pandion haliaetus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*B. lagopus*), sharp-shinned hawk (*Accipiter striatus*), northern goshawk (*A. gentils*), merlin (*Falco columbarius*), northern harrier (*Circus cyaneus*), northern saw-whet owl (*Aegolius acadius*), boreal owl (*A. funereus*), and great horned owl (*Bubo virginianus*). Bald eagles (*Haliaeetus leucocephalus*) also reside on the base. Common breeding birds include alder flycatcher (*Empidonax alnorum),* boreal chickadee (*Poecile hudsonica*), black-capped chickadee (*P. atricapillus*), gray jay (*Perisoreus canadensis*), Swainson's thrush (*Catharus ustulatus*), myrtle warbler (*Dendroica coronata*), American robin (*Turdus migraterius*), slate-colored junco (*Junco hyemalis*), ruby-crowned kinglet (*Regulus calendula*), rusty blackbird (*Euphagus carolinus*), and white-winged crossbill (*Loxia leucoptera*). A species checklist may be found in the Elmendorf AFB Integrated Natural Resources Management Plan (Air Force 2006a).

During recent breeding bird surveys within the pit expansion area, found in order of most to least abundant, were American robin, Swainson's thrush, ruby-crowned kinglet, dark-eyed junco (*Junco hyemaisl*), white-crowned sparrow (*Zonotrichia albicollis*), yellow-rumped warbler (*Dendroica coronata*), savannah sparrow *(Passerculus sandwichensis*), alder flycatcher, varied thrush (*Ixoreus naevius*), orange-crowned warbler (*Vermivora celata*), gray jay and single observations for white-winged crossbill, Lincoln sparrow (*Melospiza lincolnii*), black-capped chickadee, black-billed magpie (*Pica hudsonia*), sharp-shinned hawk and red-tailed hawk (sitting on a nest for the fifth consecutive year). A single olive-sided flycatcher, (*Contopus borealis*), was also recorded for this area.

Special-Status Species. There are no federally listed threatened or endangered species that inhabit Elmendorf AFB. Table 3.6-1 includes a partial list of special-status species. Six Alaska species of special concern may occur on or near the base. These are olive-sided flycatcher, blackpoll warbler (*Dendroica striata*), peregrine falcon (*Falco peregrinus*), gray-cheeked thrush (*Catharus minimus*), and Townsend's warbler (*Dendroica townsendi*). The olive-sided flycatcher and blackpoll warbler are known nesting species on the base (Air Force 2006a). Both species are found in coniferous forests, with the flycatcher preferring more open forests (Ehrlich *et al.* 1988). The olive-sided flycatcher is the only special status species recorded within the pit expansion area.

Peregrine falcons migrate through the base area and may be occasionally observed (Air Force 2006a). Peregrine falcons nest on cliffs, generally over water, but these features do not occur at Elmendorf AFB. Peregrines may, however, use riparian and wetland areas on the base to hunt for prey, such as waterfowl. The gray-cheeked thrush breeds in

moist coniferous shrublands/woodlands, arctic tundra, and riparian thickets. It is a habitat generalist on migration (Ehrlich *et al.* 1988), and has been recorded during breeding season in wet shrubland on Elmendorf AFB. Townsend's warbler, another coniferous forest inhabitant, has been recorded in cottonwood/spruce riparian habitat along Ship Creek.

Although it has no elevated protection status, the rusty blackbird is a species of particular interest to the Air Force because of recent declines and its occurrence on Elmendorf AFB. This species finds breeding habitat in stands of black spruce near open water wetlands.

Table 3.6-1. The Relationship of Special-Status Species to Elmendorf AFB and Environs

Common Name	*Scientific Name*	*Status*	*Occurrence at Elmendorf AFB*
Peregrine falcon	*Falco peregrinus*	AK SSC	Potential Migrant
Olive-sided flycatcher	*Contopus cooperi*	AK SSC	Yes
Gray-cheeked thrush	*Catharus minimus*	AK SSC	Yes
Townsend's warbler	*Dendroica townsendi*	AK SSC	Yes
Blackpoll warbler	*Dendroica striata*	AK SSC	Yes

FE = Federal Endangered; FT = Federal Threatened; FC = Federal Candidate; FP= Federal Proposed for listing;
AKE = State of Alaska Endangered; AK SSC = State of Alaska Species of Special Concern.
Sources: Alaska Department of Fish and Game 2005a and 2005b, USFWS 2005.

3.6 Cultural Resources

Cultural resources are any prehistoric or historic districts, sites or buildings, structures, or objects considered important to a culture or community for scientific, traditional, religious, or other purposes. They include archaeological resources, historic architectural resources, and traditional resources. Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains, such as arrowheads or bottles. Historic architectural resources include standing buildings and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the NRHP, although resources dating to defined periods of historical significance, such as the Cold War era (1946-1989), may also be considered eligible. Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community. Both historic properties and significant traditional resources identified by Alaska Natives are evaluated for potential adverse impacts from an action.

For the Proposed Action, the ROI for cultural resources is defined as land within the Seward Meridian, Township 14 North, Range 3 West, Section 35.

Existing Conditions

Archaeological Resources. Cultural resource investigations on Elmendorf AFB indicate nine archaeological sites within the ROI. While these sites have not been definitively evaluated for NRHP eligibility, they are recommended as ineligible (Air Force 2003b). All are Cold-War era sites; most are bunker sites or fox holes (Air Force 2003b; National Register Information Service [NRIS] 2007).

Architectural Resources. None of the 52 NRHP eligible buildings located on Elmendorf AFB occurs within the area encompassed by the Proposed Action.

Traditional Cultural Properties and Alaska Native Concerns. Although no traditional cultural properties have yet been identified on Elmendorf AFB, neighboring Alaska Natives have raised concerns regarding the possibility of Alaska Native burials located on Elmendorf AFB property (Air Force 2003b). Ongoing consultation between the Air Force and Alaska Natives on this and other issues is conducted on a government-to-government basis. The federally recognized tribes in the nearby Elmendorf AFB area are the Eklutna and Knik Tribes (Air Force 2003b).

3.7 Land Use and Transportation

The attributes of Elmendorf AFB and nearby land use addressed in this analysis include general land use patterns, land ownership, land management plans, and applicable plans and ordinances. General land use patterns characterize the types of uses within a particular area including human land uses, such as agricultural, residential, commercial, industrial, institutional, and recreational, or natural land uses, such as forests, refuges, and other open spaces. Land use plans and ordinances, policies, and guidelines establish appropriate goals for future use or regulate allowed uses.

Transportation resources include the infrastructure required for the movement of people, materials, and goods. For this analysis, transportation resources include roads and the railway.

The ROI for land use and transportation is defined as Elmendorf AFB.

Existing Conditions

Elmendorf AFB Land Use. Figure 3.7-1 depicts existing land uses for Elmendorf AFB. The airfield and related operation function are located in the center and southern part of the base. A large industrial area forms a boundary between the central mixed-use core of the base and the housing and services area in the base's southwest corner. Medical facilities are located in the southeast corner, along with some housing and recreational areas. Large recreational and open space areas are located north of the airfield (Air Force 2006b).

The base is bordered by U.S. Army Fort Richardson to the east. To the west of Elmendorf AFB are the Port of Anchorage and Cook Inlet/Knik Arm. The Municipality of Anchorage borders the base to the south. Privately held lands in the vicinity of the base are located primarily south and southeast of the base (Air Force 2001).

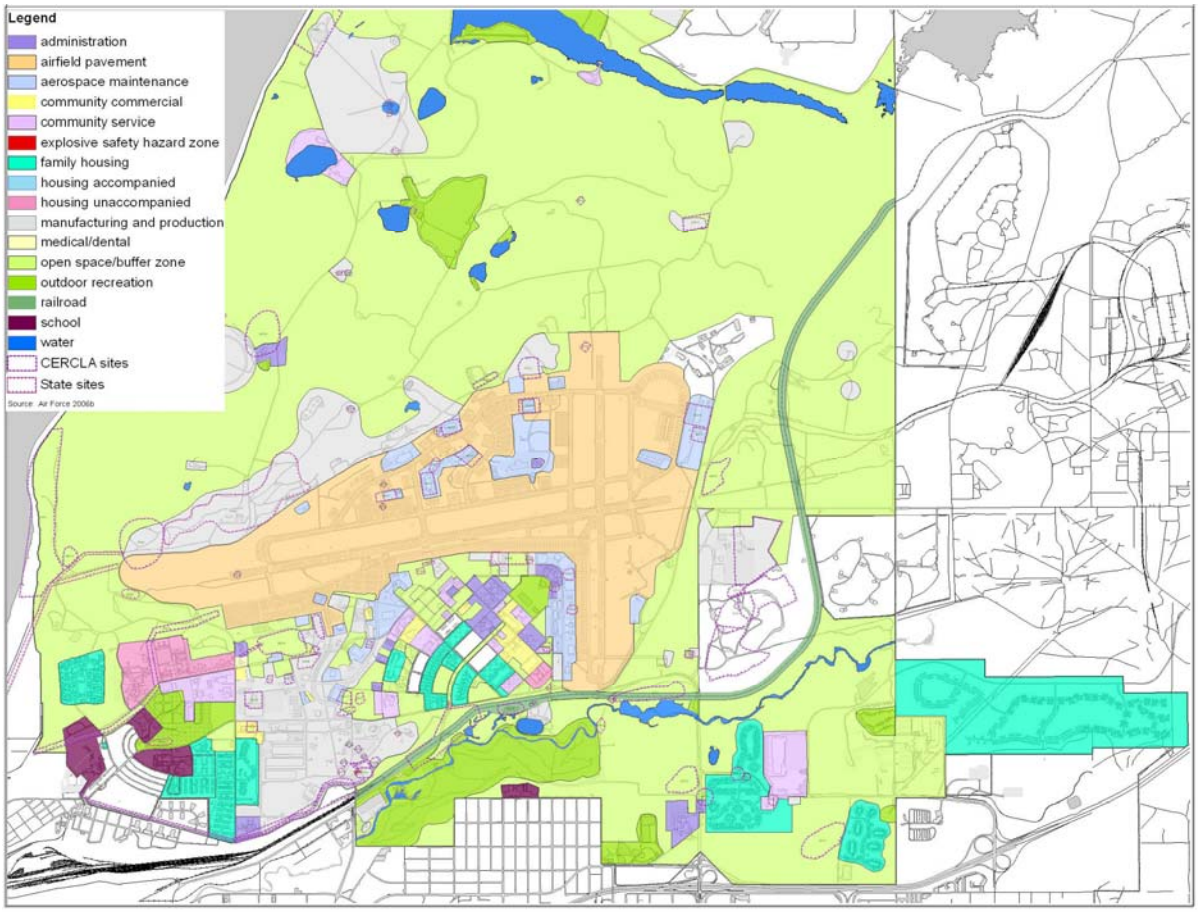

Figure 3.7-1. Elmendorf AFB Existing Land Use

The base adopted a General Plan in November 2006 that presents a comprehensive planning strategy to support military missions assigned to the installation and guide future installation development decisions. With a 50-year horizon, the plan presents a summary of existing conditions and provides a framework for programming, design and construction, as well as resource management. The future land use plan depicts opportunities for a more functional grouping of land use types through the use of focus areas. Land use for the 50-year vision is depicted in Figure 3.7-2.

Base plans and studies present factors affecting both on- and off-base land use and include recommendations to assist on-base officials and local community leaders in ensuring compatible development in the vicinity of the base. In general, land use recommendations are made for areas affected by both the potential for aircraft accidents and aircraft noise. Noise is one of the major factors used in determining appropriate land uses since elevated sound levels are incompatible with certain land uses. When noise levels exceed an L_{dn} of 65 dB, residential land uses are normally considered incompatible.

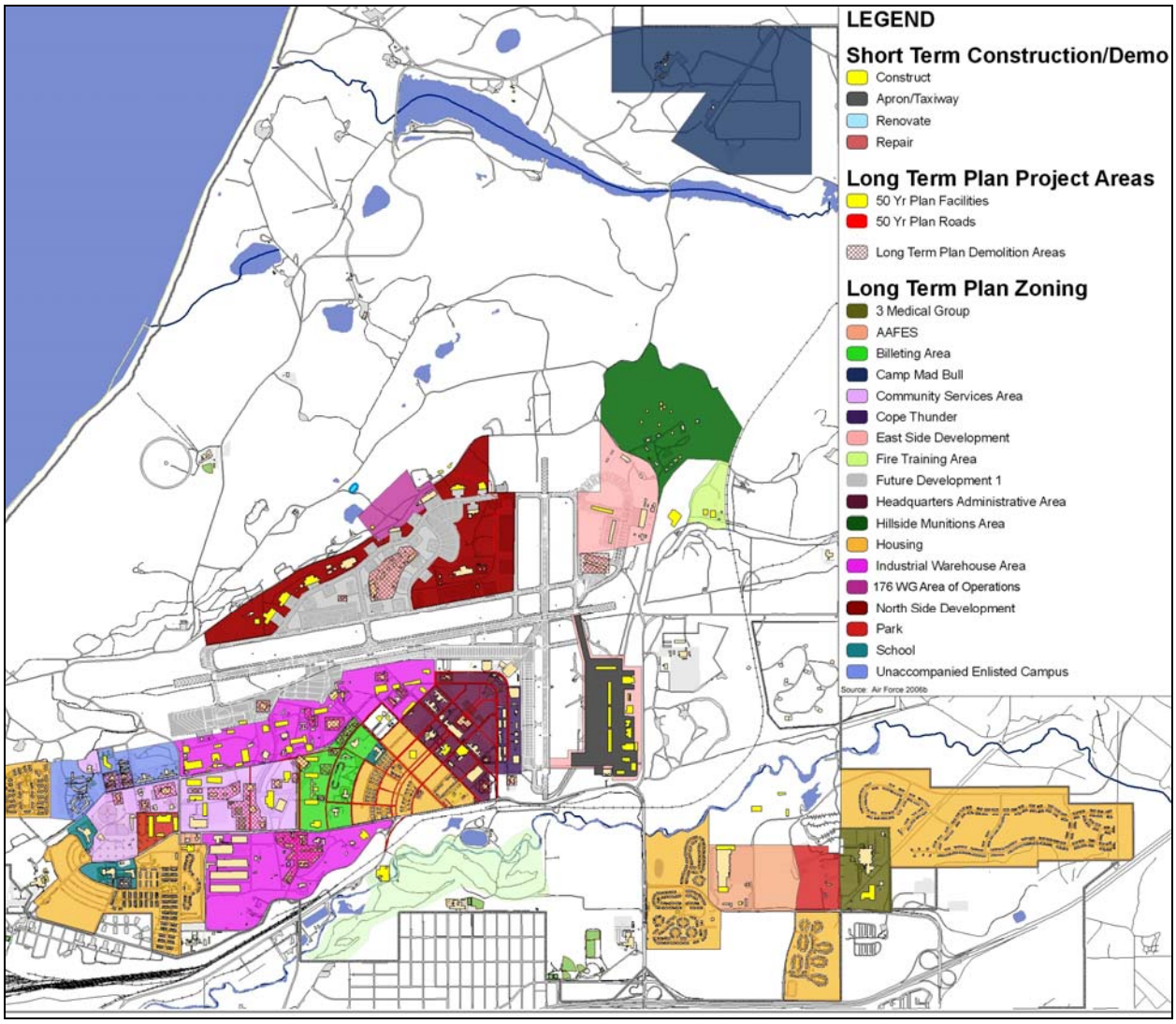

Figure 3.7-2. Land Use for the 50-Year Vision

Transportation. Elmendorf AFB is accessed through four gates on the south side (Boniface, Muldoon, Post Road, and Government Hill) and one access from Fort Richardson (Davis Highway). Vehicular traffic is permitted on most base streets; restricted access may occur for operational or security reasons. Primary roadways on Elmendorf include Vandenburg Avenue and Arctic Warrior Drive. Provider Drive, which connects to the Glenn Highway through the Muldoon Gate, also provides important access to the southeast corner of the base including the hospital. Secondary roadways include Airlifter Drive, Fighter Drive, and Fairchild Avenue. The proposed expansion area is east of Vandenburg Avenue and north of Davis Highway.

The rail line is located in the south and east portions of Elmendorf AFB and crosses the proposed gravel pit area. The rail line was realigned in 2000. The tracks have been relocated to the east to avoid security and safety hazards and are within the ARRC right

of way. The previous alignment and right of way also cross the proposed expansion area. All other tracks on the base are owned by the Air Force (Air Force 2004).

3.8 Socioeconomics

Socioeconomic factors are defined as the basic attributes and resources associated with the human environment. These factors include population, economic activity, and public services. The relevant factors to the proposed gravel pit expansion are economic activity and public service.

Data for the socioeconomic analysis in this EA were obtained from a variety of sources, including the Air Force, the U.S. Bureau of the Census, the U.S. Bureau of Economic Analysis, the Alaska Departments of Commerce and Labor, and the Municipality of Anchorage. Elmendorf AFB is situated in south-central Alaska, just north of Anchorage. Socioeconomic activities associated with the base are concentrated in the Municipality of Anchorage, which comprises the ROI for this analysis.

Existing Conditions

Elmendorf AFB makes an important contribution to the Anchorage economy through employment of military and civilian personnel and expenditures for goods and services from local businesses. The Elmendorf AFB annual payroll obligates $481 million to its military and civilian employees. In FY2005, the Air Force contributed an estimated $272 million in construction and service contracts and other purchases from local businesses. Elmendorf AFB has a total annual economic impact on the regional economy of over $880 million, supporting 3,060 secondary jobs and generating $128 million in annual secondary income (Air Force 2005c). Projects scheduled for the next two years, which would use the gravel extracted from the Elmendorf AFB pit, are shown in Table 3.8-1. These projects, a mixture of major military construction and routine maintenance and repair, are representative of the types of projects Elmendorf AFB commonly completes and are valued at an estimated $330 million.

Anchorage is the center of commerce for the state of Alaska, an economy driven by four major sectors: oil/gas, military, transportation, and tourism. These sectors have provided a level of stability to the region and contributed to 15 consecutive years of economic growth. A number of industries are headquartered in Anchorage, including oil and gas enterprises, finance and real estate, transportation, communications, and government agencies.

While the unemployment rate is generally low, there are seasonal fluctuations related to resource usage, including commercial fishing and processing activities. Average unemployment in Anchorage was 5.7 percent in 2003, fluctuating between 4.1 percent and 7.4 percent during the period from 1990-2000. In the Anchorage region, total full- and part-time employment increased from 157,120 jobs in 1990 to 188,885 jobs in 2003, at an average annual rate of 1.4 percent (U.S. Bureau of Economic Analysis 2005). The largest employment sectors are government (21.6 percent), retail trade (11.3 percent), and health care and social services (10.6 percent). The military accounts for 11,527 jobs in Anchorage, representing 28.3 percent of government employment and 6.1 percent of

Table 3.8-1. FY2008 and FY2009 Projects

FY2008 Projects	FY2009 Projects
Repair Taxiway N1, N2 and B	Repair Taxiway N Phase 2
Construct Alaska Joint Regional PME Center/NCO	Repair Taxiway N Phase 1
Repair Arctic Utilities and Infrastructure, Phase I	Repair Taxiway N Phase 3
F-22 Taxiway, Taxilanes & Arm/De-Arm Apron	In-flight Kitchen
F-22 Fighter Town East Infrastructure Phase 2	Replace Avionics Facility
F-22 7-Bay Aircraft Shelter	Washrack/Vehicle Ops
F-22 Jet Engine Inspection and Maintenance Facility	DoD Joint Regional Fire Training Facility
BRAC Construct C-130 & C-17 Apron	F-22 Aerospace Ground Equipment Shop
Maintain & Repair Airfield Pavements	F-22 7-Bay Aircraft Shelter
Repair Taxiway B Between Runway 06/24 and Taxiway M	Construct SDB Carriage Systems Facility
Maintain & Repair Base Pavements	F-22 Corrosion Control/ Low Observable Maintenance/Composite Repair Facility
Repair BAK-13 Barriers Rwy 16/34	F-22 Squad Operations/AMU/6-Bay Hangar
Repair Taxiway D Between Taxiway M and Runway 06/24	F-22 Field Training Detachment Facility
Repair Runway 06/24 Overruns	C-17 Restore Road
Maintain & Repair Arctic Warrior Drive and Fairchild Avenue to Government Hill Gate	F-22 8-Bay Aircraft Shelter
Repair Charlie Loop Taxilanes and Parking Slots	F-22 Flight Simulator Training Facility
Repair Hardstand 22	Maintain & Repair Airfield Pavements
Repair Hardstand 23	Maintain & Repair Base Pavements
Repair/Construct Connect Hardstands 21 to 22	Replace Pease Avenue, Arctic Warrior Drive to 20th Street
Repair Hardstand 21	Repair Fairchild Avenue, Airlifter to 381st Phase 1
Replace North Ramp C-5 Ramp	Repair Fairchild Avenue, 381st to Green Lake Phase 2
Construct Fenced Parking Lot - DRMO	Repair Taxiway M & Shoulders, Phase 2
Repair Paving in Front of Bldg 12745 - DRMO	Repair DV Spot 1

total employment. Military employment has steadily declined as a percentage of the region from 11.0 percent of total employment in 1980, to 8.5 percent in 1990, to the current 6.1 percent.

The Proposed Action is not expected to impact socioeconomics in the Anchorage area.

3.9 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to address environmental and human health conditions in minority and low-income communities. The minority populations are defined as Alaska Natives, persons of Hispanic origin of any race, Blacks, American Indians, Asians, or Pacific Islanders. The low-income population is defined as persons

living below the poverty level. In addition to environmental justice issues are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, which directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children. Youth population is defined as children under the age of 18 years. Population estimates can be drawn from the U.S. Bureau of the Census and the Census 2000 Profile of General Demographic Characteristics.

Elmendorf AFB is situated in south-central Alaska, just north of Anchorage. Socioeconomic activities associated with the base are concentrated in the Municipality of Anchorage, which comprises the ROI for this analysis.

Existing Conditions

To comply with EO 12898, ethnicity and poverty status in the vicinity of Elmendorf AFB were examined and compared to state and national data. Minority persons represent 30.1 percent of the Municipality of Anchorage population (U.S. Bureau of the Census 2000). Alaska Natives account for most of the minority population in Anchorage, representing 7.0 percent of the total population and 23.4 percent of the minority population. By comparison, minority persons represent 32.4 percent of the state population, with Alaska Natives accounting for 47.5 percent of the state minority population.

The incidence of persons and families in the Municipality of Anchorage with incomes below the poverty level was comparable to state levels. In Anchorage during 2000, 7.3 percent of persons were living below the poverty level, compared to 9.4 percent of persons in the state and 12.4 percent of persons in the nation (U.S. Bureau of the Census 2005).

To comply with EO 13045, the number of children under age 18 was determined for the vicinity of Elmendorf AFB and compared to state and national levels. In 2000, there were 75,742 children residing in Anchorage, comprising 29.1 percent of the population. This compares to 30.4 percent for the State of Alaska and 25.7 percent for the nation.

The Proposed Action is not expected to impact environmental or human health conditions in minority, low-income, or youth populations.

Chapter 4

4.0 Environmental Consequences and Cumulative Effects

This chapter analyzes potential environmental consequences from the proposed gravel pit expansion. As in Chapter 3, the expected geographic scope for each resource is identified as the ROI, and the consequences are identified as direct and indirect effects of the Proposed Action, the Alternative Action, and the No Action Alternative. The cumulative effects analysis for the resources considers the potential environmental consequences resulting from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7).

Assessing cumulative effects begins with defining the scope of other actions and their potential interrelationship with the Proposed Action or alternatives (CEQ 1997). The scope must consider other projects that coincide with the location and timetable of the Proposed Action and other actions. Cumulative effects analyses evaluate the interactions of multiple actions. The first steps of the environmental impact analysis process helped identify other potential and planned actions. During early community outreach efforts, agencies were asked to provide information about ongoing regional projects and the potential interaction of the gravel pit expansion at Elmendorf AFB with such projects. These initial discussions defined the ROI, which in turn defined what actions should be considered cumulatively. The ROI for cumulative effects would have both spatial and temporal dimensions.

The CEQ (1997) identified and defined eight ways in which effects can accumulate: time crowding; time lag; space crowding; cross boundary; fragmentation; compounding effects; indirect effects; and triggers and thresholds. Furthermore, cumulative effects can arise from single or multiple actions, and through additive or interactive processes (CEQ 1997).

An effort has been made to identify all actions that are being considered and that are in the planning phase at this time. To the extent that details regarding such actions exist and the actions have a potential to interact with the proposal, these actions are included in this cumulative analysis. This approach enables decision-makers to have the most current information available so that they can evaluate the environmental consequences of the Proposed Action.

Past, Present, and Reasonably Foreseeable Actions

Elmendorf AFB and Other Military Actions. Recent past and ongoing military action in the region were considered as part of the baseline or existing condition in the ROI. Each project (summarized in this section) was reviewed to consider the implication of each action and its synergy with the Proposed Action. Of particular concern were potential overlap in affected area and project timing.

Elmendorf AFB is an active military installation that experiences continuous and rapid evolution of mission and training requirements. This process of change is consistent with the U.S. defense policy that the Air Force must be ready to respond to threats to American interests throughout the world. Any new construction must comply with land use controls.

The base, like other major military installations, also requires new construction, facility improvements, and infrastructure upgrades. Table 4.0-1 lists potential major construction projects anticipated to occur on the base in the near future.

Non-Federal Actions. Non-federal actions include projects of the State of Alaska, the Municipality of Anchorage, and private projects. Specific major actions within the vicinity of Elmendorf AFB are summarized in Table 4.0-2.

Table 4.0-1. Potential Major Projects at Elmendorf AFB

Scheduled MILCON Projects	*FY*
Construct Air Force/Joint PME Center ($25M PA for Joint)[1]	2008/09
Construct In-Flight Kitchen	2009
Construct Automated Vehicle Wash/Vehicle Operations[1]	2009
Joint Regional Fire Training Facility[1]	2008/09
Construct 962 AACS Hangar	2010
Renovate People Center	2011
Construct Security Force Squadron Compound	2011
Repair Hangar 3	2011
Construct Fire Station 1	2012
Repair Hangar 2	2012
Construct Combat Alert Cells	2012
Construct New Avionics[1]	2013
Construct Visiting Quarters	2013
Construct Base Chapel	2013
Base Fire Station 6	2013
Repair Arctic Utilities and Infrastructure, Phase 1/10[1]	2009
Repair Arctic Utilities and Infrastructure, Phase 2/10[1]	2010
Repair Arctic Utilities and Infrastructure, Phase 3/10	2011
Repair Arctic Utilities and Infrastructure, Phase 4/10	2012
Repair Arctic Utilities and Infrastructure, Phase 5/10	2013

Note: 1. Project on Fiscal Year Defense Plan

Environmental Consequences and Cumulative Effects

This EA analyzes direct and indirect effects of the Proposed Action, the Alternative Action, and the No Action Alternative to each resource within the corresponding ROI. Additionally, the accumulation of past, present, and reasonably foreseeable actions is analyzed for each resource.

Table 4.0-2. Current and Future Military and Non-Military Projects
(Page 1 of 2)

Action	*Document*	*Description*
Military Projects		
C-17 Beddown	Final EA Elmendorf AFB, AK September 2004	The addition of new C-17 aircraft brings the Air Force Alaska airlift capabilities to state-of-the-art standards and increases its capacity. The project is underway and involves the departure of 18 C-130 cargo aircraft and beddown of 8 new C-17 aircraft beginning in 2007, routine aircraft operations (both mission- and training-related), and the construction and use of support facilities on Elmendorf AFB. New facilities would be constructed in a phased approach in an effort to minimize impacts to normal base operations.
F-22A Beddown at Elmendorf AFB	Final EA Elmendorf AFB, AK June 2006	The beddown of the F-22A aircraft would replace and supplement the F-15C and F-15E aircraft at Elmendorf AFB scheduled for relocation by BRAC. The project includes several construction and renovation sites to support the new aircraft and personnel.
Transformation of U.S. Army Alaska	Final EIS February 2004	This action is underway and includes accommodation for 4,000 more soldiers relocating from installations worldwide, as well as activation of a new airborne brigade. The action also transforms the 172nd Infantry Brigade into a Stryker Brigade Combat Team. This includes changes to force structure and stationing, and modifications of ranges, facilities, and infrastructure designed to meet the objectives of Army transformation in Alaska.
Fort Richardson/ Elmendorf AFB Joint Basing concept	BRAC 2005 Joint Basing Road Map Study	The Joint Basing Implementation Roadmap Study calls for 3 pilot studies that are currently underway investigating more efficient use of installations that are adjacent to one another but managed by different services (e.g., Army/Air Force, Navy/Air Force). Elmendorf and Fort Richardson, while not the subject of a pilot study, may implement the Joint Basing Concept as early as 2006. The BRAC timeframe extends to 2011. Initial efforts may include shared community service facilities, such as the current medical center. Demand for construction resources may be high.
Relocation of the Air National Guard 176th Wing to Elmendorf AFB, Alaska	Final EA Elmendorf AFB, AK September 2007	This project relocates the 176th WG from Kulis Air National Guard Base to Elmendorf AFB. The relocation places 12 C-130 H, three HC-130N, and five HH-60G aircraft on Elmendorf AFB. New facility construction, renovation and modification to existing facilities, and movement of personnel to Elmendorf AFB would occur.

Table 4.0-2. Current and Future Military and Non-Military Projects
(Page 2 of 2)

Action	*Document*	*Description*
Non-Military Projects		
Knik Arm Crossing	Draft EIS and Section 4(f) Evaluation September 2006	The Knik Arm Bridge and Toll Authority is the proponent of a $400 - $600 million dollar construction effort known as the Knik Arm Crossing Project. If constructed, the Municipality of Anchorage and the Matanuska-Susitna Borough would be linked by a bridge over the Knik Arm. The project has the potential to affect Elmendorf AFB since proposed access routes cross the base.
Cherry Hill Gravel Site	Cherry Hill Gravel Extraction EA March 2006	The Cherry Hill Borrow Site, located on Elmendorf AFB, is operated by the Maritime Administration in support of the Port of Anchorage Marine Terminal Redevelopment. The gravel removal could have some interaction with the Knik Arm Crossing Project. Anticipated work at Cherry Hill is expected from 2006 through 2010. The Finding of No Significant Impact/Finding of No Practicable Alternative was signed by the PACAF/CE on 1 March 2006.
Port of Anchorage Expansion	Marine Terminal Redevelopment EA March 2005	The Port of Anchorage is located in close proximity to Elmendorf AFB. There are stages to the expansion project that are expected to span from 2006 to 2011. The construction in the area is expected to increase through all three phases of the project.
North End Gravel Extension	North End Runway Material Extraction and Transport EA May 2006	The North End Gravel Extension, located on Elmendorf AFB, is operated by the Maritime Administration in support of the Port of Anchorage Marine Terminal Redevelopment. Up to 8.5 million cubic yards of material is estimated available at the North End Borrow Site. The Finding of No Significant Impact was signed by the PACAF/CE on 30 May 2006.
Anchorage Municipal Code Revision	Municipality of Anchorage Planning Department Title 21 Public Review Draft #2	Title 21 is a section of the Anchorage Municipal Code regulating land use and development to protect and enhance the public health, safety, and general welfare of the community, and to implement the Anchorage 2020 – Anchorage Bowl Comprehensive Plan. The revision would include development techniques and design standards, support innovative land development, encourage economic development, implement recently adopted plans and policies, and streamline the review process.

4.1 Noise

Environmental Consequences

Proposed Action. Elmendorf AFB has operated the existing gravel pit since 1994. No noticeable changes in noise levels would be expected. Noise from gravel extraction, haul trucks, crusher, and asphalt plant would continue. No change in L_{dn} noise contour is expected.

Workers may be directly affected by the noise, as would animals and birds in the immediate area of the gravel pit. No indirect effects were noted.

Alternative. Trucks or trains hauling gravel to the existing pit would generate noise outside of the existing gravel pit that would be an additional noise source for Elmendorf AFB. Noise from the crusher, asphalt plant, and haul trucks would continue. The changes in noise sources and locations would not be expected to change the L_{dn} noise contour.

Direct and indirect effects would be the same as those for the Proposed Action.

No Action. Noise from reclamation equipment would continue. Although noise levels in the immediate area of the existing gravel pit would decrease, changes would not be expected to affect the L_{dn} noise contour.

Direct and indirect effects would be the same as those for the Proposed Action; however, reclamation would not be expected to extend over as many years as extraction would.

Cumulative Effects.

Some construction associated with the beddown of the F-22 aircraft will occur across Vandenburg Avenue from the gravel pit. The North End Material Extraction is located less than 2 miles from the gravel pit. Although equipment noise may temporarily increase because of these projects, no noticeable effects on the noise levels in the ROI are expected. Elmendorf AFB conducted noise modeling for the Relocation of the Air National Guard 176th WG to Elmendorf AFB, and the noise from the existing and operating gravel pit was considered in the modeling. No change in accumulation of noise would be expected as the result of past, present, and foreseeable future actions.

4.2 Safety

Environmental Consequences

Proposed Action. Elmendorf operates the existing gravel pit through contractor support. The contract agreement specifies that the contractor will maintain a site safety plan that complies with all OSHA mining standards. To date, no safety incidents have been reported. Under the Proposed Action, borrow pit operations would continue in the existing manner. No direct or indirect effects were noted.

Alternative. Under the Alternative, mining pit expansion would not occur. Heavy equipment, trucks, the crusher, and the asphalt plant would continue to operate through contract. A site safety plan, which complies with OSHA requirements and is enforced by the contractor, would continue to be implemented at the site. No direct or indirect effects were noted.

No Action. Although operations would be reduced to reclamation only, a site safety plan, which complies with OSHA requirements and is enforced by the contractor, would continue to be implemented at the site. No direct or indirect effects were noted.

Cumulative Effects

Additional projects occurring in the vicinity of the ROI include construction associated with the beddown of the F-22 aircraft and material removal from the North End in support of port expansion. No change in cumulative effects on safety would be expected as the result of past, present, and foreseeable future actions.

4.3 Air Quality

Environmental Consequences

Proposed Action. The Proposed Action would directly affect air quality. Elmendorf AFB operates the existing gravel pit through contractor support. The contractor maintains a GP3 permit for the asphalt plant and a GP9 permit for the rock crusher. Both would require periodic renewal, and all appropriate permits would be obtained before work began. Localized, short-term elevated air pollutants from combustion engine and fugitive dust emissions would directly result from the proposed action. Reduction of these pollutants could be reduced through BMPs. For instance, frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during construction. Using efficient practices and avoiding long periods where engines are running at idle may reduce combustion emissions from construction equipment. No indirect effects were noted.

Alternative. The same types of emissions described under the Proposed Action would result from the Alternative. Some additional emissions from truck and train transport of material would be expected but would have minor, if any, direct impact on air quality. Under the Alternative, mining pit expansion would not occur. Heavy equipment, trucks, the crusher, and the asphalt plant would continue to operate through contract. The contractor would be required to obtain a GP3 permit for the asphalt plant and a GP9 permit for the rock crusher. Localized, short-term elevated air pollutants from combustion engine and fugitive dust emissions would directly result from the proposed action. No indirect effects were noted.

No Action. Under this alternative, the Elmendorf Gravel Pit would not expand. No mining operations would occur and operational emissions would be comparable with baseline conditions. Combustion engine and fugitive dust emissions may be reduced and

may decrease localized, short-term elevated air pollutant concentrations. No significant impact to the air quality within the ROI, Elmendorf AFB, is expected under this action.

Cumulative Effects

The C-17, F-22, and 176 WG beddowns would result in a temporary increase in construction emissions, and a change in aircraft emissions in the region. The gravel extractions and construction would temporarily increase construction emissions as well. Elmendorf AFB is in attainment for all criteria pollutants. The anticipated emissions will not cause or contribute to a new NAAQS violation. Additionally, the Proposed Action is not expected to impair visibility within any federally mandated federal Class I area. The cumulative effects of the Proposed Action with past, present, and foreseeable future actions is not expected to impact air quality within the ROI.

4.4 Physical Resources

Environmental Consequences

Proposed Action. The Proposed Action would directly affect the gravel resource, resulting in an irreversible and irretrievable commitment of the resource. Indirectly, the gravel extraction could affect future land uses since construction potential in the reclaimed area would be limited; however, the area is located within APZ I, which already places constraints upon land uses. Use of the land as a gravel source is consistent with APZ I constraints and is not considered a significant impact to the resource. Additional indirect results of the proposal are forest clearing and habitat disruption, which are discussed in Section 4.5. The projected expansion is not located in wetlands or floodplains, nor is it located in proximity to any environmental cleanup sites. Spills of hazardous materials or discharges to the storm water system could be reduced or eliminated through the design of BMPs and enforcement of SPCCs and SWPPPs. The operating contractor is responsible for development and implementation of both plans. Waste generation is consistent with normal base activity and disposal conforms to all requirements.

Alternative. Like the Proposed Action, the Alternative is not located in wetlands or floodplains, nor is it located in proximity to any environmental cleanup sites. Asphalt production and rock crushing would continue. Spills of hazardous materials or discharges to the storm water system could be reduced or eliminated through the design of BMPs and enforcement of SPCCs and SWPPPs. The operating contractor is responsible for development and implementation of both plans. Waste generation is consistent with normal base activity and disposal conforms to all requirements. This action does not result in an irreversible and irretrievable commitment of the resource; however, future land use will remain constrained by APZ I. No direct or indirect effects were noted.

No Action. Under this alternative, reclamation operations retain the potential for spills and discharges. Spills of hazardous materials or discharges to the storm water system could be reduced or eliminated through the design of BMPs and enforcement of SPCCs and SWPPPs. The operating contractor is responsible for development and

implementation of both plans. Waste generation is consistent with normal base activity and disposal conforms to all requirements. This action does not result in an irreversible and irretrievable commitment of the resource; however, future land use will remain constrained by APZ 1. No significant impact to the physical resource within the ROI is expected under this action. No direct or indirect effects were noted.

Cumulative Effects

Physical resources at Elmendorf AFB would be affected by the cumulative construction activities on base and at Fort Richardson. Specifically in the ROI, the Proposed Action, would directly affect the gravel resource, resulting in an irreversible and irretrievable commitment of the resource. Several future construction projects are planned, resulting in increased construction disturbance to soils with potential to affect water resources, hazardous materials, and hazardous wastes. BMPs, and adherence to SPCCs and SWPPPs would reduce the potential cumulative impacts.

4.5 Biological Resources

Environmental Consequences

Proposed Action. The Proposed Action would directly affect biological resources. The action would result in removal of forest, which would indirectly affect habitat for both mammals and birds. The area provides a travel corridor between Ship Creek and Six Mile Creek for large mammals and a prime browse area for moose. Temporary (less than ten years) reduction in vegetative cover would occur in any given area during active operations. Incorporation of corridor preservation with required mining reclamation efforts could reduce the effects on wildlife. Additionally, moose browse areas could increase through mining reclamation efforts and routine thinning and hydro-axing, producing a long-term (more than 20 years) positive impact. Neither short-term nor long-term effects are expected to have significant impacts on wildlife.

Alternative. Under the Alternative, reclamation of existing gravel pit would continue. The existing moose browse would decrease through natural forest succession unless it was maintained through routine thinning or hydro-axing; new areas of moose browse would be developed through reclamation. There is a potential long-term (more than 20 years) positive indirect impact to biological resources resulting from the increase in browse area.

No Action. The effects of this action would be the same as the Alternative. The long-term indirect effect would be improved moose habitat. No significant impact to the biological resource within the ROI is expected under this action.

Cumulative Effects

Biological resources at Elmendorf AFB would be affected by cumulative activities on base and in the immediate vicinity of the proposal. The Proposed Action would result in the removal of forested land within the project area. This forest loss is in addition to forest clearing associated with projects listed in Table 4.0-2.

Wildlife species affected by loss of forest include black bear, brown bear, moose, red squirrel and several bird species. Five special-status bird species may occur at Elmendorf AFB. The peregrine falcon, gray-cheeked thrush, and Townsend's warbler would be unlikely to inhabit the developed and affected portions of Elmendorf AFB. Small numbers of olive-sided flycatcher and blackpoll warbler may occur. Clearing marginal roadside habitat during breeding season could disrupt some nesting birds but would not be expected to affect any special status species. Clearing could be scheduled so as to not disrupt nesting. These species may be displaced or disturbed by expansion but would be expected to move elsewhere on the base. Effects would not be expected to be significant.

4.6 Cultural Resources

Environmental Consequences

Proposed Action. The Proposed Action would not affect cultural or historic resources. Compliance with Section 106 of the NHPA, including SHPO consultation regarding NRHP eligibility has been initiated and would be completed prior to the implementation of the Proposed Action. Upon project approval and funding, Elmendorf AFB would complete an archeological survey of the proposed expansion area, with the intent to locate any other cultural or historic resources. All ground-disturbing activities have a possibility of encountering previously unrecorded and unknown archaeological resources. If additional sites were discovered before the survey is completed, the work would stop and relocate to another area until a determination could be made. If suspected artifacts of any type (wood, stone, bone, metal, etc.) or other unidentifiable materials were inadvertently uncovered during ground disturbing activities, the soil disturbance activities in that area would cease until environmental staff could determine whether or not the materials warranted further actions under the Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, or the NHPA. If human remains were discovered in the course of excavation on the base, the work resulting in the discovery would stop, and the individual implementing the work would immediately notify the Cultural Resources Manager of the find, who would ensure that ICRMP procedures were implemented (Air Force 2003b). Specific base policies can be found in the 3rd Wing Policy, *Base Policy When Encountering Human Remains.*

Alternative. Under the Alternative, reclamation of existing gravel pit would continue with no effect to cultural or historic resources. During reclamation, if suspected artifacts of any type (wood, stone, bone, metal, etc.) or other unidentifiable materials were inadvertently uncovered during ground disturbing activities, the soil disturbance activities in that area would cease until environmental staff could determine whether or not the materials warranted further actions under the Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, or the NHPA. If human remains were discovered in the course of excavation on the base, the work resulting in the discovery would stop, and the individual implementing the work would immediately notify the Cultural Resources Manager of the find, who would ensure that ICRMP procedures were implemented (Air Force 2003b). Specific base policies can be

found in the 3rd Wing Policy, *Base Policy When Encountering Human Remains.* No direct or indirect effects were noted.

No Action. The effects of this action would be the same as the Alternative. No significant impact to the cultural resource within the ROI is expected under this action.

Cumulative Effects

No other projects within ROI.

4.7 Land Use and Transportation

Environmental Consequences

Proposed Action. The Proposed Action would directly affect the gravel resource, as described in Section 4.4. Indirectly, the gravel extraction could affect future land uses since construction potential in the reclaimed area would be limited; however, the area is located within APZ I, which places constraints upon land uses. Use of the area as a gravel extraction site is compatible with existing base planning and land uses. There would be no effects on transportation compared to the existing gravel extraction operations.

Alternative. Under the Alternative, gravel extraction would not continue, somewhat increasing potential future uses for the land; however, the APZ I footprint would continue to limit future use. This alternative would have a direct effect upon transportation. Hauling gravel in would create some temporary congestion entering Post Road Gate if trucks were used or would increase length or frequency of trains if railways were used. Construction improvements to Post Road Base and construction of a rail spur would be required to manage increased road and rail traffic. Indirect effects of hauling would include wear and tear of roadways, increased dust, noise and congestion, and potential for additional loose gravel on public thoroughfares.

No Action. The effects of this action would be the same as the Alternative. No significant impact to the land use and transportation within the ROI are expected under this action.

Cumulative Effects

Gravel extraction is consistent with existing land use plans and would not be expected to substantially affect land use patterns or traffic circulation in the ROI. Implementation of certain foreseeable future actions however, is likely to generate land use and transportation effects in the vicinity of Elmendorf AFB. The Knik Arm Crossing Project is proposed to alter circulation by linking the Municipality of Anchorage and the Matanuska-Susitna Borough, potentially affecting development patterns in the region. In addition, two of the three proposed bridge access routes would traverse Elmendorf AFB. Proposed expansion at the Port of Anchorage, just west of Elmendorf AFB, could alter land use and land ownership patterns, and increase traffic congestion. Construction of these and other reasonably foreseeable projects, depending on potential

concurrent scheduling with the Proposed Action, could increase pressure on regional infrastructure and construction resources. However, incremental effects of the Proposed Action, which are minor, would not be expected to create significant or adverse cumulative effects to land use resources in the region.

4.8 Socioeconomics

Environmental Consequences

Proposed Action. The Proposed Action would produce a continued positive affect on the local economy. Gravel extraction and planned construction projects would continue under current conditions.

Alternative. Under the Alternative, gravel extraction would not continue, but rock crushing, hauling, and asphalt production would continue. The effects of this action would be expected to have an impact to socioeconomics. Cost of material production and transportation would increase cost of construction projects and would be expected to result in fewer construction projects.

No Action. The effects of this action would be expected to have an impact to socioeconomics if planned projects did not occur as scheduled. Based on estimated value of projects shown in Table 3.8-1, the annual lost contribution to the Anchorage economy from decreased construction could be as high as $165 million. The lost construction projects would be expected to decrease construction employment opportunities as well.

Cumulative Effects

Economic pursuits in the region are not expected to experience any major limitations or negative effects under implementation of the Proposed Action separately or in conjunction with relevant past, present, and reasonably foreseeable future actions. A number of both military and non-military projects would increase the demand for construction employment and activity in the region. Although the increase in economic activity associated with a specific project would be temporary, lasting only for the duration of the construction period, the cumulative effects of the construction projects create employment for the foreseeable future. Incremental effects of the proposed gravel pit expansion, in combination with potential impacts associated with the reasonably foreseeable future actions, would not be expected to create any significant or adverse cumulative effect to socioeconomic resources in the region.

4.9 Environmental Justice

Environmental Consequences

Proposed Action. The Proposed Action would have no disproportionate impact to minority and low-income populations, nor any noticeable impact to children. Gravel extraction would continue under current conditions.

Alternative. The Alternative would have a direct disproportionate impact on blue-collar workers if construction projects decreased to offset the cost of gravel purchase and transport. Unless jobs created by gravel hauling equaled lost construction jobs, this action would be expected to have a subsequent disproportionate impact to minority and low-income populations. The action would not be expected to have a noticeable impact to children.

No Action. This alternative would have a disproportionate impact on blue-collar workers and would be expected to have a subsequent disproportionate impact to minority and low-income populations. No data exists to verify or deny that the alternative would have a noticeable impact to children.

Cumulative Effects

The Proposed Action is not expected to generate significant impacts, separately or cumulatively, on minority, low-income, or youth populations in the ROI. The incremental effects of this proposal, in combination with potential impacts associated with the relevant past, present, and reasonably foreseeable future actions would also not be expected to have any cumulative environmental justice effects.

4.10 Other Environmental Considerations

Relationship Between Short-Term Uses and Long-Term Productivity. CEQ regulations (Section 1502.16) specify that environmental analysis must address "…the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity." Special attention should be given to impacts that narrow the range of beneficial uses of the environment in the long-term or pose a long-term risk to human health or safety. This section evaluates the short-term benefits of the proposal compared to the long-term productivity derived from not pursuing the proposal.

Short-term effects to the environment are generally defined as a direct consequence of a project in its immediate vicinity. Short-term effects would include gravel removal and vegetation clearing. The direct effects increase habitat disruption and would impact the long-term use of the land. Reclamation would restore wildlife habitat, but the future uses of the land would be affected and limited by the extraction operation.

Irreversible and Irretrievable Commitment of Resources. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. Removal of gravel will significantly decrease the availability of minerals within the ROI.

Chapter 5

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Ellen Godden, Environmental Planner, 3 CES/CEVP, Elmendorf AFB, AK

Herman Griese, Wildlife Biologist, 3 CES/CEVP, Elmendorf AFB, AK

Bob McElroy, Project Manager, 3 CES/CECC, Elmendorf AFB, AK

Jim Miller, Chief Environmental Quality, 3 CES/CEVQ, Elmendorf AFB, AK

James F. Moore, NEPA Coordinator, Bureau of Land Management, Anchorage, AK

Christina Nahorney, Natural Resources Specialist II, Department of Natural Resources, Anchorage, AK

Valerie Payne, Community Planner, 3 CES/CECD, Elmendorf AFB, AK

Keith Quincey, Air Program, Hoefler Consulting Group, Anchorage, AK

Jon Scudder, Cultural Resources Manager, 3 CES/CEVQ, Elmendorf AFB, AK

Christa Stumpf, Project Manager, Science Applications International Corporation, Boise, ID

Erin Slaughter, Public Affairs Officer, 3 WG/PA, Elmendorf AFB, AK

Joe Williamson, Chief Environmental Restoration, 3 CES/CEVR, Elmendorf AFB, AK

Appendix A. Photographs

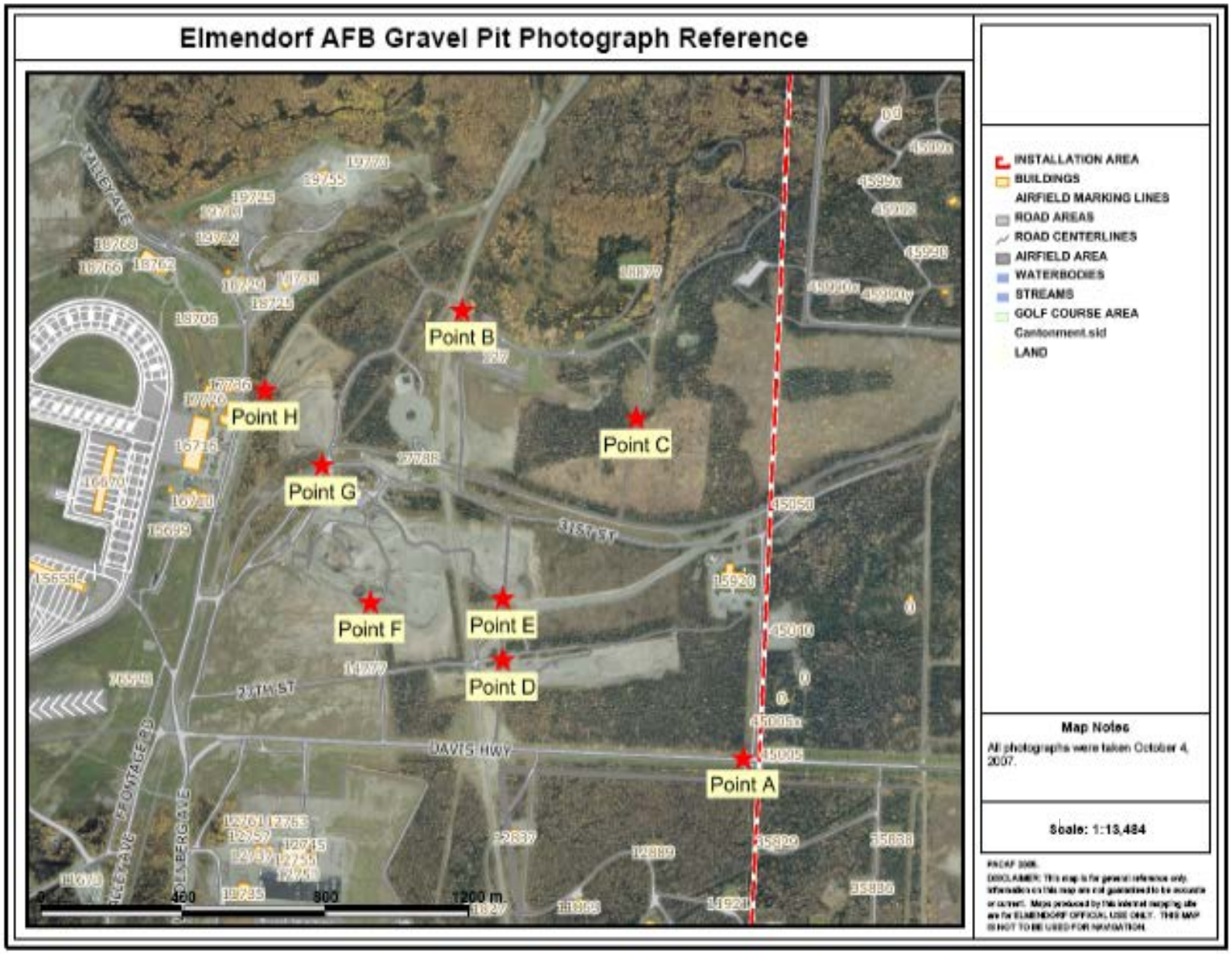

Figure A-1. Photograph Reference

Photograph A-1. Border between Fort Richardson and Elmendorf AFB. Facing North from Point A.

Photograph A-2. Remote-controlled aircraft strip. Facing Southeast from Point B.

Photograph A-3. Moose Browse. Facing South from Point C.

Photograph A-4. Sorted, crushed gravel. Facing East from Point D.

Photograph A-5. Rail bed. Facing Southeast from Point E.

Photograph A-6. Borrow source. Facing Northwest from Point E.

Photograph A-7. Borrow Source. Facing East from Point F.

Photograph A-8. Asphalt Plant. Facing Northwest from Point F, Zoom.

Photograph A-9. Haul Truck. Facing Southeast from Point G.

Photograph A-10. Boreal Forest. Facing Northeast from Point H.

Appendix B Agency Coordination

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

31 October 2007

MEMORANDUM FOR DISTRIBUTION

FROM: 3 CES/CC
6326 Arctic Warrior Drive
Elmendorf AFB AK 99506-3240

SUBJECT: Expansion of Elmendorf Air Force Base Gravel Pit Environmental Assessment

1. The United States Air Force is preparing an Environmental Assessment (EA) to determine the potential environmental consequences of a proposal to expand the existing Elmendorf Gravel Pit. The expansion would extend the existing gravel pit eastward, along the gravel seam that is currently being mined.

2. The EA will analyze the following resources to determine the potential environmental consequences associated with the expansion: airspace operations, natural resources, cultural resources, human resources, and community infrastructure.

3. As part of this National Environmental Policy Act process, the Air Force is seeking comments or input regarding this proposal. In order to give your comments or concerns full consideration early in the process, we would appreciate receiving your response by November 26, 2007.

4. If you have any specific questions about the proposal, we would like to hear from you. Please feel free to contact the Environmental Project Manager, Ms. Ellen Godden, at the above address. Ms. Godden can be reached at (907) 552-7305. Thank you for your assistance in this matter.

JAMES C. HODGES, Lt Col, USAF
Commander

Attachments:
1. Elmendorf AFB Map
2. Distribution List

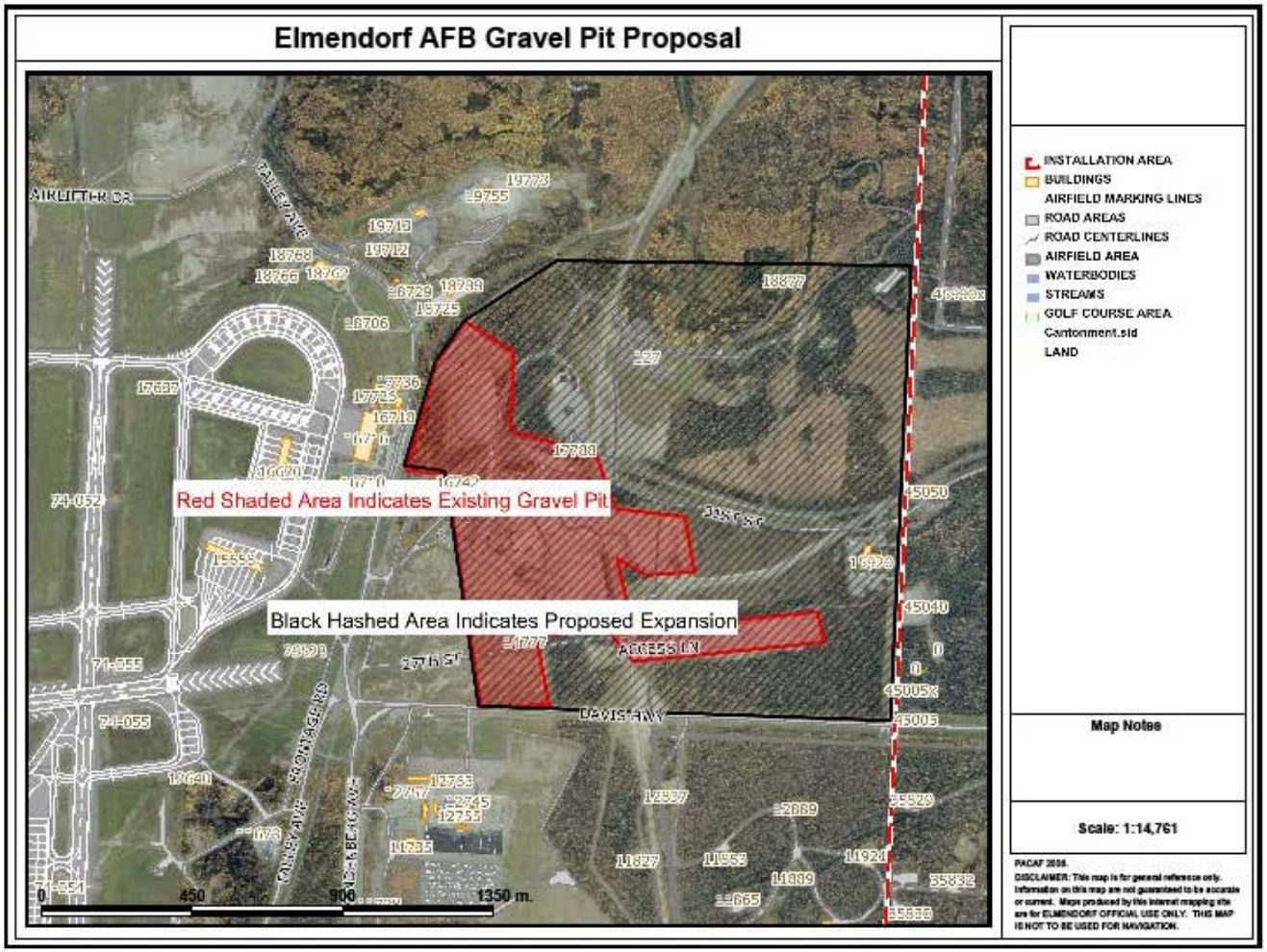
Elmendorf AFB Gravel Pit Proposal
Red Shaded Area Indicates Existing Gravel Pit
Black Hashed Area Indicates Proposed Expansion
AIRLIFTER DR
DAVIS AVE
27TH ST
ACCESS LN
0
450
900
1350 m.
INSTALLATION AREA
BUILDINGS
AIRFIELD MARKING LINES
ROAD AREAS
ROAD CENTERLINES
AIRFIELD AREA
WATERBODIES
STREAMS
GOLF COURSE AREA
Cantonment.sid
LAND
Map Notes
Scale: 1:14,761
PACAF 2008.
DISCLAIMER: This map is for general reference only. Information on this map are not guaranteed to be accurate or current. Maps produced by this internet mapping site are for ELMENDORF OFFICIAL USE ONLY. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Table B-1. IICEP Distribution List

First Name	Surname	Company	Address1	Address2	City	St	ZIP
Michael	Tucker	Knik Tribal Council	P.O. Box 871565		Wasilla	AK	99687-1565
Dorothy	Cook	Native Village of Eklutna	26339 Eklutna Village		Chugiak	AK	99567-5148
Kevin	Gardner	U.S.Army Alaska	730 Quartermaster Rd.		Fort Richardson	AK	99505
		U.S. Fish and Wildlife Service	ATTN: Regional Wilderness Coordinator/NEPA Specialist	1011 E. Tudor Rd.	Anchorage	AK	99503-6103
Louis	Howard	Alaska Deparment of Environmental Conservation	SPAR CS Programs DoD Oversight	555 Cordova St.	Anchorage	AK	99501-2617
Jacques	Gusmano	U.S. Environmental Protection Agency	Region X- Operations Office	222 W. 7th Ave., #19	Anchorage	AK	99513-7588
Jeff	Johnson	U.S. Department of Interior Bureau of Land Management	Anchorage Field Office	6881 Abbott Loop Rd.	Anchorage	AK	99507-2599

First Name	Surname	Company	Address1	Address2	City	St	
Mark	Fullmer	U.S. Department of Interior Bureau of Land Management	Anchorage Field Office	6881 Abbott Loop Rd.	Anchorage	AK	99507-2599
Rick	Sinnott	Alaska Department of Fish and Game	Division of Wildlife Conservation	333 Raspberry Rd	Anchorage	AK	99518-5519
Chris	Nahorney	Alaska Department of Natural Resources	Division of Mining, Land, and Water	550 W. 7th Ave., Ste 900B	Anchorage	AK	99501-3577
Patricia	Joyner	Alaska Department of Natural Resources	Division of Forestry	550 W. 7th Ave., Ste 1450	Anchorage	AK	99501-3566
Tammy	Massie	Alaska Department of Natural Resources	Office of Habitat Management and Permitting	550 W. 7th Ave., Ste 1420	Anchorage	AK	99501
Mary Lynn	Nation	U.S. Fish and Wildlife Service	Project Planning	101 E. Tudor Rd., MS 331	Anchorage	AK	99503

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

24 January 2008

MEMORANDUM FOR ALASKA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF HISTORY AND ARCHAEOLOGY
ATTN: MS. JUDITH E. BITTNER

FROM: 3 CES/CE
6326 Arctic Warrior Drive
Elmendorf AFB AK 99506-3240

SUBJECT: Statement of "No Adverse Effect" for Proposed Project

1. Elmendorf Air Force Base (AFB) has determined that the expansion of the existing Elmendorf gravel pit qualifies for a "No Adverse Effec." determination. An overall map of the proposed site is attached.

2. The existing gravel pit would encompass approximately 300 acres of land bringing the total acreage of the gravel pit area to approximately 427 acres. The gravel excavated from this site will be used in projects to support the Base General Plan, or 50-Year Plan. Projects anticipated over the life of this plan include removing aircraft mission areas from the interior of the base and consolidating them to the north and east of the main runway, integrating new airframe beddowns, such as the C-17 and F-22A aircraft; siting industrial functions just south of the flight line; and, redeveloping the base interior as a contiguous community district.

3. This project will impact seven archaeology sites, namely ANC-1179 to ANC 1183; ANC 1187; and ANC 1174, none of which appear eligible for the National Register of Historic Places. Upon project approval and funding, Elmendorf AFB will complete an archeological survey of the proposed expansion area. If additional sites are discovered before the survey is completed, the work would stop and relocate to another area until a determination could be made.

4. Request your office concur with this determination as completion of our Section 106 consultation requirements under the National Historic Preservation Act. We would appreciate your comments by 12 February 2008 to incorporate them in the draft environmental assessment. If you have any questions, please contact Mr. Jon Scudder, 3 CES/CEVP, at 552-9677.

Daniel A. Barnett

DANIEL A. BARNETT, YT-03
Base Civil Engineer

Attachment:
Proposed Expansion

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

24 January 2008

MEMORANDUM FOR NATIONAL MARINE FISHERIES SERVICE
ALASKA REGION

FROM: 3 CES/CE
6326 Arctic Warrior Drive
Elmendorf AFB AK 99506-3240

SUBJECT: Elmendorf AFB Gravel Pit Expansion Environmental Assessment

1. The United States Air Force is preparing an Environmental Assessment (EA) to assess the potential environmental consequences of expanding the existing Elmendorf AFB gravel pit (please refer to attachment 1). The existing gravel pit would expand eastward to the boundary between Fort Richardson and Elmendorf AFB, increasing in size from approximately 127 acres to approximately 427 acres. The EA will address gravel requirements, alternative sources, and a no-action alternative.

2. Pursuant to analysis of the proposed expansion and to support compliance with the Magnuson Stevens Fisheries Conservation and Management Act, we would like to request information regarding Essential Fish Habitat that occurs or may occur in the potentially affected area. We would appreciate your identifying a point of contact for any follow-up questions we may have. Please provide any preliminary agency comments or information regarding the proposed expansion not later than 12 February 2008 in order to be incorporated in the preparation of the draft EA.

3. If you have any specific questions about the proposal, we would like to hear from you. Our point of contact is Ms. Ellen Godden, (907) 552-7305. Thank you for your assistance in this matter.

Daniel A. Barnett

DANIEL A. BARNETT, YF-03
Base Civil Engineer

Attachment:
Proposed Expansion

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

24 January 2008

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE
ATTN: ANN RAPPOPORT

FROM: 3 CES/CB
6326 Arctic Warrior Drive
Elmendorf AFB AK 99506-3240

SUBJECT: Elmendorf AFB Gravel Pit Expansion Environmental Assessment

1. The United States Air Force is preparing an Environmental Assessment (EA) to assess the potential environmental consequences of expanding the existing Elmendorf AFB gravel pit (please refer to attachment 1). The existing gravel pit would expand eastward to the boundary between Fort Richardson and Elmendorf AFB, increasing in size from approximately 127 acres to approximately 427 acres. The EA will address gravel requirements, alternative sources, and a no-action alternative.

2. Pursuant to analysis of the proposed expansion and to support compliance with the Endangered Species Act, we would like to request information regarding federally listed threatened, endangered, candidate, and proposed-to-be-listed species that occur or may occur in the potentially affected area. We would appreciate your identifying a point of contact for any follow-up questions we may have. Please provide any preliminary agency comments or information regarding the proposed expansion not later than 12 February 2008 in order to be incorporated in the preparation of the draft EA.

3. If you have any specific questions about the proposal, we would like to hear from you. Our point of contact is Ms. Ellen Godden, (907) 552-7305. Thank you for your assistance in this matter.

DANIEL A. BARNETT, YF-03
Base Civil Engineer

Attachment:
Proposed Expansion