Environmental Assessment

for the

Joint Advanced Weapons Scoring System Installation
in the
Oklahoma Range
Donnelly West Training Area, Alaska

354th Fighter Wing
Eielson Air Force Base, Alaska
June 2008

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FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)
and
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
for the
Installation of the Joint Advanced Weapons Scoring System (JAWSS)
in the
Oklahoma Range
Donnelly Training Area, Alaska

Introduction

The US Air Force is proposing to upgrade the electronic scoring system currently used for their Oklahoma Impact Area (OIA). The OIA is located in the US Army Garrison Alaska's (USAG-AK) Donnelly Training Area (DTA) near Delta Junction, Alaska. The JAWSS upgrade would enhance the electronic warfare capability of the range and would replace the current system which presently is comprised of a one-camera, pan-tilt arrangement with a fixed, multiple-camera approach, allowing more targets to be covered simultaneously.

Proposed Action

The proposed action would result in the construction of four new range communication facilities near Delta Creek. Each of the facilities would require the hand clearing of a 1,200-square-foot helicopter landing pad, construction of a 10- by 10-foot instrument shed with a metal frame and concrete foundation, and the installation of three solar panels on pedestals set in concrete. Each installation would also include a communication tower; three would be 30-foot-tall and one 64-foot-tall. The facilities would be powered by a combination of wind power, solar and propane. A small wind generator with 9-foot diameter blades would be mounted on top of the instrument shed. In addition, three 1,000-gallon propane tanks on skids would be placed at the site to fuel the propane generators that assist in powering the equipment. The JAWSS facilities would be fly-in sites for both initial construction and follow-up maintenance. Installation of the four facilities would result in the filling of a total of approximately 0.4 acres of scrub/shrub wetlands. In addition to the JAWSS instrument facilities, a new 200-foot-high communications tower would be built to provide data links for the new systems. The tower would be sited at the existing Donnelly Ridge communications facility, 26 miles southeast of Delta Creek in the DTA.

No Action Alternative

No JAWSS facilities would be constructed under this alternative. This would result in under utilization of the mock airstrip and other target systems that currently exist in the OIA, resulting in an inability by the Air Force to meet evolving mission training requirements.

Environmental Impacts of the Proposed Action

Wetlands

All of the proposed JAWSS sites, as well as the communication tower at Donnelly Ridge, would be located in wetlands. Construction of these facilities and associated structures would result in impacts to 0.4 acres of moderate to low-value scrub/shrub wetlands. An additional 0.2 acres of

black spruce and scrub/shrub wetlands would be hand cleared of trees and shrubs to create a helicopter landing area and fire breaks. These wetlands provide habitat for some species of birds and small mammals. However, the overall quality of the black spruce scrub/shrub wetlands has a relatively low functional value.

Floodplains

The four sites proposed for JAWSS facilities are not within the 100-year floodplain of Delta Creek or any other nearby waterways. Donnelly Ridge is also not in a 100-year floodplain.

Fish and Wildlife

None of the activities associated with the proposed action would likely result in impacts to fishery resources. Some wildlife may be displaced to adjacent areas by construction of the facilities and the hand clearing of wetland vegetation. Some bird collisions may occur in conjunction with the communication towers. The overall impact to fish and wildlife from the proposed action is expected to be minor.

Historical or Cultural Resources

The proposed JAWSS sites have been surveyed for cultural resources. No evidence of any cultural resources was identified as present in the project areas. A letter stating these findings has been sent to the State Historic Preservation Office in accordance with Section 106 of the National Historic Preservation Act. No construction at the sites would occur prior to completion of the Section 106 process.

Mitigation

Standard best management practices have been incorporated into the project design to mitigate impacts to the environment. In addition the following mitigation measures will be undertaken:

- Measures to prevent erosion such as minimizing disturbance to permafrost by removing the least amount of vegetation as possible during construction.
- Use of silt fences and other construction techniques to prevent siltation into adjacent wetlands during construction.
- Limit construction activities to after July 15 to prevent disturbance to bird nesting.
- Avoid impacts to any cultural resources by relocating/reconfiguring facility components.
- Creation of fire breaks to protect facilities from wild fire.
- Beacons on towers to address aircraft safety.
- Bird collision monitoring of wind turbines.

Subsistence Practices

Section 810 of the Alaska National Interest Lands Conservation Act (16 USC § 3120) requires the federal agency with primary management jurisdiction over the land to consider the potential impact of the planned use on subsistence practices. The analysis provided in the environmental assessment (EA) shows that the proposed action would not unnecessarily impair rural subsistence practices.

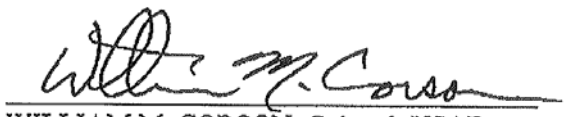
Procedural Requirements

Findings

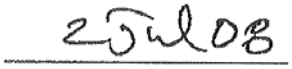
Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality implementing regulations for NEPA (40 CFR Part 1500-1508), Army Regulation 200-2, *Environmental Analysis of Army Actions* (32 CFR Part 651), and Air Force Instruction 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the Air Force has conducted an EA for the installation of new JAWSS facilities in the vicinity of the OIA. This FONSI/FONPA has been developed pursuant to information provided in the accompanying EA.

Finding Of No Practicable Alternative: Maintaining a training range that utilizes the latest technology and provides the most up-to-date combat scenarios is critical to Eielson's mission. The installation of JAWSS equipment would enhance the electronic warfare capability of the OIA range. Taking into account all the environmental, economic, safety, and other pertinent factors that have been documented in this EA, and pursuant to Executive Order 11990, and the authority vested in me by the Secretary of the Air Force Order 791.1, I find that there is no practicable alternative to the filling of 0.4 acres of wetlands and that the proposed action includes all practical measures to minimize harm to the environment.

Finding Of No Significant Impact: Based on this EA, which was conducted in accordance with the requirements of all applicable regulations, the undersigned decision authorities have concluded that the installation of the new JAWSS facilities will not result in significant impacts to the environment. We also find that the preparation of an environmental impact statement is not warranted.



WILLIAM M. CORSON, Colonel, USAF
Director, Installations and Mission Support Pacific Air Forces



Date

DAVID L. SHUTT
Colonel, U.S. Army
Commanding

Date

Addendum to FNSI

On May 23, 2008, a public notice was published in the Fairbanks Daily News Miner announcing the availability for public comment of the Draft Environmental Assessment, Draft Finding of No Significant Impact, and Draft Finding of No Practicable Alternative for a proposal to install the Joint Advanced Weapons Scoring System in the Oklahoma Range. The term of the public notice was 30 days. No comments were received during the public comment period.

TIMOTHY A. JONES
COL, AV
Commanding

15 Aug 08
DATE

Addendum #2 to FNSI

Recently Fort Wainwright became a stand alone garrison at which point all of the lands within Fort Wainwright Main Post and its associated training lands, inclusive of Donnelly Training Area, were transferred to the command of Colonel Timothy A. Jones. The Finding of No Significant Impact (FNSI) is not affected by these changes and all statements therein remain accurate. The following correction has been made to the *Environmental Assessment for Joint Advanced Weapons Scoring System Installation in The Oklahoma Range Donnelly West Training Area* document, page iii Signature Page:

This addendum changes:

DAVID L. SHUTT
Colonel, U.S. Army
Commanding

Date

To:

TIMOTHY A. JONES
Colonel, US Army
Commanding

15 Aug 08
Date

END OF ADDENDUM #2

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List of Figures and Tables

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Environmental Assessment (EA)
for the
Installation of the Joint Advanced Weapons Scoring System
Oklahoma Range
Donnelly West Training Area, Alaska

1.0 Purpose and Need for Action

Section 1.0 provides a description of the purpose and need for the proposed action.

1.1 Background and Objectives for the Proposed Action

1.1.1 The US Air Force (USAF) is proposing to upgrade the electronic scoring system that is currently used in their Oklahoma Range (R-2202). The range is located in the US Army Garrison Alaska's (USAG-AK) Donnelly Training Area (DTA), which is part of what was formerly Fort Greely Army Base near Delta Junction, Alaska (Figure 1-1). The proposed project would install shelters and equipment for the electronic scoring system referred to as the Joint Advanced Weapons Scoring System (JAWSS). The proposed action would result in the installation of four shelter/equipment complexes near Delta Creek and a communication tower at Donnelly Ridge.

1.1.2 The US Department of Defense has identified the Oklahoma Impact Area (OIA) as one of two locations in Alaska available to the 11th Air Force for tactical air-to-ground training missions. Tactical air-to-ground training involves attacking realistic ground targets under simulated conditions. The 11th Air Force (which includes Eielson AFB) conducts air-to-ground military aircraft operations in the OIA through a dual use interservice agreement between the USAF and USAG-AK.

1.1.3 Since the closing of Clark Air Base in the Philippines, Alaska ranges have become the primary US controlled tactical training areas available to Pacific Air Forces (PACAF) and US allies in the Pacific. As a result, other aircraft, in addition to Alaska based aircraft, are frequently deployed to Alaska to participate in joint/combined training and major flying exercises. The RED FLAG-Alaska program based at Eielson conducts four exercises annually. These exercises give US and allied forces' pilots the opportunity to practice air combat in a coalition environment. These exercises involve fighter units from other PACAF bases, the US Navy, the US Marine Corps, the US Air National Guard, the US Air Force Reserves, the Royal Air Force, the Royal Australian Air Force, the Royal Canadian Air Force, the Royal Singapore Air Force, Japanese Defense Forces, and other national forces.

1.1.4 Tactical combat training in the Pacific Alaskan Range Complex is enhanced by the use of the Air Combat and Maneuvering Instrumentation (ACMI) system. This is a computerized, three-dimensional tracking and recording system that monitors real-time positional and weapons data from aircraft. The data includes important information

about the aircraft such as location, speed, heading, altitude, and weapons status and is used for real-time combat exercise control and after mission training debriefing. The Unmanned Threat Emitter (UMTE) system and Televised Ordnance Scoring System (TOSS) are integral components of the ACMI system.

1.1.5 The UMTE is a remote controlled electronic device capable of emitting signals that simulate threat radars such as surface-to-air missile systems, antiaircraft artillery radars, and missile command guidance signals. With the use of the UMTEs, combat aircrews are able to receive realistic training against surface-to-air defenses and practice tactics and countermeasures used to train pilots to survive a battlefield air interdiction scenario against modern threats. The TOSS system consists of a camera and communication system that can track and score the effectiveness of mock bomb strikes against the various target arrays located within the OIA.

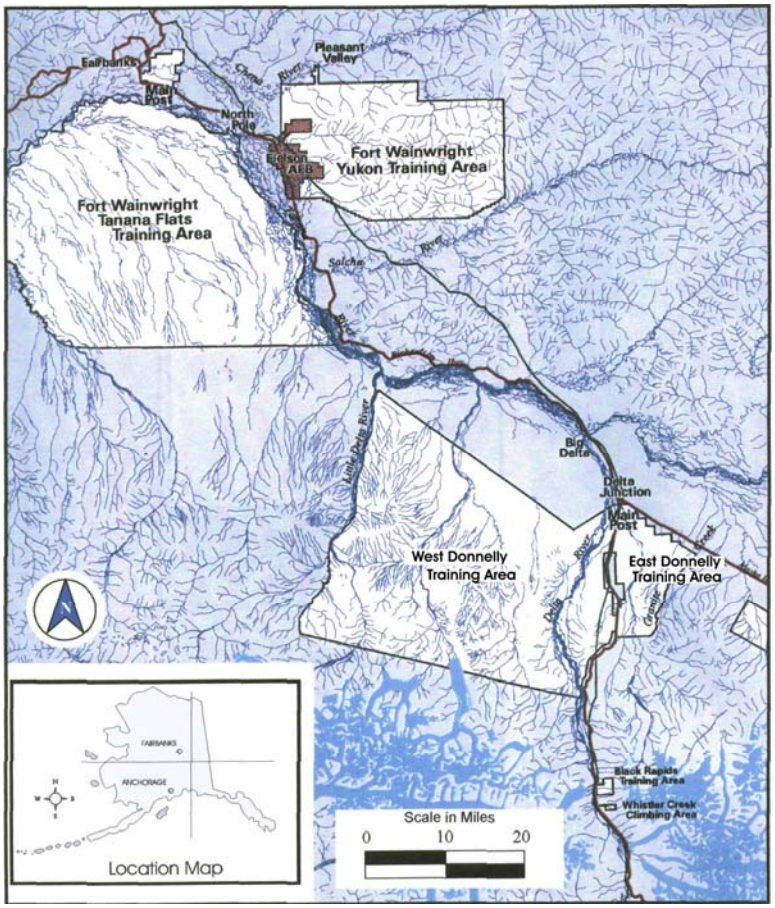

Figure 1-1 – Regional Map

1.1.6 The proposed upgrade to the Oklahoma Range is part of a 25-year plan developed by the USAF designed to increase the operational effectiveness of the ranges. Previous Oklahoma Range upgrades include the construction of a mock airfield, construction of simulated targets, installation of advanced scoring systems (i.e., TOSS systems and UMTEs) for training purposes, and upgrades to the range maintenance facility.

1.1.7 The JAWSS system component upgrades would enhance the UMTE's electronic warfare capability in the ranges and replace the current system which is comprised of a one-camera, pan-tilt arrangement with a fixed, multiple-camera approach, allowing more targets to be covered simultaneously while also providing additional mission flexibility. In addition, it would expand the real-time monitoring of aircraft that use targets in the OIA to include the Delta Creek Live Impact Area and the Scud Missile Array. Currently, only the Mock Airstrip has real-time scoring coverage.

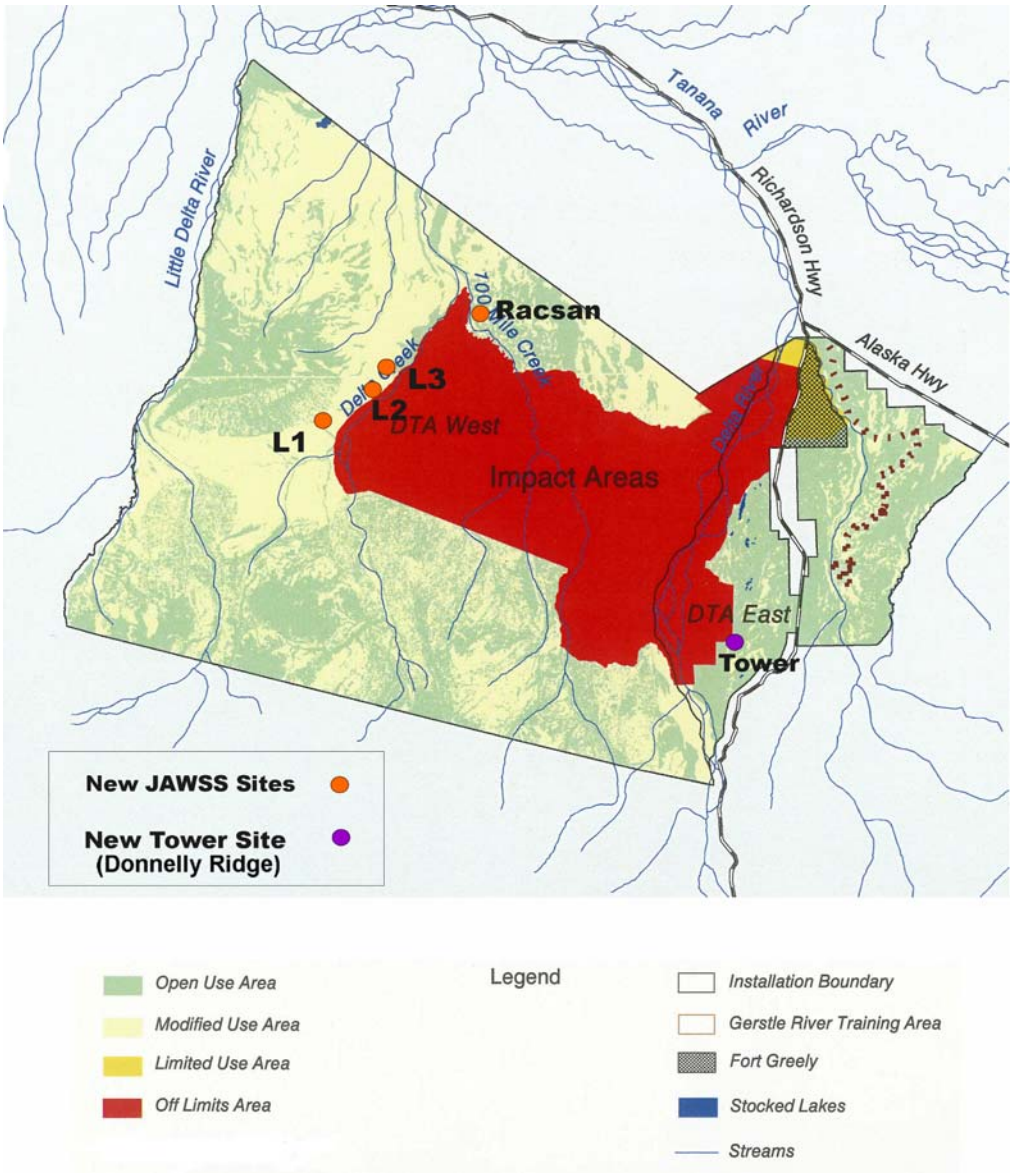

Figure 1-2 – General Site Location

1.1.8 The selection of sites for placement of JAWSS equipment should meet a strict set of siting criteria in order for the system to meet USAF operational objectives:

- The site must be flat and large enough (up to 1 acre) in size to house the shelter and equipment.

- Because of the lack of roads in the project area, the site must function as a fly-in only site and must be large enough to allow for landings of a CH-47 type helicopter to allow for installation and maintenance activities.
- The site must have a clear line-of-sight to the existing target arrays.
- The site must have a clear line-of-sight to either a microwave relay tower or to a data link site.
- Site must not conflict with Army training activities.

1.1.9 The proposed locations for the JAWSS upgrades meet the specified site criteria. The proposed facility sites are level and sufficient in size to support a CH-47 helicopter landing area and installation of the shelter and associated equipment. The sites also have a clear line-of-sight to the existing microwave network. Due to favorable site characteristics, the USAF proposes to install the JAWSS at these locations.

1.2 Location of the Proposed Action

1.2.1 The proposed project would be located along the western boundary of the OIA, a designated live impact area within the DTA (Figure 1-2). The DTA is comprised of approximately 531,000 acres and is located 100 miles southeast of Fairbanks, Alaska, near the town of Delta Junction. The OIA consists of approximately 38,400 acres and lies within the central portion of the DTA. Numerous target types are distributed throughout the OIA.

1.2.2 Under the proposed action, four new JAWSS installations and a communication tower at Donnelly Ridge would be built. Three of the JAWSS sites would be located just west of Delta Creek and the fourth site would be near One-Hundred Mile Creek, a small tributary of Delta Creek. The proposed sites are located in an area that would provide real-time monitoring of aircraft using live target arrays that are within the OIA (Figure 1-3). A communication tower that would provide a necessary data link for the JAWSS facilities would be installed at Donnelly Ridge. Donnelly Ridge is located approximately 26 miles southeast of Delta Creek, outside of the OIA, but within the DTA (Figure 1-2). It is an existing Air Force facility known as South Master and is part of the YMDS that was installed in the mid 1990s.

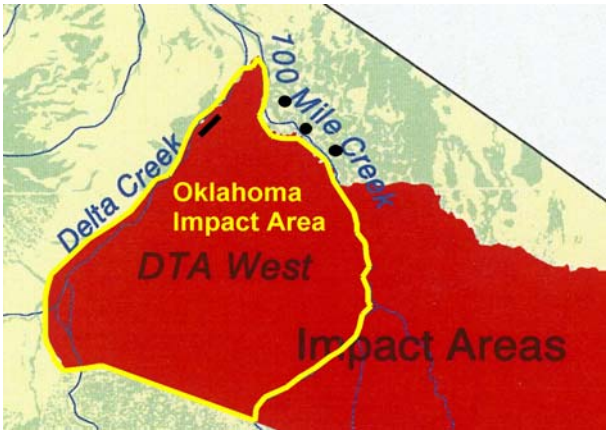

Figure 1-3 – Oklahoma Impact Area

1.3 Decision to be Made and Decision Maker

1.3.1 As required by 32 Code of Federal Regulations (CFR) Part 989, the *Environmental Impact Analysis Process* will be used to determine what would be the potential environmental consequences of constructing four new facilities and a communication

tower in the DTA. This EA is intended to satisfy these requirements. The proposed action and all alternatives considered will be addressed in detail in Section 2.0 of this document. A description of the resources associated with the areas affected by all alternatives is provided in Section 3.0 and the impacts that could result from each one are discussed in Section 4.0. Section 5.0 provides an analysis of cumulative impacts.

1.3.2 Based on the evaluation of impacts in the EA, a Finding Of No Significant Impact (FONSI) will be published if there is a finding of no significant environmental impacts for the proposed action. If it is determined that the proposed action will have significant environmental impacts, other alternatives will be considered for which impacts may not reach the threshold of significance.

1.3.3 Presidential Executive Order 11990 (*Protection of Wetlands*), requires the heads of federal agencies to find that there is no practicable alternative before the agency takes certain actions impacting wetlands. The proposed action could result in impacts that could directly affect 0.4 acres of wetlands. To address this requirement, the Secretary of the Air Force's designated agent, HQ PACAF/A7, would sign a document that addresses the issues of wetlands that may be associated with actions the Air Force proposes to take. This document, known as a Finding Of No Practicable Alternative (FONPA) will state which alternative, the proposed action or the no action alternative, will be selected as the appropriate course of action. The FONPA will be combined with the FONSI into one document. This finding will be based on the analysis provided in the EA that all practicable measures to minimize harm to wetlands have been taken, and all appropriate mitigation will be incorporated into the project design or otherwise authorized.

1.4 National Environmental Policy Act (NEPA) Actions That Influence This Assessment

1.4.1 *Alaska Military Operations Areas-Environmental Impact Statement (EIS) 11th Air Force, 1995*. This EIS was prepared to address the environmental impacts of restructuring the Air Force Special Use Airspace in Alaska. This document assesses several issues pertinent to the operation of the OIA, including airspace management, biological resources, recreational resources, subsistence, land use, air quality, and noise as they relate to the operation of military aircraft.

1.4.2 *Environmental Assessment of the Upgrade of Target Arrays on Fort Wainwright and Fort Greely, Alaska, 11th Air Force, 1992*. This EA assesses the environmental consequences associated with establishing new target arrays and a mock airfield in the OIA at Fort Greely.

1.4.3 *USAG-AK Integrated Natural Resources Management Plan and Environmental Assessment, 2006*. These documents provide a series of options for resource management of the Donnelly Training Area.

1.4.4 *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS, US Army, 1998.* This EIS assesses the environmental consequences associated with the continued military

use of US Army lands and the renewal of the withdrawal of the Fort Wainwright Yukon Maneuver Area, DTA West Training Area, and DTA East Training Area.

1.4.5 *Environmental Assessment of the Oklahoma Impact Area Upgrade Fort Greely, Alaska, 11th Air Force, 2001*. This EA assesses the environmental consequences associated with upgrades to the OP-26 range maintenance facility and establishing a new mock airfield in the OIA at Fort Greely.

1.4.6 *Environmental Assessment of the Oklahoma Range Access Upgrade Fort Greely, Alaska, 11th Air Force, 2004*. This EA assesses the environmental consequences associated with access upgrades in the OIA in the DTA.

1.4.7 *Environmental Impact Statement for Construction and Operation of a Battle Area Complex and a Combined Arms Collective Training Facility within U.S. Army Training Lands in Alaska, USAG-AK, 2006.* This EIS assesses the environmental consequences associated with the construction of a battle area complex and arms training facility in the DTA.

1.4.8 *Final Environmental Impact Statement for the Transformation of U.S. Army Alaska, USAG-AK, 2004.* This EIS addresses the proposal by the USAG-AK to transform the 172d Infantry Brigade into a Stryker Brigade Combat Team at Fort Wainwright.

1.4.9 *Donnelly Training Area East Mobility and Maneuver Enhancement Draft Environmental Assessment, USAG-AK, 2007.* This EA assesses the impacts from major improvements to their training facilities in the DTA.

1.5 Project Scoping/Significant Issues

On January 16, 2008, a scoping meeting was held at the RED FLAG-Alaska offices on Eielson to identify and discuss issues considered pertinent to the proposed Oklahoma Range upgrades. Scoping participants are listed in Section 6.0. Issues raised in the scoping meeting are briefly discussed in this section and discussed in greater detail in Sections 2.0, 3.0, and 4.0.

1.5.1 *Wetlands*: The proposed action would result in impacts to wetlands at the four JAWSS installation sites, as well as, at Donnelly Ridge.

1.5.2 *Work Undertaken Prior to Completion of the NEPA Process:* Foundations at three of the sites for which work is proposed were constructed prior to the completion of the NEPA process. A 64-foot-tall tower was constructed at one of the three sites (RACSAN). Wetland permits had been issued prior to the work being undertaken.

1.5.3 *Location of Air Force facilities Relative to Existing Army Range Facilities:* Army range personnel emphasized the need for the Air Force to choose locations for facilities that would not conflict with existing Army range facilities.

1.5.4 *Government-to-Government Coordination*: During scoping it was determined that it would be important for the Air Force to fulfill its responsibility with respect to government-to-government consultation as provided for in the Department of Defense (DoD) American Indian and Alaska Native Policy, *DoD Instruction 4710.02.* Coordination was recommended with the six tribes that are in the vicinity of the project area that are part of the Upper Tanana Tribes.

1.5.5 *Firebreaks and Tower Lighting:* During scoping discussions the Army requested that the Air Force to create adequate fire breaks for all facilities that would be constructed. They also requested that towers taller than tree height be lit to address aviation safety concerns.

1.5.6 *Bird conflicts associated with the communication towers:* Concern was expressed that there may be a problem with bird collisions if communication towers were built that were not designed properly.

1.6 Federal and State Permits or Licenses Needed to Implement the Project

1.6.1 The proposed action would require a 5-year land use permit from USAG-AK.

1.6.2 A US Army Corps of Engineers 404 wetlands permit and a state of Alaska Section 401 water quality certification has been issued for the proposed work located in wetlands. No specific mitigation was required by this permit.

1.6.3 Section 106 of the National Historic Preservation Act requires project specific identification of cultural resources. A survey of all involved sites has been conducted and no cultural resources were identified. A Section 106 consultation letter has been sent to Alaska State Historic Preservation Office documenting these findings.

2.0 Description of the Proposed Action and Alternatives

Section 2.0 provides a description of alternatives considered to achieve the purpose and need described in Section 1.0. The proposed action and the no action alternative will be addressed. A summary of the environmental consequences for these alternatives will also be provided.

2.1 Proposed Action – Install Joint Advanced Weapons Scoring System Upgrades

2.1.1 The USAF is proposing to upgrade its electronic warfare scoring system in the Oklahoma Range with the installation of JAWSS equipment west of Delta Creek just outside of the OIA boundary. The upgrade would require the development of four individual sites for the installation of shelters and equipment. A 200-foot-tall communication tower for data uplink would also be installed at Donnelly Ridge.

2.1.2 Selection of sites identified in the proposed action were carefully made based on the ability of each site to receive and transmit electronic data relative to each other. The JAWSS equipment must be able to send to and receive data from a master system located at the Air Force's Donnelly Ridge facility. Each individual site must also be able to provide data based on a triangulation process that involves typically three of the JAWSS sites at any given time. The transmission is done with equipment that requires a clear line-of-site with each of the separate system components. This critical spatial relationship resulted in selecting sites that were slightly elevated relative to the target systems with which they were associated as well as each other. Due to the electronic data transmission requirements of these facilities, relatively little latitude was available for site selection.

Table 2-1 – GPS Coordinates for Proposed JAWSS Installation

Site ID	GPS Coordinates Latitude	GPS Coordinates Longitude	W=Wetlands
Proposed Action			
L-1	N 63º 58' 17.2"	W 146º 34' 37.2"	W
L-2	N 63º 59' 19.5"	W 146º 29' 49.74"	W
L-3	N 63º 59' 48"	W 146º 29' 5.1"	W
RACSAN	N 64º 02' 52"	W 146º 19' 23.46"	W
Donnelly Ridge	N 63º 47' 15"	W 145º 51' 39"	W

2.1.3 Installation of the JAWSS equipment shelters would require the Air Force to obtain an Army land use permit for four sites, each 1 acre in size. However, the actual footprint of the facilities at each site would be considerably less, only approximately 0.1 acres each. The tower at Donnelly Ridge would be sited on land that is part of an existing facility which already has a land use permit from the Army.

2.1.4 The developed JAWSS sites would consist of the following components (see Figure 2-2):

- A 1,200-square-foot level area to be used as a helicopter landing area. If brush is present, some cutting of vegetation would be required and it would be done with hand tools.
- A 150-square-foot area for the placement of an equipment shelter. The equipment shelter would be a type S-280 or similar fiberglass constructed shelter that would house the cameras and associated electronics, approximately twenty 12-volt batteries, and four propane operated thermal electric generators (TEG) used to recharge the battery bank. Also mounted on the equipment shelter foundation frame would be a 6.3 kilowatt per hour wind generator.
- A 150-square-foot area for the placement of three 1,000-gallon propane tanks to power the TEGs. The propane tanks would be aboveground and would be located adjacent to the equipment shelter. Propane lines would be elevated aboveground and routed through PVC or metal pipe for additional protection.
- At each site 36-square-foot area for the placement of a microwave tower would be constructed. The previously constructed tower is 64-feet-tall, but the maximum tower height at the other three JAWSS sites would be 30 feet above ground level.
- Three batteries of solar panels on steel poles buried five feet in the ground in concrete. Panel arrays would have a height of approximately15 feet.

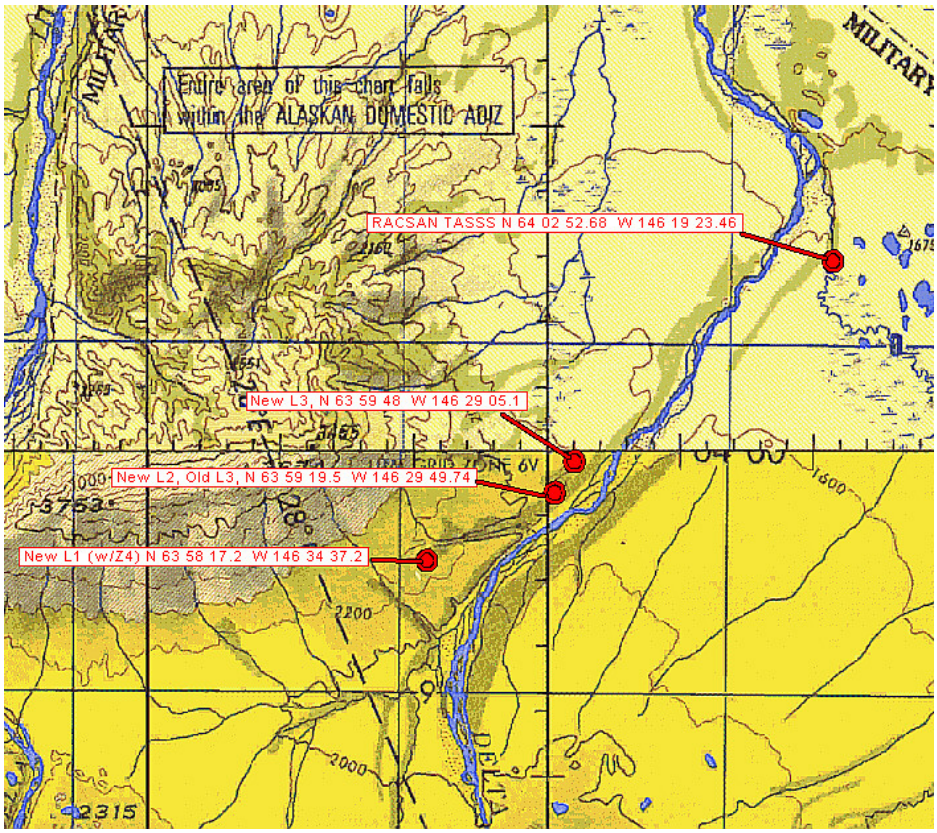

Figure 2-1 – JAWSS Facility Locations

Figure 2-2 – Typical JAWSS Installation Layout

2.1.5 The four proposed JAWSS equipment complexes would have fire breaks constructed to prevent damage to the facilities from wildfire. A 3-foot gravel perimeter, 4 to 6 inches thick would be constructed around all combustible facilities. Gravel for the fire break would be obtained from a commercial gravel source in Delta and flown to the sites by helicopter. All trees and shrubs within 100 feet of the facilities would be cut and removed.

2.1.6 All aspects of the design of the tower at Donnelly Ridge would meet with Federal Aviation Agency requirements with respect to color of tower and type of safety lighting. Lights that meet with USAG-AK safety requirements would be installed on the four communication towers that are associated with the JAWSS equipment facilities.

2.1.7 The Donnelly Ridge facility is an existing Air Force communication complex built in 1994. It was first installed as part of the YMDS and is known as South Master. Existing facilities at the site include a 200-foot-tall microwave tower (belonging to Alascom), a radome, a communications equipment shed, and a diesel-powered generator (see Figure 2-4). The construction of an additional tower would be in the same general area as existing facilities.

2.1.8 The JAWSS equipment shelters would be mounted on a steel foundation comprised of four concrete pilings 30 inches in diameter set 3 feet below grade. The solar arrays would be attached to 6-inch steel pipes set in the ground in concrete footers set three feet

below grade. Approximately seven cubic feet of soil would be excavated at each site for the installation of equipment foundations. The wind generators would be attached to the metal shed frame and, at its highest point would be 30-feet above the ground (see Figure 2-3).

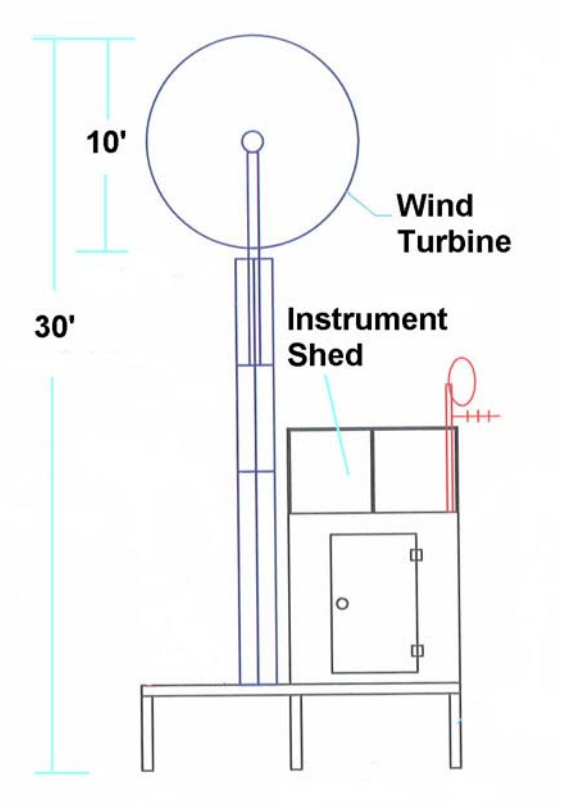

Figure 2-3 – Schematic of Wind Generator

2.1.9 The sites proposed for placement of the JAWSS equipment shelters would be considered fly-in only sites. All equipment, material, and personnel would be ferried to the site via helicopters (CH-47 and Bell 212). Site preparation for the helicopter pad, equipment shelter, propane tank area, and microwave tower would consist of clearing vegetation with hand tools.

2.1.10 Three of the four sites proposed for construction of the JAWSS equipment shelters have had prior foundation work completed. In addition, another site that would not be used for the system due to Army concerns for its location, also had foundation work completed. The previously completed work involved the construction of concrete foundations upon which equipment would be mounted, and supported by four 30-inch in diameter concrete pilings set to a depth of 3 feet in the ground. At three of the sites this prior construction would be incorporated into the proposed project. At the remaining site (Old L-2), the foundation would be abandoned in place at the Army's request. Other than the disturbance to the soil that occurred during foundation construction, impacts from the previously completed construction was minimal and the only visual indication of the

action is the steel frame that was mounted on the pilings that is still in place (see Figure 2-4).

Figure 2-4 – Abandoned Old L-2 Site

2.1.11 At the RACSAN site, in addition to the shelter foundation, a foundation and a 64-foot-tall, three-legged tower was constructed (see Figures 2-5 and 2-6). The tower has no guy wires.

The sites at which this prior work had been completed are listed in Table 2-2.

Table 2-2 – Location of Prior Work

Location	Coordinates	Status
Old L-2	**N63° 57' 32.46, W146° 33' 36.12**	**Abandoned in place**
L-2	**N63° 59' 19.5, W146° 29' 49.74**	**Proposed for use**
RACSAN	**N64° 02' 52.68, W146° 19' 23.46**	**Proposed for use**
Donnelly Ridge	**N63° 47' 15, W145° 51' 39**	**Proposed for use**

2.1.12 Impacts resulting from this prior work include the following:

- Disturbance of approximately 6 cubic feet of soil to install the concrete foundations.
- Temporary removal of approximately 190 square feet of wetland vegetation during construction. This vegetation would likely reestablish itself in 2 to 3 years.
- Some minor disturbance and compression of soils from all-terrain vehicle traffic.

Figure 2-5 – Previously Constructed Tower at RACSAN Site

Figure 2-6 – Previously Constructed Shelter Foundation at RACSAN

2.1.13 At the Donnelly Ridge communications facility a foundation consisting of three 30-inch diameter concrete pilings are required to anchor the three-legged tower. The foundation has already been constructed (see Figure 2-7). The tower would be 200-foot-tall steel with no guy wires. The site is considered wetlands.

Figure 2-7 – Previously Constructed Donnelly Ridge Tower Foundation

Figure 2-4 – Donnelly Ridge Facility

2.1.14 Facility components would be transported to the JAWSS sites by helicopter and by tracked vehicles. Some construction materials are stockpiled at OP-26. Construction of the facilities would require approximately 18 helicopter trips over a period of 6 days

for the installation of the equipment. Construction of the tower at the Donnelly Ridge facility would be completed with materials and equipment brought on an existing road that accesses the site.

2.1.15 Once the JAWSS facilities are constructed, their operation and maintenance would require approximately two helicopter visits per year for refueling propane fuel tanks and providing maintenance and repair of electronic equipment.

2.1.16 The new JAWSS equipment would greatly enhance aircraft training opportunities in the OIA. Currently the main focus of real-time monitoring of aircraft is in conjunction with the Mock Airstrip, located along Delta Creek in the northern portion of the OIA. The new camera locations would expand the coverage to other target arrays including the Scud Target Array and the Delta Creek Live Impact Area. The JAWSS locations sited further south (L-1, L-2, and L-3) would provide coverage for these target arrays.

2.2 No Action Alternative

Under the no action alternative, there would be no changes or modifications to the existing electronic scoring system and components in the OIA. No additional JAWSS sites would be constructed and no communication tower built. Only existing systems would be utilized, significantly limiting the range's training opportunities.

2.3 Other Alternatives Considered but Not Carried Forward for Analysis

Development of the proposed JAWSS facility sites was based on a very specific set of electronic transmission criteria as discussed in Sections 1.1.8 and 2.1.2. Although alternative sites were considered (Table 2-3), even minor deviations from the optimum (proposed) locations resulted in reduced target coverage and loss of critical aircraft performance data. For this reason it was decided that, for this environmental analysis, there was only one feasible set of facility locations that met the purpose and need of the proposed action. Table 2-3 lists the locations of alternate sites considered during the siting process.

Table 2-3 – GPS Coordinates of Alternative Sites Considered

Alternative Sites Considered	GPS Coordinates Latitude	GPS Coordinates Longitude	W=Wetlands
Alternate L-1	N 63º 56.78'	W 146º 38.00'	W
Alternate L-2	N 63º 57.35'	W 146º 33.97'	W
Alternate L-3	N 63º 59.11'	W 146º 30.90'	W
Alternate RACSAN	N 64º 03.31'	W 146º 19.13'	W

2.4 Alternatives Impacts Matrix

Table 2-4 – Alternatives Impacts Matrix

Resources	Proposed Action	No Action Alternative
Soils	**Minor disturbance to soil depths of 5 feet from construction of facility foundations. Total area impacted would be approximately 0.4 acres.**	**No disturbance to soils.**
Air Quality	**Minor, short-term impacts to air quality from helicopter take-offs and landings during construction phase and annual maintenance.**	**No impacts to air quality.**
Surface Water	**Few if any impacts to surface waters. During construction of foundations, minor localized siltation could occur.**	**No impacts to surface water.**
Groundwater	**No impacts to groundwater.**	**No impacts to groundwater.**
Infrastructure	**The JAWSS installation would greatly improve aircraft training opportunities.**	**If JAWSS were not installed, the range facilities would not keep pace with mission requirements in aircraft training.**
Noise	**Minor localized impacts from noise as a result of helicopter traffic during the construction phase and during annual maintenance trips.**	**No impacts from noise.**
Biological Resources - Vegetation	**Major impacts to 0.4 acres from foundation construction and construction of a fire break. Minor impacts to 0.1 acres vegetation from helicopter pad and fire break clearing.**	**No impacts to vegetation.**
Biological Resources - Wildlife	**Minor disturbance to birds possible if construction prior to July 15. Other wildlife disturbance would be temporary during construction. May be loss of birds due to collisions with Donnelly Ridge tower.**	**No impacts to wildlife.**
Biological Resources - Fish	**No impacts to fishery resources would likely occur.**	**No impacts to fish would likely occur.**
Wetlands	**Disturbance of wetlands at five locations for a total of 0.4 acres. Wetland type is low to moderate value scrub/shrub wetlands.**	**No impacts to wetlands.**
Threatened and Endangered Species	**No impacts to threatened or endangered species would likely occur.**	**No impacts to threatened or endangered species would likely occur.**
Subsistence	**No impacts to subsistence activities would likely occur.**	**No impacts to subsistence activities.**
Cultural Resources	**A survey of all sites was conducted and no cultural resources were identified.**	**No impacts to cultural resources.**
Socioeconomic	**No impacts to human populations would occur. Local economy would benefit from use of local services during construction phase of project.**	**No impacts to human populations would likely occur.**

3.0 Affected Environment

Section 3.0 describes the existing environment and resource components that would be impacted by the proposed action and the no action alternative. The resources discussed in this section are presented as a baseline for comparisons of environmental consequences discussed in Section 4.0.

- Physical resources, which include general site location, topography, geology, soils, climate, air quality, ground and surface water, wetlands, and infrastructure improvements.
- Biological resources, including vegetation, wildlife, fish, threatened or endangered species, and wetlands.
- Cultural resources including archeological and historical resources.
- Socioeconomic factors.

Figure 3-1 – Mock Airstrip and Delta Creek Corridor

3.1 Physical Resources

3.1.1 General Site Location

3.1.1.1 The USAG-AK's DTA is comprised of approximately 571,995 acres and is located approximately 100 miles southeast of Fairbanks, Alaska, near the town of Delta Junction. The OIA is a designated live impact range that is approximately 38,400 acres in size and is located entirely within the DTA.

3.1.1.2 Three of the sites identified for the proposed JAWSS instrument facilities (L-1, L-2, and L-3) are located near Delta Creek along a 10-mile stretch of the river's corridor. The fourth proposed site (RACSAN) is along One-Hundred Mile Creek near its confluence with Delta Creek. Donnelly Ridge is located approximately 26 miles southeast of Delta Creek.

Figure 3-2 – Topography of Project Area

3.1.2 Topography

The OIA is comprised of a relatively uniform, gently sloping glacial outwash fan. On the eastern and southern flanks of the outwash are numerous small lakes that are representative of thermokarst topography. It is located in the Tanana-Kuskokwim Lowland physiographic province, and is a transition from the foothills of the Alaska Range to the flood plains of the Tanana River. Elevations in this area range from 2,100 feet above sea level on the southern border to 1,400 feet above sea level on the northern border.

3.1.3 Geology

The OIA sits on an alluvial plain, characterized as a surficial glacial outwash deposit. The unconsolidated sands and gravels were deposited by glacial melt waters that transported material from the surface of nearby glaciers and associated moraines during the Pleistocene Epoch. The depth of the unconsolidated material is unknown. The active, but receding, Trident Glacier can be found about 22 miles south of the existing mock airfield site. Bedrock of the Northern Foothills consists of Precambrian and

Paleozoic-age metamorphic rocks of the Yukon-Tanana crystalline complex, formally known as the Birch Creek Shist.

Figure 3-3 – Proposed Donnelly Ridge Tower Site

3.1.4 Soils

3.1.4.1 The Delta Creek channel and active floodplain consists of alluvial gravels including poorly graded sand and silty soils (Figure 3-3). The predominant soil type found in the OIA, as identified by the Natural Resources Conservation Service, is Histic Pergelic Cryochrepts. This is described as poor-draining silt loam soils, with textures ranging from sand loam to clay loam. Soils are fairly gravelly in areas. Wet silt loam and thick peat layers commonly occupy the low depressions. Soils found in upland areas along Delta Creek and One-Hundred Mile Creek are classified as Typic Cryochrepts in association with Aeric Cryaquept. This association is described as a silt loam, moderately to well-drained, with underlying gravelly sand. Organic matter, resulting from incomplete breakdown of vegetation due to the cold temperatures and the saturated nature of the organic matter layer, covers the permanently frozen ground. Permafrost is a dominant physical feature in the OIA. Based on similar conditions found in other areas, the depth of the annual thaw layer is expected to be only 8 to 12 inches.

3.1.5 Climate

3.1.5.1 The project area has the northern continental climate of interior Alaska, which is characterized by short, moderate summers, long cold winters, and low precipitation and humidity.

Figure 3-4 – Delta Creek in the Vicinity of the Proposed JAWSS Sites

3.1.5.2 The climate of the OIA is similar to Delta Junction, the closest population center. Annual precipitation recorded by the Delta Junction National Weather Service office for the years 1952 to present averaged slightly more than 11 inches. The climate of Delta Junction is extremely continental in character with clear skies and cold temperatures (lows of -60° F, highs of +40° F) in winter and hot, dry summers (lows of +30° F, highs of +90° F). This results in a low relative humidity and a high evaporation rate of surface waters, as well as a high sublimation rate of ice and snow. Average snowfall is approximately 40 to 70 inches per year, most of which is lost due to sublimation. The wettest month is August with an average rainfall of 1.68 inches. The driest month is April with an average precipitation of 0.27 inches. Precipitation increases slightly with increased elevation. The frost-free period is generally from the third week in May until the end of August. The area has strong winds, with frequent wind speeds of 15 to 20 miles per hour.

3.1.6 Air Quality

This site falls outside the boundaries of any air quality control region. Existing conditions in the OIA are assumed to be in attainment with National Ambient Air Quality Standards. The only sources of air emissions in the area are from transient mobile sources such as vehicles and aircraft because this area is unpopulated. Naturally occurring airborne loess is common along flood plains in this area due to frequent strong winds in the vicinity of the site.

3.1.7 Ground and Surface Water

3.1.7.1 The surface to groundwater depth is estimated to be 100 to 250 feet (*Fort Greely Integrated Natural Resource Management Plan, 1998*). Ground water is estimated to be present at 100 to 250-feet-below-ground surface. Groundwater recharge is from influent seepage of glacier-fed streams.

3.1.7.2 The OIA lies entirely within the drainage of Delta Creek. The origins of Delta Creek are several nearby glaciers including Trident Glacier and Hayes Glacier. This is a silt-laden creek that flows to the north and joins the Tanana River. The creek has a multiple-thread channel system with a very low stream gradient. One-Hundred Mile Creek, a tributary of Delta Creek, forms the northern and eastern boundaries of the impact area. This creek is a non-glacial creek dependent upon snowmelt and rainfall with peak flow occurring in early summer. It is an intermittent creek and typically dries during mid-summer. No hydrological data is available for either of these creeks.

3.1.7.3 Most small streams in the area are low gradient, feeder streams that characteristically exhibit low discharges during the winter months and moderate peak discharges during the summer months. Many small streams throughout the area freeze solid during the winter months.

3.1.7.4 Numerous small lakes and ponds are found throughout the area. Water quality in the project area is unknown. Water samples collected from lakes within the West Donnelly Training Area, were determined to have a high alkalinity level.

3.1.7.5 A limited site-specific study was conducted by the US Army Environmental Hygiene Agency in 1990 at Fort Greely to determine if munitions fired into the impact areas were having any adverse effect on water quality and sediments. Water and sediment samples were analyzed upstream and downstream of Fort Greely with samples collected from the Delta River, Jarvis Creek, Delta Creek, Little Delta River, and One-Hundred Mile Creek. Data indicated that stream chemistries were not adversely affected by munitions (*Alaska Army Lands Withdrawal Renewal-Final Legislative EIS, 1998*). USAG-AK is also conducting soil and water quality monitoring in impact areas to identify and detect if any munitions residues are moving out of impact areas. Preliminary data from these studies suggest that munitions residues are not moving out of impact areas through surface water, groundwater, wind blown soils, or wildlife (*INRMP 2007-2011, USAG-AK, 2006*).

3.1.7.6 The 100-year floodplains of Delta Creek and One-Hundred Mile Creek in the vicinity of the proposed project areas have not been delineated. The active channels of both creeks are well defined. By design, all of the proposed sites are at significant elevations and distances from any active stream channels associated with these two drainages.

3.1.8 Infrastructure

3.1.8.1 The Air Force's infrastructure improvements found within the general area consist of a mock airfield, target arrays, maintenance camps, TOSS sites, and UMTE sites. These facilities are accessed via winter trail systems that exist throughout the area. Trails in the area are undeveloped and range from 10 to 30 feet in width.

3.1.8.2 The existing mock airfield is a 150-acre developed site, which consists of a mock airfield and numerous target arrays in the nearby vicinity. The mock airstrip consists of a 9,000- by 75-foot runway and a 7,500- by 200-foot parking ramp. The airstrip area has a simulated control tower, fuel tank farm, hangars, and MIG fighter plane targets.

3.1.8.3 East of One-Hundred Mile Creek, just out of the OIA, is the OP-26 maintenance camp. The OP-26 facility contains a TOSS site, which consists of a camera, tower, and propane tanks. The total footprint of the infrastructure is approximately 0.79 acres. Other TOSS and UMTE sites include OP-27 and OP-28.5 which are located east of One-Hundred Mile Creek.

3.1.8.4 USAG-AK also maintains infrastructure that is used for force training, both ground and aviation. These include Simpsonville, a mock village that is used for assault training and two drop zones, Warrior and Hillbilly. Nearby are two assault airstrips, one for fixed wing aircraft (Delta Creek Assault Strip) and another for helicopters (Bennett Assault Strip).

Figure 3-5 – Typical Vegetation at Proposed JAWSS Sites

3.2 Biological Resources

3.2.1 Vegetation

3.2.1.1 The plant communities found within the OIA are varied and have resulted from spatial differences in soil temperature, moisture content, soil fertility, and the presence of permafrost. These plant communities vary due to slope orientation, changes in elevation, and fire history. Major vegetation types include white and black spruce coniferous forests; paper birch and poplar broadleaf forests; mixed coniferous-broadleaf forests; tall scrub-shrub; and herbaceous wetlands.

3.2.1.2 The plant community in the vicinity of the wetland sites consists primarily of black spruce, dwarf birch, willow, sedges, and grasses (Figure 3-4).

3.2.2 Wildlife

3.2.2.1 The lands associated with the DTA West support a large, diverse wildlife population. This population includes many big game species such as grizzly bear, moose, caribou, wolf, and wolverine. There are also a variety of small game species including willow ptarmigan, rock ptarmigan, white-tailed ptarmigan, ruffed grouse, spruce grouse, and sharp-tailed grouse. Furbearing animals found in this region include coyote, red fox, lynx, beaver, marten, mink, short-tailed weasel, muskrat, hoary marmot, northern flying squirrel, Arctic ground squirrel, and red squirrel. These game species are managed by the Alaska Department of Fish and Game (ADF&G), with an emphasis on big game populations. The DTA West area falls within ADF&G's Game Management Unit 20A.

3.2.2.2 The project area along the Delta Creek corridor is within the historic range of the Delta Caribou herd. The herd has in recent years declined from a 1989 herd of 10,000 to an estimated number of 2,540 animals in 2003. The primary area for calving is between the Delta and Little Delta Rivers in southeastern game management Unit 20A (*ADF&G, 2005*).

3.2.2.3 Delta Creek is part of the Tanana River drainage, a major river drainage in interior Alaska. As a result of its geographic configuration it provides a major flyway corridor for seasonally migrating birds from the south that utilize North Slope of Alaska areas, as well as points in between, for nesting. Each spring and fall more than two million waterfowl pass through the region moving first north to nest, and then south again to their respective over wintering areas. Waterfowl species observed using the DTA West include sandhill cranes, Canada geese, trumpeter swan, snow and white-fronted geese, and 28 species of ducks. The One-Hundred Mile Creek area contains numerous ponds and may provide habitat for waterfowl, though no waterfowl surveys have been conducted in this area to determine its utilization.

3.2.2.4 USAG-AK natural resource personnel have conducted aerial trumpeter swan brood surveys in the DTA. Results suggest swans are increasing their range and use of the DTA lakes for nesting. The US Fish and Wildlife Service (USFWS) began

conducting statewide trumpeter swan surveys in the 1960s but did not include the DTA because habitat was considered marginal. A USFWS survey did include some portions of DTA in the 2005 statewide count and were included in the Upper Tanana census unit. Within that unit there was an increase of observed birds from 564 in 2000 to 729 in 2005, continuing the trend of increasing numbers that have been recorded during the aerial surveys that take place every five years. Aerial brood surveys were conducted in the DTA in 2001 and 2003 and as many as 60 swans were observed. All but one brood was located on DTA West lands (*INRMP 2007-2011, USAG-AK, 2006*). A study conducted by ABR Inc. in 1998 documented sandhill cranes roosting and migrating in the Delta Creek and OIA (*Wildlife Studies at Fort Wainwright and Fort Greely, Central Alaska, 1998, ABR Inc.*).

3.2.2.5 In addition to waterfowl, the region provides habitat for a variety of passerines, as many as 43 different species have been observed (Anderson, et al, 2000). Ecotypes that are most commonly used by passerines are upland moist broadleaf forest, lowland moist tall scrub, lowland gravelly dry broadleaf forest, and lowland wet mixed forest. The proposed JAWSS facilities would be located in predominantly lowland moist tall scrub ecotype.

3.2.3 Fish

3.2.3.1 Delta Creek is a glacially fed water body that, according to the ADF&G, does not have a large resident fish population; Arctic grayling are known to use Delta Creek during the summer months (*J.D. Durst, DNR/OHMP, 2004, personal communication*).

3.2.3.2 One-Hundred Mile Creek is an intermittent stream which typically dries up during the summer months but is used by Arctic grayling during the spring for spawning purposes.

3.2.4 Wetlands

3.2.4.1 In 1998, wetlands in the DTA were characterized by a survey conducted by the US Army Engineering and Research and Development Center Cold Region Research and Engineering Laboratory. The survey found that approximately 68 percent of the area was comprised of wetlands, including palustrine, riverine, and lacustrine types. Wetland types were classified according to a system established by the US Fish and Wildlife Service (*Cowardin et al, 1979*). The predominant wetland type found in the survey (35 percent) was lowland wet low scrub and lowland tussock scrub bog. The four sites proposed for construction of the JAWSS facilities, as well as the tower at Donnelly Ridge, would be located in this type of wetland.

3.2.4.2 The USAG-AK has classified wetlands on lands that they manage in Alaska as having “higher-function” or “other” (*BAX/CACTF EIS*, 2006). High-function wetlands include riverine areas, permanent emergent areas, semipermanent emergent areas, riparian areas, and other sensitive wildlife habitats that may lie within wetland areas. Wetlands considered low-function are all other remaining types that occur on USAG-AK

lands. The type of wetlands which would be impacted by the proposed project are classified as "other."

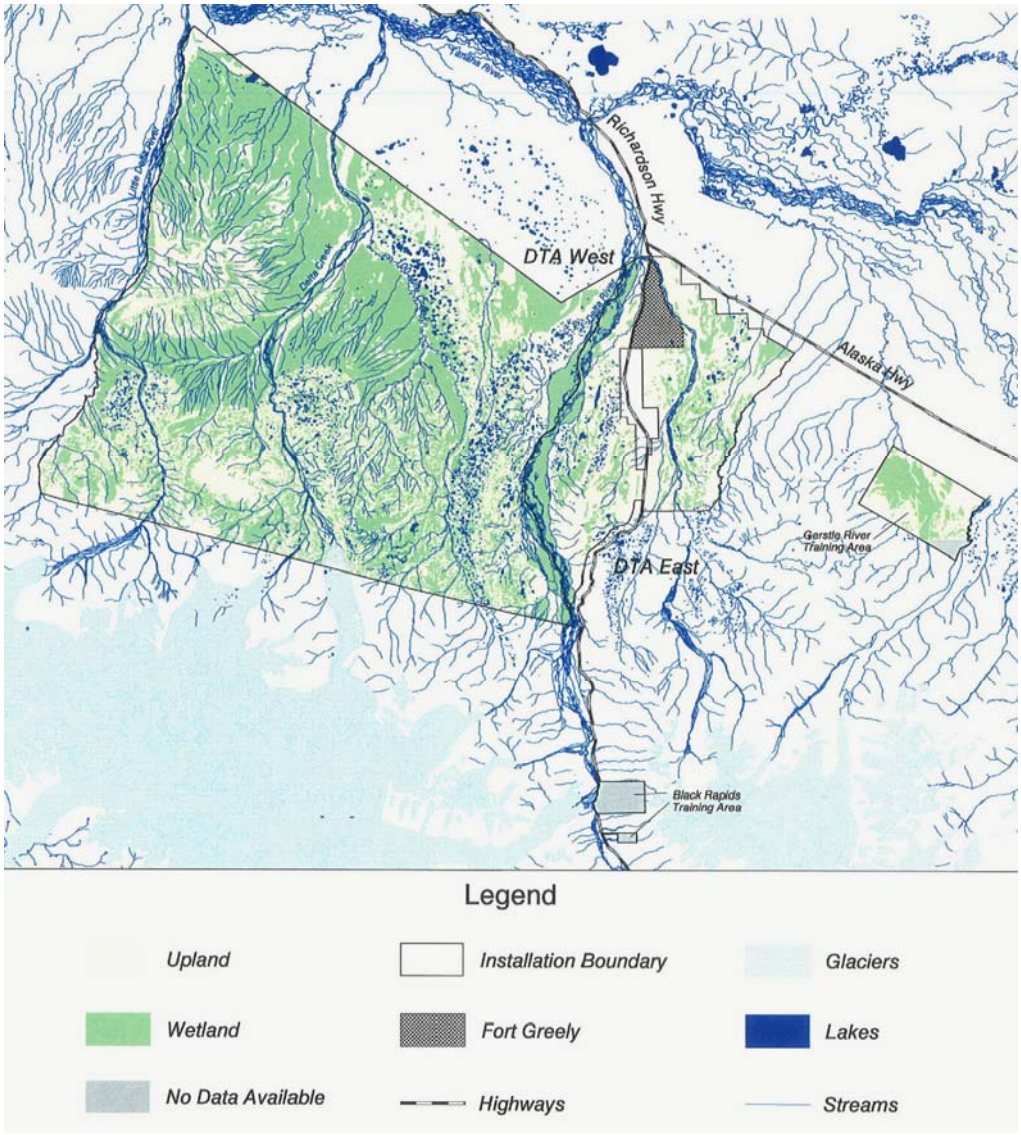

Figure 3-6 – Wetlands in the DTA

3.2.5 Threatened or Endangered Species

There are no known threatened or endangered species within the OIA. Species of concern listed by the state of Alaska that have been sighted on DTA lands include the American peregrine falcon, olive-sided flycatcher, gray-cheeked thrush, and blackpoll warbler 9 (*INRMP 2007-2011, USAG-AK, 2006*).

3.3 Cultural and Historic Resources

3.3.1 In 1984, as part of the development of a Historic Preservation Plan (HPP) for Army lands in the state of Alaska, the US Army began a detailed inventory of all archeological and historic sites contained on their lands. In 1986, the Sixth Infantry Division (Light) completed a Historic Preservation Plan for the OIA on Fort Greely. Since that time several surveys have occurred, but none of the surveys included the sites proposed for siting the JAWSS installations. As a result of the need for additional site specific survey information, a survey was conducted in mid May of 2008. The survey resulted in no cultural resources being identified at these sites.

3.3.2 Donnelly Ridge is the site of an existing USAF facility known as Central Master and was built in 1994 as part of the installation of the Yukon Measurement and Debriefing System. Prior to the construction of the facility, a cultural resource survey was conducted in 1993 by Spectrum Sciences & Software and it identified the site as part of the White Alice Communications System that was significant for its association with Cold War era of American history and is listed in the National Register. It was determined through a Section 106 consultation that construction of the Donnelly Ridge facility would not have an adverse affect on the White Alice site. The proposed tower at Donnelly Ridge is within the footprint of the existing South Master facility. The 1993 survey identified no other cultural resources in conjunction with the Donnelly Ridge site.

3.4 Socioeconomic Factors

The project area is not located near any population centers that are disproportionately inhabited by minorities or low-income groups. There are currently no consumptive or nonconsumptive recreational values in the OIA. This area is classified as withdrawn military lands and is, for the most part, in a restricted use area closed to the public.

3.5 Government-to-Government Consultation

3.5.1 The USAF acknowledges that they have a responsibility to initiate and conduct government-to-government working relationships with tribes in Alaska. The guidance for this process is the DoD's American Indian and Alaska Native Policy as reflected in DoD Instruction 4710.02. This instruction addresses those situations and issues unique to Alaska's Tribes including application of trust responsibilities, renewable resources, land status and the logistics with working on a government-to-government basis with 229 Tribes residing throughout Alaska. This guidance acknowledges that trust responsibilities are not limited to Tribal rights and resources on Indian Land, but extend to protected rights and resources off Indian land as well.

3.5.2 For the purposes of this environmental assessment, it was deemed appropriate to conduct government-to-government consultation with the six tribes that are part of the Upper Tanana Tribes. These include Healy Lake, Northway, Eagle, Tetlin, Tanacross, and Dot Lake. Letters describing the proposed work were sent to each tribe. In addition, a request for information that they might have that would be pertinent to the project area,

as well as an invitation to participate in the review of the environmental assessment was proposed.

4.0 Environmental Consequences

Section 4.0 is organized by resources, with the environmental consequences evaluated for the proposed action and the no action alternative. This discussion will provide a scientific and analytic basis for the comparisons of the alternatives and describes the probable consequences (impacts and effects) of each alternative on selected environmental resources.

4.1 Physical Resources

4.1.1 Topography

There would be no significant effect on the regional topography by implementing the proposed action or the no action alternative. Construction activities associated with the proposed action are relatively minor and would impact an area of less than 0.4 acres total for all five sites.

4.1.2 Geology

There would be no effect on the geology of the area by implementing either the proposed action or the no action alternative. Excavation for the piling foundation would be to a maximum of 5 feet and would not reach bedrock.

4.1.3 Soils

4.1.3.1 Proposed Action

Installation of JAWSS shelters would result in disturbance to approximately 7 cubic feet of wetland soils per site for a total of 4 cubic yards for all proposed facilities. An additional 3 cubic yards of gravel would be flown in from a nearby commercial source and placed underneath the four JAWSS to provide a 6 to 8 inch thick noncombustible substrate in case of tundra fire. Any excess soil from construction would be spread underneath the gravel pad. Soils located in wetlands consist primarily of poorly draining silt loam soils, with textures ranging from sandy loam to clay loam. The potential for soil erosion in the area would be minimized, however, by leaving the root mass/organic layer intact during the construction phase for all areas except the piling holes. Silt fences would also be utilized during construction to minimize siltation of adjacent wetlands.

4.1.3.2 No Action Alternative

There would be no direct disturbance to soils under the no action alternative.

4.1.4 Climate

There would be no effect on climate by implementing either the proposed action or the no action alternative.

4.1.5 Air Quality

4.1.5.1 Proposed Action

Implementation of the proposed action would result in temporary localized reductions in air quality during the period of construction primarily from helicopter emissions during take-off and landings. A semiannual maintenance visit would not likely impact air quality.

4.1.5.2 No Action Alternative

Air quality would remain constant and would not diminish under the no action alternative.

4.1.6 Ground and Surface Water

4.1.6.1 Proposed Action

The potential for contamination to ground and surface waters is greater during construction activity due to increased risks associated with fuel transfer spills and accidents in conjunction with the operation of machinery, primarily helicopters. The machinery that would be used to construct the sites would, with the exception of the towers at Donnelly Ridge, be light equipment such as handheld gas-powered soil augers and small, all-terrain vehicles. At Donnelly Ridge, larger diesel-powered cranes and earth moving equipment may be used to construct the 200-foot tower. In the event of a fuel spill associated with equipment operation at any of the sites, the USAF would respond with the appropriate equipment, and in accordance with their Alaska Department of Environmental Conservation approved oil spill contingency plan. All reportable spills would be reported to DTA Range Control. Spill response equipment for small scale spills is kept at both Donnelly Ridge and OP-26 facilities. For larger scale spill responses, equipment would be flown in by helicopter from Eielson. No fuel will be stockpiled at any of the proposed construction sites.

4.1.6.2 No Action Alternative

There would be no impact to groundwater or surface water under the no action alternative.

4.1.7 Infrastructure

4.1.7.1 Proposed Action

Upgrading the existing electronic scoring system would provide the Air Force with enhanced training and mission capabilities as stated in Section 1.1.7, as well as help achieve the USAF objectives of enhancing range operational effectiveness. The development of this additional infrastructure has been fully coordinated with USAG-AK range operations personnel to ensure that it would not interfere or limit the use and operation of their existing infrastructure.

4.1.7.2 No Action Alternative

Selection of this alternative would result in no changes to the existing infrastructure or target scoring capabilities in the OIA, resulting in Eielson not being able to meet mission training requirements.

4.2 Biological Resources

4.2.1 Vegetation

4.2.1.1 Proposed Action

4.2.1.1.1 Installation of the JAWSS system would result in the loss of 0.4 acres of vegetation. Vegetation at the sites consists of scrub/shrub tussock tundra plant communities including dwarf birch, willow, forbs, grasses, and an occasional black spruce (see Figure 3-4.). Likely impacts would be the displacement of wildlife (birds and small mammals) to similar adjoining habitat.

4.2.1.1.2 Additional impacts to vegetation would occur from the construction of firebreaks. A 3-foot-wide perimeter of gravel 4 to 6 inches deep would be placed around and under the instrument shed and wind generator to prevent it catching fire during tundra wildfires. This gravel layer would smother vegetation and cover the vegetative tundra mat. Some small mammals such as voles and shrews would be displaced to other adjacent similar habitat. In addition, all shrubs and trees that would provide fuel for tundra wildfires would be eliminated from a 100-foot radius around the facility. This would have an impact on a few species of small mammals and eliminate some nesting perches for some bird species.

4.2.1.2 No Action Alternative

The JAWSS system would not be installed, therefore, no direct loss of vegetation would occur.

4.2.2 Wildlife

4.2.2.1 Proposed Action

4.2.2.1.1 The proposed project would result in the loss of approximately 0.4 acres of moderate to low-value wetlands. This wetland habitat includes shrub-sedge tussock tundra and scrubby stands of black spruce/tamarack that offer nesting, foraging, and denning habitat for relatively few wildlife species. The 0.4 acres necessary for the installation of the JAWSS systems would likely result in displacement of wildlife to adjoining similar habitat. There may be some additional impacts to vegetation through the creation of a firebreak at each site. All trees and shrubs would be removed within a 100-foot radius of the facilities. The vegetation at these sites is sparse and relatively little clearing would be required (see Figure 3-5).

4.2.2.1.2 There may be some minor disruptions to wildlife movement in the area during construction phase. Increased activities such as helicopter traffic to sling materials from OP-26 to the site and operation of small, mostly hand equipment could result in temporary displacement of wildlife. However, these impacts would be limited in duration and scope (during project construction, 1 to 2 weeks). Approximately twice yearly, facility maintenance and propone tank refueling would occur by helicopter. During these visits some disturbance to wildlife could occur from helicopter noise.

4.2.2.1.3 The use of wind turbine systems in conjunction with the JAWSS facilities have some potential to impact wildlife. The turbines would have rotating blades approximately 10-feet in diameter. Although they would only be at a height of 30 feet off the ground, there is some concern that bird collisions could occur. The project area is in a major migratory bird corridor and each spring millions of birds fly north to nesting areas and again south after breeding season to preferred over-wintering areas. To determine if the wind turbines are a hazard to birds, a monitoring program would be conducted cooperatively with the USFWS to gather data during the summer to help in understanding potential impacts associated with operation of the turbines and to determine if any mitigation is appropriate.

4.2.2.1.4 In order to minimize impacts to trumpeter swans and other springtime migratory bird and waterfowl and to nesting species that generally occurs during June, construction activities would not occur until mid-July. Construction personnel would under all circumstances adhere to Migratory Bird Treaty Act guidelines throughout project construction.

4.2.2.2 No Action Alternative

No other impacts to wildlife are projected under this alternative.

4.2.3 Fish

4.2.3.1 Proposed Action

There would be no impacts to fish or fish habitat from the proposed action. None of the proposed work would be close enough to fish-bearing streams such that facility construction could result in impacts to fishery resources. There would likely be no impacts to fishery resources from operation of the facilities, including maintenance and refueling activities.

4.2.3.2 No Action Alternative

No impacts to fishery resources would result from this alternative.

4.2.4 Threatened or Endangered Species

No known threatened or endangered species inhabit the area.

4.2.5 Wetlands

4.2.5.1 Proposed Action

The implementation of the proposed action would result in the impacting/filling of 0.4 acres of wetlands vegetation due to the foundation construction for the instrument sheds and communications towers. As described in Section 3.2.4, the wetlands in the project area are considered to have moderate to low-value. Given the abundance of similar type wetlands found in the area, minimal impact to wetlands is anticipated. Due to system installation requirements (Section 1.1.8), no suitable upland locations were found.

4.2.5.2 No Action Alternative

There would be no loss of wetlands from this alternative.

4.3 Cultural and Historic Resources

Based on a survey conducted in May of 2008, no cultural resources were identified at the proposed sites. In addition, if during construction, any evidence of cultural resources were discovered, the cultural resource manager for the DTA would be immediately contacted and all work would cease pending a site evaluation.

4.4 Subsistence Activities

The areas associated with the proposed JAWSS sites are not areas that have in recent years received use for subsistence practices. This is in part due to the land being immediately adjacent to Army range land that has restricted access because of its use as a live impact area. The construction and operation of the JAWSS facilities at these

locations would not adversely impact ongoing subsistence use that might otherwise occur at these locations.

4.5 Government-to-Government Consultation

As part of the Air Force's responsibility under DoD Instruction 4710.02, Eielson sent letters describing the proposed action and requesting participation in the EA process to six Alaska Native groups that are within a loosely defined geographic area that is associated with the project area. These tribes included Healy Lake, Northway, Eagle, Tetlin, Tanacross, and Dot Lake. Follow-up phone calls were placed to the points of contact on record to determine if the letters had been received. No input from any of the tribes contacted was received in response to the Air Force request.

4.6 Environmental Justice

4.6.1 Environmental justice, as it pertains to the NEPA process, requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. To accomplish these requirements the Air Force must conduct an environmental justice analysis of potential impacts that may result from the proposed actions.

4.6.2 The site of the proposed project is located on federal lands designated for military operations. It is immediately adjacent to an area that is restricted to military activities only, with no public access allowed. The closest residential area to this site is Delta Junction, approximately 18 miles to the northeast. This residential area does not exhibit characteristics of low-income or minority populations that are not exhibited in the Fairbanks area population as a whole. Similarly, no native claims or allotments are located within a 10-mile radius of the project area. Based on the environmental impacts identified in this EA and on a corresponding environmental justice analysis, it is felt that no disproportionate impact to minority or low-income populations would occur from implementation of this project.

4.7 Unavoidable Adverse Impacts

The unavoidable adverse impacts associated with the proposed action and the no action alternative are summarized in Table 4-1.

Table 4-1 – Unavoidable Adverse Impacts

Action	Impacts
Proposed Action	• Installation of pilings resulting in the disturbance of 35 cubic yards of wetland soils. • Disturbance and/or filling of 0.4 acres of wetlands and the hand clearing of 0.1 acres of wetland vegetation.
No Action Alternative	• There would be no unavoidable adverse impacts associated with this alternative.

4.8 Mitigation

The project design for the proposed JAWSS facilities in the Oklahoma Range would incorporate best management practices that are designed to mitigate impacts to the environment. Design aspects include:

- Measures to prevent erosion such as minimizing disturbance to permafrost by removing the least amount of vegetation as possible during construction.
- Use of silt fences and other construction techniques to prevent siltation into adjacent wetlands during construction.
- Limit construction activities to after July 15 to prevent disturbance to bird nesting.
- Avoid impacts to any cultural resources by relocating/reconfiguring facility components.
- Creation of fire breaks to protect facilities from wild fire.
- Beacons on towers to address aircraft safety.
- Bird collision monitoring of wind turbines and towers.

5.0 Cumulative Impacts and Irreversible and Irretrievable Commitments of Resources

5.1 Cumulative Impacts

5.1.1 Definition

5.1.1.1 The NEPA process requires that the issue of cumulative impacts be addressed. This section provides (1) a definition of cumulative effects, (2) a description of past, present, and reasonably foreseeable actions relevant to the cumulative effects analysis, and (3) an evaluation of cumulative effects potentially resulting from these interactions. For the purposes of this cumulative impacts analysis, the geographic region of interest that would be considered is all Army range lands in interior Alaska which Eielson and other Air Force entities utilize for aircraft training and exercises.

5.1.1.2 The Council on Environmental Quality (CEQ) has stated in their NEPA regulations (1508.7) that "*Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions…*and*…can result from individually minor but collectively significant actions taking place over a period of time."* Cumulative effects are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location and/or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

5.1.2 Past and Present Actions Relevant to the Cumulative Effects Analysis

5.1.2.1 In conducting a cumulative impacts analysis, one must first define the geographic region within which the analysis will be conducted. For the purpose of this EA, it is deemed appropriate that it be focused on military lands in the interior of Alaska. There are approximately 1.5 million acres of land set aside for military use that is actively used by the US Army and the USAF and, except for the species referenced above, it is unlikely that any impacts associated with this project would have any affect beyond interior Alaska.

5.1.2.2 Impacts associated with the construction and expansion of military facilities in Alaska have been addressed in several previous environmental documents. These include *Fort Wainwright Resource Management Plan and Final EIS, U.S.D.I., Bureau of Land Management, 1989; Alaska Military Operations Areas-EIS* (U.S. Air Force 1995); *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS, U.S. Army 1998; National Missile Defense (NMD) Final EIS, 2000; Integrated Natural Resources Management Plan, Eielson Air Force Base, 2003;* and *Integrated Natural Resources Management Plan 2006, U.S. Army Alaska Volume 3.* In an Army NEPA document completed in 2004, *Transformation EIS, U.S. Army Alaska,* the Army conducted an extensive analysis

of cumulative impacts that have occurred as a result of military activities in interior Alaska. Many of the resource issues that were analyzed in the Army EIS are issues that pertain to this EA including wetlands, surface water, vegetation, and wildlife. The conclusions drawn in that document were that, for these resources, cumulatively significant impacts would not likely occur. The Army maintained that a combination of action specific mitigation, conducting monitoring programs, and ecosystem management would ensure that this circumstance is achieved. As new projects are proposed and built, subsequent analyses will be conducted to continually reconsider this question.

5.1.2.3 Eielson has in the past relied heavily on Army range lands for the training of its pilots. This reliance will certainly continue. These lands are the backbone of the Pacific Alaska Range Complex within which the ACMI electronic warfare system is positioned. Range facilities have been constructed in various locations throughout Army range lands, but they have been mainly concentrated in three impact areas known as R-2202 (OIA), R-2211 (Blair Lakes Range), and R-2205 (Stuart Creek Impact Area). In these impact areas various facilities including target arrays, electronic support systems, and access roads have been constructed. The actual areas on the ground that are used or affected are typically only a small fraction of the total acreages of these ranges. For example, the Air Force's Blair Lakes Range exclusive use area is comprised of 33,963 acres. Of that the Air Force has directly impacted only 226 acres. The portion of the total acreage that this constitutes is less than one percent of the total area. In addition, the total number of acres of Army range lands in interior Alaska that the Air Force has directly impacted by their construction and maintenance of facilities has been estimated at 548 acres. These lands represent a very small fraction of the total lands set aside for military use in interior Alaska. The current proposal to construct the JAWSS facilities would result in impacts to an additional 0.4 acres of wetlands in the DTA.

5.1.3 Reasonably Foreseeable Future Actions

5.1.3.1 In addition to past and present actions that could cumulatively result in significant impacts, the analysis should also consider projects that are planned in the foreseeable future. Eielson's *Base General Plan* lists projects planned for construction as far as 5 years ahead. However, the status of these projects often change and it is hard to predict accurately more than 2 or 3 years ahead which projects would be constructed.

5.1.3.2 Most of the projects scheduled for completion on Eielson and in the ranges during the next 2 to 3 years are associated with the build up for the RED FLAG-Alaska training exercises. These projects include numerous facility renovations, including office buildings, hangars, and aircraft parking ramps. Most of these projects would be in the main cantonment area of the base and in conjunction with areas that have been previously impacted through development. These projects have been tiered to a programmatic EA entitled, *Omnibus Base Construction in the Developed Portion of the Base Programmatic Environmental Assessment.* Use of this programmatic EA for NEPA analysis of a proposed project requires as a prerequisite that the action(s) not result in cumulatively significant impacts. In addition to the RED FLAG-Alaska projects, during the next 2 years a new south gate road project is planned that would impact wetlands.

Approximately 4.5 acres of black spruce wetlands would be impacted by this proposed work. On Air Force leased Army range lands a few small facility upgrade projects are planned as well as the construction of 2.4 miles of power lines to extend the power grid in the Yukon Training Area.

5.1.3.3 The USAG-AK has ongoing and future projects that have the potential for contributing to potential cumulative impacts to military lands in interior Alaska. They are completing the *Environmental Assessment for the Donnelly Training Area East Mobility and Maneuver Enhancement*. This document contains a recent cumulative effects analysis of Army activities in interior Alaska. They summarized cumulative impacts as they would occur relative to a broad range of resources including wetlands, fish and wildlife habitat, surface water, subsistence, public access and recreation, fire management, soils, and vegetation. They concluded that all related impacts would be minor and/or localized and not cumulatively significant.

5.1.4 Cumulative Impacts Analysis Summary

To date all cumulative impact analyses that have been completed in Eielson's NEPA documents for a wide range of small and large projects have arrived at the conclusion that cumulative impacts from base activities have not reached the threshold of significant. The current action would result in the loss of an additional 0.4 acres of scrub/shrub, low to moderate value wetlands. During the next 2 years it is possible that an additional 4.5 acres of wetlands could be lost as a result of a proposed road project. However, when considering all of these activities and their impacts on the environment, Eielson's program of wetland creation/enhancement has more than offset the loss of these wetlands. Since the program was implemented in 1989, Eielson has created more than 330 acres of enhanced wetlands in conjunction with gravel mining that has occurred on base lands. Thus it is believed that Eielson's current activities associated with construction of the proposed JAWSS sites would not likely result in significant cumulative impacts.

5.2 Irreversible and Irretrievable Commitments of Resources

The NEPA CEQ regulations require environmental analyses to identify *"...any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented"* (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects 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) which cannot be replaced within a reasonable time frame. Building construction material such as gravel and the gasoline usage for construction equipment would constitute the consumption of nonrenewable resources. These resources are currently plentiful and the amount of these resources required by this project would be minimal. Irreversible resource commitments associated with the proposed action is the loss of 0.4 acres of wetlands.

6.0 Scoping Participants

Person	Agency	Information
Maj Steve Brewer	353 CTS/RD Eielson AFB, Alaska Phone 907-377-2500	Range Facilities
Carrie McEnteer	USAG-AK-FWA-Environmental Fort Wainwright, Alaska Phone 907-361-9507	NEPA Coordinator
Dan Rees	USAG-AK-FWA-Environmental Fort Wainwright, Alaska Phone 907-361-9318	Forester
James Nolke	354 CE Environmental Eielson AFB, Alaska Phone 907-377-3365	Environmental Planner
Steve Thurmond	DTA Range Fort Wainwright, Alaska Phone 907-873-1447	Range
Lt Col Anthony Buck	353 CTS/RD Eielson AFB, Alaska Phone 907-377-4968	Commander
Doug Houpt	USAG-AK-FWA-DPW Fort Wainwright, Alaska Phone 907-384-7516	Public Works

7.0 Bibliography

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8.0 Glossary

100-Year Floodplain – A plain bordering a river that statistically floods at least once every 100 years.

Erosion – The wearing away of soil or organic matter by flowing water or wind.

Footprint – The maximum area required for the firing of weapons or detonation of munitions.

Intermittent Stream – A stream that has a periodic and interrupted flow.

Mitigate – To reduce or negate the effects of an environmental disturbance.

Mock Airfield – A target array consisting of mock aircraft, hangars, and airfield support facilities, which simulate an actual runway and taxiways.

Organic Soils – Soils that contain a high proportion of incompletely broken down plant material.

Outwash – Alluvial material deposits that are from glaciers and are mostly comprised of gravel and cobbles.

Permafrost – Permanently frozen subsoil.

Physiographic – A region containing the same general natural characteristics.

Ponding – Depressions resulting from the settling or removal of soil, which fill with water from the surrounding saturated soils.

Recharge – Surface water which percolates through porous soils to become part of the groundwater.

Sublimation – When water goes from a frozen state to the gaseous state without passing through the liquid state.

Subsidence – The shrinking of soils when they thaw, often resulting in ponding.

Succession – Unidirectional change in the composition of an ecosystem as the available competing organisms, especially plants, respond to and modify the environment.

Surficial – Of, or relating to the surface.

Tactical – Of, or relating to combat tactics.

Target Array – Plastic, wood, or metal representations of enemy forces, personnel, facilities, or equipment in a specific situation, accompanied by target analysis sensors.

Televised Ordnance Scoring System (TOSS) – A remotely controlled system used for the recording and scoring of ordnance strikes.

Thermokarst – Lakes, bogs, caverns, pits, or other usually water-filled depressions found in permafrost regions resulting from the melting of ground ice.

Tundra – Low-growing vegetation that exists beyond the temperature limitations of tree growth, either because of high latitudes or high altitudes.

Unmanned Threat Emitter (UMTE) – An electronic device used to simulate a combat environment (i.e., surface-to-air missiles) used for aircrew training.

Upland – The higher parts of a region or tract of land.

Wetlands – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soils conditions.

Yukon Measurement Debriefing System – An electronic system that provides real time positional and weapons data from instrumented aircraft. Data is used for real time combat exercise control and after mission debriefing.

9.0 Document Preparer

James Nolke prepared all sections of this document.

Mr. Nolke is the Environmental Planning Manager in the Environmental Flight at Eielson AFB, Alaska. He has 30 years of environmental impact assessment experience.

10.0 Wetlands Permit

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
WESTSIDE BUSINESS PLAZA
2175 UNIVERSITY AVENUE, SUITE 201E
FAIRBANKS, ALASKA 99709-4910

REPLY TO
ATTENTION OF:

Regulatory Division
POA-2004-1564-O

DEPARTMENT OF THE ARMY
PERMIT MODIFICATION

Department of the Army permit number POA-2004-1564-4, Delta Creek, was issued to United States Air Force, Eielson Air Force Base, Alaska, on February 10, 2005, for:

"Excavation of approximately 796,200 cubic yards of gravel from Delta Creek, and the placement of fill material into approximately 151 acres of wetlands for the upgrade of existing trails and target array pads at the Oklahoma Range."

The permit was modified (POA-2004-1564-M, Delta River) on June 29, 2005, as follows:

"Authorization to place approximately 44 cubic yards (cy) assorted fill (21 cy concrete, 0.4 cy iron pipe, and 22 cy unclassified fill) into 0.015 acres of wetlands for the installation of target arrays at the Oklahoma Range."

The permit was modified (POA-2004-1564-N, Delta Creek) on May 15, 2007, as follows:

"Authorization to include the placement of 14.2 cubic yards of concrete, 0.24 cubic yards of iron pipe, and approximately 14.35 cubic yards of unclassified fill into approximately 0.009 acres of wetlands for the installation of two additional Joint Advanced Weapons Scoring System sites (LISA-1 AND LISA-4)."

Note: LISA-1 in Mod N has been renamed to Old Lisa 1.

The permit is hereby modified as follows:

Authorization to place approximately 13 cubic yards (cy) of concrete, 1 cy of iron pipe, and approximately 14.4 cy of unclassified fill into approximately 545 square feet (0.0125 ac.) of wetlands for the installation of two additional Joint Advanced Weapons Scoring System sites along Delta Creek (Lisa 1 and Lisa 3). All work will be performed in accordance with the enclosed plans, sheets 1-3, dated January 30, 2008, which is incorporated in and made a part of this Permit Modification.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
WESTSIDE BUSINESS PLAZA
2175 UNIVERSITY AVENUE, SUITE 201E
FAIRBANKS, ALASKA 99709-4910

REPLY TO
ATTENTION OF:

March 4, 2008

Regulatory Division
POA-2004-1564-O

Mr. Tom Slater
354 CES/CEVN
2310 Central Avenue, Suite 100
Eielson AFB, Alaska 99702-2299

Dear Mr. Slater:

Enclosed is the signed Department of the Army (DA) permit modification, file number POA-2004-1564-O, Delta Creek. Also enclosed is a Notice of Authorization that should be posted in a prominent location near the authorized work.

If changes to the plans or location of the work are necessary for any reason, plans must be submitted to us immediately. Federal law requires approval of any changes before construction begins.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Also enclosed is a Notification of Administrative Appeals Options and Process and Request for Appeal form regarding this DA Permit Modification (see section labeled "Initial Proffered Permit").

You may contact me via email at Debby.J.McAtee@usace.army.mil, by mail at the address above, or by phone at (907) 474-2166, if you have questions. For additional information about our Regulatory Program, visit our web site at www.poa.usace.army.mil/reg.

Sincerely,

Debby McAtee
Regulatory Specialist

Enclosures

cc: Mr. Jeffrey B. Putnam, Base Civil Engineer, 2310 Central Avenue, Suite 100, Eielson Air Force Base, Alaska 99702-2299.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
WESTSIDE BUSINESS PLAZA
2175 UNIVERSITY AVENUE, SUITE 201E
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REPLY TO
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