Environmental Assessment

for

Upgrades to Target and Road Facilities in the Oklahoma Range

Fort Greely, Alaska

354th Fighter Wing
Eielson Air Force Base, Alaska
November 2004

Report Documentation Page

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FINDING OF NO SIGNIFICANT IMPACT (FONSI) and FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA) for the Upgrade of Roads and Target Pads in the Oklahoma Impact Area

Introduction

The 354 FW directs operations, training, and support for F-16CG and A/OA-10 precision weapons systems. They also oversee operations and training for Air Liaison Officer (ALO) and Tactical Air Control Party (TAC-P) combat teams that support ground operations through the lethal application of airpower. The 354 FW provides expeditionary combat ready forces for worldwide employment across the full spectrum of air and space operations. To facilitate this mission, Eielson Air Force Base (Eielson) operates range combat training facilities that are some of the finest in the world. The backbone of these facilities is the Air Combat Maneuvering Instrumentation (ACMI) system that was installed on US Army rangelands that comprise Eielson AFB's range facilities. The continued efficient and reliable operation of this range facility and training program is of vital importance to Eielson AFB's mission.

Description of the Proposed Action

The proposed action will result in upgrades to the existing trails and target array pads that comprise the Oklahoma Impact Area and related facilities. The proposed project would transform the existing earthen trails and target array pads into all weather roads and pads. Material for the proposed project would be obtained by mining gravel from Delta Creek and placing it on the existing trails. Approximately 796,200 cubic yards of gravel would be required to complete the project.

Alternatives to the Proposed Action

There were two alternatives to the proposed action. Alternative 1 would transform the existing earthen trails and target array pads into roads and gravel pads using gravel obtained from a shallow temporary gravel borrow pit that would be developed north of the mock airfield. The borrow pit site would be located on an upland shelf east of Delta Creek and would be used for a maximum of two years. Alternative 2 would transform the existing earthen trails and target array pads into roads and gravel pads using gravel obtained from a private, off-site gravel pit located south of Fort Greely on the Richardson Highway. Gravel would be trucked 22 miles to the Oklahoma Impact Area using the Winter Trail access route.

No Action Alternative

Under the no action alternative there would be no change to the existing trails or target array pads located in the Oklahoma Impact Area. This alternative would reflect the current status at the site. Accessibility within the Oklahoma Impact Area and maintenance procedures including munitions removal would remain the same under this alternative.

Environmental Impacts of the Proposed Action

100-Year Floodplain

Delta Creek, the site that will be used for extraction of gravel used for pad and road construction, is within the 100-year floodplain of the watercourse. Due to the glacial, braided nature of Delta Creek, however, flow is intermittent and except during spring breakup, less than 12 inches in depth. Excavation of gravel from Delta Creek, if conducted in the areas proposed by this project, will not alter the river hydro logically as the river will replenish the excavated area with bed load gravels during high spring flows. Therefore, it is anticipated that no impact to the 100-year floodplain will occur from this project.

Wetlands

Implementation of the proposed action, as well as alternatives 1 and 2, would result in the loss of 151 acres of wetlands. Wetlands in the project area are considered low-value wetlands and are mainly scrub/shrub tussock tundra wetlands of which there are large contiguous areas. Wildlife using the area would likely be displaced to similar adjoining habitat.

Biological Resources

Impacts to biological resources from the proposed project are expected to be minimal. The highest potential for impacts to wildlife could come from the extraction of gravel in Delta Creek. If the main channel is altered and shifts, fish entrapment could occur, which could lead to fish mortality during low flows or winter freeze. Gravel mining procedures recommended by Alaska Department of Natural Resources, Habitat Management & Permitting, should be sufficient to prevent such an event.

Threatened or Endangered Species

There are no threatened or endangered species in the project area. The project area is not suitable habitat for any of the threatened or endangered species occurring in the Alaskan interior.

Historical or Cultural Resources

Archeological surveys are not required for lands designated as part of an impact area. A small portion of the proposed project is not located in the Oklahoma Impact Area. These lands are in wetlands and have a low probability of having historic/cultural resources associated with them. A survey of these lands is scheduled for next field season and will be completed before any activities on the lands occur. In the event that historic or cultural sites are discovered during project construction, activities will be halted and a professional archeologist will evaluate the find.

Air Quality

The proposed action will have minor air quality impacts during construction due to fugitive dust and machinery exhaust. Such impacts will be highly localized and temporary in nature.

Mitigation

No mitigation was required by state and federal agencies for any aspect of the proposed work.

Public Comment

No public comment was received from the public noticing of the Draft EA/FONSI/FONPA or the Corps of Engineers 404 wetlands permit for this project.

Findings

Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) implementing regulations for NEPA (40 CFR Part 1500-1508), and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the Air Force has conducted an EA for the upgrade of target pads and roads in the Oklahoma Impact Area. This FONSI/FONPA has been developed pursuant to information provided in the accompanying EA.

Finding of No Practicable Alternative: Eielson is an Air Force facility that operates, maintains, and trains combat forces in close air support of military operations worldwide. Eielson must have reliable and cost effective training facilities in its training ranges to meet its strategic mission. Taking all the environmental, economic, and other pertinent factors into account, pursuant to Executive Order 11988 on Floodplain Management, and Executive Order 11990 on Protection of Wetlands, the authority delegated by
SAFO 780-1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the proposed action includes all practical measures to minimize harm to the environment.

Finding of No Significant Impact: Based on this Environmental Assessment (EA), which was conducted in accordance with the requirements of NEPA, CEQ, and Air Force Instructions, I conclude that the upgrade of range road and target pad facilities in the Oklahoma Impact Area will not result in significant impacts to the environment. I also find that the preparation of an Environmental Impact Statement (EIS) is not warranted.

Victor E. Renuart Jr.

VICTOR E. RENUART, JR.
Lieutenant General, USAF
Vice Commander, Pacific Air Forces

FEB 2 4 2005

Table of Contents

Environmental Assessment of
Oklahoma Impact Area Road and Target Upgrades
Donnelly Training Area, Alaska

1.0 Purpose and Need for Action

Chapter 1 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 United States Air Force (USAF) is proposing to upgrade the existing trails and target array pads within the Oklahoma Impact Area located in the Donnelly Training Area. The proposed project would transform the existing earthen trails and target array pads into roads and gravel pads. Material for the proposed project would be obtained by mining gravel from Delta Creek and placing it on the existing trails. Due to seasonal restrictions, work would be performed on an annual basis for three months each year (February-April) over a 10-year period. The project would be completed by 2015 with construction beginning January 2005.

1.1.2 The U.S. Department of Defense (DoD) has identified the Oklahoma Impact Area 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 threat conditions. The 11th Air Force (including Eielson AFB) conducts air-to-ground military aircraft operations in the Oklahoma Impact Area through a dual use inter-service agreement between the USAF and the United States Army Alaska (USARAK).

1.1.3 Since the closing of Clark Air Base in the Philippines, Alaska ranges have become the primary U.S. controlled tactical training areas available to Pacific Air Forces (PACAF) and U.S. 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 (MFE). One exercise operated annually, Cooperative Cope Thunder, opens the range and the training opportunities up to a multinational force. This exercise gives U.S. and allied forces' pilots the opportunity to practice air combat in a coalition environment. These exercises involve fighter units from other Pacific Air Force bases, the U.S. Navy, the U.S. Marine Corps, the U.S. Air National Guard, the U.S. 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 The proposed access upgrade to the Oklahoma Range is Phase 6 of a 25-year plan developed by the USAF that is designed to increase the operational effectiveness of the ranges. Previous Oklahoma Range upgrades included construction of a mock airfield and simulated targets, and installation of advanced scoring systems for training purposes including the Televised Ordnance Scoring System (TOSS) and the Unmanned Threat

Emitter systems (UMTE). One of the most crucial upgrades identified in the 25-year plan was improvement in safety and accessibility.

1.1.5 Due to ongoing training exercises, range maintenance personnel are restricted to conducting routine summer maintenance one month per year. Summer maintenance consists of repairing electronic equipment, clearing debris, leveling and constructing new targets, and recovering unexploded ordnance. Winter maintenance activities consist of transportation of all equipment, fuel, and materials necessary to support range operations for two years. These materials are transported over an ice bridge and a winter trail system that starts at the main post of Fort Greely and heads west towards the Oklahoma Impact Area.

1.1.6 The majority of the existing trail system within the Oklahoma Range is located in a permafrost wetlands environment. Surfacing the trails and target array pads with gravel would help achieve the USAF objectives of increased safety for removal of munitions and make range maintenance easier and facility operations more economical. Restricting range maintenance equipment and travel to improved roads and target pads would also minimize further ecological disturbances to wetlands.

1.2 Location of the Proposed Action

1.2.1 The proposed project is located in the Oklahoma Impact Area, a designated impact area within the Fort Greely West Training Area. The Training Area is comprised of approximately 571,995 acres and is located 100 miles southeast of Fairbanks, Alaska near the town of Delta Junction (**Figures 1 and 2**). The Oklahoma Impact Area consists of approximately 38,400 acres and lies within the central portion of the Fort Greely West Training Area. The Oklahoma Impact Area has numerous target types distributed throughout its area.

1.2.2 Under the proposed action, gravel would be excavated from the active channel of Delta Creek in the vicinity of the mock airfield. The site would be located approximately 14.3 miles upstream from its confluence with the Tanana River in Section 20, 21, T10S, R7E, Fairbanks Meridian. The existing trails that would be upgraded to all season status including the Winter Trail, Industrial Trail, Tulsa Lake Trail, and Maverick Trail; all of which are located between Delta Creek and One Hundred Mile Creek. The trails are the primary access routes to the target arrays referred to as the Army Post Area, Industrial Area, and Maverick Tank Area. The OP-26 Trail would also be upgraded and is located east of One Hundred Mile Creek. The location of the proposed gravel borrow pit site, trails, and target array areas are shown in **Figure 3**.

1.3 Alternatives to the Proposed Action

In addition to the proposed action, the following alternatives, including the no action alternative, are considered for analysis in this Environmental Assessment (EA).

1.3.1 Alternative 1 – Upgrade Existing Trails using Airfield Gravel Source and Delta Creek Gravel Source

Alternative 1 would transform the existing earthen trails and target array pads into roads and gravel pads using gravel obtained from a shallow temporary gravel borrow pit that would be developed north of the mock airfield. The borrow pit site would be located on an upland shelf east of Delta Creek and would be used for a maximum of two years. After that time period, gravel would be excavated from the current year's main channel of Delta Creek located near the mock airstrip. More than two year's excavation at this barrow pit would likely create seasonally ponded areas that could attract waterfowl and create bird air strike hazards.

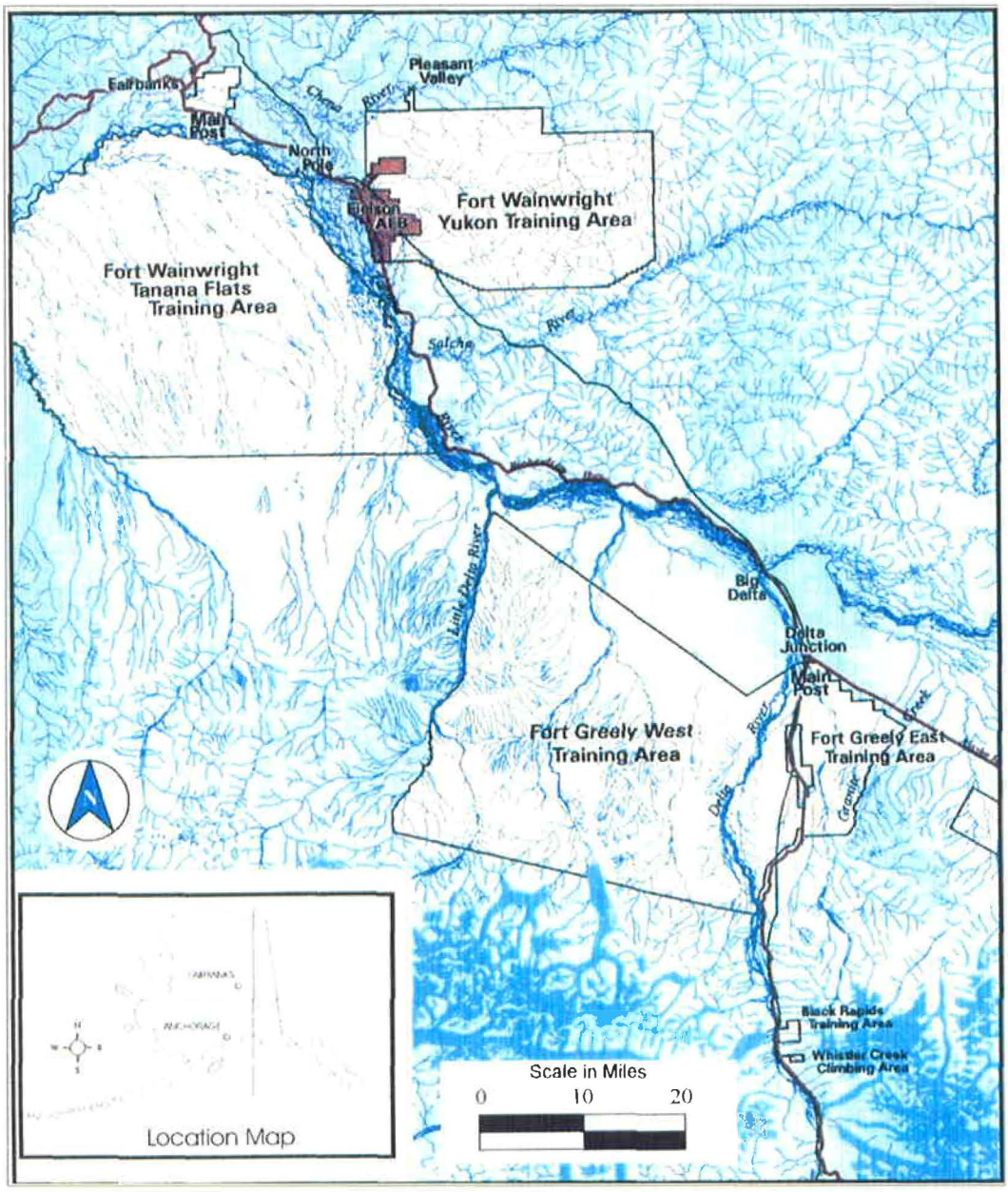


Figure 1

1.3.2 Alternative 2 – Upgrade Existing Trails using Off-Site Gravel Source

Alternative 2 would transform the existing earthen trails and target array pads into roads and gravel pads using gravel obtained from a private, off-site gravel pit located south of Fort Greely on the Richardson Highway. Gravel would be trucked to the Oklahoma Range using the Winter Trail access route.

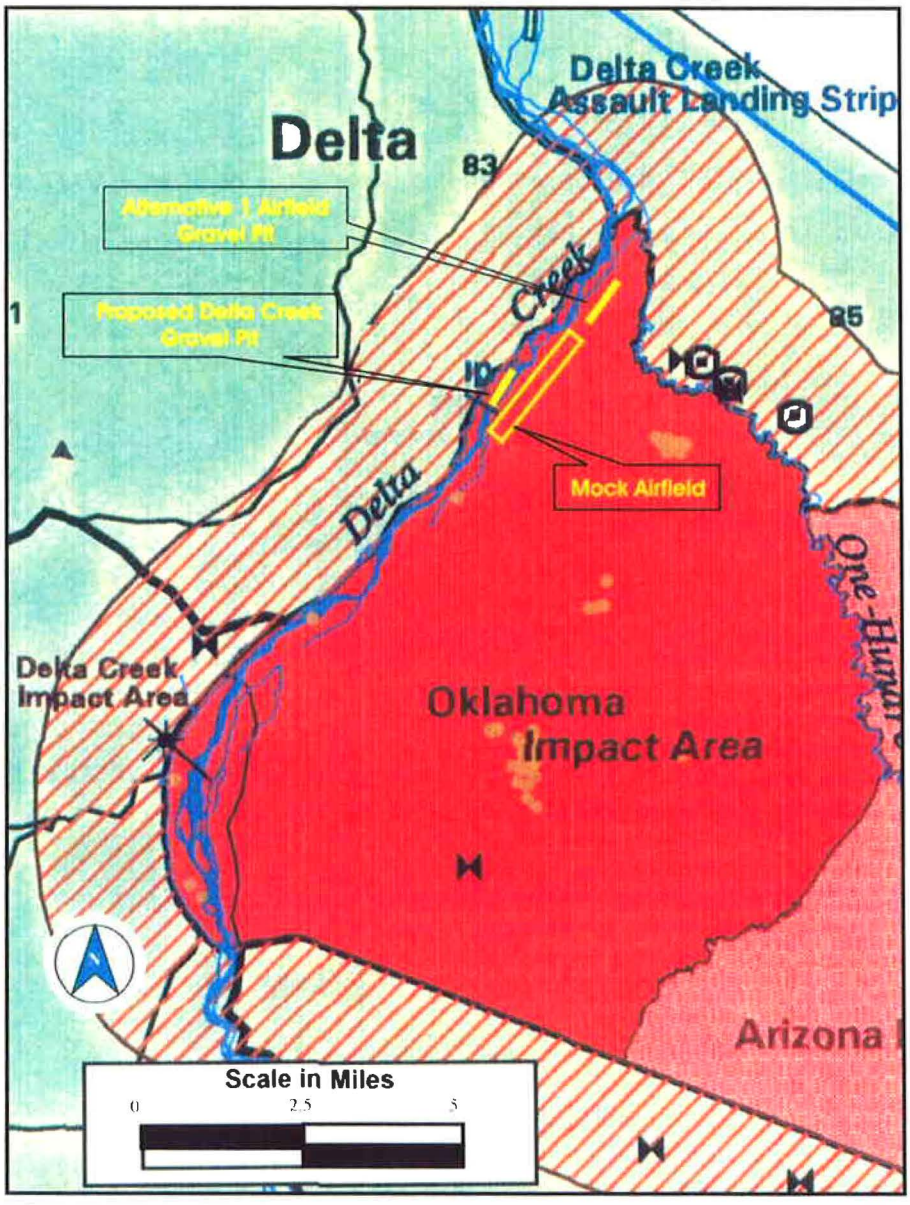


Figure 2

1.3.3 No Action Alternative

Under this alternative there would be no change to the existing trails or target array pads located in the Oklahoma Range. This alternative would reflect the current status at the site. Accessibility within the Oklahoma Range and maintenance procedures including munitions removal would remain the same under this alternative.

1.4 Decision to be Made

1.4.1 As required by Air Force Instruction 32-7061, an *Environmental Impact Analysis Process* (EIAP) must be completed to evaluate the environmental consequences of the proposed access upgrades to the Oklahoma Range. The completion of this EA is intended to satisfy these requirements. The proposed action and all alternatives listed in Section 1.3 will be described in detail in Chapter 2.0 of this document. A description of the resources at each of the alternative sites is described in Chapter 3.0 and the impacts to resources that could result from each alternative are discussed in Chapter 4.0.

1.4.2 Based on the information presented in this analysis, a decision must be made whether or not to implement the proposed action. 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, another alternative will be chosen for which impacts will not reach the threshold of significance.

1.4.3 Executive Order (EO) 11990 requires the heads of all federal agencies to find that there is no practicable alternative before the agency can take certain actions impacting wetlands and 100-year floodplains of rivers. The proposed action, alternative 1, and alternative 2 would result in impacts to wetlands and 100-year floodplains. The no action alternative would not result in impacts to wetlands or 100-year floodplains.

1.5 NEPA Actions that Influence this Assessment

1.5.1 *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 Oklahoma Impact Area, including airspace management, biological resources, recreational resources, subsistence, land use, air quality, and noise as they relate to operation of military aircraft.

1.5.2 *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 on the Oklahoma Impact Area at Donnelly Training Area.

1.5.3 *Ft. Greely, Proposed Resource Management Plan and Final EIS, U.S.D.I., Bureau of Land Management, 1989, and Integrated Natural Resources Management Plan and Environmental Assessment 2002-2006, U.S. Army Alaska, 2002*. These documents provide a series of options for resource management of the Donnelly Training Area.

1.5.4 *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS, U.S. Army 1998* This EIS assesses the environmental consequences associated with the continued military use of U.S. Army lands and the renewed withdraw of the Fort Wainwright Yukon Maneuver Area, Fort Greely West Training Area, and Fort Greely East Training Area.

1.5.5 *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 Oklahoma Impact Area at Fort Greely.

1.6 Project Scoping/Significant Issues

On March 31, 2004 and September 30, 2004 scoping meetings were held at Eielson AFB to identify and discuss issues considered pertinent to the proposed Oklahoma Range upgrades. Representatives from various agencies also participated in a site visit conducted on August 31, 2004 and October 5, 2004. An attempt was made to invite all potentially interested federal, state and local agencies. Issues raised in the scoping meeting are briefly discussed in this section and discussed in greater detail in Chapters 2, 3, and 4.

1.6.1 *Wetlands*: Air Force and agency personnel voiced concerns about the conditions of the existing trail system and degradation to wetlands. Because the trails are located primarily in a permafrost wetland environment, continued use of the trails during summer months could result in further impacts to wetlands.

1.6.2 *Impacts on Fish and Wildlife*: The Alaska Department of Fish and Game (ADF&G) raised the issue of the potential impact to fish and fish habitat in Delta Creek and One-Hundred Mile Creek. According to ADF&G, both Delta Creek and One-Hundred Mile Creek are designated as providing resident fish habitat for Arctic grayling. Proper design of the excavation pit at Delta Creek and the bridge crossing at One-Hundred Mile Creek would provide mitigation measures necessary to maintain fish habitat. These will be discussed in detail in Chapters 3 and 4.

1.6.3 *Range Access*: Range personnel stated the need for improved access within the Oklahoma Range to facilitate maintenance.

1.6.4 *Impacts on the Physical Environment*: The initial construction and subsequent maintenance of the existing mock airfield and surrounding targets have resulted in an alteration of the physical environment.

1.6.5 *Cultural Resources*: Trails within the Oklahoma Impact Area are exempt from cultural survey because of their location in an impact area, however, the potential impact to cultural resources with the proposed hardening of the OP-26 Trail must be considered. Issues relating to cultural resources will be discussed in Chapters 3 and 4.

1.6.6 *Impacts to vegetation and increased potential for erosion*: The necessity of maintaining a vegetated riparian zone along water bodies was stressed to prevent erosion and protect potential fish habitat. Excavation would occur at least 150 feet from the vegetated banks of streams and vegetated bars would be left undisturbed.

1.6.7 *Delta Creek Land Ownership:* The Alaska Department of Natural Resources (ADNR) conducted a navigability determination and concluded that Delta Creek is navigable and that the state of Alaska owns the bed of Delta Creek. The ADNR claims

that title to the beds of all navigable rivers passed to the state of Alaska at Statehood based on the Equal Footing Doctrine. Based on previous navigability determinations and legal case history, it is the opinion of the USAF that ownership of the Delta Creek bed was retained by the Federal Government at the time of Statehood. The issue of land ownership of the Delta Creek bed will most likely be decided by the courts.

1.6.8 *EOD Safety*: Air Force personnel raised the issue of safety on behalf of Air Force Explosive Ordnance Disposal (EOD) personnel. They are required to conduct annual sweeps for the disposal of unexploded ordnance. This is difficult to conduct on the existing target array pads because of soil conditions and the ponding that is prevalent in the disturbed wetlands.

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

1.7.1 A modification to existing Army 404 Wetlands Permit N-920063, Delta Creek 1, has been filed to allow excavation of gravel from the Delta Creek bed and discharge of fill material into approximately 151 acres of wetlands. The total estimated discharge is 769,209 cubic yards of gravel.

1.7.2 Prior to gravel extraction from Delta Creek or installation of a bridge crossing at One Hundred Mile Creek, ADNR Fish Habitat (Title 41) Permit would need to be obtained and approved.

1.7.3 A material sale application has been filed with the state of Alaska Department of Natural Resources for the sale of 796,200 cubic yards of gravel. An interagency agreement between the ADNR and USAF would allow for the excavation of gravel from the Delta Creek bed without the transfer of money until the land ownership issue is resolved.

1.7.4 Section 106 of the National Historic Preservation Act requires project specific identification of cultural resources. An archeological survey and Section 106 Consultation would need to be completed prior to upgrading the OP-26 Trail.

2.0 Description of the Proposed Action and Alternatives

Chapter 2 provides a description of alternatives considered to achieve the purpose and need described in Section 1.0. The proposed action, the two action alternatives, and the no action alternative will be addressed. A summary of the environmental consequences for these alternatives will also be discussed.

2.1 Proposed Action – Upgrade Existing Trails using Delta Creek Gravel Source

2.1.1 The USAF is proposing to upgrade the existing trails and target array pads within the Oklahoma Range. The proposed project would transform the existing earthen trails and target array pads into all weather roads and pads. Material for the proposed project would be obtained by mining gravel from Delta Creek and placing it on the existing trails. Approximately 796,200 cubic yards of gravel would be required to complete the project.

2.1.2 Approximately 80,000 cubic yards of gravel would be excavated on an annual basis from the Delta Creek bed located west of the mock airfield (**Figure 2**). Gravel would be mined from the current year's main channel with a variable width of 50 to 150 feet. The location and the length of the excavation pit would also vary within the creek bed on an annual basis. In order to avoid destabilization of the channel, gravel excavation would follow existing channel meanders and excavation would occur at least 150 feet from vegetated banks and vegetated bars would be left undisturbed. To ensure continuation of fish habitat and eliminate potential for impeding fish passage, the guidelines as recommended by ADNR Office of Habitat Management & Permitting would be implemented as follows:

- Depth of excavation would be up to 15 feet maximum;
- Headwall and side slopes would be no steeper than 2:1;
- The tail slope would be no steeper than 6:1.

A cross section view of a typical gravel pit is shown in **Figure 3**. It is anticipated that the extraction site would partially or completely refill with substrate each year, and that the excavation site could change each year based on seasonal channel migrations over the braided floodplain (J.D. Durst, DNR/OHMP 2004).

2.1.3 The gravel would be removed using an excavator and be directly loaded into articulating dump trucks for placement on trails. There would be no stockpiling of gravel required.

2.1.4 The trails currently within the Oklahoma Range consist of earthen trails 10 to 30-foot-wide and are located primarily in a permafrost wetland environment (**Figure 4**). The total combined trail length to be upgraded to all season road status is 78,459 feet (14.8 miles) and would require an estimated 649,247 cubic yards of gravel fill. Hardening the target array sites would require an additional 140,412 cubic yards of gravel. The proposed project would discharge fill into approximately 151 acres of wetlands.

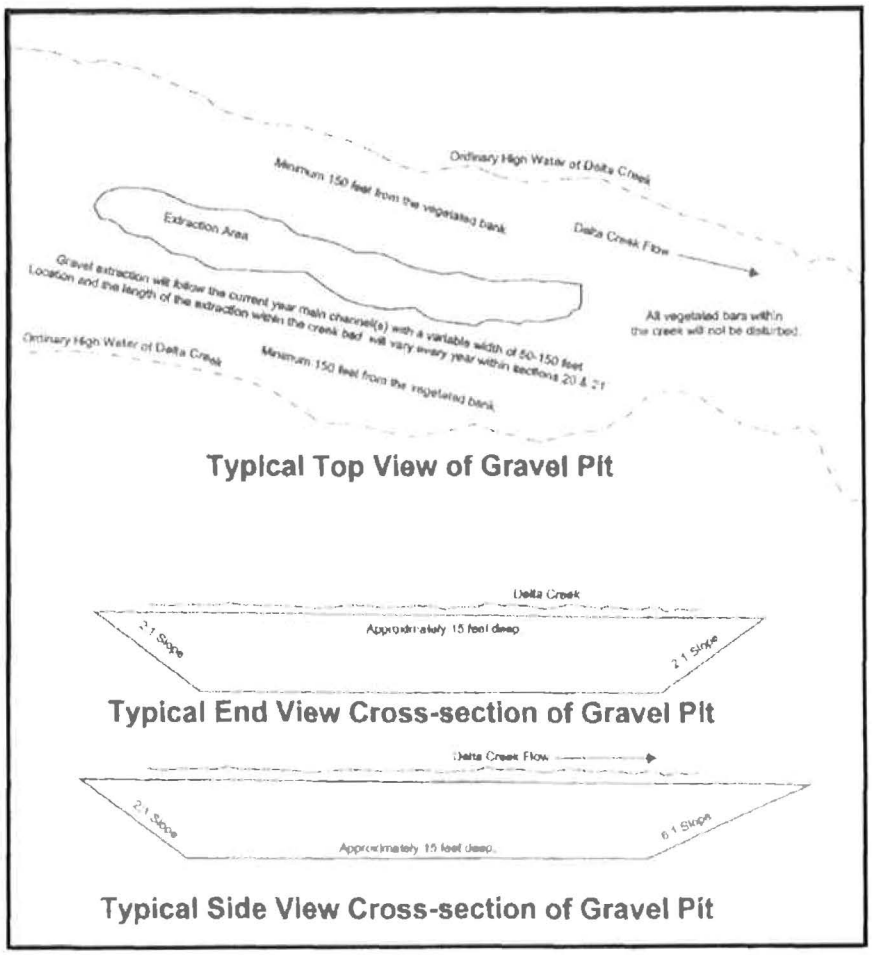


Figure 3

2.1.5 The root mass/organic layer mat would remain intact and a geotextile fabric would be placed on trails prior to gravel fill. Gravel would be delivered on-site using articulating dump trucks along with graders and bulldozers to spread the gravel. The equipment required for road construction would consist of the following:

- Six articulating end dump trucks for hauling gravel;
- Two bulldozers, D-7 and D-9 for spreading of gravel;
- Two road graders to maintain the winter trail and level gravel;
- One fuel delivery truck;
- One lube truck.

2.1.6 Road construction would begin at the trail closest to the gravel source (Winter Trail) and extend eastward. Once the all-season road is completed to One-Hundred Mile Creek, the USAF would construct a vehicle bridge over the creek to avoid impeding fish passage. Design of the bridge would take into account the meandering course of the creek. Roads would be 25 feet wide, 5 feet high, and have a 2:1 slope. Target pads would vary in size depending on the site and target array, but generally would be

5 feet high and have a 2:1 slope. Target array pads would vary in size and are shown in **Figures 5-7**. Culverts would be installed as necessary to ensure that natural drainage patterns are not impeded and that erosion and ponding does not occur.

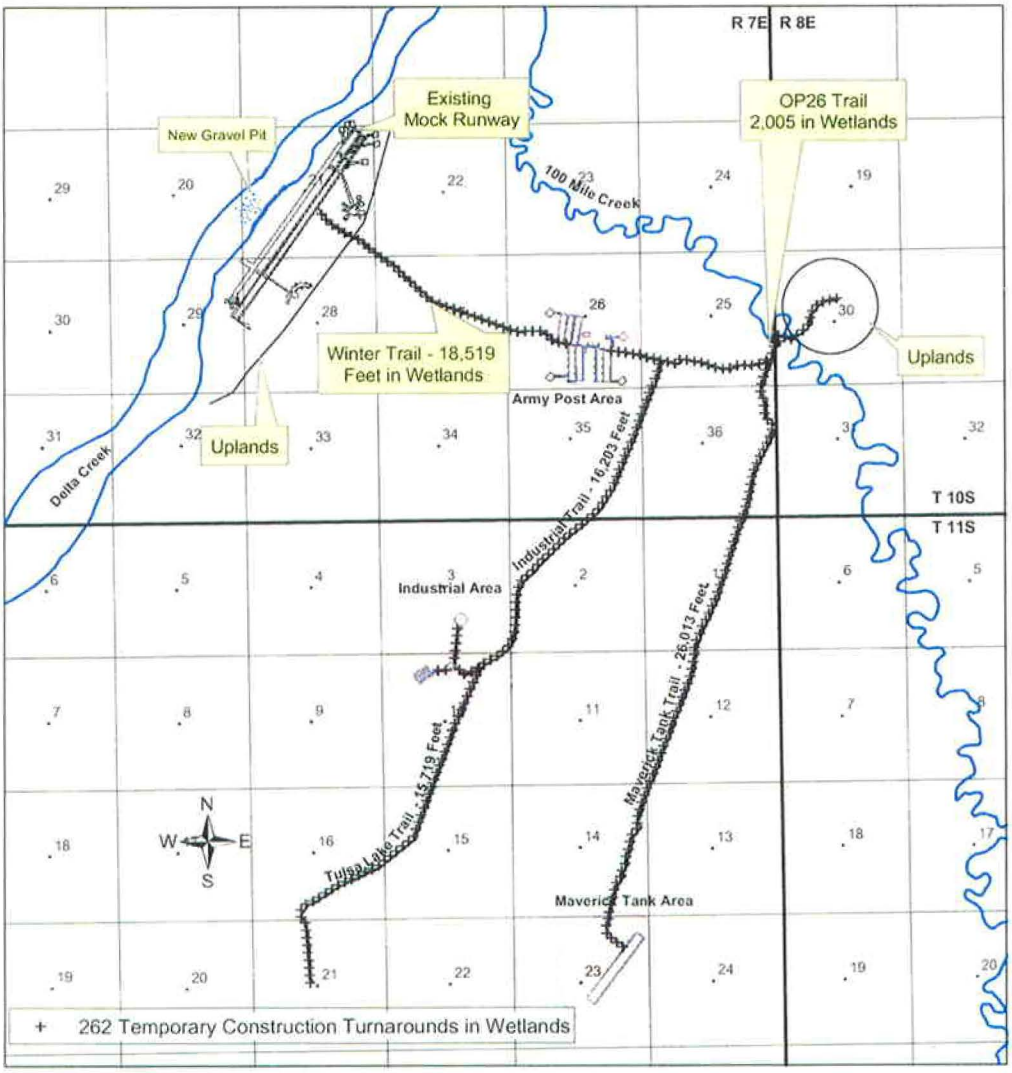


Figure 4

2.1.7 Temporary vehicular turnarounds would be constructed every 300 feet and removed once the road is built 600 feet beyond the turnaround. The fill material would be removed as close to the ground as possible and used for further road construction. Approximately 262 temporary turnarounds would need to be constructed throughout the duration of the project. It is estimated that 25 cubic yards of residual gravel would be left at each turnaround. The total residual gravel left within the turnaround footprints is estimated at 6,550 cubic yards. Following removal of gravel, the turnaround areas would be left to revegetate naturally.

2.1.8 Work on the project would be restricted to three months each winter (February – April) due to spring breakup and seasonal constraints such as construction of the ice

bridge required to access the Oklahoma Range. It is estimated that the project would take 10 years to complete with construction beginning January 2005.

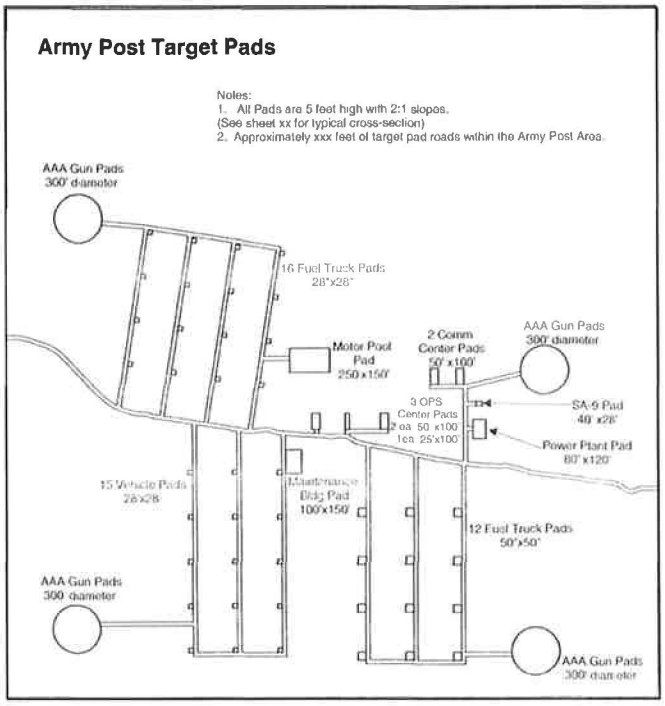


Figure 5

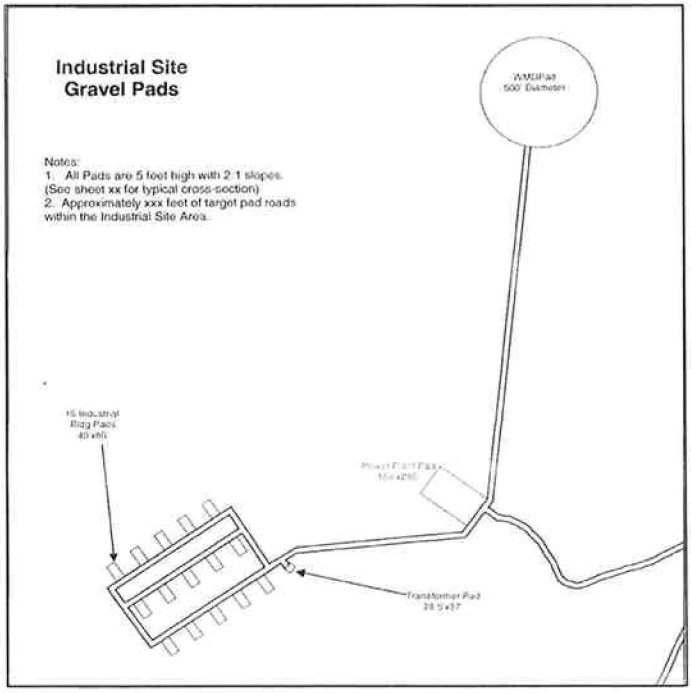


Figure 6

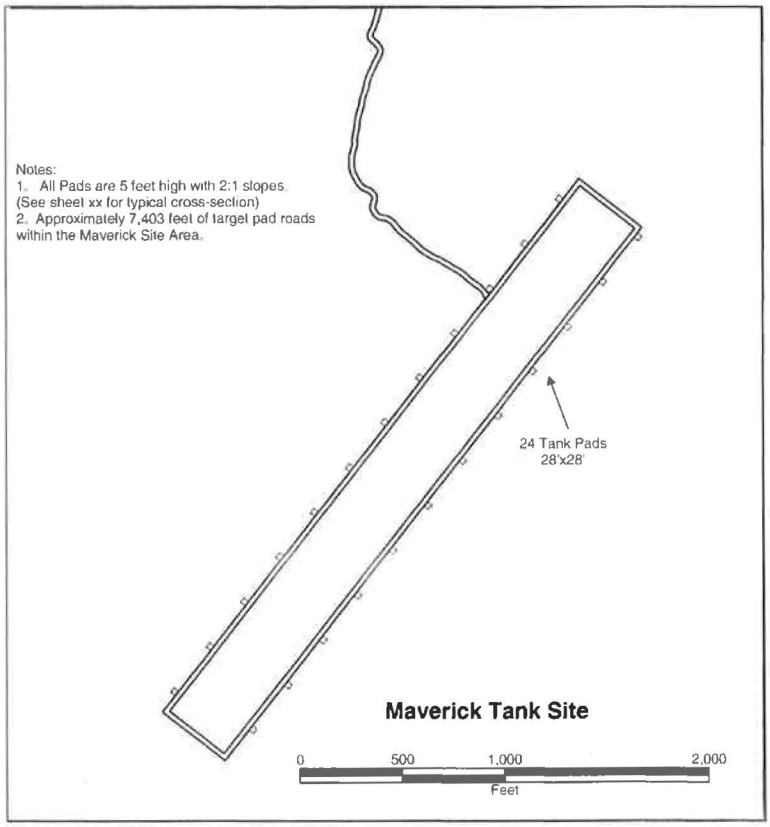


Figure 7

2.2 Alternative 1 - Upgrade Existing Trails using Airfield Gravel Source and Delta Creek Gravel Source

2.2.1 Alternative 1 would transform the existing earthen trails and target array pads into roads and gravel pads using gravel obtained from two different gravel sources. Gravel initially would be obtained from a shallow, temporary gravel borrow pit that would be developed in an area north of the existing mock airfield (**Figure 2**). The borrow pit site would be located on an upland shelf east of Delta Creek and would be used for a maximum of two years. The total amount of gravel that would be removed from this site over the two-year period would be 160,000 cubic yards.

2.2.2 The gravel pit would be 3,600 feet in length and 400 feet in width. Gravel would be removed to a maximum depth of 3 feet to prevent ponding and would have a 2:1 slope on all walls. A 150-foot vegetated buffer zone would be retained between the gravel borrow pit and the ordinary high water mark of Delta Creek. Gravel would be removed using a D-9 bulldozer and would be directly loaded into articulating dump trucks using a front-end loader. Construction of roads and target pads would be completed as stated in Section 2.1.

2.2.3 After the two-year period, the airfield gravel borrow pit would be closed and gravel would then be mined from the current year's main channel of Delta Creek bed as stated in Section 2.1. Closure of the airfield borrow pit would be necessary to avoid creating

ponded areas that would provide waterfowl resting habitat. The attraction of waterfowl to areas where aircraft are flying at low altitudes results in a significant aircraft hazard due to the potential for collisions with the waterfowl.

2.2.4 Work on the project would be restricted to three months each winter (February – April) due to spring breakup and seasonal constraints such as construction of the ice bridge required to access the Oklahoma Range. It is estimated that the project would take 10 years to complete with construction beginning January 2005.

2.3 Alternative 2 - Upgrade Existing Trails using Off-Site Gravel Source

2.3.1 Alternative 2 would transform the existing earthen trails and target array pads into roads and gravel pads using gravel obtained from a private, off-site gravel pit located south of Fort Greely on the Richardson Highway. Gravel would be trucked to the Oklahoma Range using the Winter Trail access route.

2.3.2 The proposed off-site gravel source is located approximately 20 miles from the Oklahoma Range mock airfield. Under this alternative, gravel would be brought in using 20 cubic yard belly dumps and temporarily stockpiled in the upland area located north of the mock airfield. The gravel would then be loaded into articulating dump trucks using a front-end loader.

2.3.3 The time required to make the round trip from the gravel source to the stockpile area is estimated at 2.0-2.5 hours. This alternative would require ten, 20-yard belly dump trucks to haul the gravel. It is estimated that each truck would have to make 5 round trips per day over the three-month period to deliver the required 80,000 cubic yards of gravel necessary for annual road construction. Construction of roads and target pads would be completed as stated in Section 2.1.

2.3.4 Work on the project would be restricted to three months each winter (February – April) due to spring breakup and seasonal constraints such as construction of the ice bridge required to access the Oklahoma Range. It is estimated that the project would take 10 years to complete with construction beginning January 2005.

2.4 No Action Alternative

2.4.1 The no action alternative would result in no change to the existing trails or target array pads. Under this alternative, no gravel would be mined or hauled into the Oklahoma Range. This alternative reflects the current conditions at the site. Current maintenance activities would continue under this alternative.

2.4.2 There would be no direct loss of vegetation under this alternative due to construction activities. However, it is anticipated that indirect loss of vegetation would occur due to continued maintenance activities necessary to maintain targets and facilities located in a wetlands environment. Due to subsidence and thawing of the permafrost associated with maintenance activities, it is expected that further degradation to the wetlands would continue under this alternative.

2.5 Other Alternatives Considered

2.5.1 Expansion of the airfield gravel borrow pit both in size and depth was considered, but rejected due to the potential for ponding which could attract waterfowl. Creating suitable habitat for waterfowl in the Oklahoma Impact Area would be in direct conflict with the USAF Bird-Aircraft Strike Hazard (BASH) policy designed to eliminate or reduce the risk of bird collisions with aircraft.

2.5.2 Development of a gravel source near One-Hundred Mile Creek was considered but was rejected due to lack of a sufficient quantity of gravel.

3.0 Affected Environment

Chapter 3 describes the existing environment and resource components that would be impacted by the proposed project and the alternatives. The resources discussed in this section are presented as a baseline for comparisons of environmental consequences. Due to the importance of wetlands and their predominance on the Oklahoma Range, wetlands are treated as both a physical and a biological resource.

Resources discussed in the section are as follows:

- Physical Resources, which includes general site location, topography, geology, soils, climate, air quality, ground and surface water, wetlands, and infrastructure improvements;
- Biological Resources, which includes vegetation, wildlife, fish, threatened or endangered species, and wetlands;
- Cultural Resources including Archeological or Historical Resources;
- Socioeconomic Factors.

3.1 Physical Resources

3.1.1 General Site Location

3.1.1.1 Fort Greely is comprised of approximately 571,995 acres located approximately 100 miles southeast of Fairbanks, Alaska near the town of Delta Junction. The Oklahoma Impact Area consists of approximately 38,400 acres located within the Fort Greely West Training Area (**Figure 1**).

3.1.1.2 Under the proposed action, gravel would be excavated from the Delta Creek bed approximately 14.3 miles upstream from its confluence with the Tanana River in Section 20, 21, T10S, R7E, Fairbanks Meridian. The site is located approximately 1,000 feet west of the mock airfield (**Photograph 1**). The trails to be upgraded to all season status are located between Delta Creek and One-Hundred Mile Creek with the exception of the OP-26 Trail which is located east of One-Hundred Mile Creek (**Figure 2**).

Photograph 1 – Mock airfield and Delta Creek

3.1.2 Topography

The Oklahoma Impact Area is comprised of a relatively uniform, gently sloping outwash fan. On the eastern and southern flanks of the outwash fan 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. The elevation at the proposed Delta Creek excavation site is approximately 1,445 feet above sea level and is located approximately 19 miles north of the Alaska Range. The upland shelf located east of Delta Creek, where the mock airfield is located, is approximately 1,450 feet above sea level (**Photograph 2**).

Photograph 2 – Mock airfield in foreground, Delta Creek center

3.1.3 Geology

3.1.3.1 The Oklahoma Impact Area 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 and Winter Trail. 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.

3.1.3.2 The proposed gravel source is located in the Delta Creek active floodplain. Though there has not been a delineation of the floodplain for the Delta Creek area in the vicinity of the mock airfield and the alternative 1 gravel site, it is thought to lie within the 100-year floodplain.

3.1.4 Soils

3.1.4.1 The Delta Creek material site is in the active floodplain and consists of alluvial gravels including poorly graded sand and silty gravels (**Photograph 3**). The site of the mock airfield and alternative 1 gravel source is an upland well-drained floodplain terrace with a relatively thin organic layer underlain by poorly graded sand and silty gravels. The depth of gravel is unknown. The soils are identified by the National Soil Conservation Service (NRCS) as Typic Cryochrepts in association with Aeric Cryaquept. This association is described as a silt loam, moderately to well drained, with underlying gravelly sand.

Photograph 3 –Delta Creek gravel site (J.D. Durst, DNR/OHMP 2004)

3.1.4.2 Soils in the vicinity of OP-26 and One Hundred Mile Creek are similar to those of the mock airfield and were identified as Typic Cryochrepts in association with Aeric Cryaquept.

3.1.4.3 Soils found in the vicinity of the Winter Trail, Industrial Trail, Tulsa Lake Trail, Maverick Trail, OP-26 Trail, and the target arrays are typically poorly drained organic soils underlain by permafrost. The NRCS classified the soil type as 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. Depth of the organic layer in the immediate vicinity of the existing mock airstrip is unknown. 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 Oklahoma Impact Area. Based on similar conditions found in other areas, the depth of the annual thaw layer is expected to be generally 8-to 12-inches.

3.1.5 Climate

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

3.1.5.2 The climate of the Oklahoma Impact Area is similar to Fort Greely and Delta Junction. 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 -60^0 F, highs of $+40^0$ F) in winter and hot (lows of $+30^0$ F, highs of $+90^0$ F), dry summers; this results in a low relative humidity and a high evaporation rate of surface waters and 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.

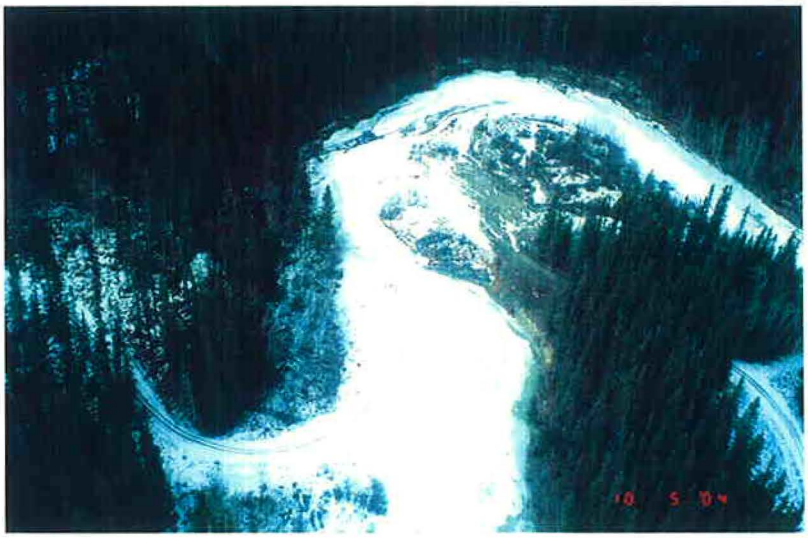
3.1.6 Air Quality

This site falls outside the boundaries of any Air Quality Control Region. Existing conditions in the Oklahoma Impact Area 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). The depth to groundwater may vary with terrain, elevation, and proximity to surface waters. Groundwater recharge is from influent seepage of glacier-fed streams.

3.1.7.2 The Oklahoma Impact Area lies entirely within the drainage of Delta Creek. This creek forms the western border of the Impact Area. 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 (**Photograph 4**). 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.



Photograph 4 – One-Hundred Mile Creek (J.D. Durst, DNR/OHMP 2004)

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 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 Fort Greely West Training Area, were determined to have a high alkalinity level.

3.1.7.5 A limited site-specific study was conducted by the U.S. 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). Though the sampling was not exhaustive in scope, available data suggests that there is not a detectable presence of contamination in surface waters due to munitions currently used in the Oklahoma Impact Area.

3.1.8 Wetlands

3.1.8.1 Wetlands are a predominating physical feature found within the Oklahoma Impact Area. The presence of extensive areas of permafrost has created perched water table conditions in many portions of the range, resulting in seasonally persistent moist or saturated soil conditions. Upland areas in the project area are located predominately along well-drained areas on south facing slopes or in permafrost free areas along creeks.

3.1.8.2 A major portion of the existing access trails throughout the Oklahoma Impact Area, are located in wetlands, however, small segments near One Hundred-Mile Creek and Delta Creek traverse through uplands.

3.1.9 Infrastructure Improvements

3.1.9.1 The infrastructure improvements found within the project area consist of a mock airfield, target arrays, maintenance camps, TOSS sites, and UMTE sites. The facilities are accessed via winter trail systems that exist throughout the area. Trails in the area are undeveloped and range between 10 and 30 feet in width.

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

3.1.9.3 The OP-26 maintenance camp consists of living quarters (which can house up to 16 people), two storage sheds, an outhouse, a generator shed, and a 1,000-gallon double-walled fuel tank. This is also a TOSS site, which consists of a camera, tower, and propane tanks. The total footprint of the infrastructure is approximately 0.079 acres. Other TOSS and UMTE sites include OP-27 and OP-28.5, which are located east of One-Hundred Mile Creek.

3.2 Biological Resources

3.2.1 Vegetation

3.2.1.1 The plant communities found within the Oklahoma Impact Area are varied and have resulted from spatial differences in soil temperature, moisture content, soil fertility, and 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 mock airfield is an open mixed forest interspersed with grass/shrub dominated communities (Viereck et al, 1992). Mixtures of balsam poplar, quaking aspen and white spruce dominate this community. Common understory shrubs include prickly rose, bog blueberry and crowberry. Aspen and balsam poplar in the area are 2 to 3 inches in diameter. A closed needleleaf forest consisting of stands of white spruce exist in isolated sections along the banks of Delta Creek and One Hundred Mile Creek. White spruce found along Delta Creek range from 6 to 8 inches in diameter.

3.2.1.3 The majority of the existing trails are in a mixed shrub-sedge tussock tundra plant community. This community type is dominated by tussock-forming sedges and contains shrubs such as dwarf birch and willows. OP-26 is a tall alder-willow shrub plant community and is co-dominated by alder and willow. Low shrubs include dwarf birch, bog blueberry, and Labrador tea. OP 26 also contains a 1.5-acre broadleaf forest dominated by birch.

3.2.1.4 Vegetation near One-Hundred Mile Creek is dominated by white spruce that are

8- to 10-inches in diameter. The Delta Creek material source site is located in the active portion of the floodplain. Vegetation is sparse and consists of seedling willows, alders, and scattered grasses.

3.2.2 Wildlife

3.2.2.1 According to Eielson AFB Natural Resource Branch, there has been little observed use of the mock airfield/Delta Creek area by waterfowl and shorebirds, with no observations of breeding, nesting, or brood-rearing activity in the area of the existing mock airfield. Waterfowl however, does use the area during spring and fall migration. Waterfowl species include sandhill cranes, Canada geese, snow and fronted geese, snipe and ducks of various kinds. 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.

3.2.2.2. Black bear, grizzly bear, moose, caribou, red fox, wolf, coyote, small furbearers, small mammals, raptors, grouse, ptarmigan, and a variety of passerines are known to use the habitat in the project area.

3.2.2.3 The area in the vicinity of OP-26, OP-27, and OP-28.5 of the One-Hundred Mile Creek drainage is not listed as having a seasonal concentration of moose (Bonito, 1980), although the presence of browsed shrubs and moose droppings in the area indicated some use.

3.2.2.4 Though the caribou range extends to the northern portion of the Oklahoma Impact Area, the area surrounding the project area is not known as being a pre-calving, calving, or post-calving area (ADF&G, 1997).

3.2.3 Fish

3.2.3.1 Delta Creek is a glacially fed water body with some clear headwater tributaries. Arctic grayling make seasonal use of Delta Creek in the project area while migrating between wintering areas in the Tanana River and spring spawning areas in the clear headwater streams and in One-Hundred Mile Creek (J.D. Durst, DNR/OHMP 2004).

3.2.3.2 One-Hundred Mile Creek is an intermittent creek, which typically dries up during the summer months but is used by Arctic grayling during the spring for spawning purposes. The surrounding lakes/ponds are unable to support resident populations of fish in winter because they are either too shallow or become deficient of oxygen in the winter.

3.2.4 Threatened or Endangered Species

There are no known threatened or endangered species within the Oklahoma Impact Area. Species of concern listed by the state of Alaska that have been sighted on Fort Greely lands include the American peregrine falcon, olive-sided flycatcher, gray-cheeked thrush, and blackpoll warbler. Sensitive species include Osprey and Trumpeter Swan (Alaska Army Lands Withdrawal Renewal. Final EIS 1998).

3.2.5 Wetlands

It is the goal of the USAF and USARAK to protect wetlands from loss or degradation to the maximum extent possible. Wetlands are recognized for their importance as a critical fish and wildlife habitat. Wetlands are also valued for their ability to function as a natural buffer for water quality maintenance. Wetlands can be grouped as having high or low wildlife habitat value. High-value wetland habitat includes seasonally flooded open habitats suitable for waterfowl nesting and feeding. Low-value wetland habitat includes shrub-sedge tussock tundra and scrubby stands of black spruce/tamarack that offer foraging habitat for relatively few species. The wetlands in the project area are considered low-value wetlands.

3.3 Cultural Resources

3.3.1 Archeological and Historical Resources

In 1984, as part of the development of a *Historic Preservation Plan* (*HHP*) for Army lands in the state of Alaska, the U.S. Army began a detailed inventory of all archeological and historic sites contained on their lands. In 1986, the Sixth Infantry Division (Light) completed the *HHP* for the Oklahoma Impact Area on Fort Greely. Based on this inventory, there are no known archeological, cultural, or historic resources located on or near the project area in the Oklahoma Impact Area.

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 non-consumptive recreational values in the Oklahoma Impact Area. This area is classified as a restricted use area and is closed to the public.

4.0 Environmental Consequences

Chapter 4 is organized by resources, with the environmental consequences evaluated for each 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. The effects of each alternative upon each resource are discussed in the same order that they were presented in Chapter 3, beginning with the proposed action. Impacts that are common to all alternatives are stated as such and are addressed in the appropriate sections.

4.1 Physical Resources

4.1.1 Topography

There would be no effect on the regional topography by implementing the proposed action, alternative 1, alternative 2, or the no action alternative.

4.1.2 Geology

There would be no effect on the geology by implementing the proposed action, alternative 1, alternative 2, or the no action alternative.

4.1.3 Soils

4.1.3.1 Proposed Action

4.1.3.1.1 Removal of approximately 80,000 cubic yards of gravel on an annual basis from the Delta Creek bed would result in temporary disturbance to river sediments. Soils consist primarily of alluvial gravels including poorly graded sand and silty gravels. The area disturbed by gravel removal activities would be approximately 144,000 square feet. Because of the high sediment load carrying capacity of Delta Creek, the excavation pit is expected to partially or completely recharge with gravel following the spring/summer open water season.

4.1.3.1.2 If a large runoff event were to occur in the Delta Creek floodplain, it is possible that new channels for Delta Creek could be created up-gradient from the gravel pit site. Without an inflow and outflow of water, the pit would fill to current groundwater level through infiltration and seepage. Creation of such a pond has the potential to impact fish populations. The potential impacts to fish are discussed in Section 4.2.3.2.

4.1.3.1.3 Upgrading the existing earthen trails to all-season roads would result in disturbance to wetland soils. A majority of the trails are located in a permafrost wetland environment. It is estimated that a total of 796,209 cubic yards of gravel fill would be discharged into 151 acres of wetlands for the construction of roads and target array pads. The potential for soil erosion in the area would be minimized however, by leaving the root mass/organic layer intact during the construction phase.

4.1.3.2 Alternative 1

4.1.3.2.1 The implementation of alternative 1 would require the development of gravel borrow pit for the removal of 160,000 cubic yards of gravel over a two year period. The removal of gravel would disturb approximately 33 acres (3,600 feet by 400 feet) of upland soils. Soils consist primarily of sandy and silty gravels. The gravel source is located on an upland shelf approximately 5 to 6 feet above the Delta Creek. Thawing or subsidence of soils is not expected to occur due to absence of permafrost.

4.1.3.2.2 Under alternative 1, construction of the roads and target array pads would have the same effects and environmental consequences as those described for the proposed action.

4.1.3.3 Alternative 2

4.1.3.3.1 Gravel required to upgrade the roads would be obtained from a private off-site source; therefore, there would be no impact to soils resulting from excavation activities. This alternative would have less impact on soils than either the proposed action or alternative 1, however, this alternative would be the most costly alternative to implement.

4.1.3.3.2 Under alternative 2, construction of the roads and target array pads would have the same effects and environmental consequences as those described for the proposed action.

4.1.3.4 No Action Alternative

There would be no direct disturbance to soils from construction activities under this alternative. However, disturbances would occur with the continuation of training and maintenance activities that currently occur in the Oklahoma Range area. Disturbance to soils resulting from direct impact of projectiles during bombing exercises is expected to be greater in wetlands than on constructed gravel target array pads. Soils with higher moisture content allow deeper penetration of ordnance, which also makes complete removal of ordnance more difficult. Similarly, personnel and equipment would have a greater impact to soils located in wetlands when conducting routine maintenance and ordnance removal.

4.1.4 Climate

There would be no effect on climate by implementing the proposed action, alternative 1, alternative 2, or the no action alternative.

4.1.5. Air Quality

Implementation of the proposed action, alternative 1, or alternative 2 would result in temporary localized reductions in air quality during operation of heavy equipment. Alternative 2 would require a greater quantity of heavy equipment than the proposed action and alternative 1. The air quality would remain constant and would not temporarily diminish under the no action alternative.

4.1.6 Ground and Surface Water

4.1.6.1 Impacts Common to all Action Alternatives

4.1.6.1.1 The potential for contamination to ground and surface waters is greater during construction activity due to increase risks associated with fuel transfer spills and accidents. Construction would occur during the winter months; however, if a spill were to occur, any residual fuel could impact surface and/or groundwater when the ground thaws. The USAF and USARAK will continue to respond to hazardous spills in cooperation with state and federal agencies. Alternative 2 would require a greater quantity of heavy equipment activity, thereby, increasing the potential for a fuel spill to occur.

4.1.6.1.2 Gravel fill placed on the trails would likely impede the flow of surface water and alter natural drainage patterns. Culverts would be installed as necessary to maintain natural drainage patterns. Given low precipitation levels for the area, erosion resulting from storm water and snowmelt runoff is not anticipated.

4.1.6.2 Proposed Action

Excavation of gravel from the Delta Creek bed would occur in the winter months and would therefore have no impact on groundwater or surface waters. Delta Creek typically ceases to flow by mid to late September and remains dry until spring runoff at break-up reestablishes the creeks flow.

4.1.6.3 Alternative 1

4.1.6.3.1 Development of the airfield gravel source would result in a shallow (less than 3 feet deep) borrow pit in order to prevent ponding. Retaining a minimum 150-foot vegetated zone between the airfield gravel pit and Delta Creek would minimize the potential for creek bank erosion as well as serve as a buffer zone for surface water runoff. No groundwater or surface water would be impacted with alternative 1.

4.1.6.3.2 Under alternative 2, construction of the roads and target array pads would have the same effects and environmental consequences as those described for the proposed action.

4.1.6.4 Alternative 2

There would be no impact to groundwater or surface waters with alternative 2.

4.1.6.5 No Action Alternative

There would be no impact to groundwater with this alternative. Surface water ponding would be expected to increase on trails and target array sites due to continuation of thawing of permafrost and subsidence. Increases in ponding at the target arrays would

pose an increased risk associated with removal of unexploded ordnance and also diminish the realism for training purposes.

4.1.7 Wetlands

4.1.7.1 Impacts Common to all Action Alternatives

The implementation of an action alternative would result in the loss of 151 acres of wetlands. As stated in 3.2.5, the wetlands in the project area are considered low-value wetlands. Given the abundance of similar type wetlands found in the area, minimal impact to wetlands is anticipated.

4.1.7.2 No Action Alternative

There would be no additional loss of wetlands with this alternative. It is expected, however, that the trails and target array sites located in wetlands would continue to degrade as a result of thawing of permafrost, subsidence, and ponding. Impacts to wetlands are minimized by transporting materials and equipment during winter months when the ground is frozen and the vegetative mat is protected by the snow pack, thus preserving its insulative qualities. However, limited summer access is necessary which results in additional degradation. In some areas, existing trails may become impassable due to extensive ponding, resulting in increased trail width that may cause further impacts to the wetlands (**Photograph 5**).

Photograph 5 – Trails located in wetlands

4.1.8 Infrastructure Improvements

4.1.8.1 Impacts Common to all Action Alternatives

Upgrading the 14.8 miles of trails in Oklahoma Range to all-season road status would help achieve the USAF objectives of enhancing range operational effectiveness.

Placement of an adequate gravel base would eliminate surface ponding and decrease subsidence. Eliminating surface ponding and creating drier soil conditions would enhance the recovery of unexploded ordnance, thereby, decreasing the potential for soil contamination and increasing the safety of EOD teams responsible for conducting annual sweeps of the unexploded ordnance. Upgrading roads and target array sites to all-season road status would also make range maintenance easier and more economical to manage. Restricting range maintenance equipment to improved roads and target pads would also minimize further ecological disturbances to wetlands. The upgrade to the trails would be viewed as an improvement to the quality of the existing infrastructure.

4.1.8.2 Proposed Action

The proposed action would remove gravel from the current year's active channel from Delta Creek. As stated previously, it is anticipated that the gravel source would replenish partially or completely on an annual basis. This alternative would not have a long-term impact to soils.

4.1.8.3 Alternative 1

Alternative 1 would remove gravel from the airfield gravel source located just north of the mock airfield. This alternative would have long-term impact to soils. In addition, the development of a gravel pit in close proximity to the mock airfield would be visible from the air, which may result in a reduction in realism for training purposes. This alternative would have less overall benefit than the proposed action or alternative 2.

4.1.8.4 Alternative 2

Alternative 2 would obtain the gravel from an off-site source for construction of the roads. There would be no short-term or long-term impacts to soils as a result of gravel extraction; however, implementing this alternative would have substantially higher costs than either the proposed action or alternative 1.

4.1.8.5 No Action Alternative

4.1.8.5.1 Selection of this alternative would not result in improvements to the existing infrastructure. Maintenance practices including the removal of unexploded ordnance would remain the same. Increased surface water at the mock airfield would also increase the risk for EOD teams responsible for removing unexploded ordnance. In deep ponded areas, unexploded ordnance can remain undetected, thereby, increasing the potential for soil contamination.

4.1.8.5.2 The USAF would continue to restrict range maintenance to winter months whenever possible in order to minimize impacts to wetlands. However, summer range maintenance is mandatory for activities such as munitions removal, which is expected to cause further ecological disturbances to wetlands.

4.2 Biological Resources

4.2.1 Vegetation

4.2.1.1 Impacts Common to all Action Alternatives

Upgrading the existing earthen trails to all-season roads will result in the loss of 151 acres of wetland vegetation and a small, unquantified amount of upland vegetation. The plant community in the vicinity of the mock airfield is an open mixed forest interspersed with grass/shrub-dominated communities. Mixtures of balsam poplar, quaking aspen and white spruce dominate this community. A closed needleleaf forest consisting of stands of white spruce exist in isolated sections along the banks of Delta Creek and One-Hundred Mile Creek. Vegetation for the majority of the trails consists of a mixed shrub-sedge tussock tundra plant community. This community type is dominated by tussock-forming sedges and contains shrubs such as dwarf birch and willows. Given the abundance of similar type of vegetation in the surrounding area, the impacts resulting from loss of vegetation would be minimal.

4.2.1.2 Proposed Action

In order to eliminate destabilization of the channel, gravel excavation would follow existing channel meanders and excavation would occur at least 150 feet from vegetated banks and vegetated bars would be left undisturbed. There would be no additional loss of vegetation due to the removal of gravel under the proposed action.

4.2.1.3 Alternative 1

The development of the mock airfield gravel source would result in an additional loss of 33 acres of vegetation. Vegetation consists primarily of a mixture of balsam poplar, quaking aspen, and white spruce. Over time, it is anticipated that the site would naturally revegetate with regrowth of vegetation proceeding in natural successional stages.

4.2.1.4 Alternative 2

There would be no additional loss of vegetation due to the removal of gravel with alternative 2.

4.2.1.5 No Action Alternative

The trails would not be upgraded; therefore, there would be no direct loss of vegetation. Incidental loss of vegetation could occur as a result of continued trail use and ponding.

4.2.2 Wildlife

4.2.2.1 Impacts Common to all Action Alternatives

4.2.2.1.1 The proposed project would result in the loss of 151 acres of low-value wetland habitat. Low-value wetland habitat includes shrub-sedge tussock tundra and scrubby

stands of black spruce/tamarack that offer foraging habitat for relatively few species. The 151 acres necessary for the construction of the roads and target array pads represents 0.0039 percent of the total land available in the Oklahoma Impact Area. Loss of this type of habitat for wildlife such as moose, caribou, black bears, grizzly bears, and other species would be minimal due to the small footprint of the site and the availability of large areas of similar habitat nearby.

4.2.2.1.2 There may be the possibility of minor disruptions to wildlife movement in the area during construction phase. Increased activities such as operation of heavy equipment could result in temporary displacement of wildlife. However, these impacts would be limited in duration and scope.

4.2.2.2 Proposed Action

Under the proposed action, approximately 80,000 cubic yards of gravel would be removed on an annual basis from the current year's main channel from the Delta Creek bed. Though unlikely, if a large runoff event were to occur in the Delta Creek floodplain, it could change the course of the main channel thereby creating site conditions favorable for ponding. Development of a pond could have the potential to create waterfowl and shorebird feeding and nesting habitat that would have an adverse effect given the proximity to the mock airfield.

4.2.2.3 Alternative 1

Alternative 1 would develop a shallow gravel source located north of the mock airfield. Gravel would be removed to a maximum depth of 3 feet to eliminate the potential for ponding. Other than temporary displacement of wildlife during the construction period, no impacts to wildlife are anticipated.

4.2.2.4 Alternative 2

Other than temporary displacement of wildlife during the construction period, no impacts to wildlife are anticipated.

4.2.2.5 No Action Alternative

No other impacts to wildlife are projected under this alternative.

4.2.3 Fish

4.2.3.1 Impacts Common to all Action Alternatives

Once the all-season road is completed to One-Hundred Mile Creek, the USAF would construct a vehicle bridge over the creek to avoid impeding fish passage. Design of the bridge would take into account the meandering course of the creek.

4.2.3.2 Proposed Action

4.2.3.2.1 Delta Creek is a glacially fed water body with known habitat use during summer months for Arctic grayling. Excavation of gravel from the Delta Creek bed would incorporate guidelines as recommended by ADNR Office of Habitat Management & Permitting to ensure continuation of fish habitat and eliminate potential for impeding fish passage as follows:

- Depth of excavation would be up to 15 feet maximum;
- Headwall and side slopes would be no steeper than 2:1;
- The tail slope would be no steeper than 6:1.

4.2.3.2.2 If, as a result of gravel excavation the main channel were to shift leaving the excavated area as an isolated depression (pond), any fish that entered such a pond during high water events could become trapped and die as the water receded or froze. For this reason the pit will be designed to have a slope of 6:1 at its tail end, making it largely self-draining, given the slope of Delta Creek in this reach. This will prevent the entrapment of water or fish during fluctuating water levels.

4.2.3.3 Alternative 1, Alternative 2, and No Action Alternative

There would be no impact to fish or fish habitat from this alternative.

4.2.4 Threatened or Endangered Species

No known threatened or endangered species inhabit the area and would not, therefore, be impacted by the selection of the proposed action, alternative 1, alternative 2, or the no action alternative.

4.3 Cultural and Historic Resources

According to the 1986 *HPP* for the Oklahoma Impact Area on Fort Greely, there are no known archeological, cultural, or historic resources located on or near the proposed project area. There would likely not be an impact to cultural or historical resources from implementation of the proposed action, alternative 1, alternative 2, or the no action alternative. In the event any signs of cultural or historic resources were encountered during construction, the Fort Greely Public Works Environmental Office would be notified immediately and all activities would cease until a professional archeologist evaluated the finding.

4.4 Environmental Justice

4.4.1 Environmental justice, as it pertains to the NEPA process, requires federal agencies to identify and address, as appropriate, 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 all potential impacts that may result from the proposed actions.

4.4.2 The site of the proposed project is located on federal lands designated for military operations. It is in an area that is restricted to military activities only, with no public access allowed. The closest residential area to this site is Delta, 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 impacts to minority or low-income populations would occur from implementation of this project.

4.5 Cumulative Impacts

4.5.1 Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Individual actions may result in minor impacts but collectively may result in significant actions taking place over a period of time.

4.5.2 Cumulative impacts to wetlands may result from repetitive actions involving training, maintenance, and operation of facilities within the Oklahoma Impact Area. Disturbance to the wetlands in permafrost areas can lead to a variety of negative consequences as discussed in previous sections of this EA. These negative consequences include loss of wetlands vegetation, increases in permafrost subsidence, increases in erosion, losses of the natural filtering mechanism which wetlands provides, and other impacts.

4.5.3 Negative impacts to wetlands associated with military activities have been minimized due to ongoing compliance with regulations controlling military activity in wetland areas. According to U.S. Army Corps of Engineers, a total of 0.0132 percent of the withdrawl lands, have been disturbed since 1989. These actions, including the presently proposed action would not likely result in significant cumulative impacts to the Oklahoma Impact Area.

4.5.4 Cumulative impacts associated with the construction and/or operation of a bombing range such as the Oklahoma Range facility have been addressed in several previous environmental documents. Other military range activities and facilities that have been proposed and built both for the Air Force and the Army in Alaska and have been subject to the environmental impact analysis process. These documents include *Alaska Military Operations Areas-EIS* (U.S. Air Force 1995), Environmental *Assessment of the Upgrade of Target Arrays on Ft. Wainwright and Ft. Greely, Alaska* (U.S. Air Force 1992), *Ft. Greely, Proposed Resource Management Plan and Final EIS* (*BLM* 1989), *Integrated Natural Resources Management Plan and Environmental Assessment 2002-2006* (U.S. Army Alaska, 2002), *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS* (U.S. Army, 1998), *Yukon Range Training Upgrade* (U.S. Air Force 1992), and *Proposed Conversion to F-16 C/D Squadron, Eielson AFB* (U.S. Air Force, 1991). Each document provides a discussion on aspects of cumulative impacts of military operations in Alaska.
4.5.5 The Bureau of Land Management has been designated by Congress to be co-land managers with the U.S. Army for lands withdrawn under the Military Lands Withdraw

Act of 1986, which includes the Oklahoma Range. They have the responsibility of monitoring and documenting land use effects on these lands and to develop Resource Management Plans (RMP). The 1989 RMP for Fort Wainwright and the 1999 RMP for Fort Greely provide comprehensive discussions of cumulative impacts. These discussions arrive at the conclusion that significant cumulative impacts from military activities have not occurred.

4.6 Unavoidable Adverse Impacts

The unavoidable impacts for the proposed action, alternative 1, alternative 2, and the no action alternative are in tabular form (**Table 4.1**) for ease of comparison.

Table 4.1

Action	Unavoidable Adverse Impact
Proposed Action	• Removal of 80,000 cubic yards of gravel annually resulting in temporary disturbance of 3.3 acres of soils on an annual basis for a 10-year period. • Loss of 151 acres of wetlands and wetland vegetation for construction of all season roads and target pads. • Project located within 100-year floodplain.
Alternative 1	• Disturbance of 33 acres of upland soils over a 2-year period for the development of airfield gravel pit. • Removal of 160,000 cubic yards of gravel over a 2-year period. • Loss of 33 acres of upland vegetation for the development of airfield gravel pit. • Removal of 80,000 cubic yards of gravel annually resulting in temporary disturbance of 3.3 acres of soils on an annual basis for an 8-year period. • Loss of 151 acres of wetlands and wetland vegetation for construction of all season roads and target pads. • Project located within 100-year floodplain.
Alternative 2	• Loss of 151 acres of wetlands and wetland vegetation for construction of all-season roads and target pads. • Project located within 100-year floodplain.
No Action Alternative	• Continued permafrost thawing, subsidence, and surface water ponding on existing trails and target array sites resulting in further impacts to wetlands. Loss of vegetation due to maintenance of targets and facilities in wetlands.

4.7 Relationship of Short-Term Uses and Long-Term Productivity

The short-term uses and benefits with all action alternatives is that upgrading the trails and target array pads to all season status would help achieve the USAF objectives of enhancing range operational effectiveness. Ordnance recovery would be more efficient, allow for more complete recovery, and would also increase the safety for EOD crews. Maintenance of the range would be more efficient, less costly to operate, and could occur year-round without further degradation to wetlands. Long-term productivity resulting from loss of wetlands and vegetation would be minimal.

4.8 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term. Irretrievable commitments are those that are lost for a period of time. The only irreversible commitment associated with the action alternatives is the loss of 151 acres of wetlands. The only irretrievable commitments may be the loss of existing vegetative growth for construction purposes under all of the action alternatives and the removal of gravel from the airfield gravel pit under alternative 1.

4.9 Mitigations

The design aspects for the proposed upgrade to the trails and target array sites located in the Oklahoma Range would incorporate management practices that are designed to mitigate impacts to the environment as discussed in Chapters 2-4. Design aspects include the following:

- Measures to prevent erosion;
- Measures to prevent destabilization of Delta Creek channel;
- Measures to ensure fish passage;
- Measures designed to minimize impacts to wetlands.

5.2 Scoping Participants

Person	Agency	Information
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Frank Maxwell	AK DNR Lands Ph: 451-2728	Lands
John O'Brien	USAF, 354 CES/CEOR Ph: 377-2892	Range Project
Ron Weber	USARAK DTA Range Control Ph: 873-4716	DTA Range Control
Robert Layne	AK DNR MCW Ph: 451-2735	Lands
Jim Durst	AK DNR Habitat Ph: 459-7254	Habitat
Brent Koenen	USAF, 354 CES Natural Resources Eielson AFB ph: 377-5182	Natural Resource
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Andy Schumacher	USAF, 354 CES/CEO Ph: 377-1195	Range Project
Barbara Larweth	USAF, 354 CES/CERR Ph: 377-3142	Real Estate
Tom Slater	USAF, 354 CES Natural Resources Eielson AFB ph: 377-5182	Photo Documentation
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Will Strickland	USACE Ph: 474-2166	Corp Permits
Christy Evert	USACE Ph: 474-2166	Corp Permits
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6.0 Bibliography and Glossary

6.1 Bibliography

Bacon, G.H., J.A. Ketz, and C.M. Mobley. 1986. *Historic preservation Plan for U.S. Army Lands in Alaska*. Alaska Heritage Research group, Inc. for the U.S. Army Corps of Engineers, Alaska District.

Freeman, L.H. 1995. *How To Write Quality EIS's and EA's: Guidelines for NEPA Documents*. Franklin Quest Co., Shipley Associates Division. Bountiful, Utah.

State of Alaska Department of Fish and Game. *Memorandum, February 2000.* Delta Creek 1 Modification, N-920063, USAF.

State of Alaska Department of Fish and Game. *Part II General Performance and Reclamation Guidelines.*

U.S. Air Force. 1992. *Environmental Assessment of the Upgrade of Target Arrays, Fort Wainwright and Fort Greely, Alaska.*

U.S. Air Force. 1995. *Environmental Impact Statement of Alaska Military Operations Area*–Volume 1–3.

U.S. Air Force. 1998. *Environmental Assessment of the Oklahoma Range Target Facility Maintenance.*

U.S. Air Force. 1998. *Wetlands Determination of Mock Airfield and Targets for Oklahoma Impact Area, Fort Greely, Alaska.*

U.S. Air Force, Memorandum, May 1998 – August 2000. *Spring and Fall Migratory Bird Survey for the Mock Airfield at the Oklahoma Range.*

U.S. Army Alaska, Department of the Army. 1998. *Alaska Army Lands Withdrawal Renewal. Final Legislative Environmental Impact Statement* Volume 1–2.

U.S. Army Alaska, Department of the Army. *Integrated Natural Resources Management Plan.* 1998-2002. Volume 1 – Fort Greely

U.S. Army Corps of Engineers, Alaska District. 1997. *Permit Evaluation and Decision Document for permit # M-920063, Delta Creek 1.*

U.S. Army Corps of Engineers, Alaska District. 2000. *Permit Modification and Decision Document for permit # N-920063, Delta Creek 1.*

Viereck, L.A.; Dyrness, C.T.; Batten, A.R.; and Wenzlick, K.J. 1992. *The Alaska Vegetation Classification.* U.S. Department of Agriculture Forest Service.

6.2 Glossary

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

Borrow Pit – A specific location where gravel is removed for use at another site.

Drainage Courses – Small, ephemeral runoff channels distinguishable by differences between them and the surrounding vegetation.

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.

Loess – Unstratified deposits of silt and loam that are primarily deposited by the wind.

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 simulates an actual runway and taxiways.

Ordnance – Military supplies including weapons, ammunition, combat vehicles, and maintenance tools and equipment.

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

Outwash – Alluvial material from glaciers 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.

Riparian – Of, on, or pertaining to the bank of a river, or a pond, or small lake.

Sedge – Any of a family (Cyperaceae) of usually tufted marsh plants differing from the related grasses in having achenes and solid stems.

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 exist beyond the temperature limitations of tree growth, either because of high latitudes or high altitudes.

Unexploded Ordnance – Live ordnance, which did not explode on impact, or practice ordnance in which the smoke spotting charge did not explode on impact.

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 used for real time combat exercise control, and after mission debriefing.

7.0 Wetlands Permit